Fire and Emergency Medical Services Response Capacity in Rural Communities of California

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UC SANTA BARBARA
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Executive Summary

Purpose & Scope

This report evaluates fire and emergency medical services (EMS) across California rural counties. The focus is on comparative response capacities. Volunteer staffing is evaluated using incident and certification data to gain insight on trends, vulnerabilities and practical strategies to strengthen these essential public safety services.

Core Findings

Demand for fire and EMS response in rural California has surged. CAL FIRE calls have climbed roughly 75% since 2007, and wildfires are larger, faster moving and more costly than ever seen. Although volunteers make up only about 17% of California's 53,000 firefighters, they supply the majority of staffing in rural communities. This is similar for EMS, with some 4,018 certified responders in rural areas of the state. Many rural services are fire department based and largely run by volunteers. At the same time, many counties have watched their volunteer rosters shrink substantially as aging populations, greater training requirements and burnout accelerate attrition. Service quality gaps persist as well. Rural Local EMS Agency organizations lag state benchmarks for trauma, stroke and hypoglycemia care, and several cannot afford modern protective equipment or round-the-clock advanced-life-support coverage.

Strategic Recommendations

A range of actions are offered to enhance volunteerism in the areas of fire and EMS response across rural communities:

1. Conduct county-level baseline audits of staffing and finances.
2. Launch unified recruitment portals and youth explorer programs.
3. Streamline and subsidize training through online modules and mobile apps.
4. Consider retention incentives such as stipends, Length of Service Award Program credits and mental-health support.
5. Strengthen leadership skills and zero-tolerance policies for hostile behavior.
6. Form county authorities or joint-powers agreements to pool fire and EMS resources.
7. Back legislation that creates tax credits for volunteer responders and a provisional EMS only volunteer tier.
8. Develop capacity to obtain federal and foundation grants that support recruitment and retention.
9. Create fast-tracking credential bridges for military medics and Disaster Healthcare Volunteers to supplement rural fire and EMS personnel shortages.

While volunteer rates in California are comparatively low, rural areas have long relied on volunteers in many ways, especially in emergency response. The continued trend towards privatization of EMS will no doubt present further challenges for rural areas that have partially or fully relied on volunteers. With access to medical care in rural areas generally well below that of urban areas, it is not clear that privatization of EMS will translate to improved response and/or service.

Acknowledgements

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1. Introduction

Fire and emergency medical services (EMS) are among the most critical municipal response needs of communities, towns, counties, states and regions. A fire department is generally conceived to be an organization responsible for preventing and extinguishing fire, but may also provide medical support to save lives as well as undertake search and rescue. EMS denotes an organization responsible for attending to injuries and saving lives. In both fire and EMS response, the organization(s) consist of skilled personnel, firefighters trained to fight fires and EMS staff prepared to provide medical care, though it is not unusual that some are qualified to do both. Annual budgets for taxing entities obligated to provide for public safety reflect their importance. Across California, fire response (sometimes combined with EMS) ranges from 8% to 20% of an annual fiscal budget based upon a sampling of cities and counties. This is no surprise when one considers that the National 911 Program estimates that in 2021, for California, there were over 26.6 million calls (911.gov, 2021). Further, the U.S. Fire Administration reports that in 2023 nearly 67% of fire department response calls were for EMS and 4% for fires, with some 1.39 million fires that resulted in losses totaling $23.2 billion.[1] In Los Angeles County alone, there were 463,866 dispatched incidents (out of 633,078 911 calls) in 2024, exceeding the 449,364 dispatched incidents in 2023.[2] In 2024, the California Department of Forestry and Fire Protection (CAL FIRE) reported 605,868 emergency responses across the state and 8,024 wildland fires of 10 acres or more (CAL FIRE, 2025). The most recent information reported by the California Emergency Medical Services Authority (2024) estimates nearly 3.8 million EMS responses across the state in 2023. The January 2025 fires in Los Angeles further highlight the significance and importance of both fire and EMS response capabilities, with the Eaton and Palisades fires alone spanning 37,728 acres, responsible for 29 deaths, displacing some 130,000 people, damaging/destroying 25,135 structures and estimated losses ranging from $28 to $35 billion (Murray et al., 2025).

The act of unpaid work undertaken for the benefit of others and society is known as volunteerism (Wilson, 2000). Volunteers are individuals who contribute their labor without financial remuneration, driven by a complex set of factors, including altruism, social expectations, training, experience and personal motivations. Unpaid labor is conventionally identified as “serious leisure” when volunteering functions as a purposeful, skill-building pursuit that yields self-fulfillment, enjoyment and identity recognition grounded in activity engagement (Stebbins, 1996). The importance and significance of unpaid labor is that firefighting and, by extension, EMS both have historically relied upon volunteers. Fire response and medical assistance have long been a community response activity, both to help neighbors and friends but also to thwart the spread of an outbreak that may harm the broader community, including themselves. Volunteer fire response was historically the norm. Murray et al. (2025) review the evolution of modern firefighting organizations, beginning in Rome with *familia publica* (circa 300 BC) and *corpos of vigiles* (circa

[1] U.S. Fire Administration, https://www.usfa.fema.gov/statistics/, accessed 3/29/25.
[2] County of Los Angeles Fire Department, https://fire.lacounty.gov/2024-dispatch-statistics/, accessed 3/15/25.

6 AD), but it was not until repeated conflagrations in major cities that professional firefighting arose in New York (1648), London (1680), Paris (1716) and Philadelphia (1736). Volunteer fire response was and remains prominent, with estimates that some 70% of firefighters (~700,000) in the United States are volunteers (U.S. Fire Administration, 2025).

Rural communities face many challenges and generally have limited services and resources compared to more populated urban areas. According to the U.S. Census Bureau (2025) a rural area/community is the population, housing and territory that is not urban, with urban defined as an area having at least 2,000 housing units or at least 5,000 people. This is but one interpretation of urban and rural. Murray and Grubesic (2019) note that both urban and rural have been and continue to be defined in different ways. In fact, U.S. government agencies can vary substantially in their individual interpretations of urban and rural. Irrespective of what constitutes a rural area/community or how it is defined, the issues faced are real and far-reaching. Examples include climate change impacts, homelessness, wildfire vulnerability, quality of life, access to healthcare, poverty, crime, drug addiction and communicable disease, but certainly there are others. While these may seem to reflect broader societal issues that are also prevalent in urban regions, the impacts on and implications for rural communities are challenging given their relative lack of formal services and resources.

This report specifically focuses on the capacity in rural communities of California to undertake fire and EMS response and has been commissioned by the Rural Advancement Institute. Fundamental research questions center on:

- What are the trends in fire and EMS call volumes in rural communities?
- What are the current rates of rural community volunteerism in fire and EMS?
- What successful models and effective strategies can be implemented to maintain adequate capacity, address volunteerism, cope with call volumes and provide adequate staffing in rural communities?

The report assesses the current state of fire and EMS response, offering a national perspective for comparison. Volunteerism and rural contexts are reviewed. Approaches and initiatives observed in rural communities are evaluated relative to volunteer staffing needs. Best practices utilized by rural fire and EMS departments are outlined to address issues related to recruitment and retention.

2. Fire

Firefighter requirements are often determined by individual states and/or local authorities, but across the United States the National Fire Protection Association (NFPA) and International Fire Service Training Association have set curriculum standards for training, experience and examinations that are commonly followed by most fire departments. The U.S. Fire Administration indicates that there are more than 1,054,500 firefighters across the nation in 2025. Firefighters will typically need to obtain state-level certification(s) that adhere to the NFPA standards and guidelines (e.g., NFPA 1001 Standard for Fire Fighter Professional Qualifications) (California Office of the State Fire Marshal, 2019; National Fire Protection Association, 2019). As detailed below, the most common firefighting certifications are Firefighter I and II, based on NFPA 1001 standards. Similarly, all states require possession of a high school diploma/GED, physical endurance and strength (e.g., Candidate Physical Ability Test), training hours (110 to 500 or more) and possibly medical certification. State and local authorities may have specific requirements for level I and II certificates, but they typically conform to NFPA 1001 standards.

The California Office of the State Fire Marshal (2020) establishes baseline requirements for Firefighter I and II certificates. NFPA 1140 (Wildland Firefighter 1) and NFPA 470 (Hazardous Material Awareness and Operations), as well as NFPA 1001, are required. Additionally, there is an expectation that a firefighter: (1) hold an emergency medical certificate, (2) maintain a valid driver's license, (3) undergo six months of full-time paid experience (or volunteer equivalent) outside fire academy training, and (4) pass the Candidate Physical Ability Test associated with their local agency.

While requirements to become a career firefighter in California are generally consistent with national standards, volunteer firefighter criteria vary widely in terms of cost, time commitment and effort (California Volunteer Firefighters, 2025). Volunteers must commonly undergo basic fire and medical training, but not to the NFPA 1001 levels required of their paid counterparts. Individual fire departments will often have their own requirements for volunteers, but generally one must: (1) be at least 18 years of age, (2) hold a valid driver's license, (3) pass the Candidate Physical Ability Test (or be in good physical condition), and (4) complete any required basic fire and/or medical training.

2.1. National Trends

It was noted above that there were more than 1 million firefighters in the United States. Since 1986, the average number each year has been 1,086,230, with a minimum of 1,020,700 in 1989 and a maximum of 1,160,450 in 2015, according to the National Fire Protection Association (Fahy et al., 2022). The geographic breakdown across states is shown in Figure 2.1 for 2025 (U.S. Fire Administration, 2025). The number of firefighters tends to be related to population in a state, with

New York, Texas and California reflecting this. However, there is clearly an element of fire risk in various forms that adjust needed responders beyond a per capita measure.

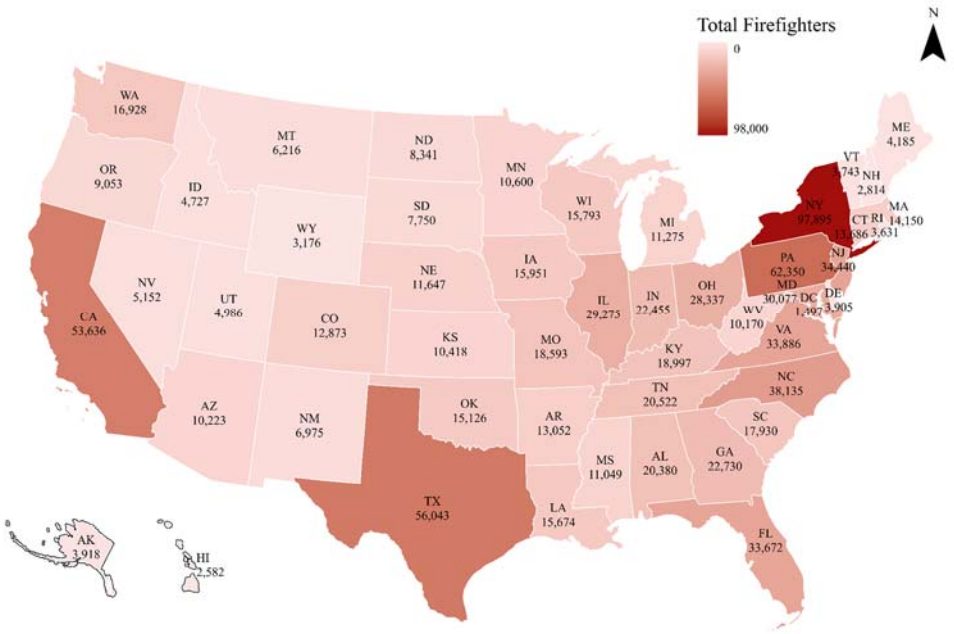

Figure 2.1. Number of firefighters across the United States (2025).

Fire departments in the U.S. have experienced an increase in service call volumes over the past 4.5 decades, as summarized in Figure 2.2.[3] In 1980, they responded to almost 11 million calls. This number has steadily risen to 42.4 million in 2023, representing nearly a fourfold increase. The number of fire related calls has been decreasing from 3 million in 1980 to 1.4 million in 2023, constituting approximately 4% of the emergency calls received by fire departments. Figure 2.2 indicates that medical aid (EMS) is a significant proportion of service calls. The remaining calls under "Other" reflect things like false alarms, mutual aid, hazardous material situations and other community needs.

[3] https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/fire-department-calls, accessed 3/30/2025.

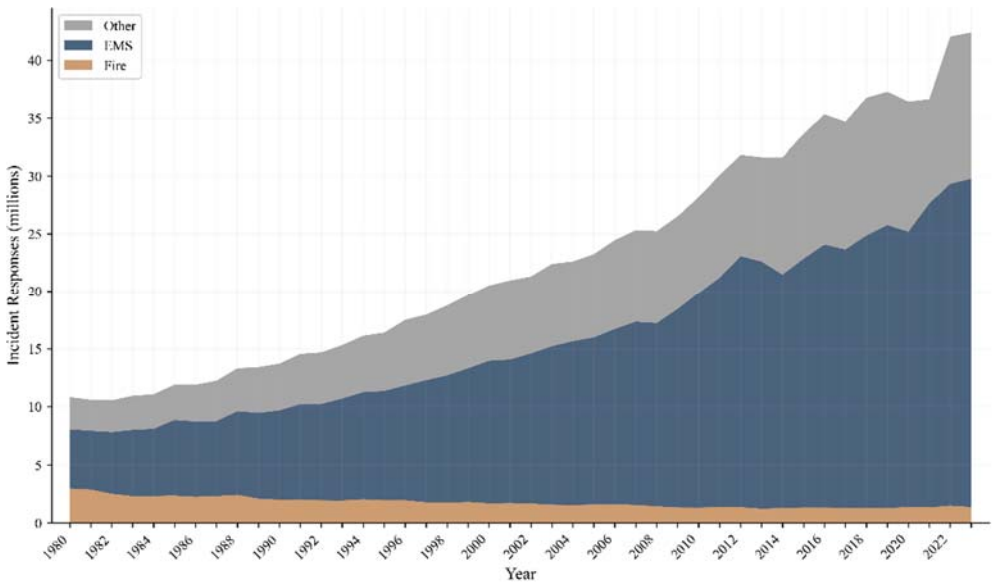

Figure 2.2. Annual trend in fire department incident response in the U.S. (1980-2023).

The geographic distribution of fire incidents at the national level is shown in Figure 2.3 for 2023. An overview of fire incident types nationwide is summarized in Figure 2.4.[4] During the period from 1985 to 2023, the total number of fire incidents has dropped from nearly 2.5 million to less than 1.5 million. Building fire incidents, including residential and non-residential, have also exhibited a steady decrease. Reasons for this decrease are attributed to mandates for smoke alarms, education, fire sprinklers, etc., but also changes in building materials to make them less flammable. Somewhat related is the reduction in smoking (Yau and Marshall, 2014). The average number of wildfire incidents over 1985-2023 (Figure 2.3) was 72,233 per year, with a high of 96,363 in 1996 and a low of 47,579 in 2013.

[4] Data from various sources, including U.S. Fire Administration (1997, 2007, 2025).

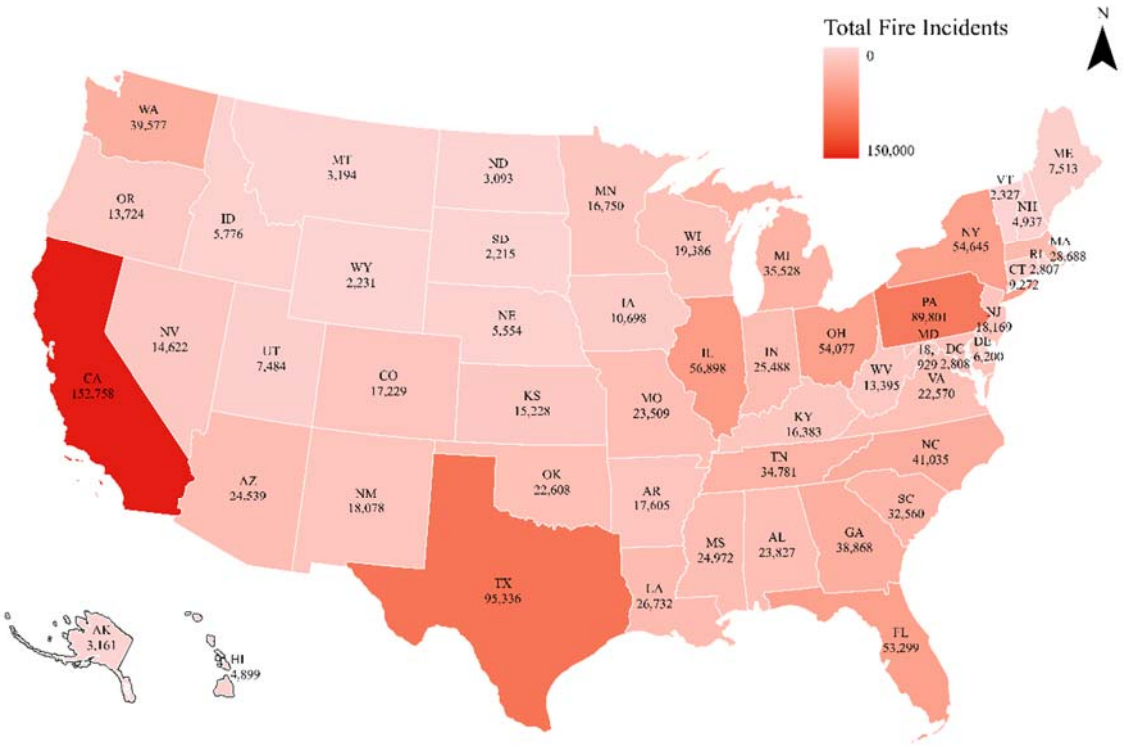

Figure 2.3. Fire incidents across the U.S. (2023).

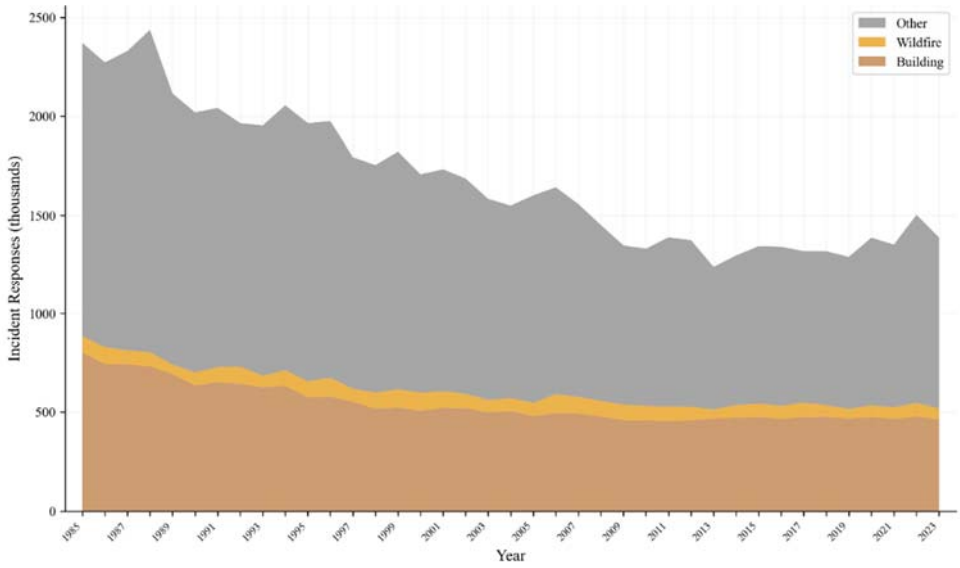

Figure 2.4. Annual trend in fire incidents in the U.S. (1985-2023).

Despite the overall decrease in fire incidents over this period, recent years have experienced an increase. The number of fires over the last decade has increased by more than 91,000, from 1.298 million in 2014 to 1.389 million in 2023. While the number of annual wildfire incidents has been

relatively static (Figure 2.4), their impact and magnitude of destruction have increased substantially. Not shown in Figure 2.4 is that the U.S. Fire Administration reports a trend of increasing fire related deaths over the last decade, up from 3,275 in 2014 to a high of 3,800 in 2021. National Fire Protection Association (2024) reports annual property losses trends from 1980 to 2023, and are summarized in Figure 2.5. While not shown in Figure 2.5, adjusted to 2023 dollars, would be an annual loss of some $19.3 billion in the U.S. over this period.

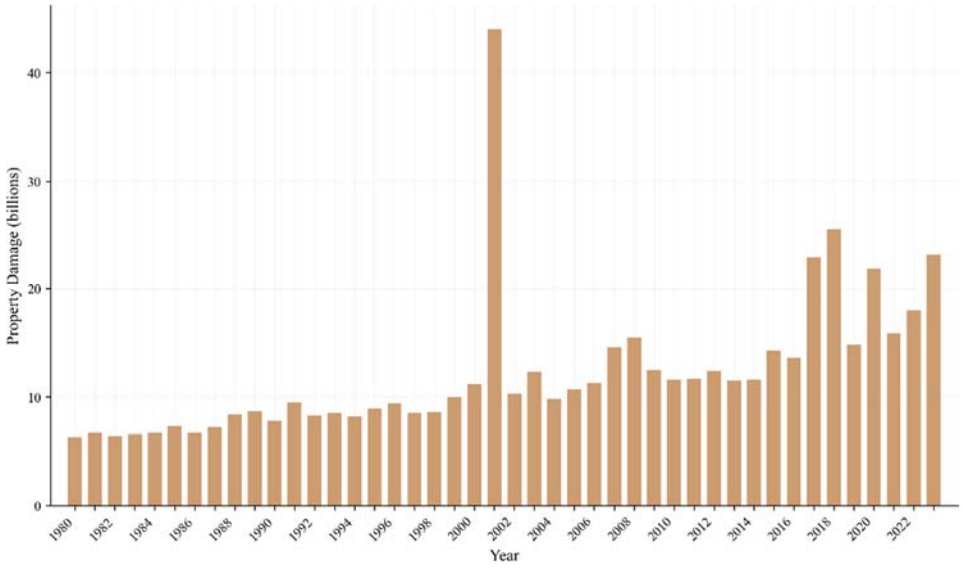

Figure 2.5. Annual trend in property damage in dollars due to fire in the U.S. (1980-2023) (National Fire Protection Association).

The national trend in total expenditure on fire, according to Federal Reserve Economic Data, is shown in Figure 2.6 as a component of public safety from 1959 to 2023. Indicated in Figure 2.6 is a 2023 expense of $77.8 billion. Another way to look at expenditure is through wildfire suppression summarized in Figure 2.7, adjusted to 2023 dollars, allocated to U.S. Department of Agriculture (Forest Service with 11,393 firefighters) and Department of Interior (Bureau of Land Management with ~3,000 firefighters, Bureau of Indian Affairs with 2,915 firefighters, Fish and Wildlife with ~500 firefighters, National Park Service with ~1,000 firefighters) (National Interagency Fire Center, 2025). Suppression costs have clearly soared. Worth noting is that Figure 2.7 does not include state, county and municipality expenditure, nor wildfire mitigation efforts and investment. Nevertheless, the five year average wildfire suppression expense over 2019-2023 was $3 billion. In contrast, the average suppression expense over 1985-1989 was only $3.7 million.

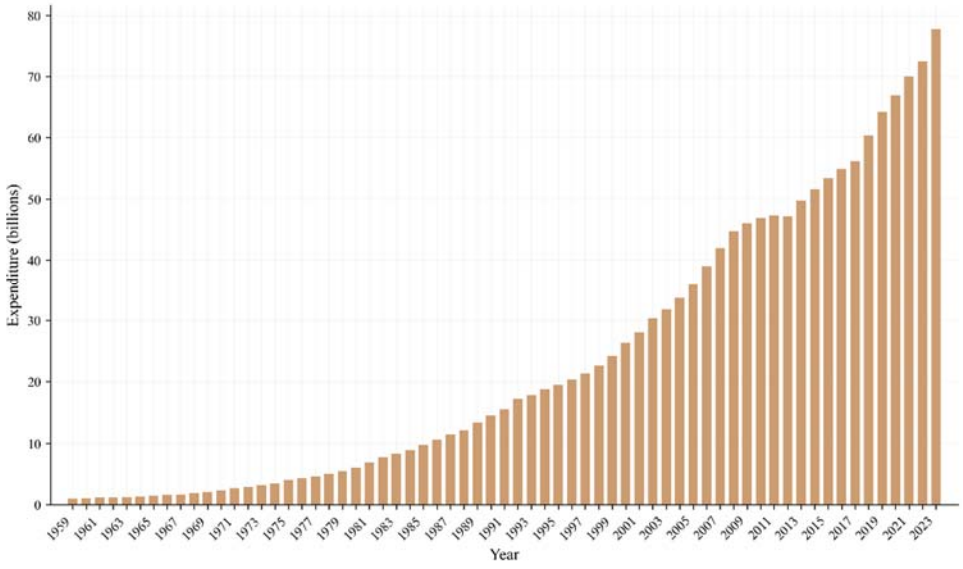

Figure 2.6. Annual trend in U.S. expenditure associated with fire (1959-2023).

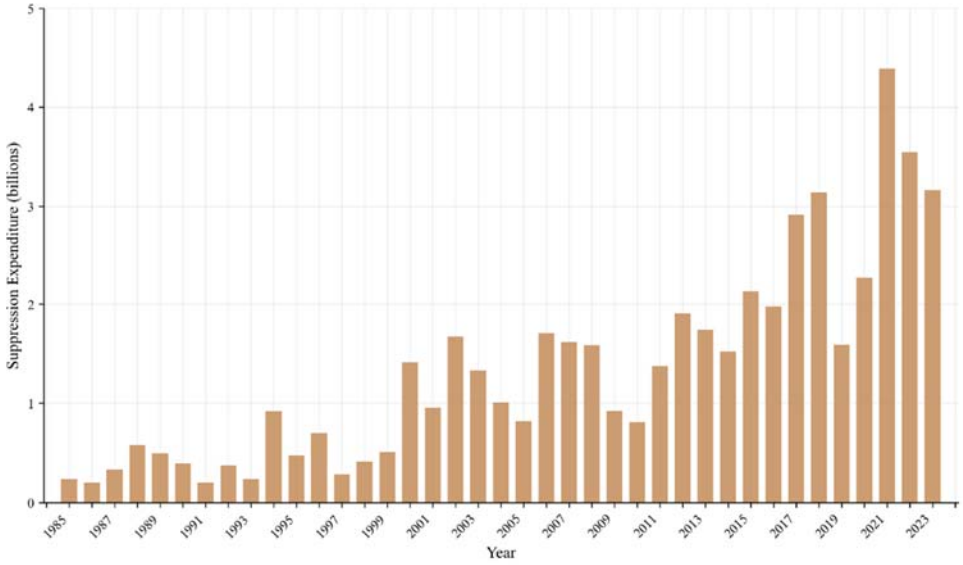

Figure 2.7. Annual trend in federal expenditure on wildfire suppression (1985-2023), adjusted to 2023 dollars.

The destruction caused by fire has been significant. Considering only wildfires, measured by the acres burned, indicates a nationally increasing trend but with substantial fluctuations (Figure 2.8) (National Interagency Fire Center, 2025). The average acres burned in the U.S. over this period was 5,352,766.8, with a low of 1,148,409 in 1984 and a high of 10,125,149 in 2015. However, the average acres burned over 2020-2024 of 6,968,373.8 is a significant increase from that of 2,976,874.2 spanning 1983-1999.

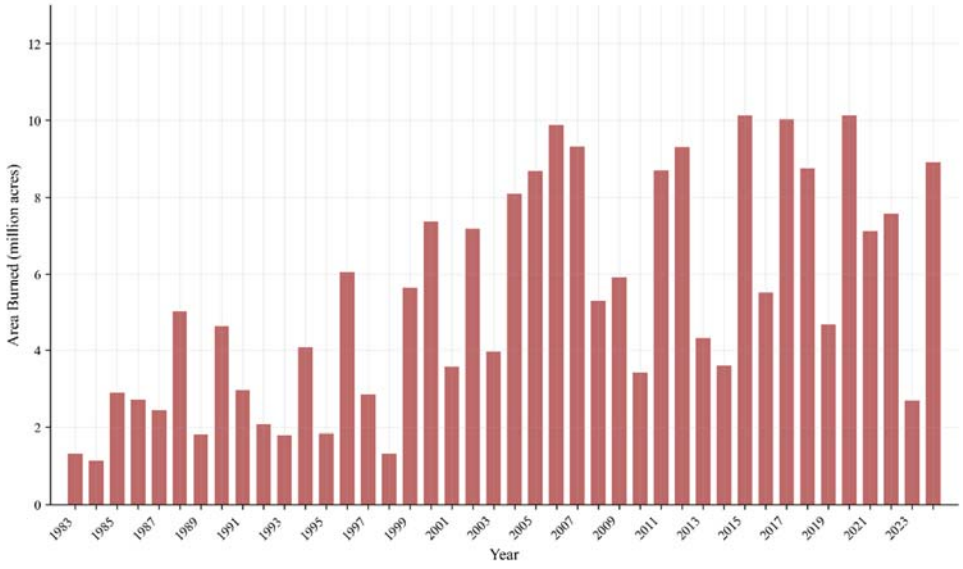

Figure 2.8. Annual trend in wildfire areas burned in the U.S. (1985-2024).

Overall, Figures 2.1 to 2.8 offer a snapshot of fire trends in the U.S. over the past four decades. While emergency response calls to fire departments have increased substantially, fire incidents have been trending downward. This has largely been due to structure fire incidents decreasing. In contrast, wildfire incidents have been somewhat constant, averaging around 72,233 per year. Yet, the destruction and cost of wildfires have drastically increased. The literature notes many reasons for this increase in destruction and cost, including urban housing needs that have encroached wildlands, historical fire exclusion and suppression, as well as more extreme weather conditions due to climate change that increase the risk of fire ignition and spread. The result has been bigger, hotter and more damaging fires (see Murray et al., 2021, 2023; Radeloff et al., 2023; Balch et al., 2024). Geographically, wildfire activities are more prevalent in the west and southeast regions of the U.S. Many studies have focused on wildfire dynamics in the western U.S., reporting significant increases in large-scale fire activity (Dennison et al., 2014; Burke et al., 2021). The increase in wildfires has largely been associated with the continued expansion of the wildland-urban interface (WUI), which simultaneously results in higher chances of human-ignited wildfires and greater exposure to fire risks (Radeloff et al., 2023). Beyond the growth in direct destruction, increasing wildfires have long-term regional impacts, such as elevated PM2.5 in the atmosphere with known and unknown public health implications (Burke et al., 2021).

As indicated above, reported federal expenditures are but a fraction of the total costs. This share has grown from 20% several decades ago to over half of U.S. wildfire suppression spending according to the National Association of State Foresters (2025). The primary components of federal suppression spending are costs associated with contractual services and personnel. The explicit proportion of shares in fire suppression costs varies across regions (Liao and Kousky, 2022; Pennick McIver et al., 2021), but the local burden of repair and replacement is often greater than suppression. For instance, 85% of repair costs associated with the 2017 Eagle Creek fire were

absorbed by local and regional municipalities/counties, while suppression costs were only 26% local/regional (Politoski et al., 2022). The total economic cost of wildfires is difficult to precisely determine as long-term effects, such as smoke or particulate matter impacts, stress induced cardiac arrest, disrupted economic activity, lost educational and physical activity opportunities, etc., are hard to measure and track (Arabadjis et al. 2023). While the complete picture remains uncertain, the sheer scale of suppression expenditure suggests increasing challenges and resource demands associated with fire response.

2.2. California Trends

The number of firefighters in California (non-federal) is 53,636, according to the U.S. Fire Administration through the National Fire Department Registry, and the geographic distribution is shown in Figure 2.9. Worth noting is that the Bureau of Labor Statistics and other sources suggest the number is 27,580, but this appears erroneous given that Los Angeles County employs around 10,000 firefighters and CAL FIRE employs some 12,000 permanent and seasonal personnel. The pattern in Figure 2.9 highlights the concentration of firefighters in urban centers across the state.

Fire incidents have steadily increased in California. Figure 2.10 summarizes CAL FIRE (2025) reported incident responses, increasing from 347,045 in 2007 to 605,868 in 2024 (+75%). There was only one year (2020) when incident responses did not increase.

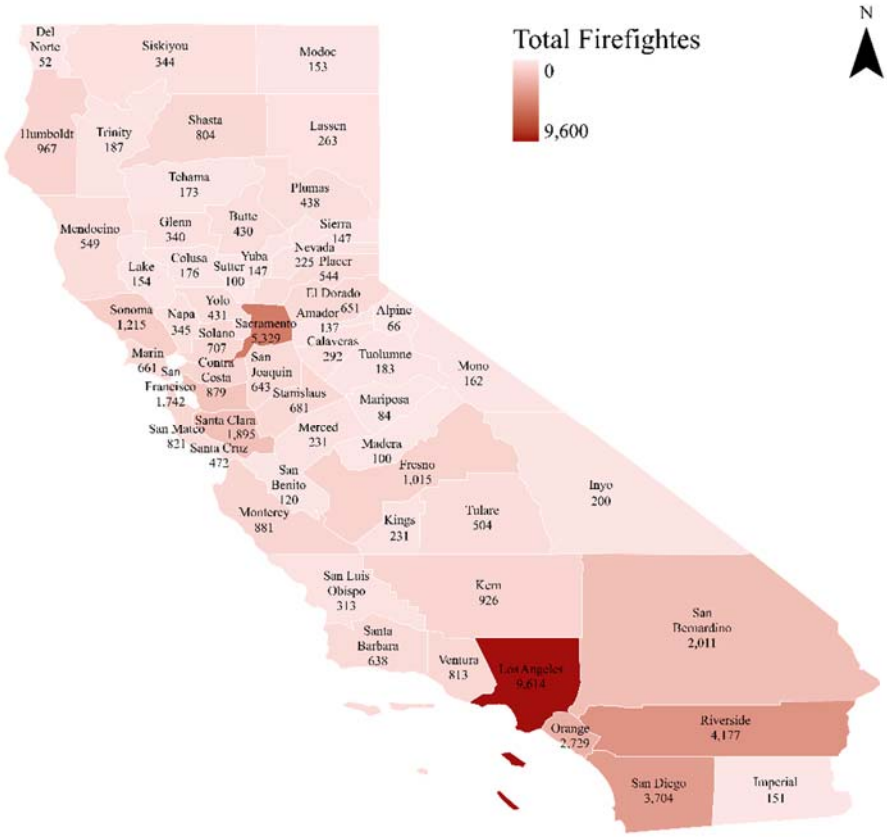

Figure 2.9. Number of firefighters in California (2024).

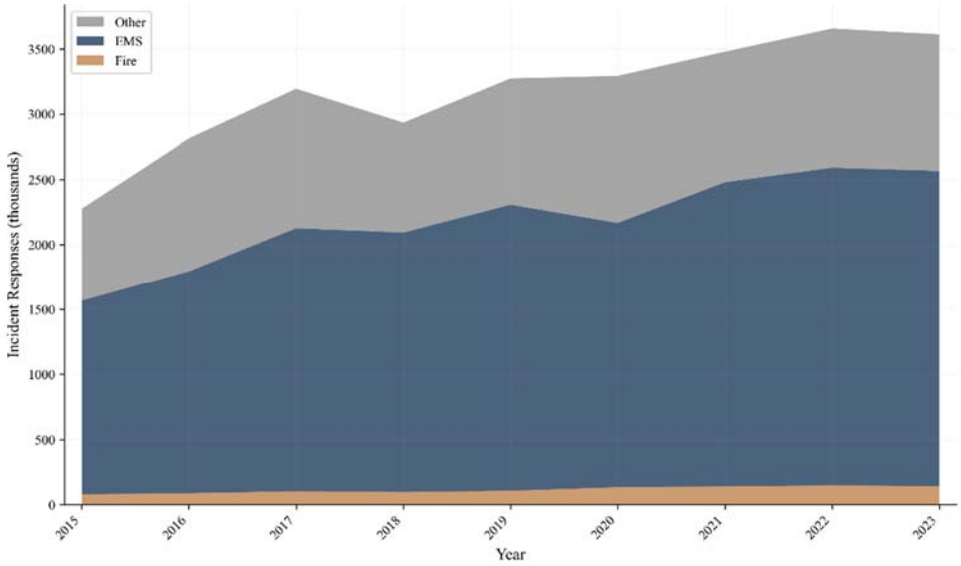

Figure 2.10. Annual trend in fire department incident response in California (2015-2023).

Figure 2.11 offers a geographic perspective of the 151,432 fire incidents by county in California for 2023. This pattern appears consistent with the number of firefighters by county reported in Figure 2.9. Annual variability by building/structure and wildfire is reported in Figure 2.12, based on information obtained from the U.S. Fire Administration (2025). Building fires mimic trends seen nationally during the 2005 to 2023 period, remaining somewhat consistent. The average number of building fires in Figure 2.12 was 12,833.4. However, the period from 2005-2016 had a lower average number of building fires (11,760.4) compared to the period spanning 2017-2023 (14,672.9). The average number of wildfires over the period reported in Figure 2.12 was 1,637.3, but the periods of 2005-2016 and 2017-2023 witnessed an average increase from 1,394.8 to 2,053, respectively.

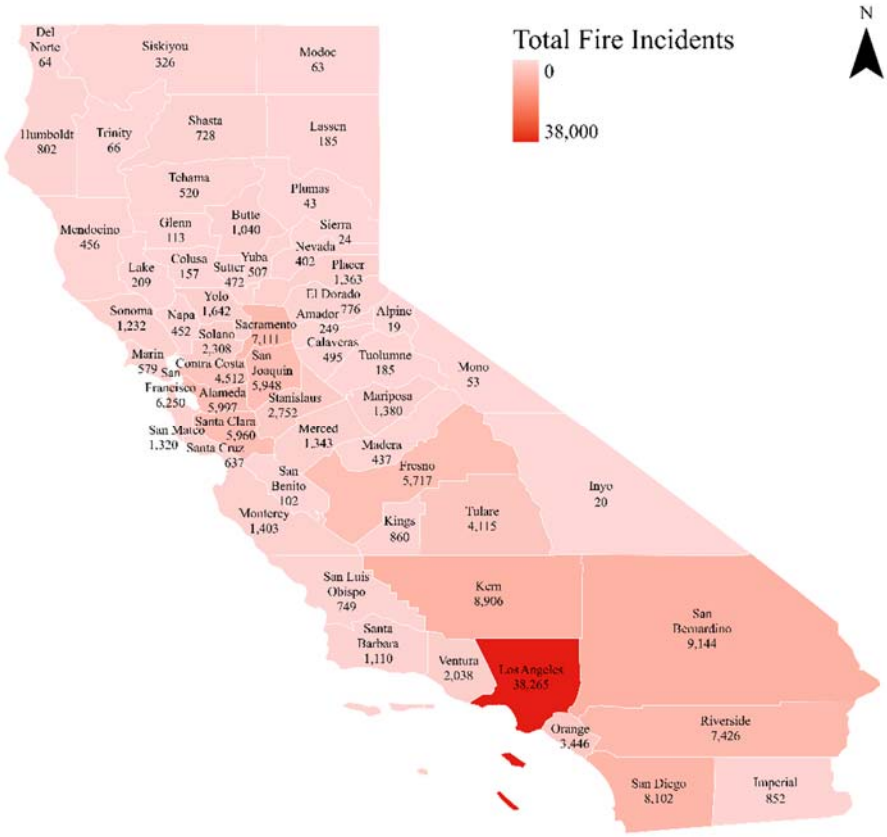

Figure 2.11. Fire incidents in California (2023).

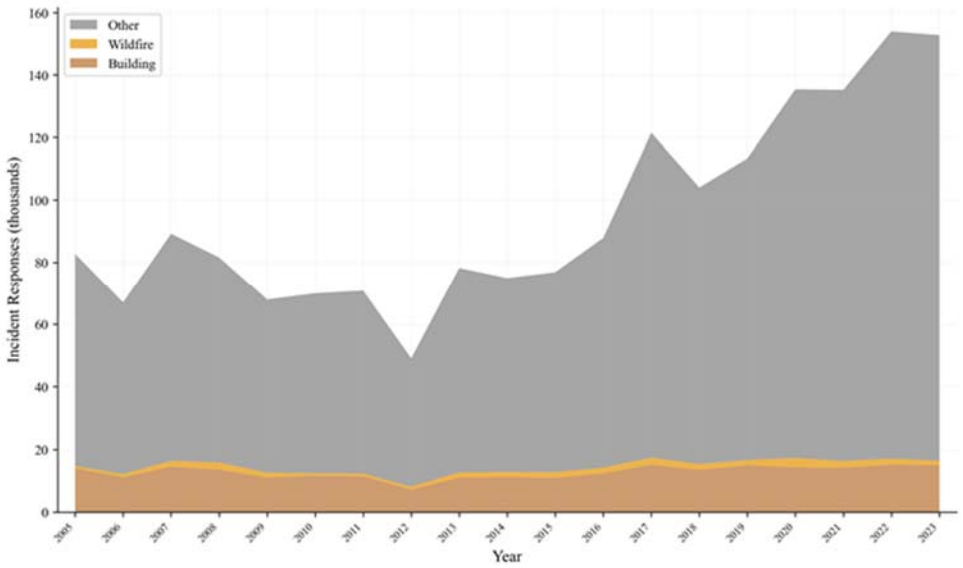

Figure 2.12. Annual trend in fire incidents in California (2005-2023).

CAL FIRE expenditure is detailed in Figure 2.13.[5] The annual expenditure ranged from a low of $118 million in 1981 to a high of $4.625 billion in 2022. The average over the past decade was $3.34 billion, significantly higher than the average of $436.68 million over 1980-2005 or $1.239 billion over 2006-2014.

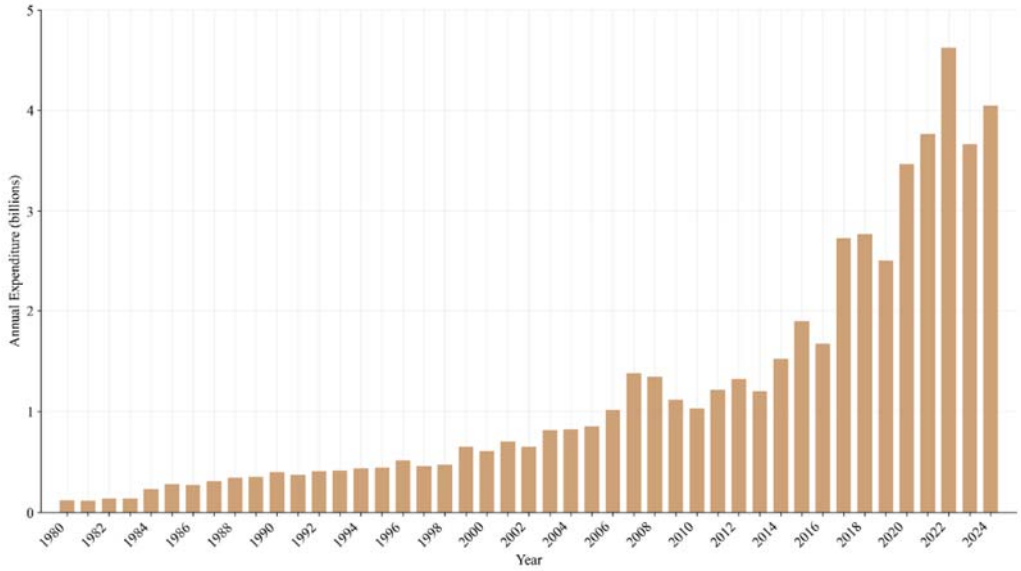

Figure 2.13. CAL FIRE annual expenditure (1980-2024).

Of course, state (and federal) level expenditure is only part of the picture. As an example, summarized in Table 2.1 is that Los Angeles County budgeted $1.6 billion in 2024-25 to support

[5] Expenditure amounts taken from annual California budgets (https://lao.ca.gov/, accessed 4/22/2025).

its fire department, and the City of Los Angeles allocated $400 million (2024-25) for fire suppression. Similarly, other counties and municipalities allocate significant and sustained funding devoted to fire response, as noted in Table 2.1.

Table 2.1. Representative county and municipality budgets for fire response in California.

County / Municipality	Budget	Year
Los Angeles County	$1.6 billion	2024-25
City of Los Angeles	$400 million	2024-25
City of Santa Barbara	$39,891,571	2024-25
County of Santa Barbara	$124,929,100	2024-25
Crescent City	$1,147,622	2024-25
El Centro	$7,886,094	2024-25
City of Sacramento	$219,809,015	2024-25
Tulare County	$35,776,685	2024-25
City of Monterey	$32,012,179	2024-25
Butte County	$ 26,248,276	2024-25
Merced County	$38,243,516	2024-25
City of San Luis Obispo	$15,247,000	2023-25

Unprecedented levels of destruction due to fire have been observed in California over the past 25 years (Figures 2.14 and 2.15) (CAL FIRE, 2025). A marked increase can be observed in 2017 with 1.6 million acres burned followed by nearly 2 million in 2018, 4.3 million in 2020 and 2.6 million in 2021 (Figure 2.9). Historic numbers of structures lost due to fire can be observed for 2017 (10,868), 2018 (22,868) and 2020 (11,116), summarized in Figure 2.15.

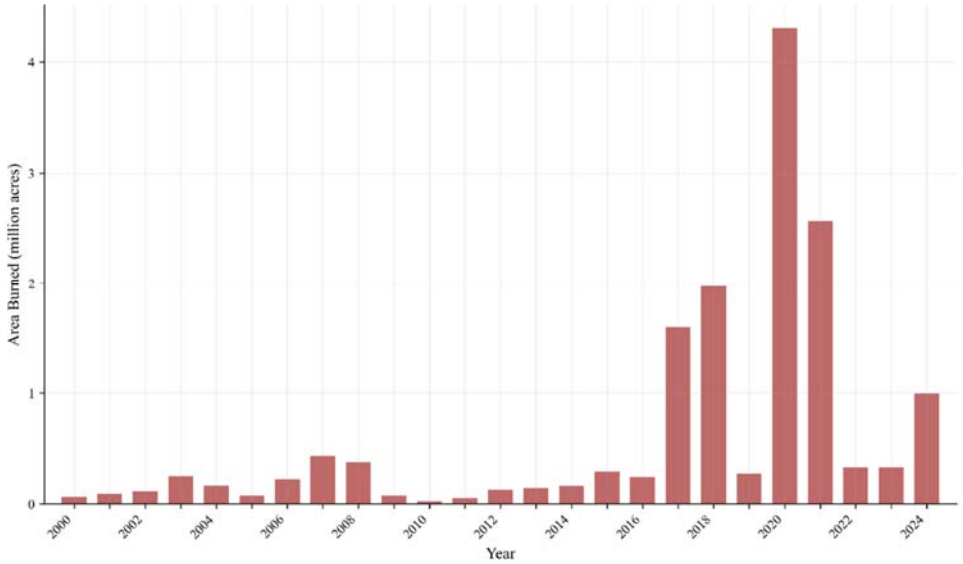

Figure 2.14. Annual trend in area burned in California (2000-2024).

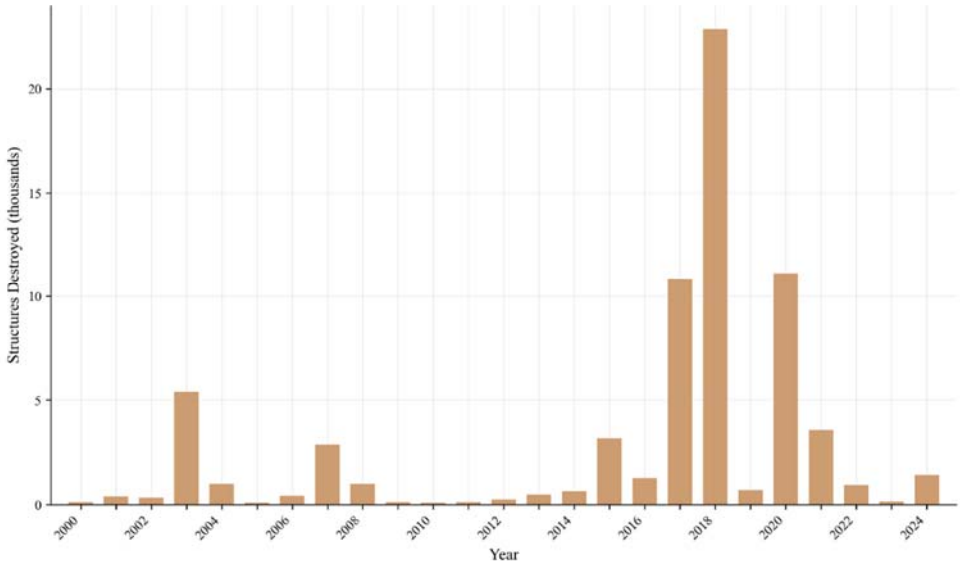

Figure 2.15. Annual trend in structures destroyed by fire in California (2000-2024).

The trends observed in Figures 2.9 to 2.15 suggest that fire risk in California is only increasing. The reasons for this are many, with national fire risk characteristics similarly a concern in California. Climate change in the form of warming temperatures and intensifying droughts have contributed to a more fire-prone environment along with the expansion of the wildland-urban interface (Li et al., 2022; Office of Environmental Health Hazard Assessment, 2022; Kumar et al., 2025). The accumulation of high fuel loads too have been attributed to observed increases in extreme fire destruction in California due to decades of aggressive fire suppression operations (Westerling et al., 2018; Kreider et al., 2024). A continually expanding wildland-urban interface across the state has contributed to fire risk as well. More people in the WUI have served to increase wildfire ignition, with some 90% of the most destructive wildfires being human-caused (Kumar et al., 2025).

California fire suppression expenditures are unparalleled, higher than any other state in the U.S., exceeding $4 billion alone in 2024-25 by CAL FIRE (Figure 2.13). Beyond direct firefighting costs, wildfires in California have broader economic effects that include long-term county and municipal budget strains as well as property insurance implications. Wildfire in the state also exerts substantial impacts on environmental and public health, responsible for declining vegetation cover and high levels of PM2.5 in the atmosphere (Burke et al., 2021). These impacts are highly uneven, as 89% of areas near fires (within 0.62 miles) are rural and over 80% of buildings destroyed are within the WUI (Kramer et al., 2019).

Wildfires in California show no sign of abating. Table 2.2 highlights that most of the major wildfires in the U.S. have occurred in California over the past decade, underscoring what the future holds for the state. Climate models have projected that under high emissions scenarios the state could face a 77% increase in area burned and a 50% rise in wildfire frequency by 2100 (Westering

et al., 2018). Temperature and drought trends also point to increased wildfire across the state (Shives et al., 2025).

Table 2.2. Major wildfires in the United States.

Wildfire	Year	Acres Burned	Deaths	Buildings Destroyed
Eaton (Los Angeles County)	2023	14,021	17	10,488
Palisades (Los Angeles County)	2025	23,707	12	14,647
Maui (Hawaii)	2023	17,000	98	2,200
Marshall (Colorado)	2022	6,026	2	1,084
North Complex (Butte, Plumas, Yuba Counties)	2020	318,935	15	2,352
Woolsey (Ventura, Los Angeles Counties)	2018	96,949	3	1,643
Thomas (Ventura, Santa Barbara Counties)	2017	281,893	2	1,063
Camp (Butte County)	2017	153,336	86	18,804
LNU Complex (Napa, Sonoma Counties)	2017	36,807	22	5,643

3. EMS

All EMS personnel are required to be certified. The four recognized levels of EMS certifications are (National Registry of Emergency Medical Technicians, 2025):

- Emergency Medical Responder (EMR)
- Emergency Medical Technician-Basic (EMT-B)
- Advanced Emergency Medical Technician (AEMT)
- Paramedic

According to the National Registry of Emergency Medical Technicians, there are currently 506,870 people certified across these levels in the United States. An EMR provides basic life support and is trained to handle responsibilities such as cardiopulmonary resuscitation, airway functioning and bleeding control, accounting for 3.19% (16,180) of all nationally certified personnel. EMT-B represent 65.13% (330,145) of total national certifications and perform all skills of an EMR but have additional medication administration and airway management capabilities. AEMT is 4.46% (25,880) of all nationally certified EMS personnel. They are responsible for limited advanced life support, such as administration of certain medications and intravenous access. Finally, paramedics constitute 26.57% (134,665) of nationally certified personnel, and represent the highest level of EMS provision. They are responsible for all aspects of advanced life support, including but not limited to medication administration, cardiac life support intervention and situational medical assessments.

Requirements for becoming an EMS professional entail being an adult (18+ years of age) and having a high school diploma (or GED equivalent). In addition, training and certification are needed, with increasing rigor concomitant greater medical responsibilities:

- **EMR:** 40-80 hours of training and final examination.
- **EMT-B:** No prior EMR training, but must complete state approved program (100-150+ hours over 2-6 months) as well as national cognitive exam.
- **AEMT:** Additional 150-250 hours of training beyond the EMT-B certificate.
- **Paramedic:** Eligible after EMT for 1-2 years. Must complete 1,000-1,500 hours of training, commonly in the form of a two-year program.

For each level of certification, there are associated responsibilities and limitations for services that can be provided. This standard is maintained regardless of work type, meaning that both paid and volunteer EMS professionals must possess adequate certifications to provide medical aid.

EMS response most commonly falls into the categories of Basic Life Support and Advanced Life Support. California Emergency Medical Services Authority (2024) outlines distinctions. Basic

Life Support is defined as “procedures and skills contained in the EMT-1 scope of practice”, including CPR, oxygen administration and bleeding control. These are most commonly carried out by an EMR or EMT-B. Advanced Life Support is offered by AEMT and paramedics, and is defined to be “any definitive prehospital emergency medical care approved by the local EMS agency, in accordance with state regulations”, including establishing intravenous lines, administering medications, monitoring EKG and performing synchronized cardioversion or defibrillation.

3.1. National Trends

Between the years of 2011 to 2023, fire departments experienced a 43.5% increase in EMS call volumes. Figure 3.1 shows that during this period EMS personnel through certifications grew at an even faster rate, 56.8%, with 325,314 certified nationally in 2011 and 510,035 in 2023 (National Registry of Emergency Medical Technicians, 2025). As the total number of EMS professionals has increased, the composition of this workforce has shifted slightly; most notably with a 5.4% decrease in EMT-B certifications, and a 4.5% increase in total AEMT. Total certifications by state are given in Figure 3.2 for 2025.

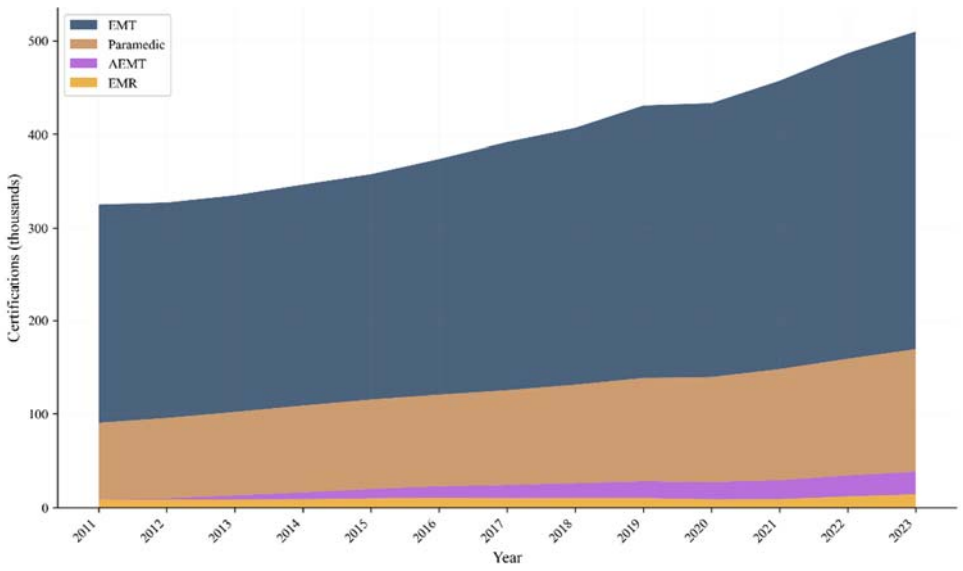

Figure 3.1. Annual trend in EMS personnel/certifications in the United States (2011-2023).

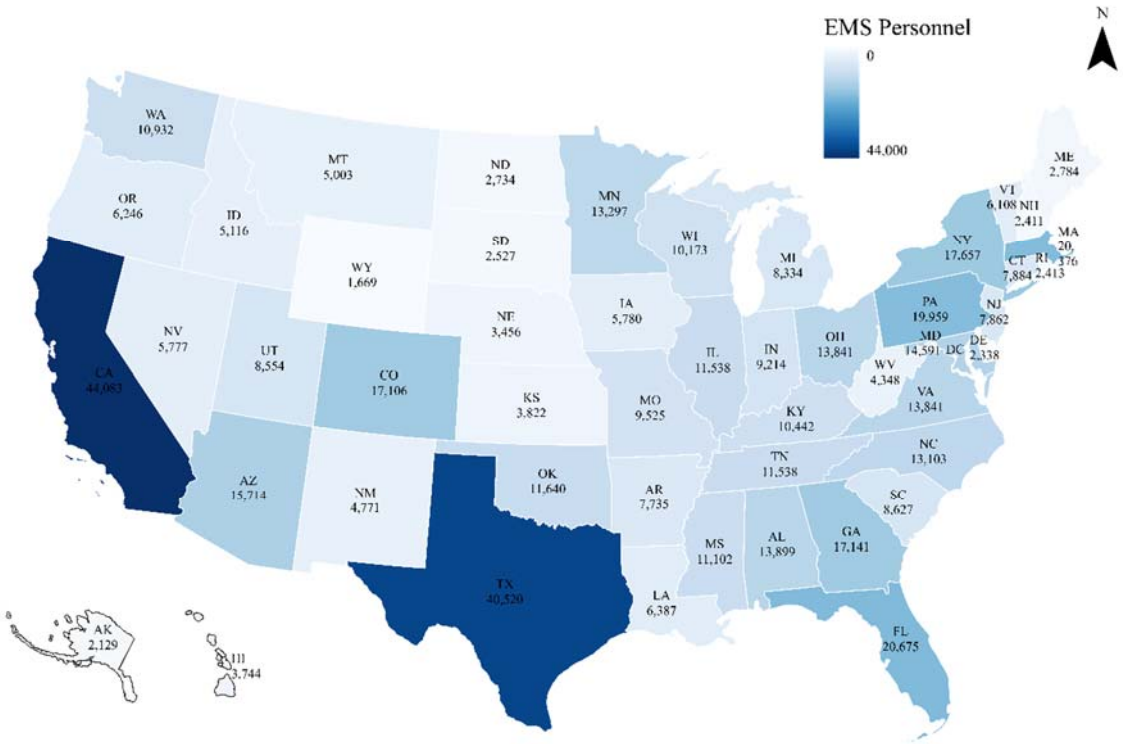

Figure 3.2. EMS personnel/certifications by state (2025).

Figure 2.2 indicates that medical emergency calls have grown from 5 million in 1981 to 28.4 million in 2023, now accounting for some 67% of all fire department responses. EMS calls at the national level are responded to by fire departments, volunteer groups or private companies. In 2023, calls handled by fire departments (28.4 million) accounted for 52.4% of total national incident responses (54.2 million) recorded by the National Emergency Medical Information System. The reporting of EMS related call volumes outside of fire departments is limited, particularly historical information. The National EMS Assessments and National Emergency Medical Information System have been able to provide statistics for select recent years, reporting incident responses for EMS providers including fire departments: 36.7 million in 2009, 42.6 million in 2018 and 54.2 million in 2023 (Federal Interagency Committee on Emergency Medical Services, 2011, 2021; National Emergency Medical Information System, 2024). While this data is limited, it is consistent with trends in Figure 2.2. The increase in EMS calls may be driven by the aging U.S. population, as older people have disproportionately higher rates of EMS utilization (Platts-Mills et al., 2010).

The national trend in total expenditure on EMS (or ambulance) according to Federal Reserve Economic Data is shown in Figure 3.3 from 2004 to 2022. Indicated in Figure 3.3 is a 2023 expense of $16.2 billion. The Centers for Medicare & Medicaid Service (2024) indicate that ambulance services are tracked under the subcategory of national health expenditure: “Other health, residential, and personal care services.” In 2022, this category totaled $246.5 billion, accounting

for 5.4% of the $4.53 trillion spent on healthcare. As with EMS certificates and call volumes, national expenditure on health care and EMS-related services has increased since 2000, with total expenditure growing 256% and Other Health, Residential, and Personal care increasing by 326%.

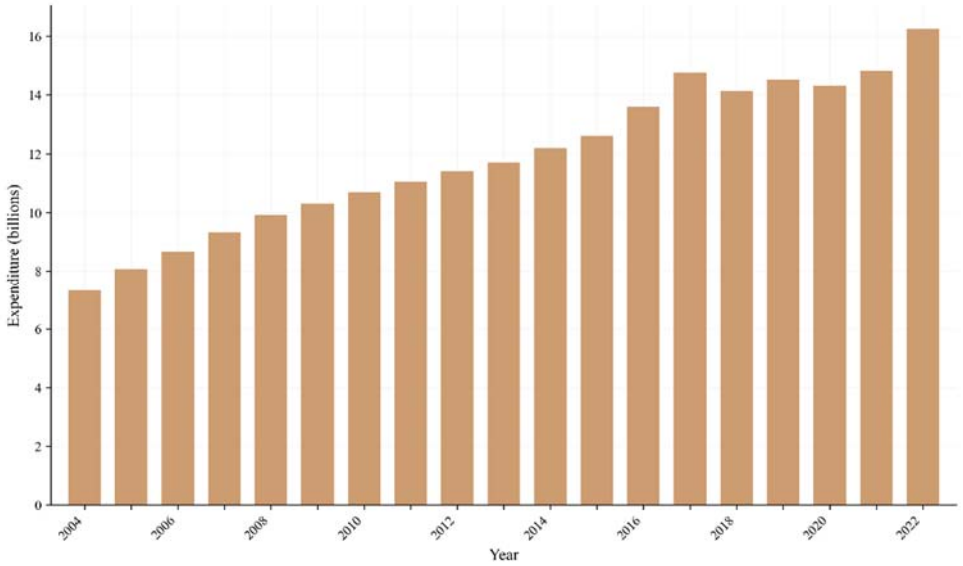

Figure 3.3. Annual trend in EMS expenditure across the U.S. (2004-2023).

There are several trends that could be attributed to ongoing stressors impacting the EMS workforce according to Cash et al. (2024). In 40 states across the U.S., EMS staffing levels are at risk due to the perception that they are not considered an essential public service and are prone to agency closures and/or funding cuts. Across much of the EMS workforce, additional strain is put on staffing levels given the fact that 34% of EMS personnel simultaneously work for multiple agencies. Rural communities face additional difficulties with accessing advanced life support due to higher costs and paramedic shortages, leaving them with only basic life support care in the event of an emergency.

3.2. California Trends

The number of annual EMS certifications in California is summarized in Figures 3.4 (EMT-B) and 3.5 (Paramedics). Modest growth from 2015 to 2024, from 80,500 to 92,942, can be observed. This growth is less than what is seen at the national level (Figure 3.1). California consists of a higher percentage of EMT-basic (73% vs. 65% national) and a lower percentage of advanced EMT (0.1% vs. 5% national). Figures 3.5 and 3.6 provide a breakdown of certifications by county for 2024.

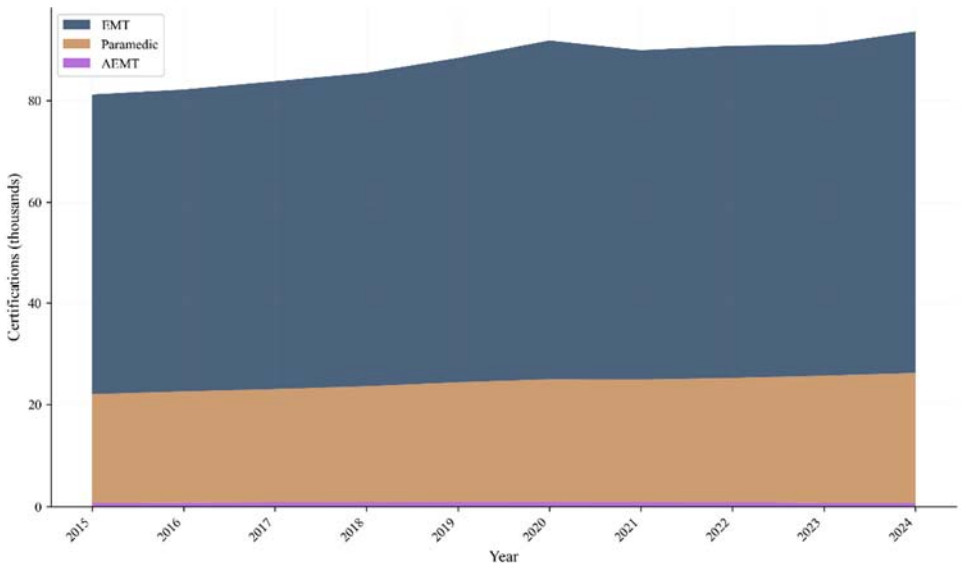

Figure 3.4. Annual EMS certifications in California (2015-2024).

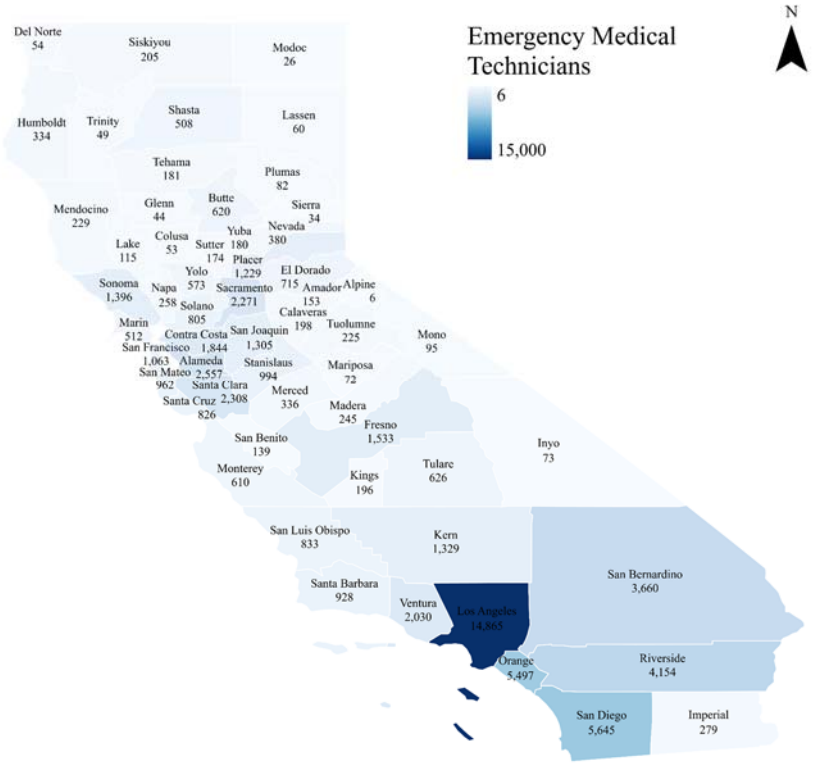

Figure 3.5. EMT-B certifications in California by county (2024).

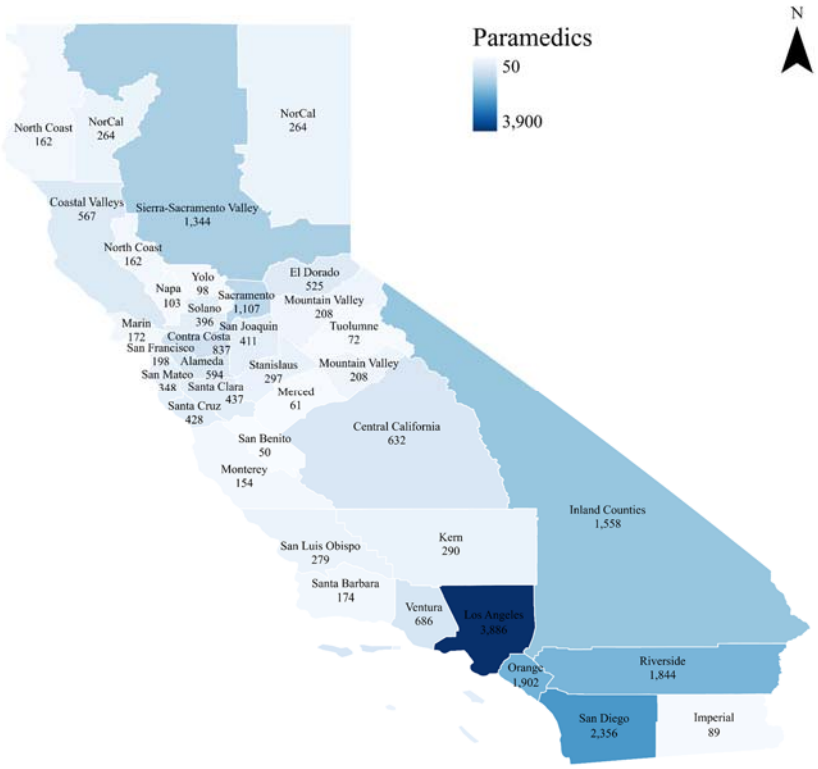

Figure 3.6. Paramedic certifications in California by county (2024).

The number of EMS responses in California has fluctuated over the period from 2017 to 2023 shown in Figure 3.7, ranging from a low of 4,506,395 in 2018 to a high of 5,183,226 in 2022 (California Emergency Medical Services Authority, 2023, 2024). This is less reflective of the national EMS trend of increased call volumes reflected in Figure 2.2. It is estimated that providers statewide receive more service calls than reported, some 6.4 million each year (California Emergency Medical Services Authority, 2024). The discrepancy in total numbers is due to incomplete reporting as not all agencies have participated in making their information available but also information may be incomplete in some cases. Nevertheless, the fire department EMS call trend (Figure 2.10) is similar to that reported by EMS agencies in Figure 3.6. Fire departments are only responsible for 35% of EMS responses in California, and those not responded to by fire departments are handled by private non-hospital providers (60%), governmental non-fire providers (4%) and hospitals (1%) (California Emergency Medical Services Authority, 2024). California EMS call response data, similar to the national level, is collected through a self-reporting system (California Emergency Medical Services Information System). They have acknowledged potential data issues associated with system version changes (e.g., 2022 and 2023) as well as agency reporting noted above. As shown in Figure 3.6, Los Angeles County accounts for a significant proportion of annual calls, ranging from 15.7% to 18.7%.

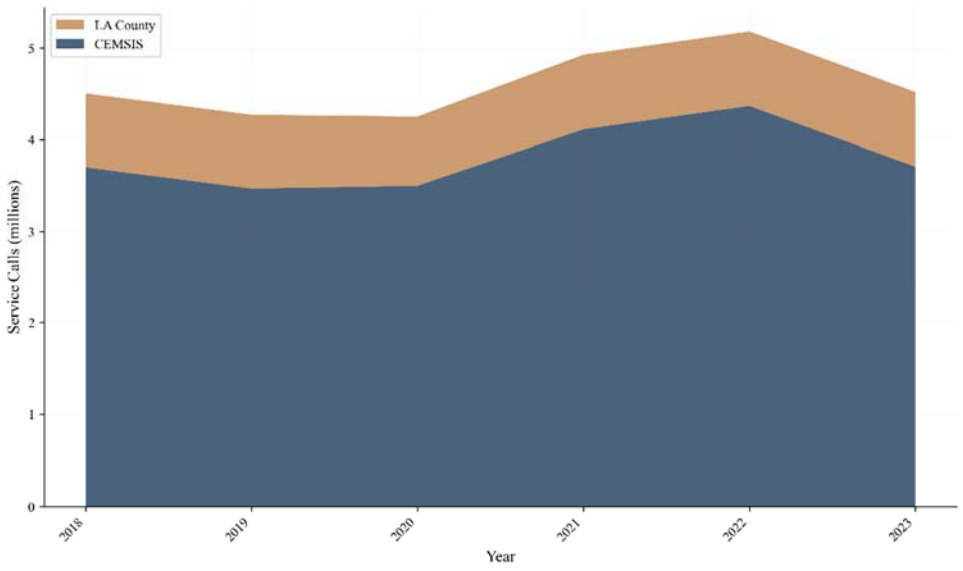

Figure 3.7. EMS incident response in California (2018-2023).

The expenditures on EMS in California are challenging to tease out given the overlap with fire response noted previously. The total health expenditure in the state for 2000 was $242.44 billion (17.74% of the U.S. total), and "other health, residential, and personal care" (with EMS included) made up $4.7 billion (7.4% of the U.S. total). By 2020, these figures rose to $810.9 billion and $31.1 billion (19.5% and 14.76% of the national expenditure), respectively. During this period, "other health, residential, and personal care" spending grew by 561%, nearly double the growth rate of the state's aggregate health expenditure and national trend (Centers for Medicare & Medicaid Services, 2023). Funding for EMS in California is derived from a variety of sources, with primary providers being: private health insurance reimbursement, Medicare & Medicaid reimbursement and local county/municipality taxes (generally the primary source of fire department annual support). In addition to these primary sources, less substantial but valuable secondary funding streams exist: state general fund that allocates $30-40 million per year to the California Emergency Medical Services Authority, federal grants available to hospital and fire department programs, specific taxes or levies and out of pocket payments by patients without insurance (California Department of Finance, 2024; Centers for Disease Control and Prevention, 2024b).

In order to provide some insight into the annual expenditure, Figure 3.7 indicates the City of Los Angeles fiscal year budgets for EMS from 2014 to 2025. The budget allocated to fire is also included for reference and context. In 2014, the EMS budget was $131.93 million, and has steadily (mostly) increased to a high of $239.40 million in 2025.

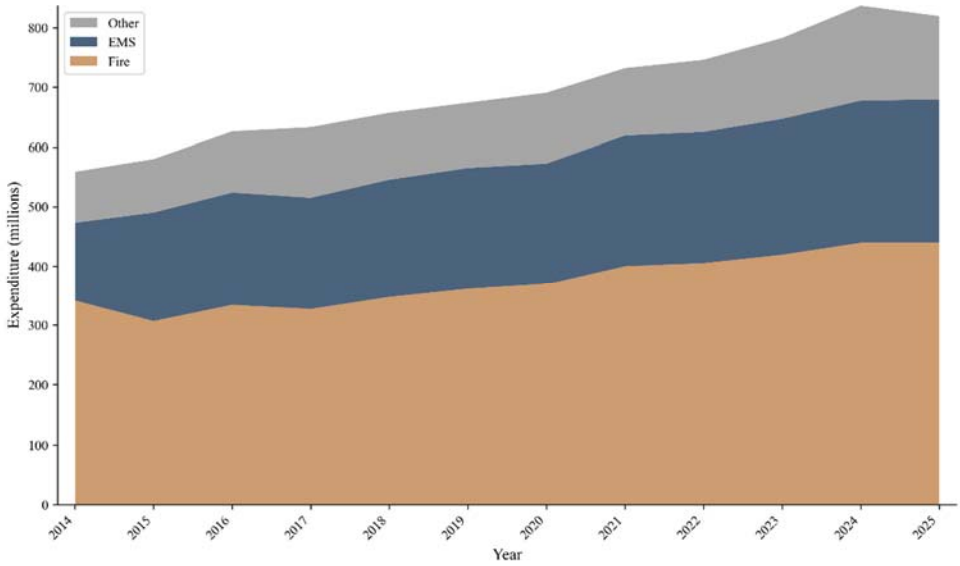

Figure 3.7. Annual trend in EMS and fire budgets for City of Los Angeles (2014-2025).

4. Rural Fire and EMS

As detailed previously in this report, rural communities are faced with many challenges due to less access to services and resources. Noted as well was that there are many competing definitions of a rural area/community, and the most appropriate may be dependent on context and the purpose of evaluation/assessment. Nevertheless, a common interpretation of rural is an area that is not urban, with urban characteristics in terms of population/housing numbers and/or density (e.g., 2,000+ housing units or 5,000+ people). Another conventional definition is the U.S. Office of Management and Budget's nonmetropolitan areas. An overview of fire and EMS in rural U.S. is now offered, followed by patterns and trends across California, by metropolitan and nonmetropolitan classification.

4.1. National Trends

A broad summary of the population in the United States in terms of rural and urban residence is that 66.3 million people (20%) reside in a rural community, out of 331.4 million, based on the 2020 U.S. Census. Across metropolitan counties, the proportion is lower (12.9%) while in non-metropolitan counties the proportion is higher (64%). The geographic distribution of rural (and urban) population across the country is shown in Figure 4.1 for 2020, and the proportion of rural population in each state is depicted in Figure 4.2. The proportion of rural areas in the U.S. has declined from 1950 (36%) to 2000 (21%), but has remained at this level through 2020 (Figure 4.3).

The number of rural firefighters in the United States is summarized in Figure 4.4 based on data from the U.S. Fire Administration (2025). New York has the largest number of rural firefighters by state (18,545), but not far behind are Pennsylvania (15,887), North Carolina (14,363) and Texas (14,194). Of course, a different pattern emerges when considering the proportion of rural firefighters in a state, as shown in Figure 4.5. Wyoming has the highest proportion of rural firefighters with 84% (2,671 in Figure 4.4 out of 3,176 in Figure 2.1) and not far behind is Vermont with 81%, but also worth noting are North Dakota (76%), South Dakota (73%) and Nebraska (72%). Further, more than one-third of states (18) have a majority of firefighters in rural areas.

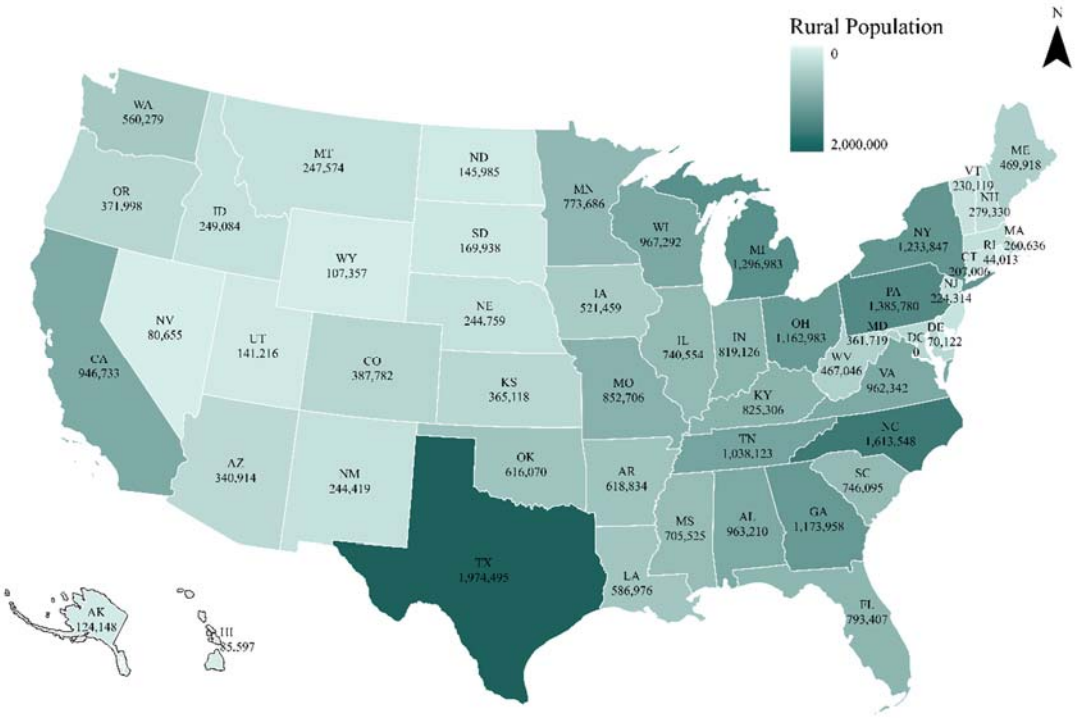

Figure 4.1. Rural population across the United States (2020).

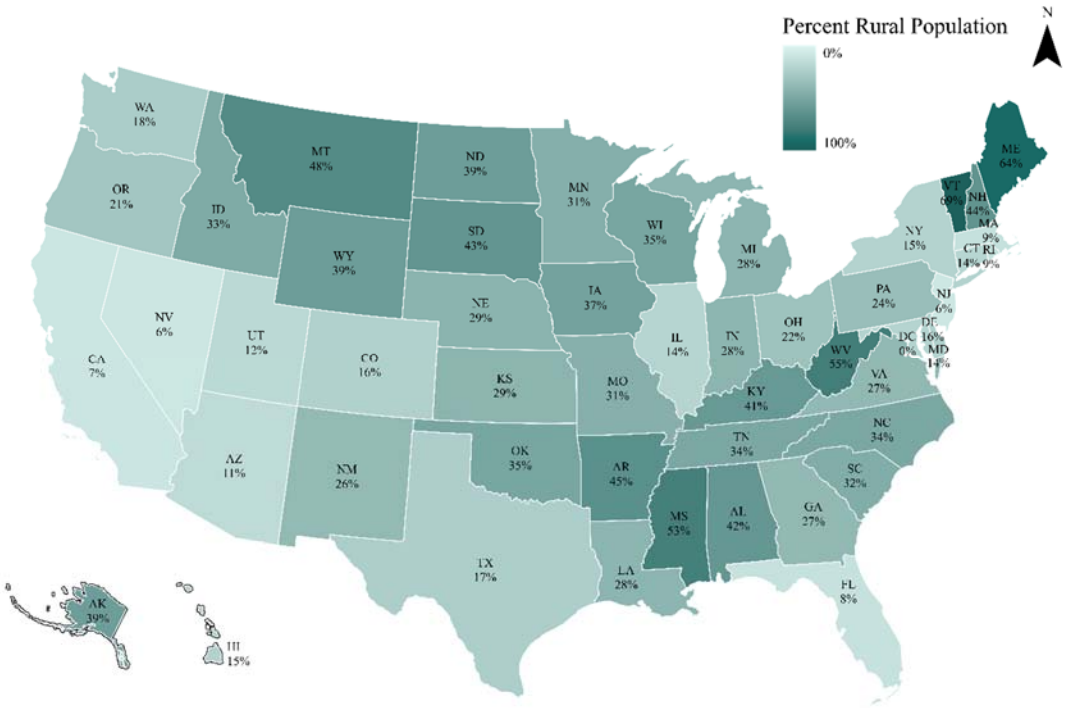

Figure 4.2. Proportion of rural population across the United States (2020).

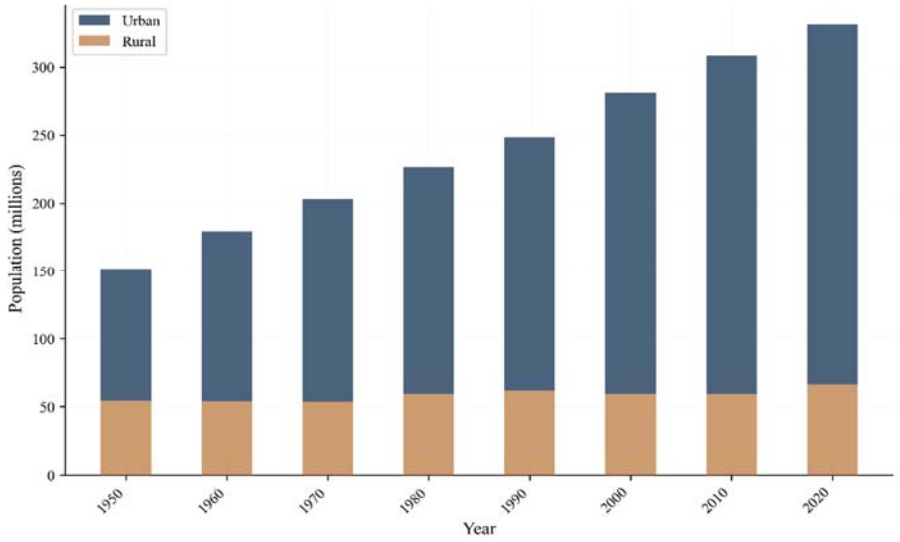

Figure 4.3. Annual trend in rural population in the United States (1950-2020).

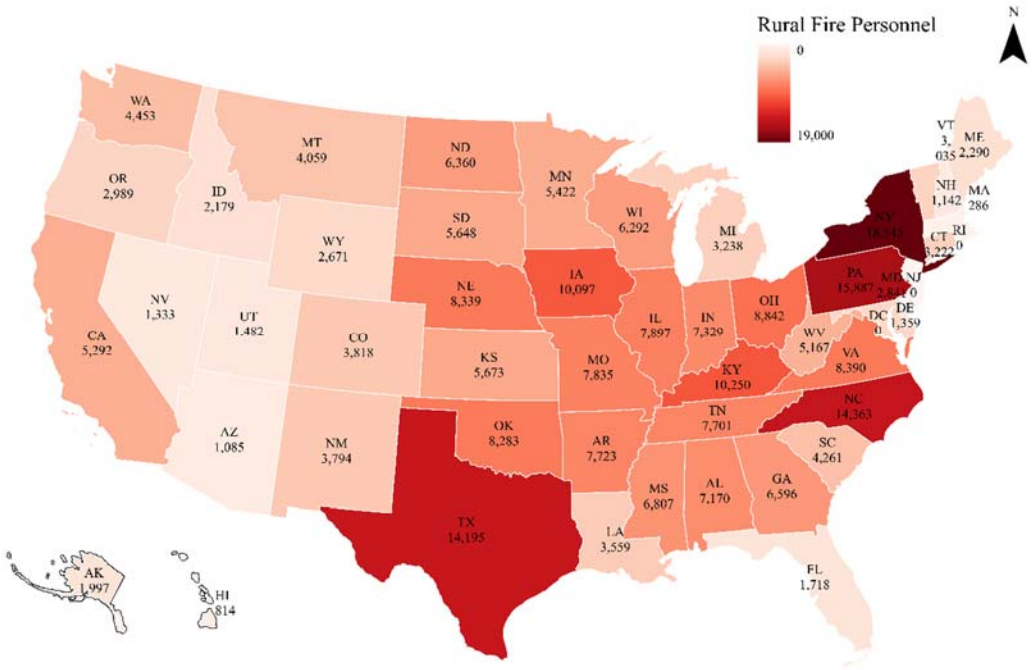

Figure 4.4. Number of rural firefighters across the United States (2025).

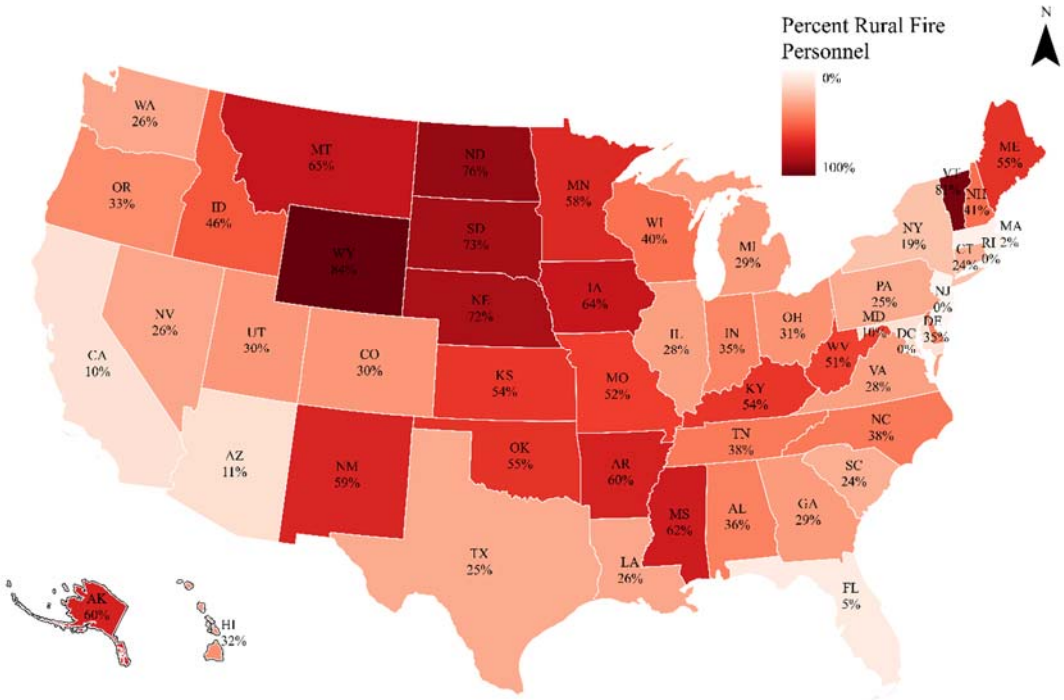

Figure 4.5. Proportion of rural firefighters across the United States (2025).

Insights on fire incidents and responses are presented in Figures 4.6–4.9 based on the National Fire Incident Reporting System (2025). Figure 4.6 offers a historical perspective on rural (and urban) incident response from 2000 to 2023, suggesting annual variation around an average of 237,744 fire incidents since 2005 in rural areas. The distribution of rural fire incidents across the U.S. is shown in Figure 4.7 for 2023. Pennsylvania had the highest number of rural fire incidents in 2023 with 17,925 followed by Texas with 13,731. In 2023, approximately 20% of fire responses in the U.S. were in non-metropolitan counties. Worth noting is that 1,244,437 out of the 1.4 million incidents could be accurately assessed as being in a metropolitan / non-metropolitan county, leaving the incident location of ~10% of fire responses as unknown. Figure 4.8 indicates the number of fire incident responses that were building, wildfire and other in rural areas of the U.S. from 2000 to 2023. Building fires have averaged 63,904 incident responses each year since 2005 in rural areas, with wildfires averaging 10,920.

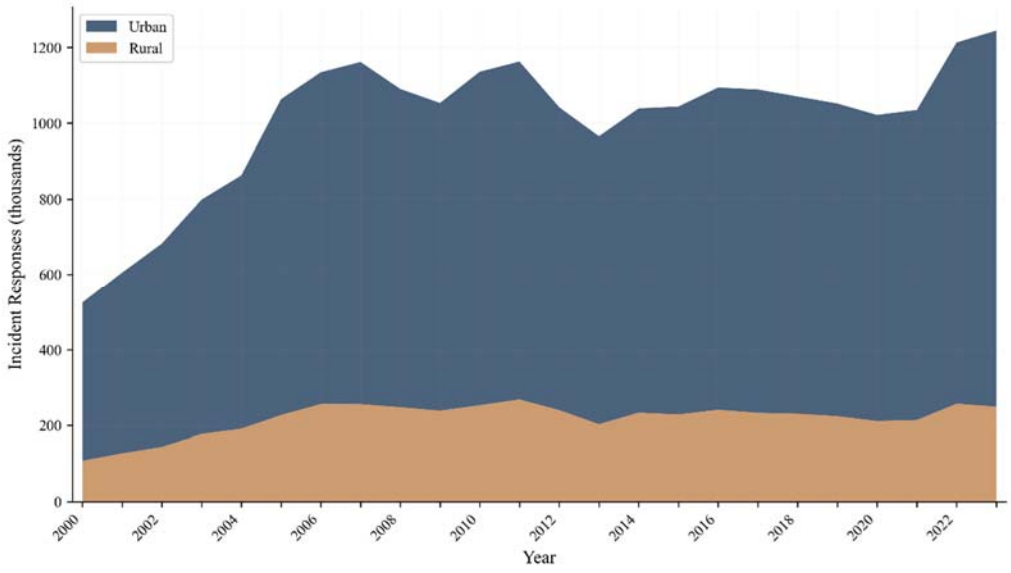

Figure 4.6. Annual trend in rural fire response in the U.S. (2000-2023).

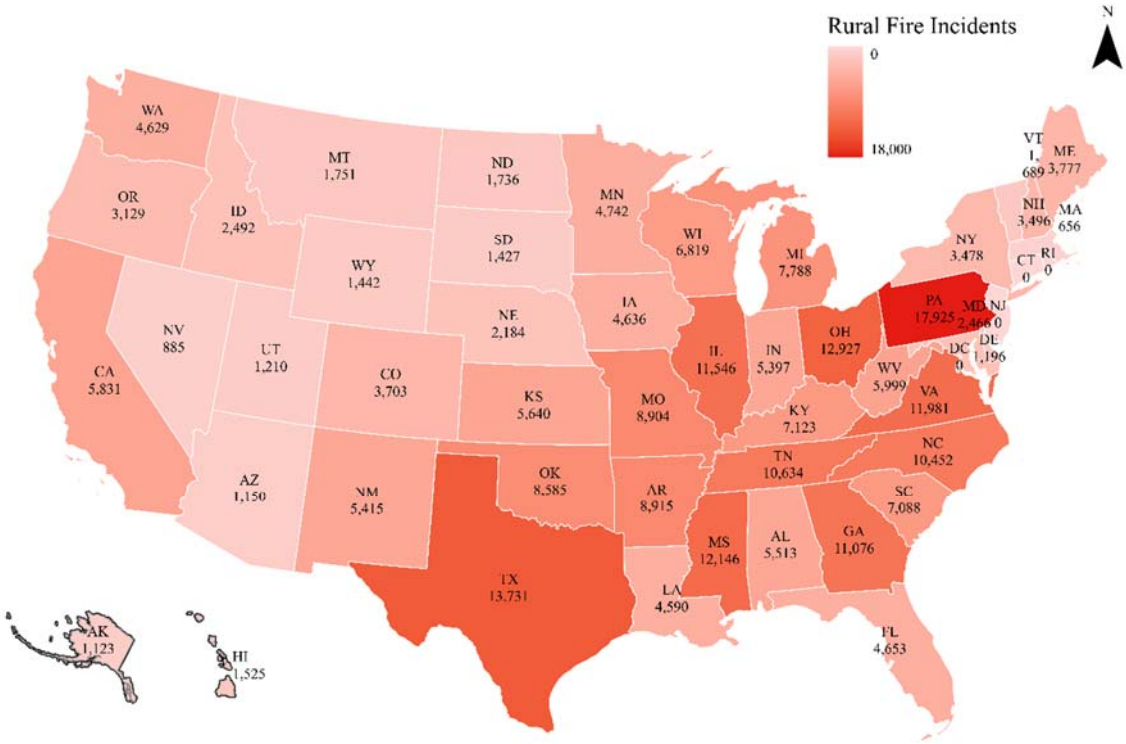

Figure 4.7. Fire incidents across rural U.S. (2023).

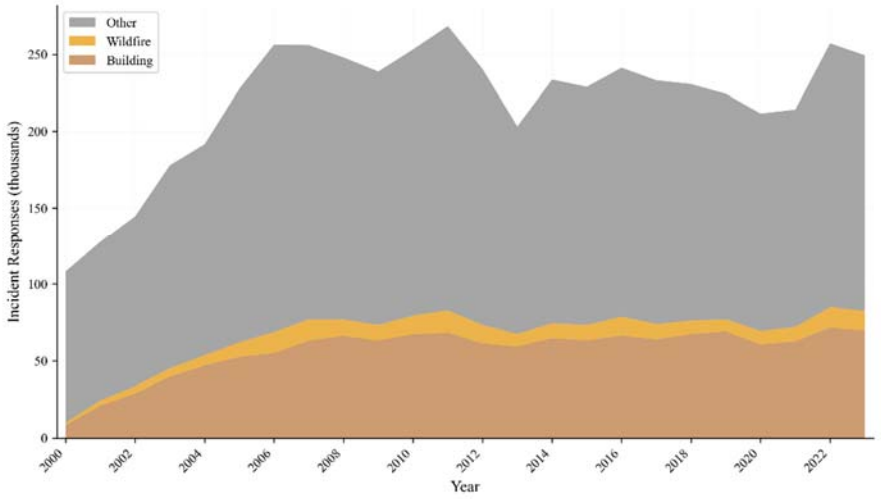

Figure 4.8. Annual trend in fire incidents in the rural U.S. (2000-2023).

The annual property loss in dollars due to fire is summarized in Figure 4.9, based on data from the National Fire Incident Reporting System. The amounts differ from the totals summarized in Figure 2.5 as they are projections derived by the National Fire Protection Association. Neither source of information on property loss may be completely accurate, yet both indicate similar trends. Figure 4.9 suggests increasing losses in most of the past five years for rural areas (and overall). The average loss was $1.13 billion in rural areas from 1980 to 2023, but since 2006 the average is $1.59 billion, and since 2019 the average is nearly $2.1 billion. This conforms to observed increases in fire intensity and severity, resulting in more destruction and devastation with higher property losses, irrespective of rural or urban context.

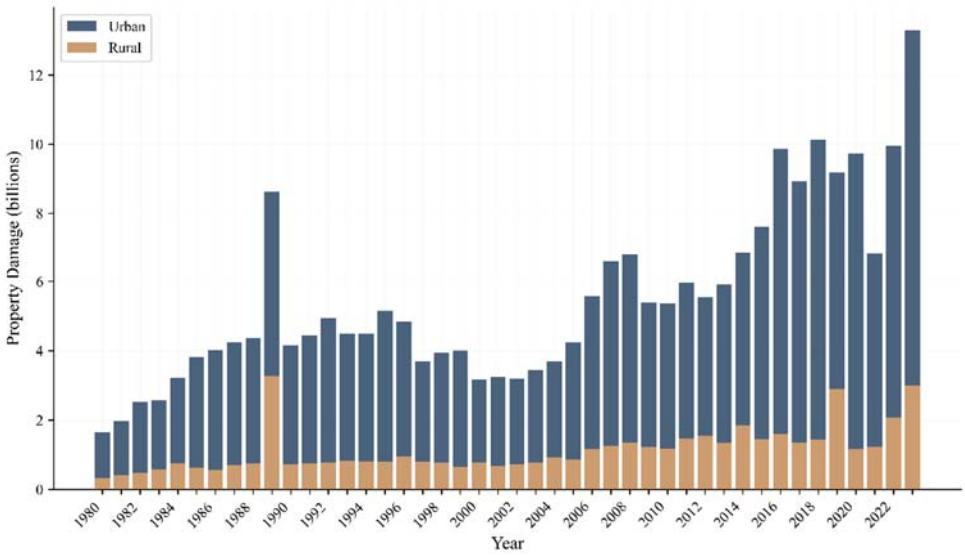

Figure 4.9. Annual trend in property loss in dollars due to fire in rural U.S. (1980-2023)

EMS incidents in rural areas across the U.S. are summarized in Figure 4.10 for 2017 to 2023. This data is based on the National EMS Information System (NEMSIS),[6] with 52,958,577 out of 54,190,579 records able to be assessed in terms of rural and urban location. There were 4,088,462 incidents in rural areas in 2023, representing 7.72% of all incidents. While not obvious, Figure 4.10 indicates there has been a steady decline in the percentage of rural incidents.

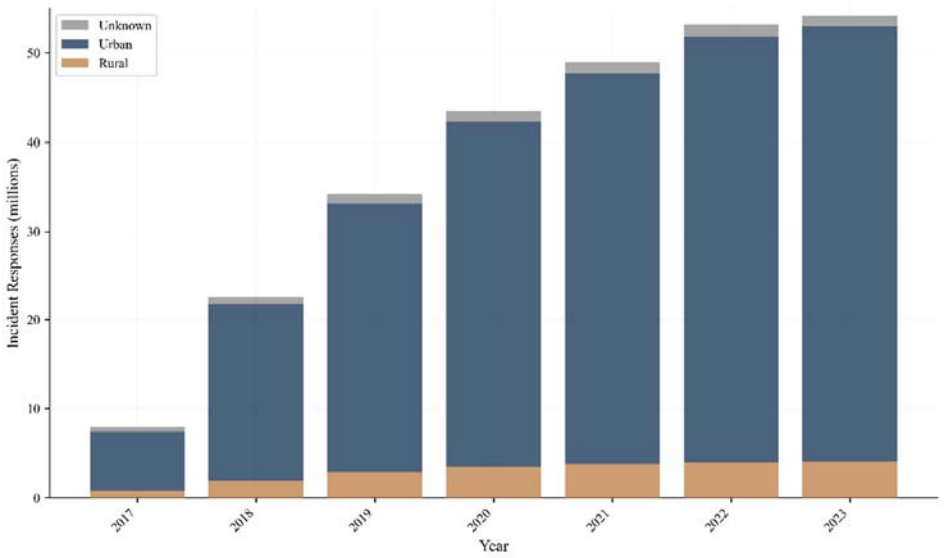

Figure 4.10. Annual trend in EMS incident responses in rural U.S. (2017-2023).

Unfortunately, it is not possible to go beyond the national level EMS certifications summarized in Figures 3.1 and 3.2 as this information cannot be broken down by rural/urban or metropolitan/non-metropolitan. Existing research has identified urban-rural gaps in EMS response. The rural EMS agencies are less likely to follow clinical quality metrics (Redlener et al., 2018). Rural ambulance services have been found to have longer travel times and lower levels of expertise in trauma care, triage, and transfer decision-making compared to their career counterparts (Lee et al., 2021; He et al., 2019; Wang et al., 2013).

Overall, urbanization and the corresponding decline in the proportion of the rural population have been persistent over the past century. In 1980, the rural population constituted 26.3% of the total U.S. population. This proportion steadily declined to 21% by 2000 and reached the lowest recorded point of 19.3% in 2010. Although the rural population share rose slightly to 20% in 2020, this increase appears to be a shift in the definition and classification criteria rather than a migratory displacement (U.S. Census Bureau, 2022). Concurrent with this decreasing trend, rural counties began experiencing net population declines starting in 2010, a trend more pronounced in remote rural regions (Saint et al., 2020). However, recent research has identified renewed growth in the

[6] NEMSIS Public-Release Research Database (5/9/2025).

rural population, recording an increase of approximately 0.25% from 2020 to 2022, apparently driven by the in-migration of retirees (Davis et al., 2023).

Rural areas in the U.S. are characterized by depopulation, aging, higher mortality rates, lower socioeconomic status and generally lower racial diversity compared to urban areas (Saint et al., 2020). Depopulation and aging in these regions are largely driven by the out-migration of younger individuals and declining fertility rates. Higher mortality rates among older residents further exacerbate population declines. Socioeconomic indicators in rural areas are typically poorer, such as higher poverty rates (16.4% in rural areas versus 12.9% in urban areas) and a smaller proportion of the population holding bachelor's degrees (19% in rural areas compared to 33% in urban areas). Although traditionally less racially diverse, rural regions have experienced growing diversity, with the non-Hispanic white population increasing by 20% between 2000 and 2010. Additionally, steady trends of positive socioeconomic developments have been observed, as over 80% of non-metropolitan counties saw reductions in poverty rates between 2007 and 2021 (Davis et al., 2023).

4.2. California Trends

While there are many major urban regions in the state, the U.S. Census Bureau classification for 2020 highlights that rural areas in California have 2.3 million residents, 5.8% of the total 39.6 million. Except for San Francisco, every county has rural communities (Figure 4.11). There are six counties that are classified as entirely rural, with a total of 66,000 residents: Alpine, Mariposa, Modoc, Plumas, Sierra and Trinity. There are five counties with rural population exceeding urban (158,000 residents total): Amador, Calaveras, Lassen, Siskiyou and Tehama. Figure 4.11 highlights counties with a sizable rural population, including San Bernardino (55,011), Riverside (48,938), Kern (45,008) and Fresno (40,061). However, the percentage of rural population in Figure 4.12 gives a different geographic pattern, reflecting the above recognized counties that are predominantly rural as well as Mendocino (52% rural). The annual trend associated with rural residents in California is given in Figure 4.13 for 1950 to 2020. The proportion of rural population in the state has dropped from 19.33% in 1950 to around 5% the last three decades. The average number of rural residents is a little over 2 million in the state.

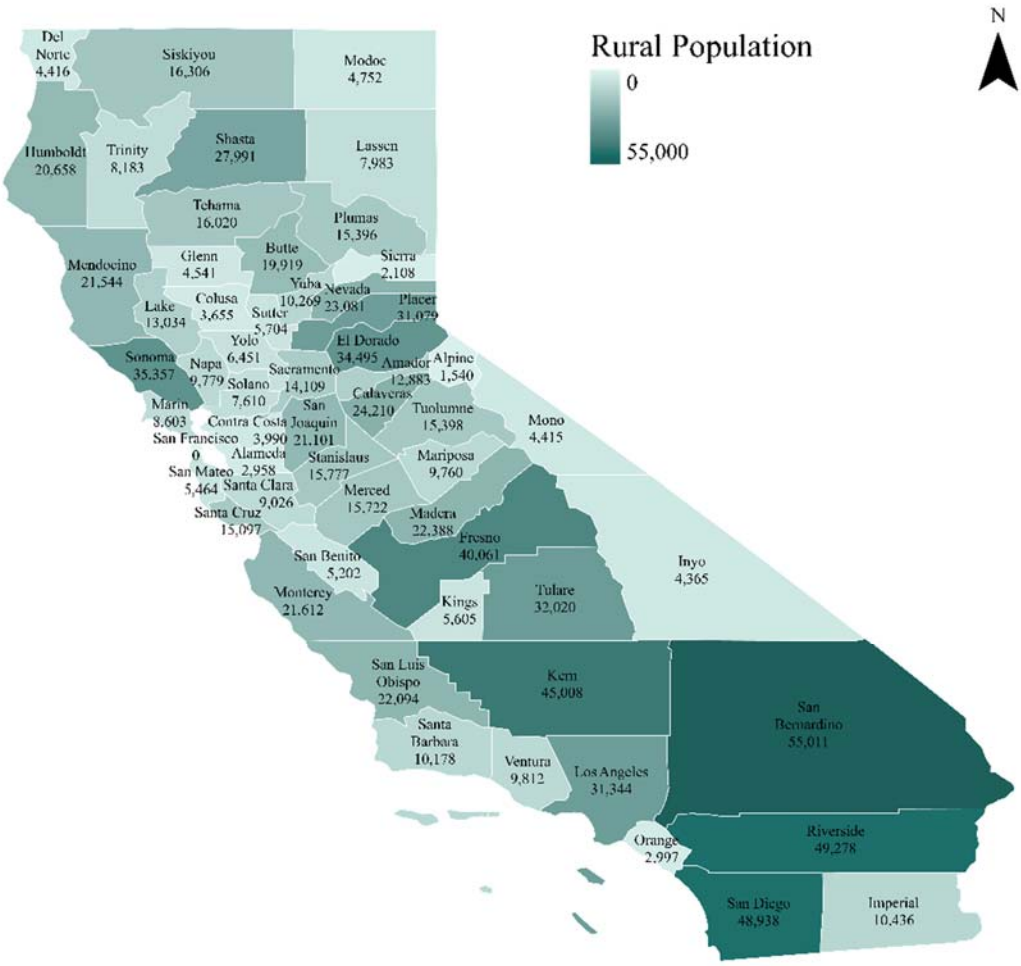

Figure 4.11. Rural population in California (2020).

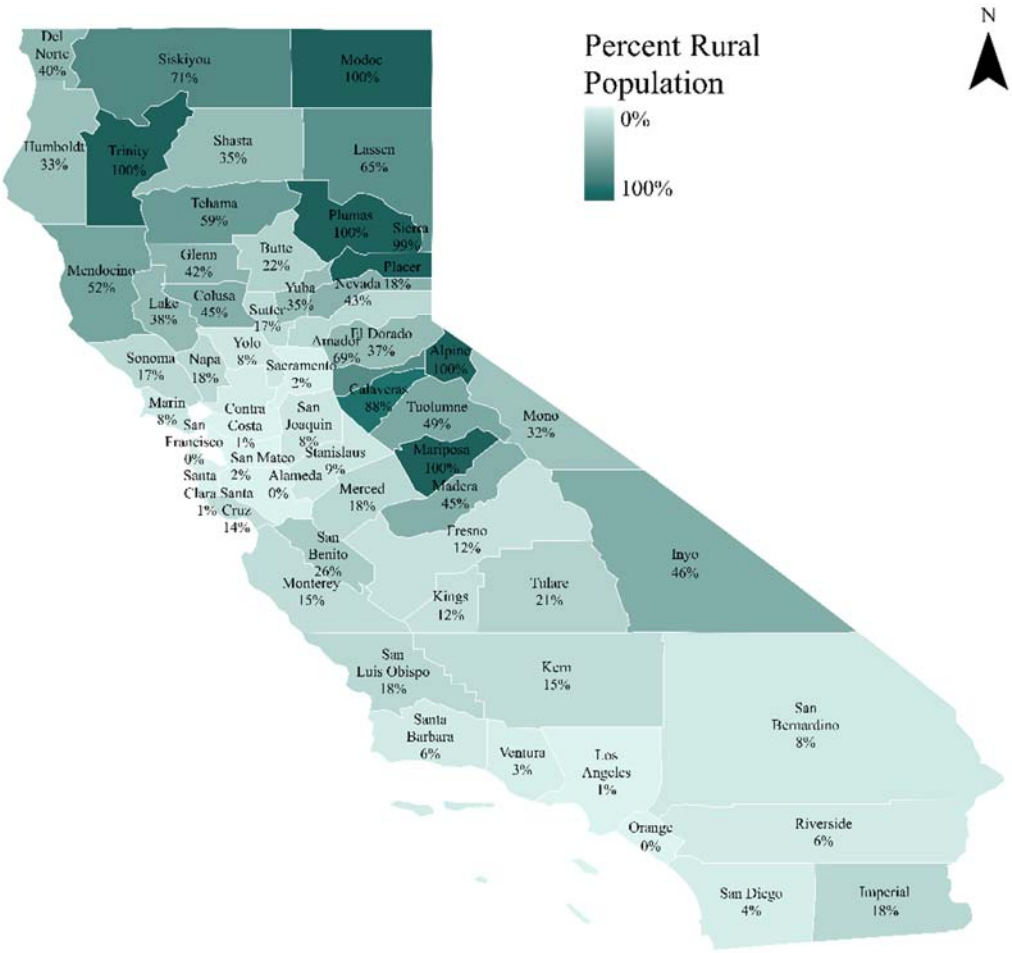

Figure 4.12. Percentage rural population in California (2020).

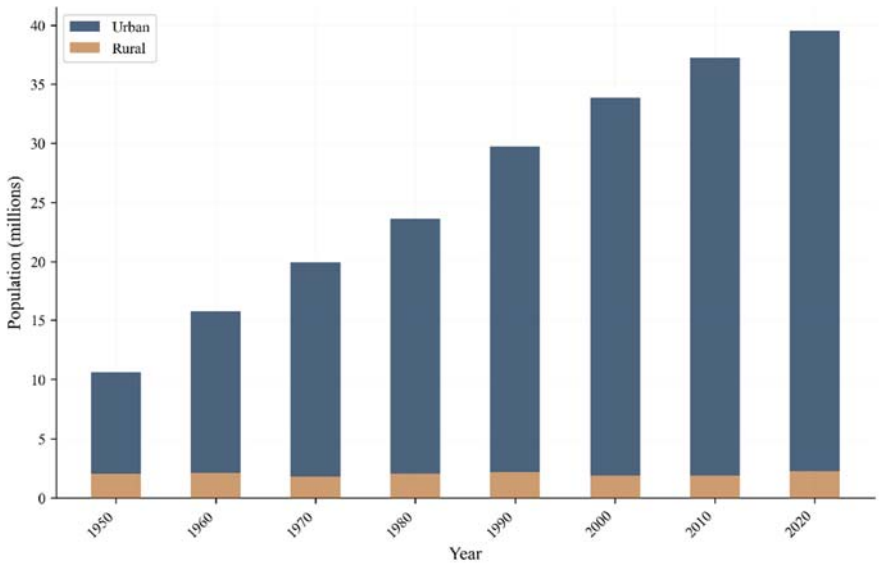

Figure 4.13. Annual trend in rural population in California (1950-2020).

According to the U.S. Census and the U.S. Department of Agriculture, there are 21 rural counties in California (Figure 4.14). Furthermore, Rural County Representatives of California (RCRC) recognizes 40 of the state's 58 counties as rural by self-designation. These 40 counties are characterized by significant geographic diversity, and contain much of the state's forested areas. Importantly, they share common economic profiles and challenges: agriculture, resource extraction and tourism; limited local-government capacity and tax revenues; dispersed populations that complicate transportation, education, and health services; and threatened natural resources. Together, these lead to the collective cultural identity of rurality. Therefore, while most of our analysis focuses on the 21 rural counties, this report also discusses RCRC counties when significant patterns emerge.

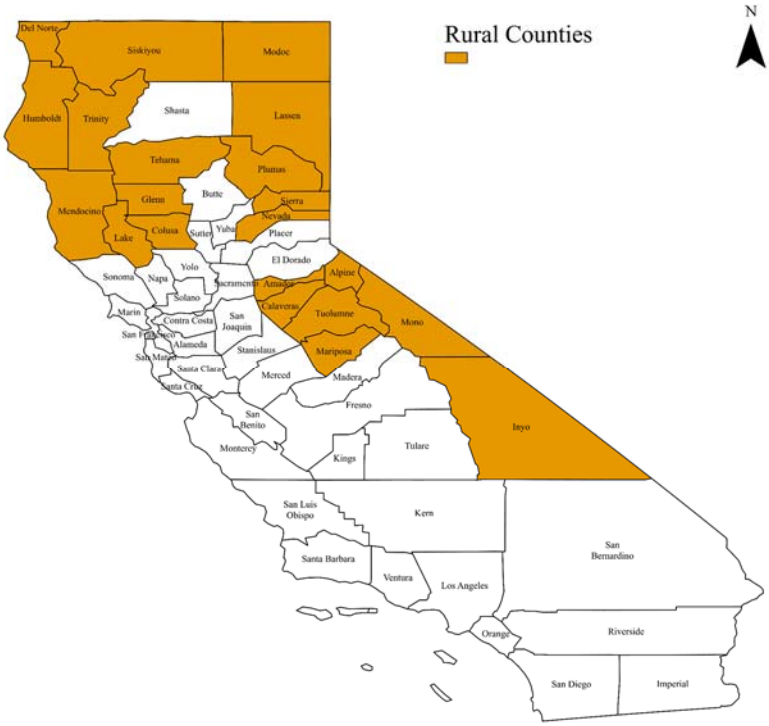

Figure 4.14. Rural (nonmetropolitan) counties in California

Of the 53,636 firefighters in California noted in Figure 2.1, there are 5,292 in rural areas according to the National Fire Department Registry (U.S. Fire Administration, 2025). At the national level, most of the 153,031 fire incidents in California could be accurately located, but 1,599 were unknown in terms of their county. From this, roughly 3.6% were in non-metropolitan counties. The annual trend from 2000 to 2023 is shown in Figure 4.14 using the National Fire Incident

Report System data.[7] The average number of fire incidents in rural areas from 2005 to 2023 was 5,346 but has increased to an average of 6,569 since 2020. There are 5,831 fire incidents in rural (non-metropolitan) counties recorded by the National Fire Incident Reporting System for 2023, with 1,417 building, 2,185 wildland and 2,229 other fires.

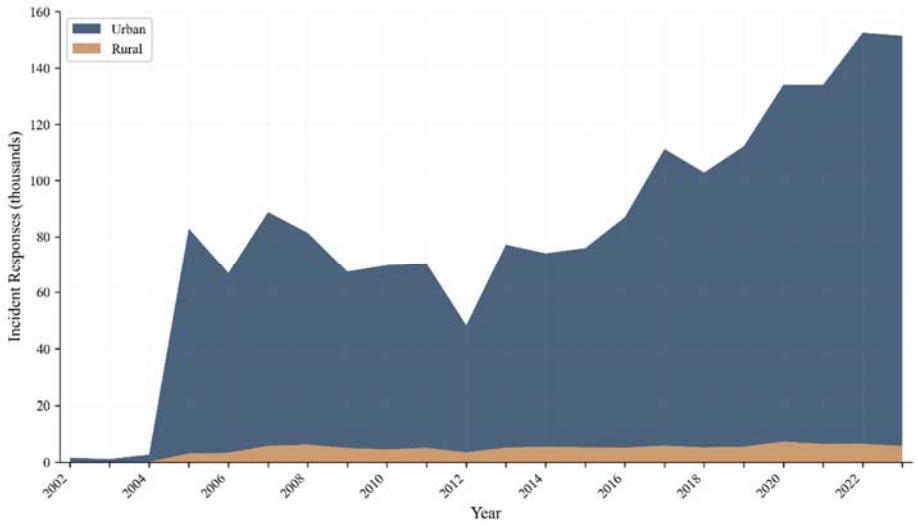

Figure 4.14. Annual trend in rural fire response according to the National Fire Incident Reporting System for California (2002-2023).

The annual property loss trend in rural California due to fire during 2013–2023 is summarized in Figure 4.15 derived from CAL FIRE (2025). The property loss caused by fires has substantial variation across the years, with considerable fluctuations in the shares of rural counties. The loss peaked in 2017 at $12.1 billion, split roughly equally between rural and urban counties. While not considered as rural (nonmetro), some RCRC member counties — Butte, Sonoma, and Napa — are among the counties with the largest losses due to fire. Among the $12.1 billion loss in 2017, nearly $12 billion fell in the Nevada-Yuba-Placer and Sonoma-Lake-Napa CAL FIRE units — about $6 billion each. In 2020, the property loss in Napa ($1.1 billion) and Sonoma ($1.3 billion) together exceeded half of the total state loss of $4.3 billion. Butte County lost approximately $2 billion in the 2018 Camp Fire. For these three metro counties, the most-affected areas lie in each one's rural and WUI parts.

[7] The data for 2002–2004 were severely underestimated as California fire departments were not widely reporting at that time (see Anderson and Ezekoye, 2018).

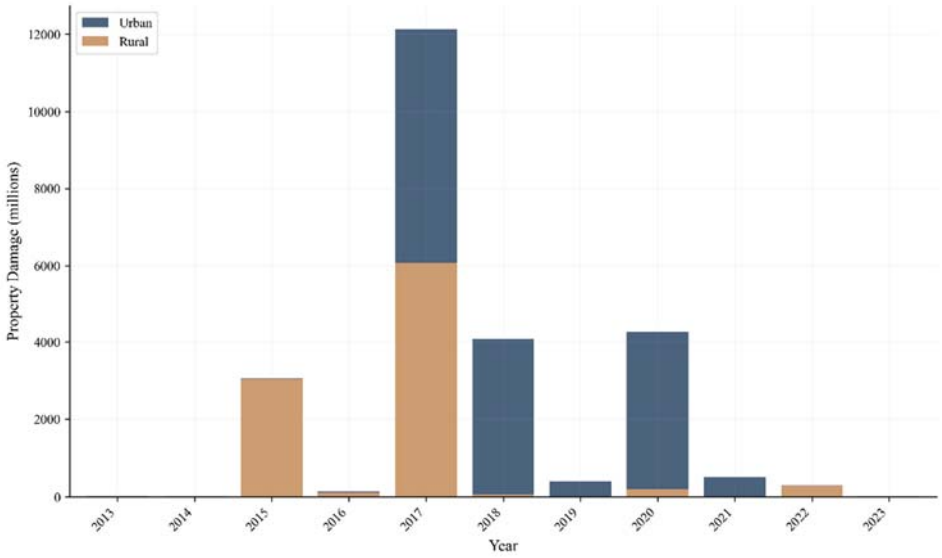

Figure 4.15. Annual trend in property loss by fire in rural California (2013-2023).

Trends in area burned are shown in Figure 4.16. Between 2013 and 2025, the state averaged 914,169 acres burned annually, about 40 % of it in rural counties. (370,003 acres). In 2017, 2020, 2021, and 2024, several wildfire events impacted both rural and urban counties (mixed) with substantial burned areas. The burned acres peaked in 2020 (2.9 million acres) and 2021 (2.2 million acres), with 1.3 million and 898,458 acres in rural counties, respectively.

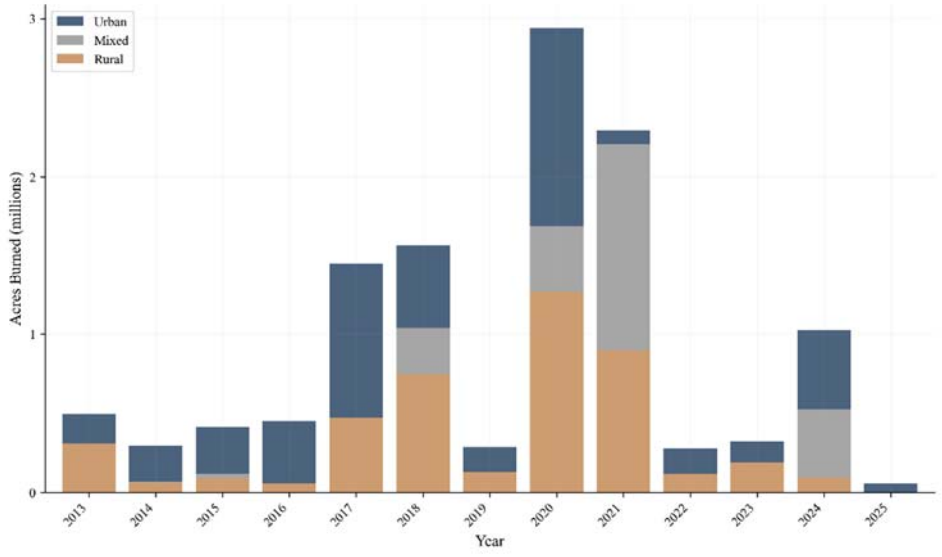

Figure 4.16. Annual trend in areas burnt by fire in rural California (2013-2025).

Figures 4.17 and 4.18 present the number of EMS certifications in California based on information provided by the California Emergency Medical Service Authority. Rural California (and urban) trends in EMS certification are detailed in Figure 4.17 from 2015 to 2024. The average number of EMS certifications in rural areas over this period was 3,877, with a high of 4,126 in 2020. The

4,018 rural EMS certifications in 2024 represent 7.67% of all in the state. The spatial distribution of paramedic certification number per capita by LEMSA (Local Emergency Medical Services Agency under the California Emergency Medical Services Authority) is shown in Figure 4.18 for 2024. This differs from the county-based summary as there are fewer LEMSAs (34) than counties (58).

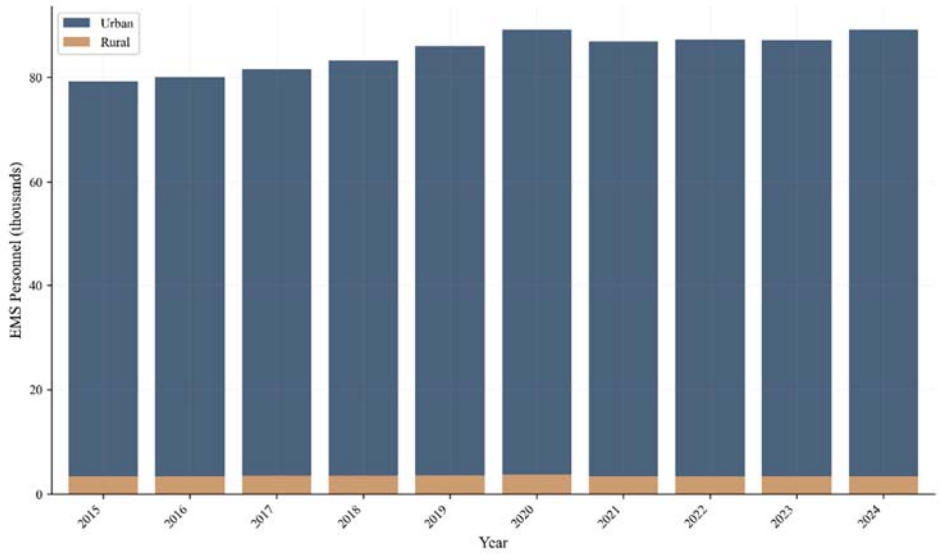

Figure 4.17. Annual EMS certifications in rural (and urban) California (2015-2024).

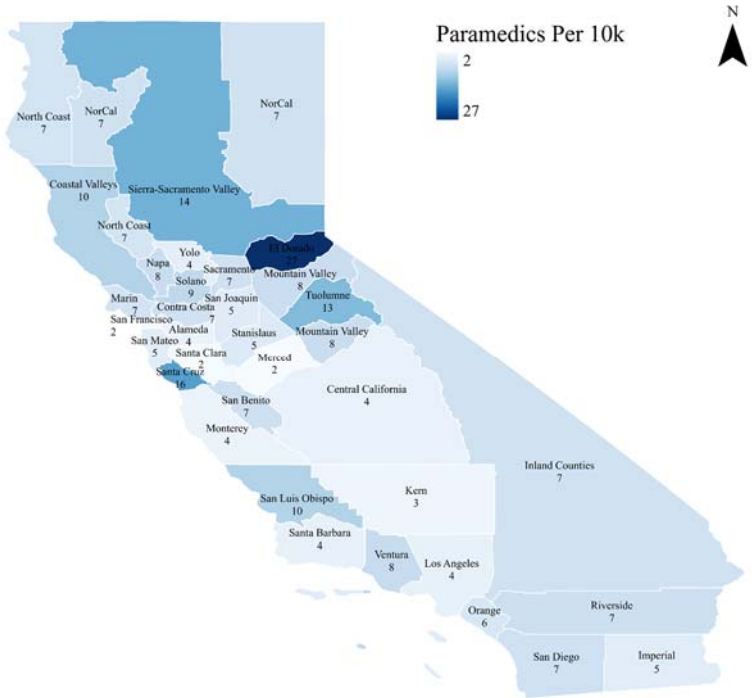

Figure 4.18. Per capita EMS certifications in California by LEMSA (2024).

Most of the LEMSAs in rural California contain multiple counties: Northern California (Lassen, Modoc, Plumas, Sierra, Trinity), Inland Counties (Inyo, Mono, and San Bernardino), Sierra-Sacramento (Butte, Colusa, Glenn, Nevada, Placer, Shasta, Siskiyou, Sutter, Tehama, Yuba), Mountain Counties (Alpine, Amador, Calaveras, Mariposa), and Tuolumne. EMS incident responses in rural areas of California from 2019 to 2023 are given in Figure 4.19. The average number of rural EMS incidents over this period was 780,561.

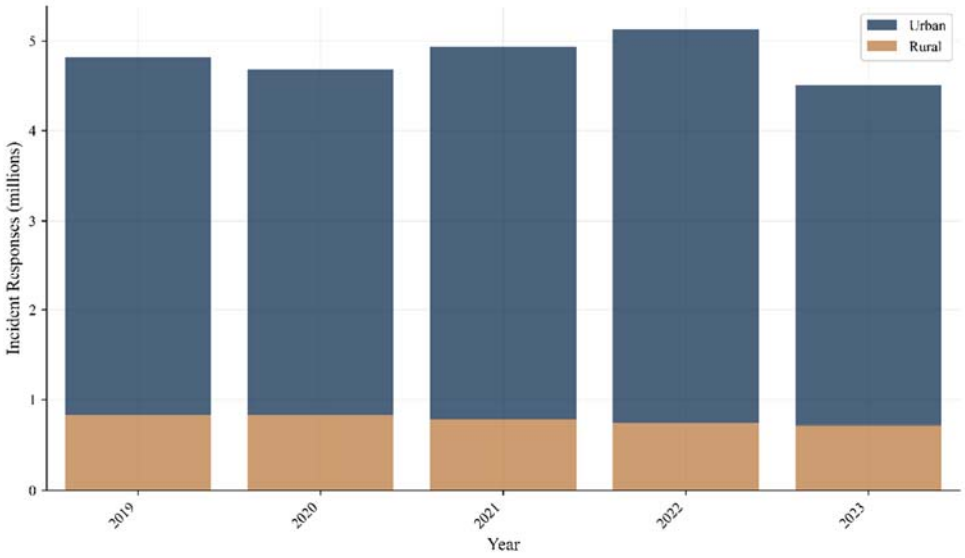

Figure 4.19. EMS incident response in California (2018-2023).

Through a review of EMS reports submitted by LEMSAs and other sources, several rural areas were identified as having increased EMS call volumes:

- Sierra-Sacramento Valley LEMSA: 114,605 calls in 2017, 162,732 in 2024 (+42%).[8]
- Tuolumne County LEMSA: 14,735 calls in 2018, 17,701 calls in 2022 (+20%).[9]
- Mendocino County: EMS calls increased roughly a third since 2016. Departments like Ukiah Valley Fire Authority now respond to ~500 calls per month (Hutchison, 2025).
- East Plumas Health Care Ambulance Service (Plumas County): ~95 calls per month in 2022 to ~110 calls per month in 2023 (+15%) (Plumas Sun, 2023).
- Mammoth Lakes Fire Protection District (Mono County): ~700 total calls in 2020 to ~1300 calls in 2023, where EMS accounts for roughly half of the calls (Mono County Local Agency Formation Commission, 2025).

[8] https://emsa.ca.gov/SSV-EMSPlans/, accessed 7/10/2025.
[9] https://emsa.ca.gov/Tuolumne-EMSPlans/, accessed 7/15/2025.

For RCRC counties, call volume trends can also be noted:

- Shasta County Fire Department: While total call volume remained flat, there were 800 EMS calls from rural areas in 2018, and 1,300 in 2022 (+62.5%) (CAL FIRE and SCFD, 2018, 2022).
- Yolo County LEMSA: 18,515 calls in 2014, and 22,195 in 2019 (+20%).
- American Canyon Fire Protection District (Napa County): ~1,000 EMS calls in 2020, ~1,400 in 2024 (+40%).[10]
- Monterey County Regional Fire Protection District (2022, 2024): 2,166 EMS calls in 2022, 2,404 in 2024 (+11%).

Other rural LEMSAs, such as Northern California, Mountain Valley and Inland Counties, did not show significant increases in the number of responses reported to the California EMS Information System, nor did they provide this attribute in the *EMS System Planning Report*. Counties like Lassen did show spikes of EMS calls around 2021, which were triggered by the pandemic, but returned to previous levels. Therefore, it is likely that rural counties and districts have diverging patterns of EMS call volumes in California.

In rural California, EMS is comprised of an eclectic mixture of private, non-profit, government, and volunteer organizations, while volunteer and paid fire staff often provide first response (Jacob et al., 2017). This is shaped by the condition that in rural and remote communities, EMS is economically burdensome, often with small (if any) profit margins due to low population density and larger areas to service (Jacob et al., 2017). Consistent with the national findings that rural EMS has poorer quality and funding, studies have identified substantial urban-rural disparity in California. The per capita LEMSA revenue in rural California is $2.56, nearly 5 times lower than urban areas ($13.28) (Centers for Disease Control and Prevention, 2024a). The quality assessment in 2023 (California Emergency Medical Service Authority, 2024b) indicates that rural LEMSAs tend to have lower core quality metrics: Mountain Counties (28%), Tuolumne (48%), and Northern California (45%) score well below the state mean of 81% on TRA-2 (Percentage of Transport of Trauma Patients to a Trauma Center). Mountain Counties (6%) and Inland Counties (61%) underperform compared to the state mean of 76% in HYP-1 (Percentage of Treatment Administered for Hypoglycemia). Mountain Counties (66%) and Northern California (74%) are poorer compared to the state mean of 86% in STR-1 (Percentage of Prehospital Screening for Suspected Stroke Patients). For PED-3 (Percentage of Respiratory Assessment for Pediatric Patients), Northern California underperforms with 64% compared to the state mean of 92%. In addition, several RCRC member counties have been in the lower quantile of many EMS quality metrics: El Dorado (STR-1 69%), Monterey (PED-3 79%), Merced (TRA-2 55%; HYP-1 26%), San Benito (STR-1 77%).

[10]https://www.americancanyon.gov/files/assets/city/v/2/documents/live/citizens-academy/citizens-academy-week-2-presentation.pdf, accessed 7/15/2025.

Figure 4.20 depicts the spatial patterns of EMS responses across California in 2023. The Annual EMS Data Report in 2024 stated that Inland Counties (243), Napa (240), Northern California (195) and Sierra-Sacramento Valley (192) rank among the LEMSAs with the most incidents per 1,000 population. In contrast, Mountain Valley LEMSA records the fewest responses per capita — 37 per 1,000 residents.

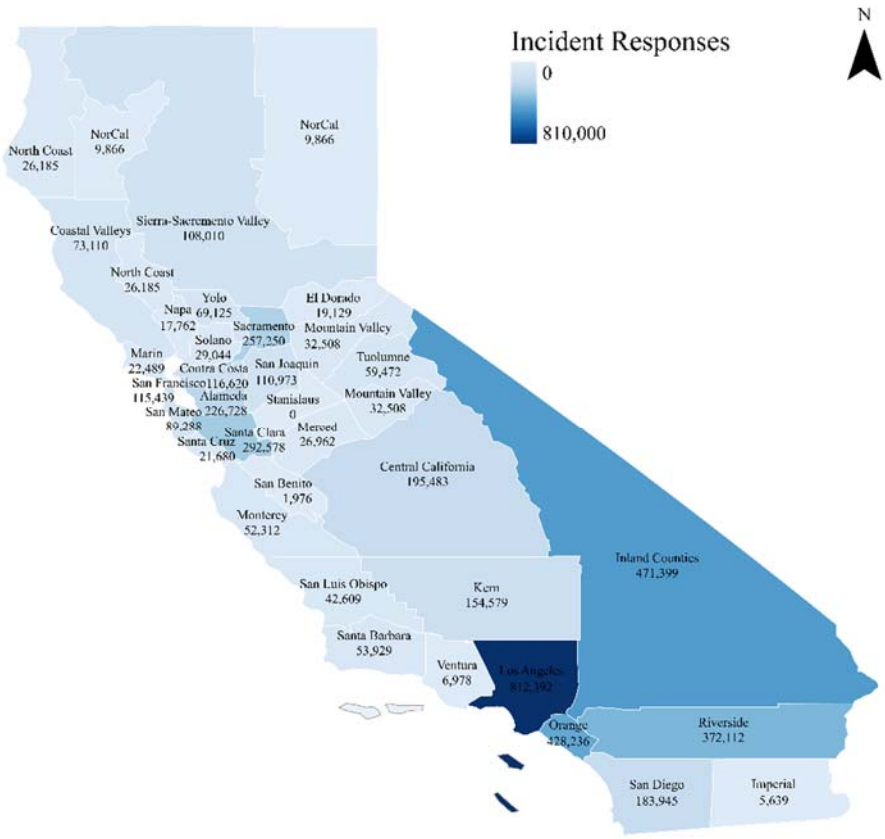

Figure 4.20. EMS incidents by LEMSA (2023).

In summary, the rural population in California is small and has remained relatively static over many decades. While rural counties are concentrated in Northern and Eastern mountainous regions, there are considerable rural populations within most urban counties, especially Riverside, Kern and San Bernardino. Despite the small share of incidents (<5%), the losses caused by fires are substantial in rural counties, reflected by the large, highly variable property losses and total burned acres. Nevada-Yuba-Placer and Sonoma-Lake-Napa counties are some of the hotspots of severe wildfire destruction in terms of acreage. Since 2018, several wildfire events have impacted both rural and urban counties, posing threats to the rural and suburban WUI regions of metropolitan areas. The aggregated data on EMS responses and certifications did not show drastic growth in recent years in rural California. However, when examined at finer scales, several individual rural/RCRC counties and LEMSAs show growing EMS call volumes, suggesting potential

disparities among rural areas. Evidence indicates that EMS response in rural California has poorer financial capacity and operation quality, demonstrated by the lower per capita revenues and core quality metrics.

5. Volunteerism

As noted previously, volunteerism is unpaid labor performed for the benefit of others, with formal and informal modes (Muscik et al., 2000). Formal volunteering occurs through structured entities like public agencies, nonprofits, charities and faith-based organizations, whose roles carry delineated tasks, schedules, and responsibilities. Informal volunteering, by contrast, comprises spontaneous or ad hoc acts such as assisting neighbors or organizing community clean-ups. Alongside the formal-informal distinction, scholars further parse these modes into finer subgroups that reflect setting, duration and organization.

Cross-national analyses show that formal volunteering rates are typically higher in developed countries in contrast to developing countries (Salamon and Sokolowski, 2001). The United States consistently ranks among the top volunteering countries, a pattern rooted in longstanding social and cultural norms that emphasize self-help, self-governance, and civic association (Skocpol, 2013). Volunteer labor therefore functions as an institutional adjunct, filling gaps of public services, including fire and EMS response but also education, political mobilization, environmental stewardship and food assistance (Nerino, 2019). Beyond charity, volunteerism and civic engagement are perceived as the cornerstone of American society. It is an indispensable pillar that upholds social function and community resilience, reinforcing democratic and societal values (Putnam, 2000).

Extending beyond benefits to communities, individual rewards are well documented: volunteers tend to have higher life satisfaction, improved health and stronger career prospects (Spera et al., 2013; Velasco et al., 2019). Of course, the macroeconomic value is also substantial. AmeriCorps (2022) estimates that U.S. residents contributed 4.1 billion volunteer hours in 2020-21 worth some $122.9 billion. Other analysts place the figure even higher, at 2 % of national GDP (Pho, 2008) which would be greater than $500 billion in current dollars. Beyond balance sheet metrics, volunteer activity fortifies neighborhoods by fostering social cohesion, augmenting local capacity and mitigating risk. These are benefits that defy easy monetization yet arguably outweigh any fiscal valuation (Velasco et al., 2019).

5.1. National Trends

Many have observed a sustained contraction of volunteerism over the past two decades in the U.S. (AmeriCorps, 2022; Grimm and Dietz, 2018). Nationally, the share of adults engaged in formal volunteering fell from 30% to 23% during 2019–2021 (AmeriCorps, 2022). Many reasons have been posited for this decline, including economic and financial instability due to recession(s), higher social disconnection and isolation, decreasing religious involvement, generational shifts and technology/lifestyle changes (Dietz and Grimm, 2023; Gianoni and Wales, 2024).

The number and share of volunteer firefighters by state are shown in Figures 5.1 and 5.2, respectively, based on data from the U.S. Fire Administration (2025). The Midwest and Northeast display the highest reliance on volunteer labor, with several states (e.g., Nebraska, North Dakota, South Dakota, New York, and Pennsylvania) having volunteer shares approaching 90%. The unpaid labor contributed by volunteer firefighters has substantial budget savings, estimated to be $46.9 billion annually according to Zhuang et al. (2017). The National Fire Protection Association (2014) placed this number even higher, with donated time of volunteers deemed to be worth $139.8 billion per year. Rural areas in the U.S. are particularly dependent on volunteer fire service.

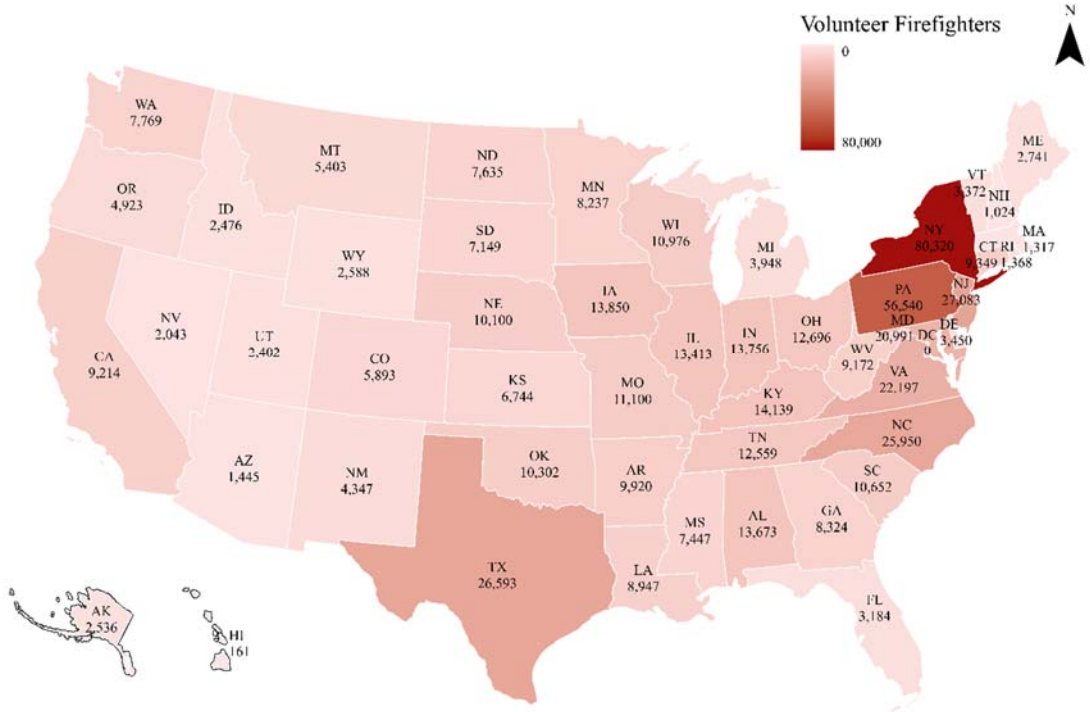

Figure 5.1. Number of volunteer firefighters across the United States (2024).

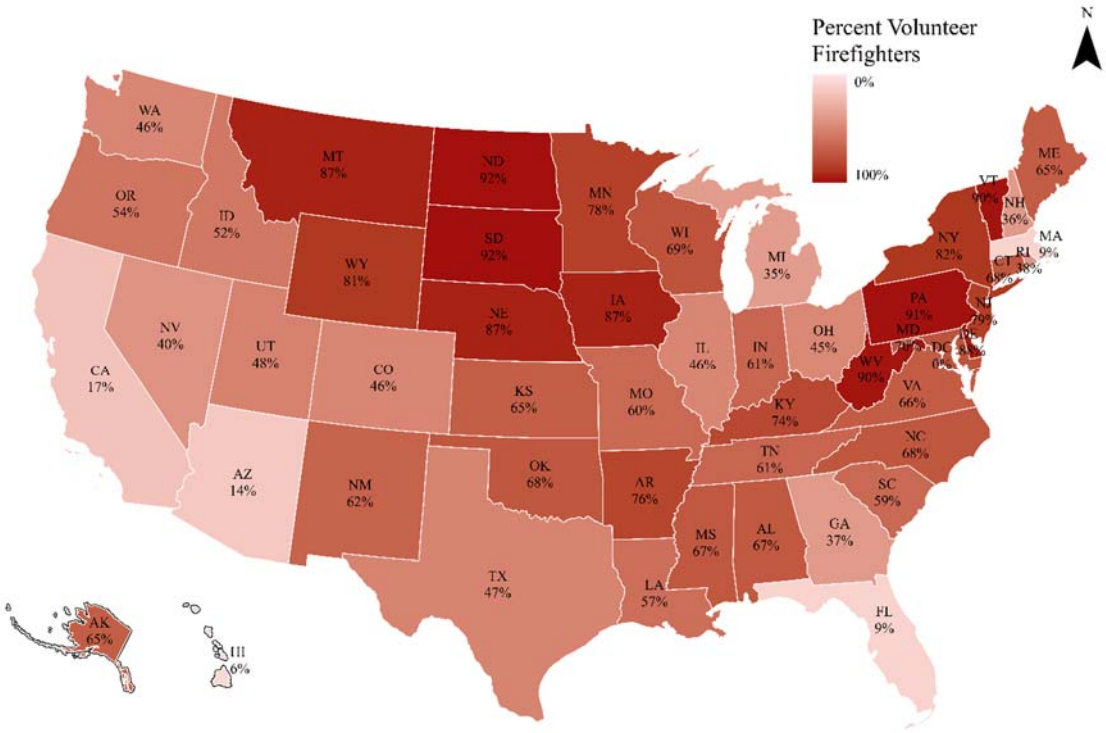

Figure 5.2. Proportion of volunteer firefighters across the United States (2024).

In general, volunteer personnel in fire and EMS in the U.S. have both been in decline. Figure 5.3 indicates the volunteer (and career) firefighter counts over the period of 1985 to 2023, with an average of 776,820 each year (Fahy et al., 2022). The most volunteers were observed in 1995, some 838,000 (76.3% of all firefighters). In contrast, 2023 saw a low of 635,100 (62.4% of all firefighters). Further, the average since 2016 is 694,088 per year, which is substantially lower than the average of 798,882 during the period of 1985 to 2015.

County level analysis comparing 2004-06 with 2015-17 shows that the steepest declines occurred in rural areas. Since these areas conventionally have richer social capital and more reliance on volunteers, a narrowing of urban-rural civic engagement gaps has emerged (see Paarlberg et al. 2022). According to the U.S. Fire Profile, 92% of local communities with fewer than 2,500 residents rely on all volunteer fire departments, and over 80% of communities with populations under 10,000 are protected by mostly volunteer or all-volunteer fire departments (Fahy et al., 2022).

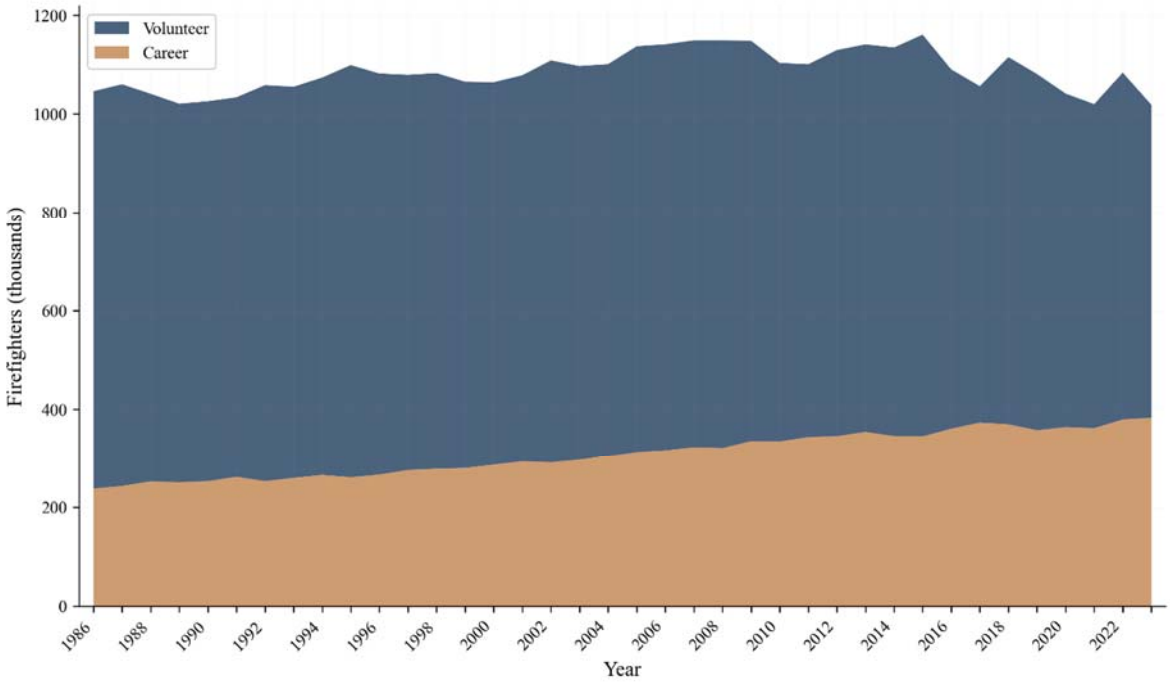

Figure 5.3. Career and volunteer firefighters in the United States (1986-2023).

In the past two decades, there has been a national trend of intensifying recruitment and retention challenges. This issue was flagged nearly twenty years ago by the U.S. Fire Administration (2007). More recently, the National Volunteer Fire Council (2020) reported survey results that found 70% of fire department leaders perceive difficulty in recruiting volunteers. The COVID-19 pandemic exacerbated the problem, with persistent impacts through the post-COVID era (Santana, 2023). In addition recruitment and retention challenges, the decline in volunteer firefighter numbers can also be attributed to a conversion and/or transition to a career track, as the number of employed firefighters has risen steadily from 237,750 in 1985 (22.7%) to 383,300 in 2023 (37.6%) (see Figure 5.3).

Trends in United States EMS volunteerism are more difficult to trace than fire protection due to a lack of centralized data source tracking. Despite this, various individual reports indicate contractions in EMS volunteerism (Patterson et al., 2015; Young, 2017; Cash et al., 2021). These reports have indicated that volunteers in the Unites States previously constituted a large portion of the EMS workforce, but that this is no longer the case. In 2011, the National EMS Assessment reported that 30 of 50 states relied on volunteers for more than half of their EMS first responders (Young, 2017). In 2013, the National Registry of Emergency Medical Technicians estimated that volunteers constituted roughly 40% of the national EMS workforce.[11] But in the late 2010s, national EMS volunteer shares were only only 13% in 2018 and later just 12.1% in 2024 (Cash et al., 2021; Gager et al., 2024).

[11] https://content.nremt.org/static/documents/research/LEADSII-2014Fact%20Sheet.pdf, accessed 6/5/2025

Depicted in Figure 5.4 is the state level distribution of volunteer EMS proportion, based on data from Cash et al. (2021). Unlike the percentages of volunteer firefighters shown in Figure 5.2, no single state records an EMS volunteer share exceeding 50%. Again, states in the Midwest and portions of the Northeast have higher levels of EMS volunteerism: Vermont (47%), North Dakota (45%), Montana (36%), and South Dakota (35%). Like fire response, the concentration of EMS volunteers in rural regions has been well established (see Mears et al., 2012; Patterson et al., 2015; Young, 2017; Cash et al., 2021; National Rural Health Resource Center, 2021). In 2008, over 80% of isolated small rural communities relied on EMS agencies with either complete or partial volunteer involvement (Patterson et al., 2015). In 2018, 74% of surveyed EMS volunteers served in rural areas (Cash et al., 2021).

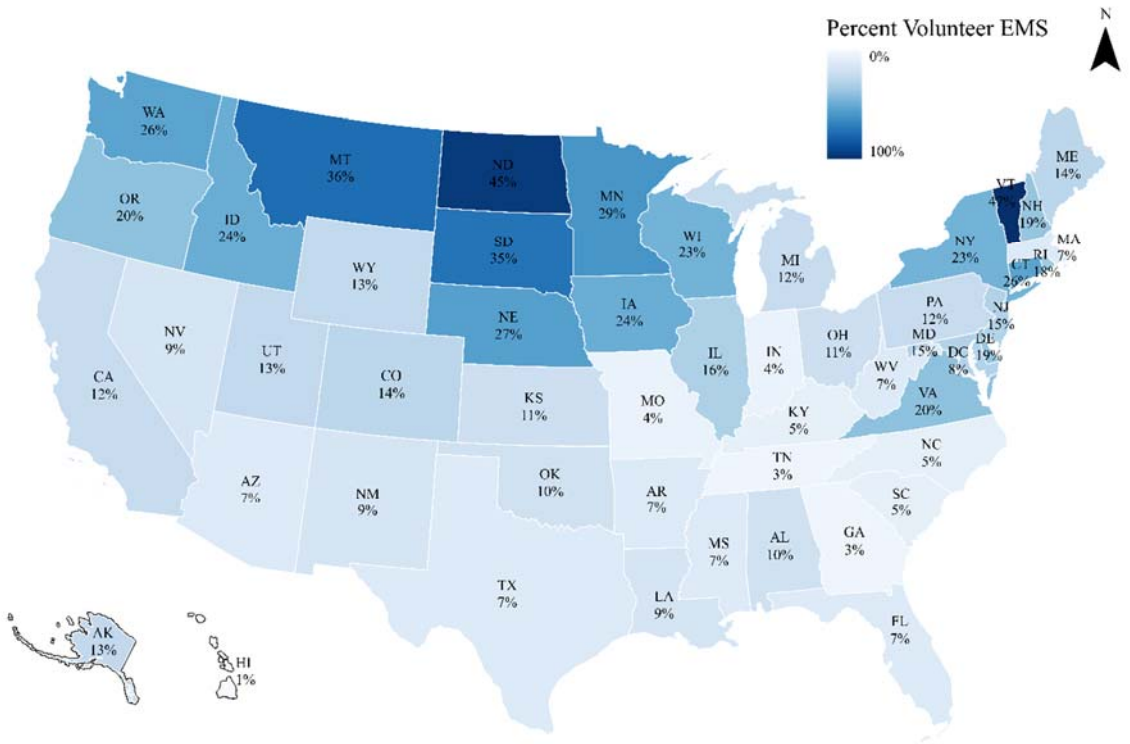

Figure 5.4. Proportion of volunteer EMS across the United States (2018).

Based on multiple independent studies, there have been growing challenges within EMS volunteer recruitment. A nationwide survey in 2018 found that 50.4% of rural EMS agencies reported persistent recruitment problems (Freeman et al., 2008). While there is a lack of national records on EMS volunteers, insights might be drawn from some state-level reports. 77% of volunteer agencies in communities under 5,000 people in Minnesota reported recruitment difficulties, while only 45% of career agencies in larger locales (>10,000) indicated problems (Asche, 2022). 90% of EMS providers in Wisconsin, most of whom are volunteers, requested help with recruitment

and 69% doubted they could sustain ambulance operations due to the staffing challenge (Wisconsin Office of Rural Health, 2023).

The evidence suggests volunteerism in both fire and EMS is in decline across the U.S. The drops in the number of volunteer firefighters are steady and perhaps increasing over the past decade or two. These may pose threats to the staffing of fire and EMS services, particularly in rural areas with a higher reliance on volunteer-based services. It is worth noting that half of the EMS providers in the U.S. are fire departments (Cash et al., 2021; Mueller et al., 2021), reflected in the correlation between state level volunteer shares of fire and EMS observed in Figures 5.2 and 5.4. Consequently, the staffing shortfall caused by declining volunteerism in fire departments might simultaneously affect EMS capacity.

5.2. California Trends

California lags most of the nation in formal volunteer engagement. AmeriCorps (2025) indicates in its Volunteering & Civic Life release that the state's volunteer rate was 24.1%, which places it near the bottle in the United States. Even so, it is estimated that 7,488,073 Californians volunteered in 2023, contributing nearly 690 million hours, for a total value of $16.6 billion.

Volunteerism for fire response follows this statewide pattern. The California registry indicates about 9,200 active volunteer firefighters statewide, representing 17% of California's 53,600 firefighters. It is worth noting that CAL FIRE and the California Department of Correction and Rehabilitation supply over 1,500 trained incarcerated firefighters every year, comprising approximately 16.3% of the volunteer workforce. During the 2017 Tubbs Fire, as an example, 650 incarcerated crew members were on the fire line, some 7% of the total force (Helmick, 2017). During the 2025 Los Angeles Wildfire, around 1,000 incarcerated firefighters from this program were deployed (Schneid, 2025).

The 2024 National Fire Department Registry lists 849 registered fire departments and 3,782 stations in California, figures that generally exclude federal wildland agencies (e.g., U.S. Department of Agriculture Forest Service and the U.S. National Park Service). The spatial distributions by county are shown in Figures 5.5 and 5.6. Roughly 10% of departments have not enrolled in the registry, but of the 849 departments that did respond:

- All-volunteer fire departments: 28.7 %
- Mostly-volunteer fire departments: 25.9 %
- Mostly-career fire departments: 15.7 %
- All-career fire departments: 29.8 %

This registry further counts 3,250 of California's 9,214 (35.3%) registered volunteer firefighters as serving in rural counties. Volunteers supply 61.4% of all firefighter positions in those counties, and 16 of the 21 counties rely on volunteers for more than half of their total force. When extending to RCRC member counties, 34 out of the 40 counties have >50% volunteer shares, with Alpine, Calaveras, Colusa, Del Norte, Mariposa, Modoc, Mono, Siskiyou, and Trinity exceeding 80%. This reliance on volunteers is highest in the sparsely populated northern and mountain regions: Modoc (92 %), Siskiyou (91 %), Del Norte (90 %) and Trinity (82 %). This extends south through Mendocino (71 %), the central Sierra foothills (Mariposa 96 %, Calaveras 83 %), the Eastern Sierra (Alpine 95 %, Mono 83 %), and portions of the Sacramento Valley such as Colusa (90 %).

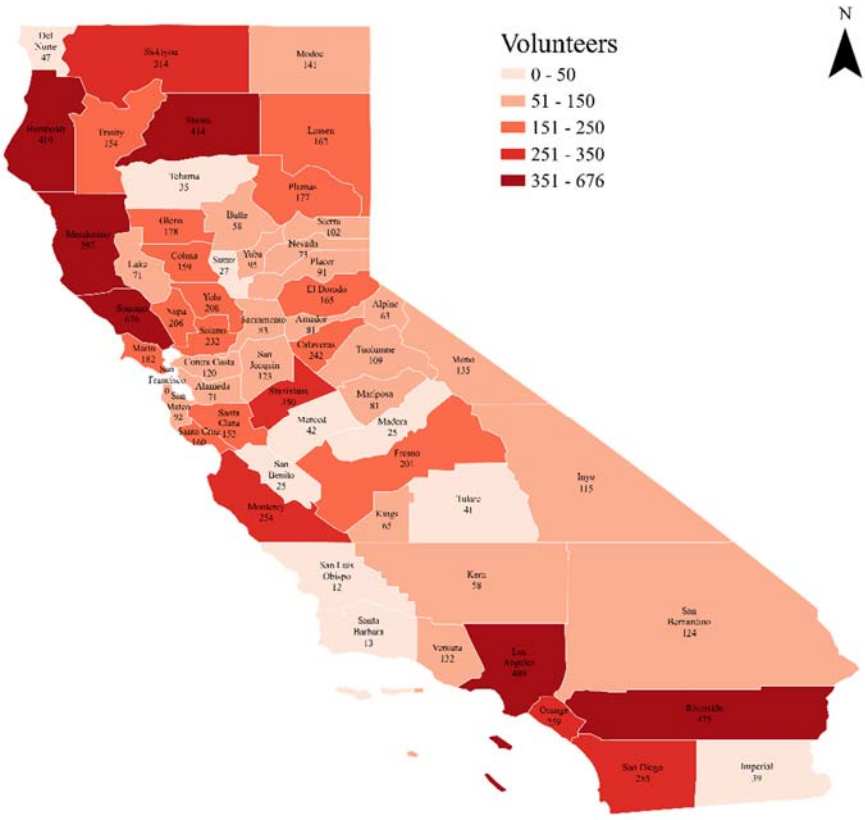

Figure 5.5. Volunteer firefighter numbers across California (2024).

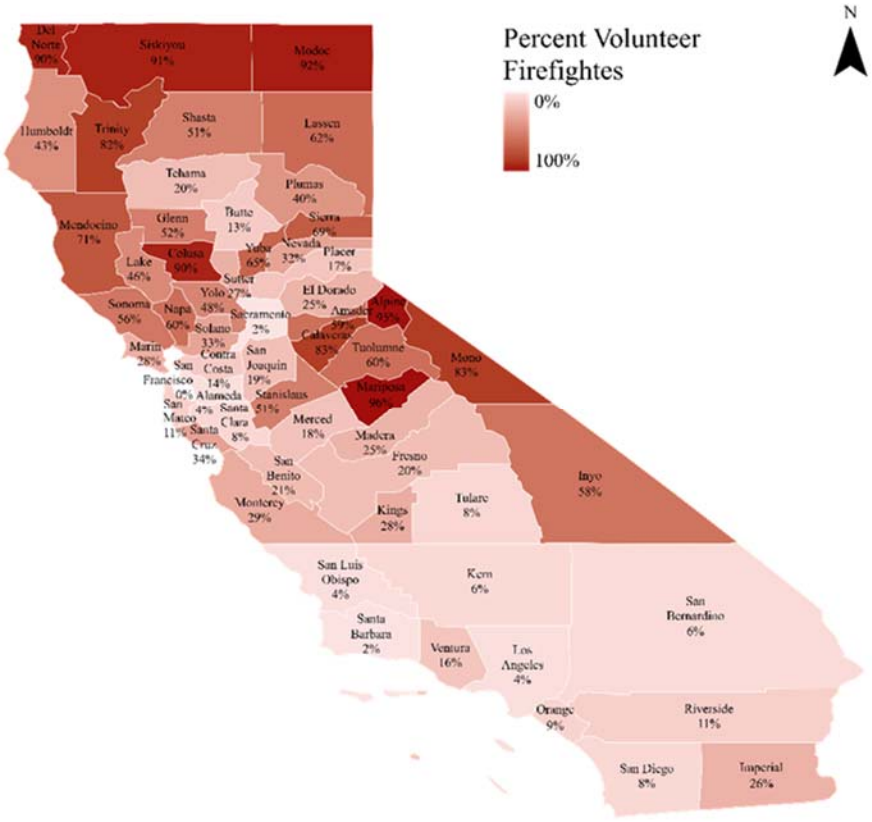

Figure 5.6. Percentage of volunteer firefighters across California (2024).

California lacks a unified, longitudinal personnel database that spans every county and firefighting agency. As a result, a comprehensive longitudinal assessment is not possible. Considered here are annual departmental reviews, County Fire Chiefs' Association reports, Local Agency Formation Commission Municipal Service Reviews, and county grand jury reports. Coverage, however, is uneven: each source reports different metrics (e.g., roster size, staffing, apparatus counts) on different cycles, and many agencies and authorities publish no historical tables at all. Consequently, cross-sectional snapshots like Figure 5.5 are limited in capturing longitudinal dynamics; any statewide time series must be interpreted cautiously and supplemented with qualitative evidence from local reports.

Data from several counties, where figures are available, confirm a steady contraction of volunteer staffing across many California fire agencies and authorities.

- Riverside County: Volunteer ranks fell from 170 in 2019 to 136 in 2025 (–20 %).[12]
- Santa Cruz County: The roster has hovered near 70 volunteers since 2021, down from roughly 100 earlier in the decade (–30 %) (Kathan, 2021).

[12] Riverside County Fire Department communication on 01/21/2025.

- Humboldt County: The county fire chiefs' association tallied 668 volunteers in 2015 and 549 in 2021 (–18 %; Humboldt County Fire Chiefs' Association, 2015, 2021).
- Nevada County: Local Agency Formation Commission records show a decline from 109 volunteers in 2005 to 68 in 2025 (–37.6 %; Nevada Local Agency Formation Commission, 2005, 2025).
- Lassen County: Comparing 2010 and 2020 Municipal Service Reviews, 7 of 13 fire districts lost volunteers, their combined total sliding from about 80 to 44 (–45 %; Lassen County Local Agency Formation Commission, 2010, 2020).
- Shasta County Fire District: The county's largest headquarters reported >200 volunteers in 2018 but only 108 in 2022 (–46 %; CAL FIRE and Shasta County Fire District, 2018, 2022).

Additional evidence of county-level attrition, such as unpublished headcounts, comes from grand jury findings and Municipal Service Reviews. Many recent reports flag declining volunteer numbers and challenges in finance and the recruitment and retention of staff, warning that existing numbers are "unsustainable": El Dorado (El Dorado County Grand Jury, 2020), Inyo (Inyo County Grand Jury, 2018), Lake (Lake County Local Agency Formation Commission, 2024), Modoc (Modoc Local Agency Formation Commission, 2017), Napa (Napa County Grand Jury, 2023), San Benito (San Benito County Civil Grand Jury, 2023), San Joaquin (San Joaquin Local Agency Formation Commission, 2011), San Luis Obispo (County of San Luis Obispo Board of Supervisors, 2018) and Trinity (Trinity Local Agency Formation Commission, 2020). The San Luis Obispo Board of Supervisors stated that volunteer firefighters in the county have "all but vanished."

Of the 15 counties where a decline has been documented, seven are rural (Humboldt, Inyo, Lake, Lassen, Modoc, Nevada and Trinity) and 12 are RCRC member counties (El Dorado, Napa, San Benito, San Luis Obispo, and Shasta in addition to the 7 rural counties). The non-rural counties report that volunteer shortages, and the attendant funding and training gaps, occur mostly in rural areas and within outlying communities.

Regarding drivers of volunteer attrition, local reports converge onto a common triad of stressors in rural California: demography, finance, and training:

- Shrinking catchments: Several grand jury reports note that the shrinking population has thinned the pool of prospective volunteers, particularly those qualified for the tasks.
- The population workload paradox: Lake County illustrates the opposite problem: its population increase has pushed call volumes up faster than volunteer rosters can grow, leaving departments chronically short-staffed (Lake Local Agency Formation Commission, 2024).

- Fragmented tax base: Many districts draw on fewer than 1,500 residents, limiting revenue-raising capacity and foiling efforts to introduce incentives as benefits.
- Minimal benefits: Many rural districts' revenue barely covers apparatus maintenance, let alone health insurance or retirement credits for volunteers. Nevada County's Ophir Hill Fire District, for example, has become a "training center and résumé builder" where newly certified firefighters depart for better-funded agencies,[13] as it is too financially constrained to offer competitive incentives.
- State and national mandates: California now expects volunteer structural firefighters to complete Firefighter I (300 hours) plus annual refreshers, let alone the EMT certification for departments providing EMS. Complying with NFPA 1001, 1021 and 1051 standards push total training past 400 hours before a volunteer can start service.
- Cost transfer to individuals: The training coverage has become a significant barrier for the budget. The difficulty of accommodating volunteers from different places to schedule training events is very high. Several districts report that they can no longer reimburse coursework, gear rental, or travel.

The protection quality and volunteerism rates of a fire agency are largely impacted by training, communication, and organization. Napa County, considered to be a representative example of rural California by the Napa Grand Jury (2023), can serve as an example. Several fire company chiefs within the county lack state-mandated certification, and only 98 of the 165 volunteers were deployable due to many not satisfying state mandates. This has created countywide inefficiency for fire protection, as the current volunteer response rate now struggles to surpass 50%.

While volunteerism for both fire and EMS in California share certain attributes, data on EMS volunteerism in the state is considerably sparser. Statewide workforce assessments concentrate almost entirely on paid staff and omit the systematic counts of volunteers (Jacobs et al., 2017; Bates and Coffman, 2023). Other medical response volunteer organizations, such as Disaster Health Volunteers, do however, have forms of formal roster documentation. Figure 5.7 illustrates the aggregated numbers of Disaster Health Volunteers personnel by rural and urban counties, where urban counties have a spike in staffing after 2023.[14] With approximately 47,000 registered volunteers, Disaster Health Volunteers was primarily established as a disaster response mechanism, serving as reserves activated during declared emergencies rather than providing routine pre-hospital care.

[13] https://yubanet.com/regional/grand-jury-report-challenges-of-a-small-rural-fire-district/, accessed 5/18/2025

[14] https://data.chhs.ca.gov/dataset/emsa-dhv-volunteers-by-org/resource/3350afa9-542b-42d1-98a4-60101e581a17, accessed 2/25/2025

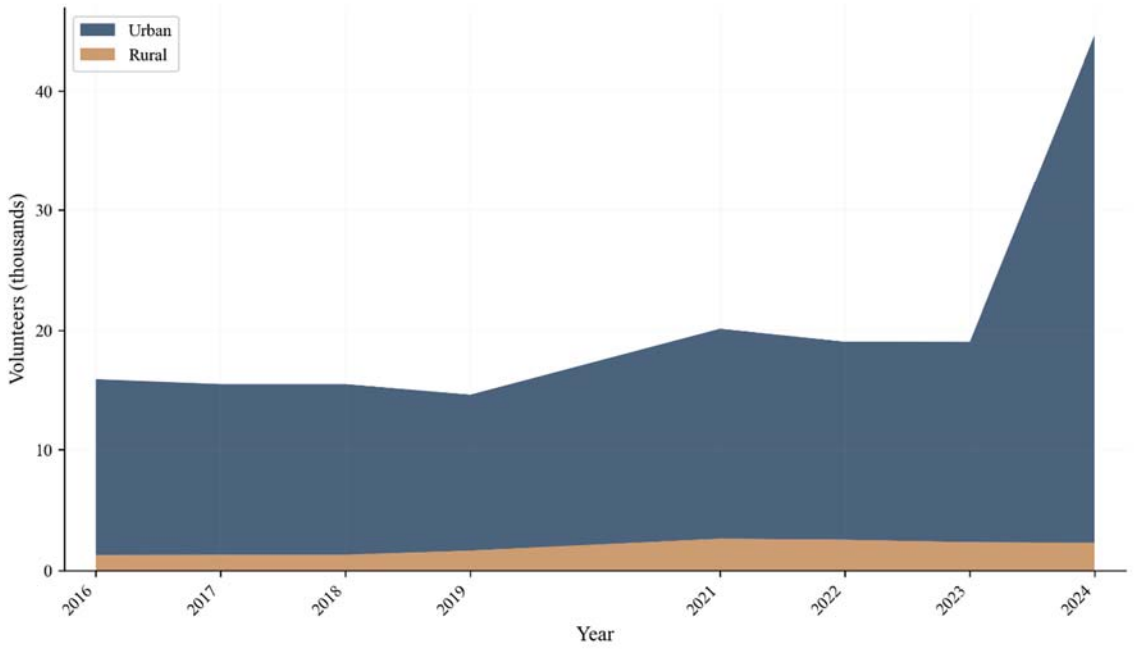

Figure 5.7. Annual trend of Disaster Health Volunteer numbers in California (2016-2024).

At the agency level, about 60% of California's ambulance services are private, non-hospital firms and 35% are fire-department-based EMS divisions (California Emergency Medical Services Authority, 2023). In urban counties, there is a greater proportion of private providers, where national contractors such as AMR dominate. In rural counties, however, three-quarters of EMS providers are fire agencies. After matching with the National Fire Department Registry, 63% of those fire providers turned out to be operated entirely or predominantly by volunteers.

Gaps follow the rural-urban division on EMS agency types. Less than 25% of mostly volunteer or all-volunteer fire departments in rural counties can field an advanced life-support unit, whereas most urban agencies meet such standards. Therefore, rural California remains heavily dependent on an undercounted volunteer EMS workforce that operates within fire departments with basic life-support service.

Standalone volunteer EMS agencies are very scarce in California. Among the very few (~10) stand-alone, non-fire volunteer ambulance services identified, at least five have publicly documented staffing or funding stressors:

- Angwin Community Ambulance (Napa County): Closed permanently in 2019 after 41 years of service when insurance and recruitment costs became unsustainable.

- Nelson Camp Volunteer Ambulance (Tulare County): Issued public appeals in early 2025 for EMTs and drivers, citing an "urgent staffing shortage" that could force a shutdown (Tellez, 2025).
- Happy Camp Volunteer Ambulance (Siskiyou County): Chief reported ongoing difficulty recruiting qualified volunteers as the local population declines.[15]
- Butte Valley Ambulance – Siskiyou County: Temporarily suspended operations in 2024 because of simultaneous funding and personnel gaps.[16]
- Southern Cascades EMS – Modoc County: Also halted service in 2024 for similar reasons, leaving parts of Highway 139 without local transport coverage.

All in rural/RCRC counties, these cases suggest that a significant share of California's already small cohort of stand-alone volunteer ambulance providers is presently under notable strain.

Inyo County and Mendocino County show reliance on volunteer fire departments as EMS providers. In September 2024, Olancha-Cartago Fire Department (Inyo County) suspended EMS operations after it could no longer field enough certified volunteers (Tyler, 2024). County officials called the shutdown emblematic of countywide volunteer-dependent EMS system being highly fragile. In Mendocino County, several volunteer fire departments including the Elk, Laytonville and Anderson Valley have been running their ambulance services at a loss, with some noting staffing shortfalls.[17]

Volunteer fire departments that are EMS providers may lose both fire and EMS capacity due to declining volunteerism. This is likely to be applicable for counties that depend on volunteer fire agencies for ambulance services. These counties include Humboldt, Nevada, Lake, Mendocino, Inyo, Trinity, Calaveras, Colusa, Mono, Alpine, and Siskiyou, as they have high shares (>80%) of fire departments as EMS providers. Urban counties like Shasta are also vulnerable, as their rural area EMS is still covered by fire departments (Shasta County Fire Department, 2024).

Data provided by the California Emergency Medical Services Authority shows diverging trends of active EMT and paramedic certification in California counties. Table 5.1 lists this data for the 20 counties with the strongest declines in the percentages of certified paramedics. Between 2015 and 2024, there were 15 counties that recorded decreases in certified EMTs. Among these, 12 are rural counties. The largest decreases are: Modoc (-27.8%), Mariposa (-17.2%), Mendocino (-12.9%), Lake (-11%), and Napa (-10.4%). Some of the declines were steeper during 2020-2024, including Modoc (-41%), Glenn (-18%), Inyo (-12%), and Humboldt (-11%).

[15] Contacted through telephone interview on 3/28/2025
[16] Sierra-Sacramento Valley EMS Agency Joint Powers Agency Governing Board Meeting (https://www.ssvems.com/wp-content/uploads/2024/03/01-2024-JPA-Minutes.pdf, accessed 5/20/2025)
[17] https://www.firesafemendocino.org/the-latest/measure-p, accessed 5/20/2025

For paramedics, the total number of certifications by county per year had steeper decreases in some counties. Four counties had roughly halved paramedics: Colusa (5 to 2), Lassen (12 to 6), Del Norte (17 to 9), and Sierra (9 to 5). In addition, there were four other counties with more than 20% decline between 2015 and 2024, including Tehama (42 to 29, -31%), Sutter (57 to 42, -26.3%), Plumas (31 to 23, -25.8%), Lake (72 to 57, -20.8%). Notably, 7 out of the 8 counties with substantial drops in paramedic certifications are rural counties, with Sutter County the only exception. All 8 of these counties are RCRC members.

Table 5.1. Top 20 counties with the largest drops in paramedic certifications (2015-2024)

County	Paramedic 2015	Paramedic 2024	Paramedic Change	EMT 2015	EMT 2024	EMT Change	Rurality	RCRC
Colusa	5	2	-60%	46	53	15.22%	nonmetro	yes
Lassen	12	6	-50%	55	60	9.09%	nonmetro	yes
Del Norte	17	9	-47.06%	40	54	35%	nonmetro	yes
Sierra	9	5	-44.44%	25	34	36%	nonmetro	yes
Tehama	42	29	-30.95%	163	181	11.04%	nonmetro	yes
Sutter	57	42	-26.32%	144	174	20.83%	metro	yes
Plumas	31	23	-25.81%	90	82	-8.89%	nonmetro	yes
Lake	72	57	-20.83%	129	115	-10.85%	nonmetro	yes
Alameda	734	594	-19.07%	2181	2557	17.24%	metro	no
Santa Clara	538	437	-18.77%	2185	2308	5.63%	metro	no
Napa	126	103	-18.25%	288	258	-10.42%	metro	Yes
Marin	203	172	-15.27%	472	512	8.47%	metro	no
San Francisco	232	198	-14.66%	1046	1063	1.63%	metro	no
Contra Costa	961	837	-12.90%	1500	1844	22.93%	metro	no
Modoc	9	8	-11.11%	36	26	-27.78%	nonmetro	yes
Mendocino	58	52	-10.34%	263	229	-12.93%	nonmetro	yes
Trinity	10	9	-10%	54	49	-9.26%	nonmetro	yes
Butte	173	156	-9.83%	569	620	8.96%	metro	yes
Santa Cruz	474	428	-9.70%	694	826	19.02%	metro	no
Merced	66	61	-7.58%	263	336	27.76%	metro	yes
Tuolumne	76	72	-5.26%	230	225	-2.17%	nonmetro	yes

In summary, fire and EMS in rural California are heavily volunteer-based. Rural counties in California have a strong reliance on volunteers for fire protection with high shares of volunteer firefighters. The geographic patterns of volunteer firefighters align with Musso et al. (2019), with regions having smaller populations, lower median incomes and more conservative voting profiles representing a larger share of volunteer public safety. For many of these counties, the role of volunteer fire departments extends to EMS, meaning that the declining volunteerism may have

dual consequences. Based on the synthesis of various sources, many areas of rural California were found to have declines in volunteer based fire departments. Within many rural counties, there have been declines in EMT and paramedic certification, offering further evidence of contracting EMS labor. All taken together, the available evidence points to a statewide decline of volunteerism for fire and EMS across rural California, which encompasses rural counties and the rural areas of urban counties. Some of these counties (e.g., Inyo, Lake, Lassen, Mendocino, and Modoc) that have heavier dependency on volunteer-based fire and EMS services explicitly reported volunteer staffing shortages, and show notable contraction of EMT/paramedic certifications, are more likely to bear losses in fire and EMS capacity.

6. Strategies Moving Forward

Outlined in this report are factors that have contributed to contractions in fire and EMS volunteering at the national and state levels. It has been noted that EMS and fire workforces within rural areas of California generally show higher, and currently diminishing, volunteer rates. Declining volunteerism in EMS and fire means decreases in available staffing and limited abilities to provide services. A number of recommendations, strategies and practical measures drawn from national case studies and guidelines are offered for local agencies and governments to mitigate volunteerism decline, a resource that is essential to sustain adequate service to communities.

6.1 Evaluation and Assessment

Proper support and prioritization of fire and EMS services requires an understanding of current fiscal resources, staffing levels/trends, call demand, and community risk. Longitudinal trends are valuable as well. Several resources emphasize that basic evaluation and assessment are fundamental in supporting agencies facing volunteer declines (see NFPA 1300; FEMA Comprehensive Preparedness Guide 101; U.S. Fire Association Risk Management in the Fire Service). To ensure adequate and consistent evaluation of rural volunteer services, jurisdictions can request public assessments through Local Agency Formation Commission studies, grand jury inquiries or stand-alone audits.

6.2 Agencies and Authorities

The stability and success of a workforce is commonly found to be a function of recruitment and retention. Recruitment is the process of attracting and hiring new individuals. Retention is the ability to support and maintain existing members. Institutional analyses, most notably the National Volunteer Fire Council (2020) and the U.S. Fire Administration (2023), have identified three primary obstacles based on case studies, surveys, and expert opinions that impact the recruitment and retention of volunteer fire and EMS personnel:

1. Training costs and time burdens: Mandatory coursework and certifications demand substantial out-of-pocket spending and time commitments, potentially hundreds of hours.
2. Leadership and workplace climate: Weak or unsupportive leadership leaves volunteers feeling unappreciated and can lead to issues in communication and management.
3. Operational workload: Rising call volumes and shrinking rosters push remaining members toward burnout.

Others have noted additional compounding factors:

- Information gaps: A National Volunteer Fire Council survey in 2015 found that nearly 80% of U.S. residents were not aware of whether their local fire departments were accepting volunteers.
- Demographic change: Rural populations are aging and shrinking, eroding the pool of qualified candidates for volunteer positions.
- Elevated health risks: Volunteers face greater exposure to carcinogens, cardiovascular strain, and on-scene hazards, yet often lack comprehensive health benefits. Mental health burdens, including chronic stress, anxiety, and PTSD, are prevalent in both fire-suppression and EMS roles (Essex and Scott, 2008).
- Generational value shifts: Younger adults are less inclined toward volunteerism and more likely to view emergency response as a career service by nature (National Rural Health Resource Center, 2021).
- Broader socio-economic trends: Economic instability, shifting lifestyles, and weaker social ties (e.g., declining religious participation) further depress volunteer engagement.

While strengthening community cohesion, social connectedness and overall life satisfaction would bolster formal volunteerism at a broader scale, such deep social change lies beyond shorter term needs. A more practical path is to identify concrete steps rural volunteer agencies can implement now, with support from the county and the state, to abate the declining volunteer numbers and alleviate the resulting staffing shortfalls in fire and EMS personnel in rural California.

6.2.1 Public presence and education

Case studies highlight that departments with a strong, positive public presence see higher application rates. The Firehouse profiles of the Kiowa Fire Protection District (Colorado), Canton Fire Department (Connecticut) and Gilt Edge Volunteer Fire Department (Tennessee) all credit recruitment gains to deliberate outreach campaigns. Typical tactics include partnering with local media and businesses, maintaining an active social media presence and staging open houses, career days or demonstrations. In California, for example, the Hayfork Volunteer Fire Department (Trinity County) engages in county fairs, is present at high school football games and offers public CPR and first-aid classes, activities that keep the department visible and approachable.

Clear, candid messages are equally imperative. Recruitment materials and websites should spell out roles, duties and time commitments so that applicants enter with realistic expectations, especially in rural departments where EMS calls now dominate workloads. Advertising EMS specific roles alongside firefighting positions both reflects operational reality and broadens the applicant pool. Departments should consider adopting multi-path application strategies. National and state portals such as Make Me a Firefighter and California Volunteer Firefighters may widen outreach at little cost. Registering with these platforms, while also maintaining a prominent,

straightforward application button on department websites, creates multiple entry points that maximize visibility and lower barriers for prospective volunteers.

Education driven partnerships help counter generational shifts away from volunteerism. By linking service to coursework, departments give students hands-on experience, fill short-term staffing gaps and cultivate pipelines of trained recruits likely to return after graduation. As examples, Moscow Volunteer Fire and Ambulance in Idaho provides housing to University of Idaho students in return for volunteer staffing and Humboldt General Hospital in Nevada exchanges EMT tuition for clinical rotations and shift work (Lukens, 2018). Educational involvement can further promote a volunteer department and increase public awareness.

6.2.2 Simplification and incentives

Training has been frequently mentioned by rural agencies to be a significant hurdle in the recruitment of volunteers. The state mandate for firefighter and EMT training requires considerable financial and time commitments. This can be a difficult investment for potential volunteers to make, particularly in remote areas where trainings can require longer commutes and greater organizational costs. To minimize these challenges, there are several measures that agencies can consider.

One solution is to allow volunteers to take State Fire Training coursework in an online format, providing them with more time and flexibility. Such virtual learning includes the basic Incident Command System as well as understanding fire behavior models. What training cannot be done virtually should be organized into condensed blocks rather than being spread out over extended periods of time. This allows volunteers the flexibility to plan days for training and minimize commuting.

While tuition for firefighters, EMTs and paramedics is covered by some counties in California (e.g., Plumas, Lake, Mendocino), most counties expect individuals or agencies to cover their own fees. In addition to tuition costs, there are other expenses for recruits associated with training: lost wages, commuting and lodging. If possible, agencies should attempt to understand and account for these costs. There may be several funding opportunities available to agencies (see below) in supporting recruitment that recognizes the burdens of tuition and related expenses. Financial compensation to offset costs associated with training and incentives the recruitment/retention of volunteers could include stipends and local incentives. Stipends, the most common monetary rewards, have been adopted by many California agencies. Some counties provide fixed monthly stipends, while others use a pay-per-call model like for “paid call firefighters” (e.g., County of San Luis Obispo Board of Supervisors, 2016). The pay-per-call stipend has been suggested as a better approach by the Napa County Grand Jury (2023) as it only supports actively working staff. In

addition to stipends, agencies can often ask for support from local businesses in providing volunteer incentives such as fuel cards, discounts and membership fees.

6.2.3 Leadership and management

Unsupportive leadership and poor management have been widely recognized as reasons for attrition in emergency services (National Volunteer Fire Council, 2020; U.S. Fire Administration, 2023). As California's emergency call volumes rise, it is becoming increasingly important for EMS and fire agencies to develop supportive leadership that emphasizes communication and conflict resolution. Strong leadership and management of expectations/workloads can prevent burnout and make volunteers feel more appreciated.

It is essential for leadership to consider and take care of the mental health of its workforce. There are several resources available for agencies to consider, such as the First Responder Behavioral Health Access Program Toolkit and the International Association of Fire Chiefs' Bullying and Workplace Violence Prevention Toolkit. These resources, in addition to management strategies such as schedule rotations, adjustments to the number of standby personnel and ensuring volunteers receive adequate breaks, can reduce the stress put on volunteer workers.

The Herald Fire Protection District, an all-volunteer agency in rural Sacramento County, appears to be a good example of effective leadership in hiring and maintaining a volunteer workforce. In past years, volunteers felt unsafe and underappreciated, resulting in resignations. When changes to leadership were made in tandem with upgrades to safety equipment, many volunteers returned to their positions (Sacramento County Grand Jury, 2017).

6.3 Grants and Funding Opportunities

The recruitment and retention strategies outlined above may impose additional costs on fire and EMS agencies. One way to offset these expenses is to seek assistance through grants from local, state and federal sources. Offered below is a sampling of potential funding sources.

A variety of federal and California state programs exist that can provide aid to fire and emergency services, helping maintain volunteer personnel levels. A summary is offered in Table 6.1. Two of the most important federal grants for fire protection are the Staffing for Adequate Fire and Emergency Response and Assistance to Firefighters Grant Program, offered by the Federal Emergency Management Agency. Both grants can contribute to training, staff stipends, equipment or any other essential needs by fire departments. For the recruitment and retention of volunteer firefighters, the annual award is typically around $100,000 to $300,000. The assistance awards usually range from $20,000 to $200,000 per year for small and mid-sized departments. The former awards roughly 300 grants per year while the latter awards around 2,000.

Table 6.1. Potential grant opportunities fire and EMS volunteer opportunities in California.

Program	Issuer	Link
Staffing for Adequate Fire and Emergency Response	Federal Emergency Management Agency	https://www.fema.gov/grants/preparedness/firefighters/safer
Assistance to Firefighters Grant Program	Federal Emergency Management Agency	https://www.fema.gov/grants/preparedness/firefighters
California State Firefighters Association Reimbursement and Scholarship	California State Firefighters Association	https://californiavolunteerfire.org/grant-info
Volunteer Fire Capacity Program	U.S. Forest Service and CAL FIRE	https://www.grants.ca.gov/grants/2025-volunteer-fire-capacity-vfc
USDA Community Facilities Direct Loan & Grant Program	U.S. Department of Agriculture	https://www.rd.usda.gov/programs-services/community-facilities/community-facilities-direct-loan-grant-program-11
Length of Service Award Program	Local	https://www.losap.com/what-is-losap
California Fire Foundation Grants	California Fire Foundation	https://www.cafirefoundation.org/what-we-do/for-grant-seekers/funding-opportunities
Benefit Advantages for Emergency Responders program	California State Firefighters' Employee Welfare Benefits Corporation	https://baer911.org
Rural Emergency Medical Services Training Grant	Substance Abuse and Mental Health Services Administration (U.S. Department of Health and Human Services)	https://www.samhsa.gov/grants/grant-announcements/ti-23-011

The other noted programs of potential interest in Table 6.1 can be significant as well. The California State Firefighters Association Reimbursement and Scholarship program reimburses up to $2,500 to each newly recruited volunteer firefighter who meets NFPA standards and $3,250 for their costs of Personal Protective Equipment. The Volunteer Fire Capacity Program awards between $500 and $20,000 for equipment, training, communications and safety gear to fire departments. It is open to all California volunteer fire departments, with annual application cycles via the California Grants Portal. The USDA Community Facilities Direct Loan & Grant Program offers support to build or improve essential community facilities, including EMS and fire stations. The grant portion (25%-75% of the project) depends on the median household income of a community. The Length of Service Award Program is a tax-free benefit for volunteer fire and EMS personnel, allowing members to accrue up to $7,500 per year of service (2024 limit) as a deferred-compensation award that is excluded from taxable income. California Fire Foundation Grants are a private nonprofit fund that provides $5,000–$25,000 to California-based fire departments, firefighter associations and nonprofit community organizations. The Benefit Advantages for Emergency Responders program is membership-based providing free and discounted services, including insurance plans, training scholarships, recruitment kits and recognition plaques, that

reduce out-of-pocket costs for volunteer fire and EMS agencies. Finally, the Rural Emergency Medical Services Training Grant is designed to train EMS personnel in rural areas.

Alongside these federal and state grant opportunities, agencies should closely monitor local funding opportunities as well. County Service Areas in California are funded by parcel taxes and may be eligible for financial assistance from the local CSA board to support volunteer fire and EMS services. Another potential resource is the California Fire Chiefs' Association Grant Listings. While not a grant itself, grant opportunities with rolling deadlines and niche focus areas may be applicable for volunteer fire and EMS services.

When seeking financial assistance, agencies must track each source's deadlines, application cycles, award amounts, eligibility requirements, accessibility and thematic foci. The difficulty of obtaining a grant varies. California State Firefighters' Association reimbursements, Burned Area Emergency Response and Length of Service Award Program grants appear to be relatively easy to obtain, whereas FEMA Staffing for Adequate Fire and Emergency Response, U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration Rural EMS Training Grant and USDA Community Facilities awards are highly competitive. Some programs target a specific need. As an example, the California Fire Foundation Grant program in 2025 focuses on community outreach, fuel reduction and PPE. Thus, departments needing to update protective gear should consider applying, enabling budgets for volunteer support to be increased. Other opportunities, like the Rural EMS Training Grant, prioritize projects addressing substance use and behavioral health interventions. Overall, rural fire and EMS agencies should actively gather funding information from multiple sources and submit well-targeted proposals that spell out spending plans and document needs in clear, specific terms.

6.4 Regionalization, Revenue, Legislation and Mobilization

The strategies and recommendations proposed above are mostly tailored to agencies. However, action and support from the county and state levels are also essential. Based on existing literature, additional options that should be explored include: regionalization, revenue sharing, legislation and mobilization.

6.4.1 Regionalization

One strategy is to strengthen inter-agency collaboration through regionalization or consolidation. Small rural districts can merge into larger entities to cut overhead and use resources more efficiently. While several counties have fire authorities or fire advisory boards, there are many counties in California that are not part of a central body to oversee their services.

There are already calls for consolidation within the state. The El Dorado Grand Jury and El Dorado Local Agency Formation Commission have recommended consolidation of fire protection in El Dorado County and urged reactivating the county Fire Advisory Board (El Dorado County Grand Jury, 2018). Solano County's grand jury and Local Area Formation Commission issued similar advice, recommending the consolidation of rural volunteer departments (Miller, 2021).

Apart from better integration and allocation of existing resources, regionalization also brings advantages in recruitment and grant applications. This is exemplified by Calaveras County with their award to the Fire Chiefs Association of $1.88 million through the Department of Homeland Security SAFER program (see Streich, 2025). The application collectively represented 10 volunteer fire districts in the county. The award funded county-wide volunteer recruitment and training. Some experts have also recommended creating a county recruitment program that incorporates all departments, optimizing recruitment through a regionalized effort.

The formation of the county fire authority benefits not only fire but also EMS. While the Local Emergency Medical Service Agency has already been established under the California Emergency Medical Service Authority to provide oversight to regional EMS, gaps still exist for rural areas relying on volunteer fire districts as EMS providers. Because these districts are funded and governed as fire agencies, Local EMS Agency oversight is limited. Therefore, creating regional fire authorities or Joint Powers Authorities may bridge this governance gap by enabling coordinated training, funding and staffing, thereby bolstering the resilience of rural fire and EMS services together.

6.4.2 Revenue sharing

Rural volunteer fire and EMS agencies face chronic budget shortfalls that limit their ability to buy, maintain and replace critical equipment and invest in personnel safety. These financial constraints also undercut volunteer recruitment and retention by making it impossible to offer basic benefits such as stipends or health insurance.

These issues are often driven by tax bases and revenue that poorly equate to the amount of required service. For example, the Arcata Fire District in Humboldt County has been experiencing an increased number of calls due to the growth of the local California Polytechnic University, but has not been provided additional funding to support this (Humboldt County Civil Grand Jury, 2024). With the university providing no additional funds, the agency is required to increase service under the same fixed budget, creating a financial crisis. The grand jury urged the city of Arcata to negotiate a funding agreement with the university. To address funding gaps like these, districts may want to negotiate Payments in Lieu of Taxes with large tax-exempt institutions, advocate for state incentives that reimburse counties for rural fire and EMS services, and consider modest household service fees in areas outside existing tax districts. Such measures would broaden the

revenue base, improve service quality and help agencies offer the benefits they need to recruit and retain volunteers.

6.4.3 Legislation

In 2020, the Volunteer Responder Incentive Protection Act was permanently exempted $600 per year for both fire and EMS volunteers nationwide. Alongside this federal example, other states have made similar efforts to further reduce state taxes. Some regions have made volunteer emergency responders partially exempt from property taxes. For instance, New York has been providing $200 ($400 if married) tax credit for volunteer firefighters and EMS responders.[18] Some counties in New York also provide a 10% exemption of property taxes for volunteer firefighters (Creenan, 2023). The Illinois Volunteer Emergency Worker Credit provides an annual credit of $500 to emergency volunteer workers, including fire and EMS, for state individual income tax.[19]

There has not yet been any enacted legislation in California that reduces volunteer emergency responder state taxes, despite several bills having been proposed. AB 2727 was introduced in 2018, designed to allow tax credits of 80% of unreimbursed training or equipment expenses for volunteer firefighters. However, it has not yet advanced. Other bills recently introduced are progressing faster, such as SB 87 and SB 696. These legislative efforts target sales taxes for fire departments. It is plausible that supporting this legislation can lead to the creation of incentives that will reduce financial burdens on volunteer Fire and EMS in California.

Notwithstanding the dual role of fire departments for both fire protection and EMS, the current regulation models still treat EMT and firefighters as distinct tracks. Many fire departments across California still require mandatory Firefighter I certification. Since the vast majority of calls for many fire departments are EMS related, it might be worth considering altering the current training regulation, allowing certified EMTs to serve in fire departments and respond exclusively to medical calls, while deferring requirements for full Firefighter I credentials until volunteers choose to expand into structural or rescue operations.

The growing demands to mandate training have been frequently mentioned as a major barrier to volunteer recruitment and retention in rural fire departments. As a tentative concept, the legislature might consider a provisional volunteer tier that includes a compact core curriculum (perhaps 20-40 hours of fundamentals, such as CPR, basic radio communications and first aid) that grants newcomers provisional status to assist in non-suppression or medical support roles.

6.4.4 Additional mobilization

[18] https://www.ftb.ca.gov/tax-pros/law/legislation/2017-2018/ab2727-021518.pdf, accessed 6/17/2025
[19] https://tax.illinois.gov/individuals/credits/volunteer-emergency-worker-credit.html, accessed 6/17/2025

There are resources that are likely untapped in California. One example is the Disaster Healthcare Volunteers registrar, reflecting a reservoir of medical skill that could potentially support thin rural EMS rosters. It lists more than 40,000 licensed clinicians statewide. Although nurses and physicians dominate the field, the absolute number of field ready EMTs is substantial. The armed forces in the state are another deep well. Thousands of combat medics cycle through active duty posts each year, and redirecting even a small fraction could blunt staffing gaps in some remote counties.

The recent bipartisan Preserve Access to Rapid Ambulance Emergency Medical Treatment Act (H. R. 2220, 119th Congress, 2025) includes streamlining the path from veteran to civilian EMT or paramedic. The U.S. Fire Administration (2024) Summit likewise urged bridging to let active medics finish civilian credentials before discharge. California already has a working model. The Oceanside Fire Department participates in the U.S. Department of Defense SkillBridge program, hosting service members as EMT interns during their final 180 days of duty.

The state might attempt to scale these pilots by:

- Fast-track accreditation: formally credit military medic competencies, waive redundant coursework and offer an accelerated accreditation module that meets EMSA standards.
- Targeted outreach: use the California Department of Veterans Affairs and county Veteran Service Offices to market volunteer or reserve EMS roles to active troops and veterans.
- Flexible duty pools: create a scheduling platform that lets reservists and newly separated veterans sign up for part-time rural shifts without long-term contracts.

A parallel track could enlist Disaster Healthcare Volunteers clinicians. Local EMS Agencies might tentatively run a dual registry that invites licensed Disaster Healthcare Volunteers EMTs and paramedics to serve as reserve responders while keeping their disaster-deployment status. Disaster Healthcare Volunteers personnel could also staff models like the community paramedicine attachment (introduced in AB 1544) to handle low acuity home visits and free ambulances during peak demand. Only a few urban Local EMS Agencies have launched Community Paramedicine, but extension to volunteer districts relying on Disaster Healthcare Volunteers members might still be an option worth exploring for rural California EMS. Legislation or agency reformulation requires the action of local government and may be slow to change. However, many of the above outlined strategies can be implemented by agencies now. The above recommendations are additive, and the integration of both systemic and localized changes will create the largest benefits to the recruitment and retention of volunteers within rural California's fire and EMS services.

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