



STATE OF ILLINOIS

STATEWIDE RISK ASSESSMENT

DECEMBER
2025



Acknowledgements

The development of the Illinois Community Risk Reduction (CRR) State Risk Assessment represents a collaborative effort among dedicated professionals committed to improving safety and reducing risk across the State of Illinois.

This important initiative was first set in motion by Marsha Giesler, a founding contributor whose vision and leadership began the process of advancing a statewide approach to community risk reduction. Her commitment to prevention and data-driven strategies laid the foundation for this assessment.

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Community Risk Assessment

Table of Contents

Introduction.....	4
Illinois Fire Service Profile	10
State Community Profile	18
State Demographic Profile	30
State Incident Response Profile	51
Fire Incident Detail	75
Regional Fire Incident Detail.....	195
Explosion Incident Detail.....	216
Emergency Medical Service Detail	218
Hazardous Condition Detail.....	221
Service Call Detail	229
Good Intent Call Detail	238
False Alarm & False Call Detail.....	240
Severe Weather Call Detail.....	243
Special Incident Detail	245
Weather/Natural Hazard Risk Profile	247
Critical Infrastructure	262
Risk Scoring and Prioritization	264
Summary	277

Introduction

Community Risk Reduction and the Statewide Imperative

The fire service in the United States has undergone a profound transformation over the past two decades. Where once the measure of an effective fire department was defined almost exclusively by response times and suppression capabilities, today's leading fire service organizations recognize that the most impactful interventions occur long before an emergency call is placed. Community Risk Reduction (CRR) represents this paradigm shift—a deliberate, evidence-based approach to identifying where risks exist within a community, understanding why those risks persist, and mobilizing the right combination of prevention, education, enforcement, engineering, and emergency response strategies to reduce both the frequency and severity of harm.



For the State of Illinois, the application of CRR principles at the statewide level carries particular significance. With 1,130 fire departments serving communities ranging from dense urban centers to rural agricultural townships, and with a resident population of more than 12.5 million people representing extraordinary demographic diversity, no single local assessment can capture the full scope of fire risk across the state. A Statewide Risk Assessment (SRA) provides the essential "30,000-foot view" that complements local Community Risk Assessments (CRAs): it identifies cross-jurisdictional patterns, regional concentrations of risk, demographic disparities in fire injury and fatality rates, and strategic opportunities for coordinated intervention that transcend individual department boundaries.

This distinction between a community-level CRA and a statewide SRA is more than semantic. A local CRA is designed to be specifically tailored to the unique geography, housing stock, population characteristics, and incident history of a particular jurisdiction. An SRA, by contrast, analyzes aggregated data across all jurisdictions to reveal patterns that are invisible at the local level. It asks not only "Where is the greatest risk in this community?" but also "Which regions of the state face the highest fire burden?", "Which demographic groups are most disproportionately affected?", and "Where should state-level

resources, training investments, and technical assistance be concentrated to achieve the greatest reduction in fire injury and death?"

The Illinois Statewide Risk Assessment is intended to serve as both a diagnostic tool and a strategic planning resource. It provides the empirical foundation upon which a comprehensive statewide Community Risk Reduction strategy can be constructed—one that leverages the collaborative network of state agencies, fire organizations, and local departments that has been carefully built over the past several years.

The Evolution of Community Risk Reduction in Illinois

Illinois's commitment to Community Risk Reduction as a statewide strategy emerged from a pivotal convening in December 2019, when fire service leaders from organizations and agencies across the state gathered to examine what CRR should look like in Illinois. Through a structured SWOT analysis conducted during that session, participants identified a critical asset: Illinois possesses 14 state agencies and numerous fire service organizations with robust networking capabilities, collectively positioned to reach the state's 1,130 fire departments and the communities they serve. This network capacity was recognized as both a significant strength and an unrealized opportunity.

From that foundational meeting, the Illinois CRR Stakeholder Task Force was born. The Illinois Fire Chiefs Association (IFCA) was designated as the lead organization to champion CRR efforts, with Marsha Giesler serving as Task Force Leader, while the Office of the State Fire Marshal (OSFM) provided critical financial support through grant funding to the Illinois Fire Service Institute (IFSI) for the development of foundational Community Risk Reduction training and education. This collaborative structure, combining the advocacy voice of fire chiefs, the educational capacity of IFSI, and the regulatory authority of the OSFM, created a robust framework for promoting CRR across Illinois.

Illinois CRR Stakeholder Task Force Membership

Founding Members	Members Joined After Inception
Illinois Fire Chiefs Association (<i>Task Force Leader</i>)	100 Club of Illinois
Office of the Illinois State Fire Marshal	Illinois Fire Safety Alliance / Camp I Am Me
Illinois Fire Service Institute	Red Cross of Illinois
Associated Firefighters of Illinois	Illinois Fire Service Administrative Professionals
Mutual Aid Box Alarm System	Illinois Department of Public Health
Illinois Association of Fire Protection Districts	Illinois Fall Prevention Coalition
Illinois Firefighters Association	Illinois Municipal League
Chicago Fire Department	Northern Illinois Fire Inspectors Association
International Association of Arson Investigators	Northern Illinois Alliance of Fire Protection Districts
Illinois Professional Firefighters Association	Joliet Fire Department
Illinois Society of Fire Service Instructors	Peoria Fire Department
Illinois Fire Inspectors Association	Romeoville Fire Department
	Plainfield Fire Protection District
	Greater Round Lake Fire Protection District
	Springfield Fire Department
	Palatine Fire Department
	Countryside Fire Protection District
	Libertyville Fire Department
	O'Fallon Fire Department
	North Palos Fire Protection District
	Arlington Heights Fire Department
	Bloomington Fire Department
	Lockport Township Fire Protection District

Founding Members	Members Joined After Inception
	Homer Township FPD
	Romeoville FD
	Urbana FD

The Illinois CRR Stakeholder Task Force worked diligently to operationalize a mission statement that captured the essence of their collective vision: "Promote the importance of Risk Reduction in Illinois by inspiring community ownership and providing coordinated resources." This mission acknowledged that sustainable CRR requires three essential elements: a cultural shift in how communities view fire service and risk management, widespread access to resources and technical assistance, and coordinated efforts that allow fire departments to learn from and support one another.

By 2024, after several years of development and implementation, the task force leadership determined that CRR efforts would be best positioned for long-term sustainability and impact under the formal structure of the Office of the State Fire Marshal. This transition moved CRR from a collaborative initiative to an embedded state function, ensuring consistent funding, sustained attention, and integration with broader state fire service policy and planning. The team-based collaborative approach established by the stakeholder task force remains central to OSFM's strategy, as the office continues to work with all state fire organizations, fire departments, and community partners to promote CRR, provide education and technical assistance, and distribute resources to support local implementation.

It is within this context of sustained institutional commitment and collaborative organizational infrastructure that the Illinois Statewide Risk Assessment is presented. This document represents the next logical step in Illinois's CRR evolution, moving from building organizational capacity to building the evidence base that will guide strategic action across all 102 Illinois counties.

Methodology, Data Sources, and Purpose

The Illinois Statewide Risk Assessment draws upon a rigorous multi-source data collection methodology designed to provide the most accurate, comprehensive, and current picture of fire risk across the state. The primary data sources include the United States Census Bureau's American Community Survey (ACS), which provides detailed demographic,

socioeconomic, housing, and population data at multiple geographic levels; the United States Fire Administration (USFA) and National Fire Incident Reporting System (NFIRS), which supply incident-level fire data across Illinois departments; the Illinois Office of the State Fire Marshal; and local fire departments throughout the state.

Fire-related injury and fatality data required integration of multiple sources to achieve comprehensive coverage. The USFA maintains the National Fire Incident Database, which includes civilian fire casualty information reported through NFIRS. To address potential underreporting and ensure accuracy, these data were supplemented with information from the Illinois Department of Public Health vital statistics system, which records fire-related deaths identified through death certificates and medical examiner reports. Cross-referencing these datasets enabled verification of fatality counts and identification of demographic characteristics of fire victims. Additionally, the Centers for Disease Control and Prevention's Web-based Injury Statistics Query and Reporting System (WISQARS) provided comparative national data on fire-related injuries and deaths, enabling contextualization of Illinois's experience within the broader national landscape.

The analytical approach employed in this assessment utilized Geographic Information Systems (GIS) technology to visualize spatial patterns of risk and identify geographic clusters of elevated fire incidence or severity. Statistical analysis techniques included calculation of fire rates per capita and per housing unit, trend analysis to identify temporal patterns, and comparative analysis to benchmark Illinois's performance against national averages and peer states. Particular attention was given to identifying disparities in fire risk and outcomes across different demographic groups, socioeconomic strata, and geographic regions within Illinois, recognizing that fire risk is not uniformly distributed but rather concentrates in specific populations and places.

While this edition of the statewide risk assessment is grounded in legacy NFIRS data, future revisions will progressively incorporate data from the National Emergency Response Information System (NERIS), the next-generation federal incident reporting platform currently in phased national deployment. As NERIS adoption expands across Illinois fire departments, its enhanced data architecture and standardized reporting fields will strengthen the analytical foundation of subsequent assessment cycles, enabling more precise measurement of changes in the statewide risk landscape and providing a more robust framework for evaluating the effectiveness of CRR program delivery over time.

Purpose and Intended Outcomes

The primary purpose of this Statewide Risk Assessment is to provide a comprehensive, evidence-based foundation for strategic decision-making regarding Community Risk

Reduction across Illinois. By systematically analyzing risk patterns at the state level, this assessment enables stakeholders to move beyond anecdotal evidence and reactive responses toward proactive, targeted prevention strategies grounded in empirical data. Specifically, this assessment is intended to inform decisions about where state and local resources should be prioritized, which communities most urgently need technical assistance and support for developing local CRR initiatives, which prevention and mitigation strategies have the greatest potential for reducing fire injuries and fatalities in Illinois, and how state agencies and fire organizations should coordinate their efforts to achieve maximum impact.

The collaborative spirit that launched Illinois's Community Risk Reduction initiative in 2019 continues through this assessment and the implementation planning that will follow. Reducing fire risk requires the coordinated efforts of state agencies, local fire departments, community organizations, elected officials, and citizens. No single entity possesses all the resources or authority necessary to address the complex factors that contribute to fire risk. In that regard, it is important to clarify the regulatory context within which this assessment operates. The NFPA 101 Life Safety Code, 2015 Edition, has been adopted as the State Fire Code. The Office of the Illinois State Fire Marshal has jurisdiction over all state-owned, leased, or licensed facilities and shares concurrent jurisdiction with local Authorities Having Jurisdiction. The OSFM has no authority over the operations of the Illinois fire service. This assessment is therefore offered not as a directive but as a shared resource, one intended to support and strengthen local decision-making rather than supplant it. By working together, guided by a shared understanding of the challenges documented in this assessment, Illinois's fire service community can significantly reduce the burden of fire on the state's residents and build more resilient communities across all 102 counties.

The ultimate measure of this assessment's success will not be the comprehensiveness of its data or the sophistication of its analysis, but rather the extent to which it catalyzes meaningful action that reduces fire-related death, injury, and property loss across Illinois. Readers are encouraged to approach this document not merely as a technical report but as a strategic planning resource and call to action, one grounded in the firm conviction that data-driven decisions save lives.

Illinois Fire Service Profile

The State of Illinois is served by one of the most extensive and organizationally diverse fire service networks in the United States. According to the most current data extracted directly from the U.S. Fire Administration's National Fire Department Registry, Illinois has 1,107 registered fire departments operating across all 102 counties, from the dense urban core of the Chicago metropolitan area to rural townships across the southernmost reaches of the state. Of those departments, 995 reported incident data to the National Fire Incident Reporting System (NFIRS) in 2023, representing a statistically robust base for statewide risk analysis. Illinois accounts for 4.1% of all registered fire departments and 4.3% of all career firefighters in the United States, underscoring the state's significant presence within the national fire service landscape. [1, 2]



Illinois's registered fire service is collectively staffed by 39,876 active firefighters, including career, volunteer, and paid-per-call personnel, supported by an additional 2,415 non-firefighting civilian and volunteer staff, bringing total registered fire service personnel to 42,291 statewide. These agencies operate from a network of 1,868 fire stations distributed across all 102 counties.

Department Classification and Distribution

The Illinois fire service encompasses the full spectrum of staffing models defined by the National Fire Protection Association (NFPA). Department type is determined by the proportion of career to volunteer personnel, in accordance with NFPA classification definitions utilized by the USFA registry. [1]

Volunteer departments (100% volunteer staffing) constitute 65.4% of all registered



Illinois fire departments, representing 724 agencies. These departments form the essential backbone of fire protection across the state's predominantly rural and small-town communities, where full-time career staffing is economically or logistically infeasible.



Mostly volunteer departments (1% to 50% career staffing) account for 14.0%, representing 155 departments. These combination agencies rely primarily on volunteer labor but supplement with some paid staffing, frequently for daytime coverage, administrative functions, or specialized EMS roles.

Mostly career departments (51% to 99% career staffing) represent 6.1%, covering 68 departments, typically serving mid-size suburban communities where career personnel provide core coverage supplemented by paid-per-call or part-time staff.

Career departments (100% career staffing) constitute 14.4% of Illinois fire departments, representing 160 agencies. These are concentrated in the City of Chicago, its immediate suburban communities, and larger downstate cities.

When viewed exclusively through the lens of local fire departments and districts, excluding federal, military, private, and contract agencies, the 1,074 local agencies break down as: Volunteer 66.8% (717), Mostly Volunteer 14.0% (150), Career 13.0% (140), and Mostly Career 6.2% (67).

Compared to national averages, Illinois has a notably higher proportion of career and mostly career departments. Nationally, career departments represent 9.6% and mostly career departments 5.1% of all registered agencies, totaling 14.7% combined. Illinois's combined career and mostly career rate of 20.5% is nearly six percentage points above the national average, reflecting the outsized influence of the Chicago metropolitan region's substantial career fire service infrastructure.

Personnel

The 1,107 registered Illinois fire departments are collectively staffed by 15,862 firefighters, representing 39.8% of all active Illinois firefighters and 4.3% of all career firefighters nationwide. The Chicago Fire Department alone employs 4,881 career firefighters, making it one of the largest career fire departments in the United States and accounting for 30.8% of all career firefighter positions in Illinois. Volunteer firefighters' number 13,415, representing 33.6% of all active Illinois firefighters, serving predominantly in rural and small-community departments. Paid-per-call firefighters' number 10,599, representing 26.6% of the total, reflecting the hybrid staffing models common in Illinois's large combination and mostly volunteer sector.

The ten largest career fire departments in Illinois by active career firefighter count are as follows: Chicago Fire Department, 4,881 (Cook County); Rockford Fire Department, 272 (Winnebago County); Joliet Fire Department, 214 (Will County); Aurora Fire Department, 213 (Kane County); Springfield Fire Department, 212 (Sangamon County); Peoria Fire Department, 201 (Peoria County); Naperville Fire Department, 192 (DuPage County); Schaumburg Fire Department, 138 (Cook County); Elgin Fire Department, 134 (Kane County); and Bloomington Fire Department, 119 (McLean County). [1]

Fire Stations and Geographic Distribution

Illinois's 1,107 registered fire departments operate from 1,868 fire stations statewide. Most departments (719, or 64.9%) operate from a single station, 235 departments (21.2%)



operate two stations, and 150 departments (13.5%) operate three or more stations. Multi-station departments are concentrated in urban and suburban counties, while single-station agencies predominate in rural areas.

The county with the largest number of registered fire departments is Cook County with 119 departments, reflecting the extraordinary density of the Chicago metropolitan area and its surrounding suburban municipalities and fire protection districts. The next highest concentrations are found in Madison County (38), Saint Clair County (37), Lake County

(29), DuPage County (28), and Will County (28), all counties within or adjacent to major metropolitan areas. By contrast, several of Illinois's most sparsely populated counties are served by only two or three registered agencies, illustrating the profound disparity in fire service density and resource availability across the state's 102 counties.

Additionally, 598 of Illinois's registered fire departments serve as the primary agency responsible for emergency management in their respective communities, representing 54.0% of all registered agencies, underscoring the all-hazards, multi-mission role that Illinois fire departments play beyond fire suppression and EMS.

Organizational Structure Under Illinois Law

The 1,107 registered Illinois fire departments encompass three primary organizational governance structures. Fire Protection Districts, established under the Illinois Fire Protection District Act, operate as independent units of local government with dedicated taxing authority and elected or appointed governing boards, created specifically to provide fire protection to a defined geographic service area without regard to municipal boundaries. Municipal Fire Departments operate as departments of city, village, or township government. A smaller number of agencies operate under varied models including private or industrial fire brigades (11), regional transportation authority or airport fire departments (5), contract fire departments (5), federal Department of Defense fire departments (4), and other organizational structures.

At minimum 60% of state fire station rehabilitation and construction grant funds are reserved by statute for volunteer or combination fire departments, a policy recognition of the financial constraints faced by non-career agencies and the critical role they play in protecting Illinois communities. [3]

Regulatory Oversight, Certification, and Training

The Illinois fire service operates under the regulatory authority of the Office of the State Fire Marshal (OSFM), authorized under the Illinois Fire Protection Training Act (50 ILCS 740) to establish firefighter training standards and certification programs and to assist local governmental agencies in elevating fire service personnel competency statewide. [3] Firefighter certification is administered through the OSFM's Division of Personnel Standards and Education in alignment with NFPA professional qualification standards, including NFPA 1001 (Standard for Fire Fighter Professional Qualifications) and NFPA 1021 (Standard for Fire Officer Professional Qualifications). The foundational Illinois Basic Operations Firefighter certification requires a minimum of 180 instructional hours, passage of both State Written and State Practical Examinations, and completion of Hazardous Materials Operations certification requirements.

The Illinois Fire Service Institute (IFSI) at the University of Illinois Urbana-Champaign serves as the statutorily established State Fire Academy for Illinois and is the oldest continuous fire training institution in the United States. Since 1925, first responders from across the state, the nation, and the



world have relied on IFSI to deliver hands-on, innovative, and top-quality training, education, and research. Each year, IFSI reaches approximately 60,000 students through the delivery of more than 1,600 courses. Its Firefighting, Special Operations, and Leadership and Development Programs are at the forefront of national training standards. To consistently deliver the highest quality and portable training and education, IFSI maintains accreditation with the National Board of Fire Service Professional Qualifications (Pro Board) and the International Fire Service Accreditation Congress (IFSAC). The OSFM partners with IFSI in delivering certification programs statewide, and in Fiscal Year 2023 distributed more than \$6.2 million in grants for firefighter training, including \$1.3 million directly to IFSI. [4]

IFSI also serves as a national leader in life safety research, dedicated to improving the work, health, and safety of first responders through action-oriented studies designed to produce real-world results that directly benefit firefighters and emergency personnel. IFSI Research conducts projects across multiple environments, including the Champaign training grounds, the campus of the University of Illinois Urbana-Champaign, and partner facilities throughout the country. Through this hands-on, collaborative approach, IFSI continues to advance critical safety practices and support those who serve on the front lines of emergency response in Illinois and beyond.

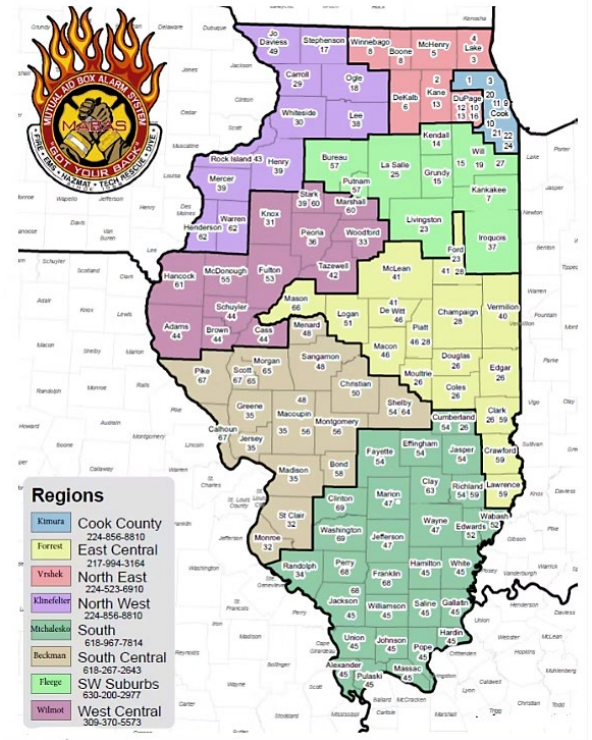
In 2024, Illinois fire departments responded to 9,860 carbon monoxide-related incidents statewide, illustrating the broad all-hazards service profile expected of Illinois firefighters beyond traditional fire suppression. [5]

Mutual Aid: The Mutual Aid Box Alarm System (MABAS)

The defining structural feature of Illinois's fire service coordination framework is the Mutual Aid Box Alarm System (MABAS), a statewide mutual aid response system for fire, EMS, and specialized operations. Established in 1968 by Captain Donald Kuhn of the Elk Grove Village Fire Department, MABAS was designed to automate and standardize resource sharing among fire departments when local capabilities are exceeded. From its origins as a regional cooperative, MABAS has expanded into a statewide network organized into 69 Divisions within 8 Regions across Illinois, with partner agency relationships in Wisconsin, Indiana, Michigan, Iowa, and Missouri. [6]

MABAS operates through standardized Box Alarm Cards, pre-designed run cards that specify the exact apparatus, staffing, and specialized resources to be dispatched at escalating alarm levels. All MABAS agencies operate on a common radio frequency, the Interagency Fire Emergency Radio Network (IFERN) at 154.265 MHz, and adhere to uniform standards for incident command, equipment staffing, fireground safety, and on-scene terminology, ensuring seamless interoperability among crews from different jurisdictions. The system responds to more than 800 extra-alarm incidents annually throughout Illinois.

A Memorandum of Understanding between MABAS and the Illinois Emergency Management Agency (IEMA), first executed January 16, 2001, and updated in 2006, designated MABAS as the state's official mechanism for fire, EMS, and special operations resource mobilization under a gubernatorial Declaration of Disaster. MABAS maintains statewide specialized capabilities including 40+ hazardous materials teams, 26 underwater rescue and recovery teams, 39 technical rescue teams, and a state-sponsored Urban Search and Rescue (USAR) team. The Regional Emergency Dispatch (RED) Center in Northbrook, Illinois serves as MABAS's statewide communications hub and designated dispatch center for all governor-directed mutual aid activations. The City of Chicago operates as MABAS Division 9, fully integrated into the statewide framework. In recognition of MABAS's central role in Illinois fire service coordination, the OSFM works closely with MABAS leadership and provides annual funding from the Illinois Fire Prevention Fund to support the system's ongoing operational and administrative capacity.



The Illinois Fire Service in National Context

Illinois's 1,107 registered fire departments represent 4.1% of all registered fire departments nationally. The state ranks 5th in the nation in total registered department count, trailing only Pennsylvania (1,804), New York (1,660), Texas (1,520), and Ohio (1,137). Illinois falls within FEMA Region V, encompassing Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin, which accounts for 20.1% of all U.S. registered fire departments, the largest share of any FEMA region. The state's 15,862 career firefighters represent 4.3% of the national career firefighter total of 372,314, a disproportionately large share that reflects the scale and staffing depth of the Chicago metropolitan fire service. [1, 2]

The breadth and complexity of the Illinois fire service, from one of the world's largest urban career fire departments to single-station volunteer companies protecting isolated rural communities, demands a differentiated, evidence-based approach to Community Risk Reduction. No single program, prevention model, or resource allocation framework can adequately address the full spectrum of risk across this diverse landscape. The Illinois Statewide Risk Assessment provides the stratified, data-driven analysis necessary to guide the OSFM, MABAS, regional organizations, and local departments in deploying prevention and preparedness resources where the evidence demonstrates they are needed most.

References

1. U.S. Fire Administration. (2025a). National Fire Department Registry, Illinois extract [Data file]. <https://apps.usfa.fema.gov/registry/>
2. U.S. Fire Administration. (2025b). National Fire Department Registry, National extract [Data file]. <https://apps.usfa.fema.gov/registry/>
3. Illinois General Assembly. (2024). Illinois Fire Protection Training Act, 50 ILCS 740; Fire station rehabilitation and construction grants, 41 Ill. Admin. Code Part 296. <https://www.ilga.gov/>
4. Office of the Illinois State Fire Marshal. (2023). Fiscal year 2023 annual report. <https://www.ilga.gov/documents/reports/ReportsSubmitted/4533RSGAEmail9532RSGAAttachAnnual%20Report%20Fiscal%202023%20final.pdf>
5. Office of the Illinois State Fire Marshal. (2025). Carbon monoxide awareness 2024 statistics. <https://sfm.illinois.gov>
6. MABAS. (2025). What is MABAS? <https://www.mabas-il.org/about/>

7. National Fire Protection Association. (2024). NFPA 1710: Standard for the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments. NFPA.
8. National Fire Protection Association. (2024). NFPA 1720: Standard for the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by volunteer fire departments. NFPA.

State of Illinois Community Profile

Geographic Overview

The State of Illinois is located in the East North Central region of the Midwestern United States, bordered by Wisconsin to the north, Iowa and Missouri to the west, Kentucky to the southeast, and Indiana to the east.



Illinois also shares a northeastern water boundary with Michigan via Lake Michigan. The state's western boundary is defined almost entirely by the Mississippi River, while its southeastern and southern boundaries follow the Wabash River and Ohio River, respectively. The confluence of the Ohio and Mississippi Rivers at the state's southernmost tip, in Alexander County, marks the lowest point in Illinois at an elevation of 279 feet above sea level. [9, 26]

Illinois encompasses a total land area of 57,918 square miles, spanning approximately 390 miles from its northern border to its southernmost tip and 210 miles at its greatest east-west width. The state is organized into 102 counties, ranging from the highly urbanized Cook County, home to the City of Chicago and the largest county in the state by population, to sparsely populated rural counties in the central and southern regions. McLean County is the largest county by land area at 1,184 square miles. Illinois's geographic position at the continental interior places it at the confluence of major river systems, Great Lakes access, and overland transportation corridors, a combination that has made the state one of the premier transportation and logistics hubs in North America.

Topography and Natural Regions

Illinois is commonly described as a flat, prairie state, and while that characterization is largely accurate for the dominant central region, the state's topography is considerably more varied than its popular image suggests. Illinois touches four major physiographic provinces of North America, each presenting distinct geographic, ecological, and emergency response characteristics relevant to community risk assessment. [19]

Northern Illinois is dominated by the Chicago metropolitan area, featuring poorly developed natural drainage, abundant marshes, natural lakes, and glacial moraines that

create subtle but consequential terrain variation. Along the Lake Michigan shoreline, Illinois maintains 63 miles of Great Lakes coastline, a unique geographic asset and hazard factor in the northeast. In the extreme northwest, the Wisconsin Driftless Area creates rugged ridges and deep river valleys, hosting Charles Mound, the state's highest elevation at 1,235 feet (376 meters) above sea level near the city of Galena. [25]

Central Illinois represents the state's most dominant geographic character, the Grand Prairie Natural Division, a vast, largely flat plain formerly occupied by tallgrass prairie, now converted extensively to some of the most productive agricultural land in the world. The Central Plains account for approximately 90% of Illinois's total land area and are underlain by rich glacial till soils that have defined the state's agricultural identity. Major river corridors, including the Illinois River and Rock River, cut through this region, creating locally significant bluffs, floodplains, and backwater lakes. Springfield, the state capital, is situated on the high plain beside the Sangamon River in this central region. [27, 28]

Southern Illinois is geologically and ecologically distinct from the rest of the state. The Shawnee Hills, sometimes called the "Illinois Ozarks," rise in the southern region, ranging from 300 to 1,065 feet above sea level, creating a landscape of forested hills, valleys, sandstone bluffs, and scenic river corridors at significant variance with the flat central prairie. The Shawnee National Forest, one of the largest federally protected forest tracts in the region, anchors this area. The extreme southern tip of Illinois, the area historically known as "Little Egypt" near the confluence of the Ohio and Mississippi Rivers, lies within the Gulf Coastal Plain physiographic province, characterized by hilly terrain that flattens toward the Kentucky border. This region is also the area of Illinois most directly exposed to seismic hazard from the New Madrid Seismic Zone. [29]

Land Use

Land use in Illinois is defined by the extraordinary dominance of agriculture. Cropland accounts for approximately 75 to 76 percent of the state's total land area, a proportion without parallel among major U.S. states. According to the USDA 2022 Census of Agriculture, Illinois has 26 to 27 million acres of



farmland across 71,123 farms, with an average farm size of 370 acres. Approximately 89% of the state's cropland is classified as prime farmland, ranking Illinois third nationally in total prime farmland acreage. [8]

The remaining land area encompasses urban and suburban development concentrated in the northeastern Chicago metropolitan corridor and in mid-sized cities including Rockford, Aurora, Joliet, Naperville, Elgin, Springfield, Peoria, Champaign-Urbana, and the Metro-East region (Belleville, Edwardsville) adjacent to St. Louis, Missouri. The Chicago metropolitan area, comprising the City of Chicago and its collar counties of DuPage, Kane, Lake, McHenry, and Will, represents one of the most densely developed and economically complex urban environments in the United States, presenting fire and emergency service challenges of a fundamentally different character than the rural agricultural communities that constitute the majority of the state's geographic footprint.

Protected lands include the Shawnee National Forest in southern Illinois, several state forests, more than 50 state parks and recreation areas, and numerous conservation areas managed by the Illinois Department of Natural Resources. The Illinois and Michigan Canal National Heritage Corridor, the Cache River Wetlands, and extensive Mississippi and Illinois River bottomland conservation areas represent significant natural land features with associated ecological and emergency management implications. [9]

Economy

Illinois maintains the fifth-largest economy in the United States and the eighteenth-largest economy in the world, with a 2024 gross domestic product (GDP) of \$1.148 trillion. [1, 21] The state's economy is one of the most structurally diversified in the nation, spanning finance, manufacturing, agriculture, logistics, healthcare, higher education, and technology, though the Chicago metropolitan area disproportionately anchors economic activity, accounting for approximately 77% of the state's total wages as of the most recent comprehensive analysis.



Finance and Professional Services constitute the single largest economic sector. Chicago is one of the world's preeminent global financial centers, home to the Chicago Mercantile

Exchange, the world's largest futures exchange, and housing the headquarters or major operations of Citadel LLC, CNA Financial, Discover Financial Services, Morningstar, Aon, Willis Towers Watson, and Nuveen, among dozens of other financial institutions. [1, 13]

Manufacturing remains a critical economic pillar, contributing approximately \$110.7 billion to Illinois GDP in 2024 and ranking the state third nationally in manufacturing output. Key manufacturing industries include food processing, chemical manufacturing, machinery (led by Caterpillar, headquartered in Peoria and Deerfield), fabricated metals, transportation equipment, and computer and electronic products. John Deere's manufacturing presence in the Quad Cities (Moline and East Moline) represents another anchor of the state's industrial heritage. Illinois's manufacturing GDP reached \$139 billion in 2024. [30]



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Agriculture provides the productive foundation underlying much of Illinois's rural and downstate economy. Illinois is the number one soybean-producing state in the nation and the number two corn-producing state, together accounting for 15% of all U.S. soybean production and 13% of all U.S. corn production. In 2024, Illinois farmers set a new state corn yield record of 217 bushels per acre and a new state soybean production record of 688 million bushels harvested across 10.75 million acres. The state ranks third nationally in agricultural exports, shipping \$8.2 billion in commodities annually to international markets, representing 6% of all U.S. agricultural exports. Market value of agricultural products sold in Illinois totaled more than \$26.4 billion in the 2022 Census of Agriculture. [8, 17, 6]

Energy represents a significant and sometimes overlooked element of Illinois's economy. The state is the fourth-largest crude oil refiner in the nation, with refinery capacity capable of processing nearly one million barrels of oil per day, making the energy sector a critical infrastructure consideration for the fire service. Illinois also ranks as one of the nation's leading states in nuclear power generation, ethanol production, and biodiesel production. [30, 8]

Emerging Technology sectors are expanding, particularly in the Chicago region and Champaign-Urbana. The Illinois Quantum and Microelectronics Park on Chicago's South

Side, with PsiQuantum as anchor tenant and IBM among early participants, and the Illinois Fermentation and Agriculture Biomanufacturing Tech Hub (iFAB) at the University of Illinois Urbana-Champaign, which received a \$51 million federal grant, represent significant growth investments in advanced manufacturing and high-technology industries. [2]

The economic dichotomy between Illinois's global-scale Chicago metropolitan economy and the predominantly agricultural downstate economy is a recurring theme with direct implications for fire department resources, risk profiles, community vulnerability, and the capacity of local governments to fund robust emergency services. This economic disparity is one of the primary structural factors shaping the need for a differentiated, regionally stratified approach to community risk reduction statewide.

Transportation Infrastructure

Illinois functions as the transportation hub of North America, a designation grounded in its geographic position at the confluence of the continent's most important highway, rail, air, and waterway corridors. The state's multimodal transportation infrastructure is both a major economic asset and a significant driver of fire and emergency service risk, creating exposure to hazardous materials incidents, mass casualty transportation accidents, and demand for specialized rescue capabilities.



Highways and Roadways. The Illinois Department of Transportation (IDOT) maintains a statewide highway system currently undergoing the largest infrastructure capital investment in state history. The Rebuild Illinois program, enacted in 2019, has committed \$45 billion to transportation improvements across all modes and all 102 counties over six years. Through the end of 2025, Rebuild Illinois delivered nearly \$20.8 billion in completed improvements to more than 21,300 lane miles of highway and 815 bridges statewide. In October 2025, IDOT released its largest-ever multi-year construction program, \$50.6 billion over fiscal years 2026 to 2031, eclipsing all prior records. [12] Major interstate corridors traversing Illinois include I-90, I-94, I-290, I-88, I-80, I-55, I-57, I-64, I-70, I-72, and I-74, creating a dense network of high-volume freight and passenger

routes through both urban and rural areas. The value of freight shipments to and from Illinois businesses is projected to grow from \$1 trillion in 2023 to \$2 trillion by 2050, with 79% of domestic trade moved by truck. [20]

Freight and Passenger Rail. Chicago is the freight rail capital of North America. Six of the seven Class I railroads in the United States converge on Chicago, making it the single most critical rail interchange point on the continent. This concentration of rail activity creates commensurate hazardous materials transport risk, as petroleum products, chemicals, grain, and industrial commodities move through the state by rail in significant volumes. The state's FY2025-2030 multimodal program allocated \$2.54 billion for freight and passenger rail improvements. [10, 31] Amtrak operates intercity passenger rail service from Chicago's Union Station to Springfield, Carbondale, Champaign-Urbana, Quincy, and multiple out-of-state destinations, providing another dimension of transportation infrastructure requiring specialized mass casualty and evacuation planning capabilities.

Aviation. Illinois is served by a comprehensive network of commercial, general aviation, and military airports. O'Hare International Airport in Chicago, one of the busiest airports in the world, and Midway International Airport serve as the dominant commercial aviation gateways, collectively handling tens of millions of passengers



annually and providing critical air cargo infrastructure. Regional commercial airports serve Rockford, Peoria, Springfield, Champaign, Decatur, Moline (Quad Cities), and other metropolitan areas across the state. In FY2024, major Illinois airports received \$211.9 million in federal Airport Improvement Program funding, with an additional \$58.9 million in capital investments for terminal, runway, and facility improvements. [20, 10] IDOT's FY2025-2030 program designated \$1.57 billion for aviation infrastructure. [10]

Waterways. Illinois's position at the confluence of the Mississippi, Ohio, Illinois, and Wabash Rivers, combined with Lake Michigan access, makes waterborne freight a significant economic and hazard dimension. The Illinois Waterway, connecting Lake Michigan through the Chicago Sanitary and Ship Canal to the Illinois River and Mississippi River, allows commercial barge traffic to move inland from the Great Lakes to

the Gulf of Mexico. Port activity along the Mississippi and Illinois Rivers supports agricultural commodity exports, petroleum, and industrial goods. The state's FY2025-2030 multimodal program included \$160 million for ports and waterways investment. [10]

Public Transit. Urban transit services are concentrated in the Chicago metropolitan area, where the Chicago Transit Authority operates one of the largest public transit systems in the United States, including the elevated and subway rail system and extensive bus networks. The Regional Transportation Authority coordinates transit across the six-county northeastern Illinois region, also encompassing Metra commuter rail and Pace suburban bus services. Statewide, urban and rural transit agencies reported \$9.6 billion in revenues in 2023. [20] IDOT's FY2025-2030 program allocated \$7.5 billion for transit investment. [10]

Agriculture and Rural Land Use: Implications for the Fire Service

The profound agricultural dominance of Illinois land use, 75 to 76% of the state's total area dedicated to farming, creates a set of fire and emergency service conditions that are central to any statewide risk assessment. Rural agricultural communities in Illinois typically rely on volunteer or mostly volunteer fire departments operating from single-station facilities covering large geographic service areas. Agricultural operations generate recurring fire and rescue risk across the state's 70,000+ farms, including grain storage and handling facilities, grain elevator explosions, agricultural machinery fires, anhydrous ammonia and pesticide incidents, and seasonal field and structure fires during harvest.

Illinois's position as the nation's leading ethanol producer, using 274 million bushels of corn annually, and its substantial petroleum refining capacity create industrial fire hazard profiles of national significance. The petroleum refining complex in the Wood River/Roxana area of Madison County represents one of the most concentrated industrial fire hazard environments in the Midwest. Chemical manufacturing, grain elevator operations, and ethanol production facilities are distributed across both urban and rural counties, requiring specialized hazardous materials and industrial fire response capabilities that are not uniformly available across the state's 1,107 fire departments. [8, 30]

Critical Infrastructure and Built Environment

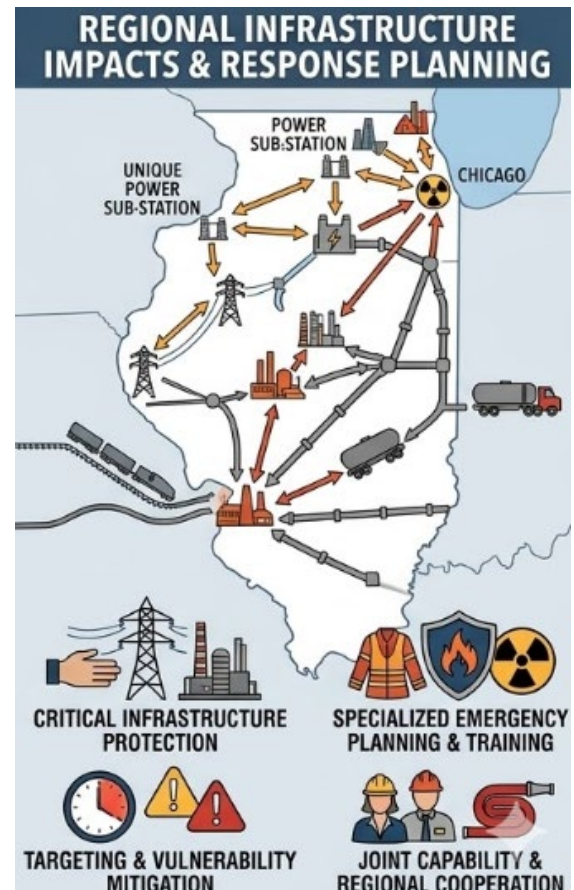
Illinois's critical infrastructure, encompassing utilities, communications, water systems, energy production, and essential facilities, reflects the state's dual character as both a major industrial nation-state economy and a predominantly rural agricultural landscape.

Energy Generation and Distribution. Illinois is one of the nation's leading nuclear power states, with multiple operating commercial nuclear facilities generating a substantial proportion of the state's electricity. Nuclear power plants and high-voltage transmission infrastructure represent both critical assets and potential emergency response targets requiring specialized planning and capability. The state's petroleum refining capacity, ranking fourth nationally, concentrated primarily in the Chicago area and Metro-East region, represents significant industrial fire and hazardous materials exposure for local and regional fire service response. [30]

Water Supply and Flood Control. Inland water management is a significant component of Illinois's critical infrastructure. The Chicago Area Waterway System, a network of canals, locks, and reservoirs connecting Lake Michigan to the Illinois River, is both a critical transportation and water supply asset and a source of flood management complexity. Flood control infrastructure along the Mississippi River bottomlands, including levee systems and retention structures, protects agricultural land and communities from major riverine flooding. The Illinois River, Fox River, Rock River, and Kaskaskia River systems all have histories of significant flood events requiring emergency response and evacuation coordination. [28, 9]

Telecommunications. Illinois maintains a statewide public safety communications infrastructure through the Illinois Statewide Terrorism and Intelligence Center (STIC) and the Illinois Law Enforcement Alarm System (ILEAS). The Illinois State Police operates the Illinois Public Safety Agency Network, and MABAS provides a dedicated statewide fire service radio network through the IFERN frequency (154.265 MHz). However, rural telecommunications infrastructure disparities, including gaps in broadband access and cellular coverage in portions of central and southern Illinois, affect both community resilience and fire service operational capabilities in lower-density areas.

Healthcare Facilities. Illinois is served by a robust network of healthcare facilities concentrated in urban centers but also distributed through regional hospital systems across downstate communities. The Illinois Health and Hospital Association reports approximately 200 hospitals operating in Illinois, anchored by major academic medical



centers including the University of Chicago Medical Center, Northwestern Memorial Hospital, Rush University Medical Center, and the University of Illinois Hospital in Chicago; OSF HealthCare in Peoria; HSHS St. John's Hospital and Memorial Medical Center in Springfield; and Carle Foundation Hospital in Urbana. These facilities serve as critical resources for mass casualty management, trauma care, and behavioral health services in both routine emergency response and major disaster scenarios. Rural hospital closures and the consolidation of healthcare services in regional centers have increased emergency transport distances and call volume for EMS-providing fire departments in multiple downstate counties, amplifying both response burden and community vulnerability. [16]

Educational Institutions. Illinois is home to an extensive network of public and private educational institutions spanning pre-kindergarten through graduate and professional education. The Illinois State Board of Education (ISBE) oversees approximately 850 public school districts serving more than 1.9 million students in K-12 settings statewide. Higher



education is anchored by the University of Illinois System, along with Illinois State University in Normal, Northern Illinois University in DeKalb, Southern Illinois University campuses in Carbondale and Edwardsville, Loyola University Chicago, DePaul University, Northwestern University in Evanston, the University of Chicago, and a broad network of 48 Illinois community college campuses serving all 102 counties. Educational facilities represent a significant category of assembly occupancy with life safety implications for fire and emergency services, particularly given the breadth of specialized occupancies ranging from research laboratories to large athletic venues. [18, 7]

References

1. Bureau of Economic Analysis, U.S. Department of Commerce. (2025). Gross domestic product by state: Illinois 2024. <https://fred.stlouisfed.org/series/ILNGSP>

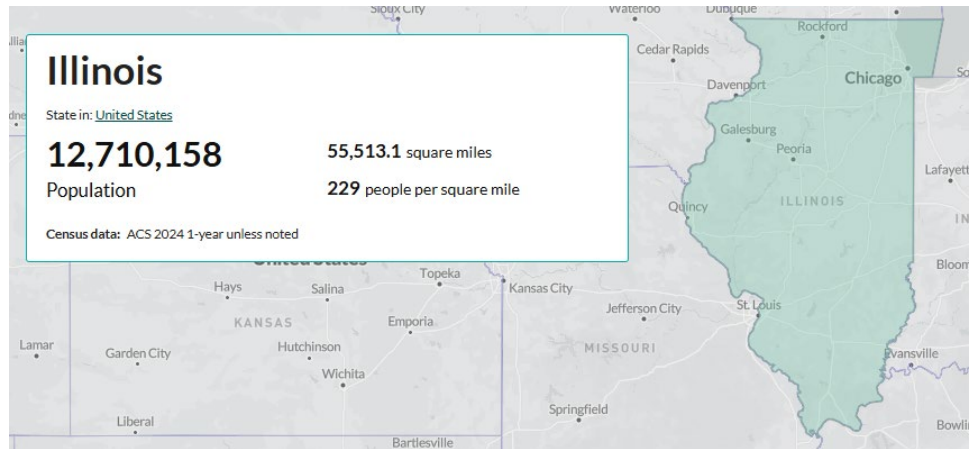
2. Commission on Government Forecasting and Accountability. (2025). State of Illinois economic forecast — Moody's Analytics 2025.
<https://cgfa.ilga.gov/Upload/2025StateofILEconomicForecast.pdf>
3. Crisis Equipped. (n.d.). These natural disasters can occur in Illinois.
<https://crisisequipped.com/what-natural-disasters-occur-in-illinois/>
4. Central United States Earthquake Consortium (CUSEC). (2006). New Madrid Seismic Zone catastrophic planning project. <https://cusec.org/new-madrid-seismic-zone/new-madrid-seismic-zone-catastrophic-planning-project/>
5. Elnashai, A. S., Cleveland, L. J., Jefferson, T., & Harrald, J. (2010). Impact of New Madrid Seismic Zone earthquakes on the central USA, Vol. 1 and 2. Mid-America Earthquake Center, University of Illinois at Urbana-Champaign.
<https://www.ideals.illinois.edu/items/14315>
6. Farm Flavor. (2024). Top Illinois agriculture facts from the 2024 Census of Agriculture. <https://farmflavor.com/illinois/top-illinois-agriculture-facts/>
7. Illinois Community College Board. (2024). About community colleges in Illinois.
<https://www.iccb.org>
8. Illinois Department of Agriculture. (2024). Facts about Illinois agriculture.
<https://agr.illinois.gov/about/facts-about-illinois-agriculture.html>
9. Illinois Department of Natural Resources. (2024). Natural division overview.
<https://dnr.illinois.gov/conservation/iwap/naturaldivisionoverview.html>
10. Illinois Department of Transportation. (2024). Rebuilding Illinois: IDOT revitalized, modernized transportation statewide in 2024.
<https://idot.illinois.gov/news/rebuilding-illinois--idot-revitalized--modernized-transportation.html>
11. Illinois Department of Transportation. (2024). New \$41 billion multi-year improvement program is largest in state history. <https://idot.illinois.gov/news/new--41-billion-multi-year-improvement-program-is-largest-in-sta.html>
12. Illinois Department of Transportation. (2025). IDOT in 2025: Rebuilding Illinois continues to improve mobility, safety and quality of life.
<https://idot.illinois.gov/news/idot-in-2025--rebuilding-illinois-continues-to-improve-mobility-.html>
13. Illinois Economic Development Corporation. (2025). Illinois investment guide 2024–25. <https://www.illinoisedc.org/resource/illinois-investment-guide-2024-25/>

14. Illinois Emergency Management Agency. (2013). New Madrid Seismic Zone — earthquake preparedness. <https://iemaohs.illinois.gov/preparedness/earthquake-newmadrid.html>
15. Illinois Emergency Management Agency. (2024). Illinois hazard mitigation plan. <https://iema.illinois.gov>
16. Illinois Health and Hospital Association. (2024). About Illinois hospitals. <https://www.team-iha.org>
17. Illinois Soybean Association. (2025). Illinois soybean farmers achieve record-breaking harvest in 2024. <https://www.ilsoy.org/illinois-soybean-farmers-achieve-record-breaking-harvest-in-2024/>
18. Illinois State Board of Education. (2024). Illinois education facts. <https://www.isbe.net>
19. Northern Illinois University Libraries. (2004). The geographic setting: Physiographic divisions of Illinois. <https://www.lib.niu.edu/2004/iht1120402.html>
20. Transportation Infrastructure Information. (2024). Illinois infrastructure at-a-glance. <https://transpoinfo.org/state/IL>
21. U.S. Bureau of Economic Analysis. (2025). Real gross domestic product: All industry total in Illinois. Federal Reserve Bank of St. Louis. <https://fred.stlouisfed.org/series/ILRQGSP>
22. U.S. Department of the Interior. (2007). New Madrid Seismic Zone — congressional testimony. https://www.doi.gov/ocl/hearings/110/madridseismiczone_120407
23. U.S. Geological Survey. (2024). The New Madrid Seismic Zone. <https://www.usgs.gov/programs/earthquake-hazards/new-madrid-seismic-zone>
24. USDA National Agricultural Statistics Service. (2024). 2022 Census of Agriculture: Illinois state profile. <https://www.nass.usda.gov>
25. World Atlas. (2024). Illinois maps and facts. <https://www.worldatlas.com/maps/united-states/illinois>
26. Study.com. (n.d.). Illinois geography facts. <https://study.com>
27. MapsofWorld. (2024). Illinois map and facts. <https://www.mapsofworld.com/usa/states/illinois/>

28. Ezilon Maps. (n.d.). Illinois physical map.
https://www.ezilon.com/maps/north_america/illinois-physical-maps.html
29. WhiteClouds. (2025). Illinois geography. <https://www.whiteclouds.com/3d-maps/illinois-map/>
30. Oreate AI. (2025). Illinois economy overview. <https://oreate.ai>
31. Illinois Railroad Association. (2024). Illinois railroads overview.
<https://www.ilrailroad.org>

State Demographic Profile

Demographic characteristics are among the most reliable and consistent predictors of fire risk at the community level. Age, income, housing age and tenure, race and ethnicity, educational attainment, disability



status, and social isolation are each independently associated with elevated fire fatality and injury rates in the peer-reviewed literature and confirmed by national fire loss data. At the statewide level, demographic analysis serves a different but complementary purpose: it identifies the geographic distribution of vulnerable populations, quantifies the magnitude of structural risk factors across Illinois's 102 counties and four analytical regions, and provides the empirical foundation for prioritizing CRR program investment where the compounding effects of multiple vulnerability indicators converge.

This section draws primarily on the U.S. Census Bureau's 2019–2023 American Community Survey (ACS) 5-year estimates, the most statistically reliable dataset for small-area comparisons across Illinois's 102 counties — supplemented by the 2024 Population Estimates Program and additional ACS subject tables. Where national benchmarks are cited, they derive from the same ACS release cycle to ensure comparability. Key data points are presented in the context of their fire and life safety implications, consistent with the statewide CRR analytical framework.

Population Overview and Trend

Total population

12.7M

6th most populous state

Median age

38.9

National median: 38.7

Median household income

\$81,702

National: \$81,604

Below poverty line

11.7%

Chicago: 18.5%

As of the 2024 Population Estimates Program, Illinois has a total resident population of 12,710,158, making it the sixth most populous state in the nation. The 2019–2023 ACS 5-year estimate places the population at 12,692,653, a figure reflecting a gradual but

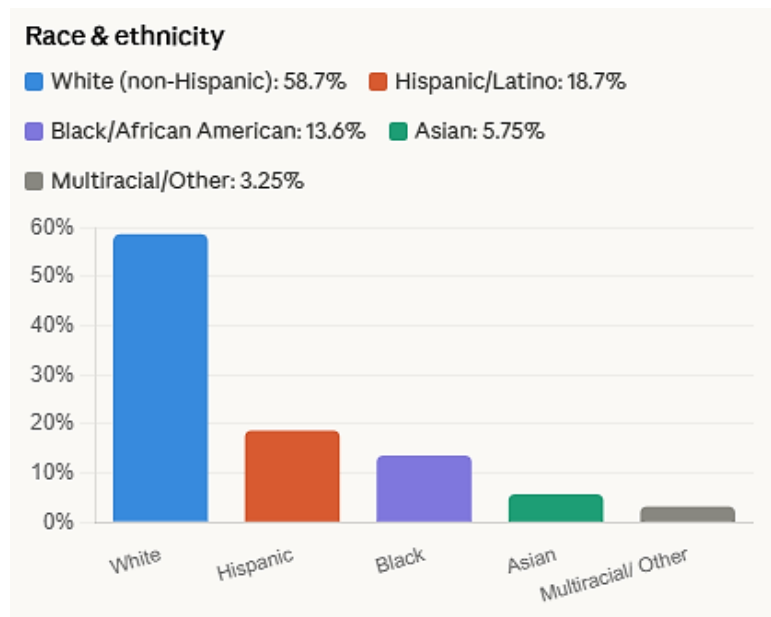
sustained decline from the state's peak population of approximately 12.87 million recorded in 2013. Between 2022 and 2023, Illinois experienced a population decline of approximately 0.5%, continuing a multi-year pattern of net outmigration that distinguishes the state from national growth trends (U.S. Census Bureau, 2024; Illinois-Demographics.com, 2024).

Illinois's population is heavily concentrated in the northeastern corner of the state. Cook County alone accounts for approximately 40% of the total state population, and the six-county Chicago metropolitan statistical area (Cook, DuPage, Kane, Lake, McHenry, and Will counties) represents approximately 65% of statewide population. This concentration has direct implications for fire service resource allocation: the majority of the state's absolute fire incidents occur in the northeast, while the highest per-capita rates of fire risk, driven by housing age, income vulnerability, and sparse rural service coverage, are concentrated in central and southern Illinois.

Population decline is not uniform across the state. Central and southern Illinois counties, particularly in the Mississippi River bottomland communities and the coalfield counties of Williamson, Franklin, Jefferson, and Saline, have experienced sustained multi-decade decline, resulting in aging housing stock, reduced local tax bases, consolidation or closure of fire departments, and growing ratios of elderly and economically vulnerable residents relative to the working-age population.

Racial and Ethnic Composition

Illinois is one of the most racially and ethnically diverse states in the Midwest. According to the 2023 ACS, the five largest racial and ethnic groups are: White (Non-Hispanic), 58.7%; Black or African American (Non-Hispanic), 13.6%; Hispanic or Latino (any race), approximately 18.7% when all Hispanic subgroups are combined; Asian (Non-Hispanic), 5.75%; and Multiracial/Two or More Races, approximately 5.7%. Non-English language use is significant:



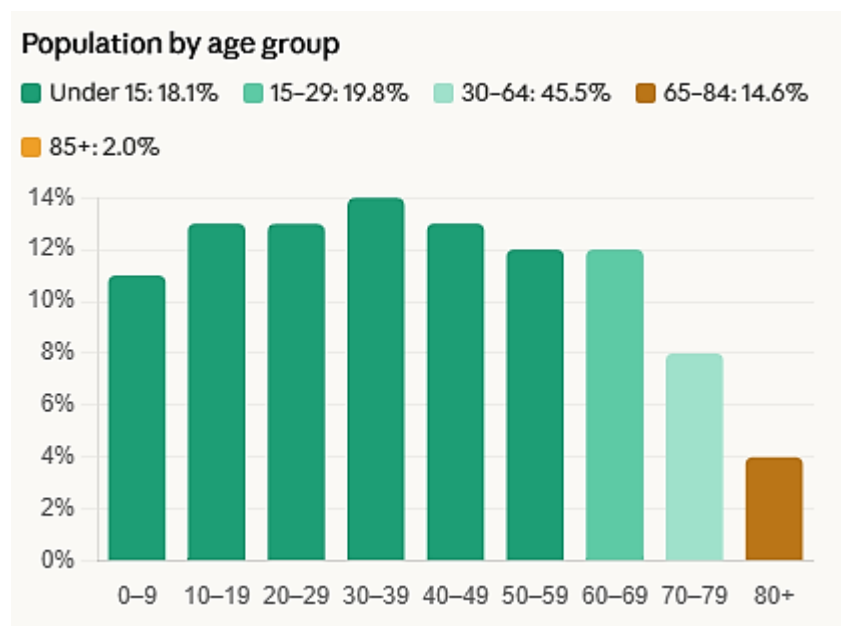
23.8% of Illinois households report a language other than English as the primary language spoken at home (U.S. Census Bureau, ACS 2019–2023).

The fire service implications of racial and ethnic diversity operate primarily through three pathways. First, language and cultural barriers may impede smoke alarm installation, fire safety education uptake, and 911 access, particularly among recent immigrant populations concentrated in Cook, DuPage, Lake, Kane, and Will counties. Second, historical patterns of residential segregation have produced geographic concentrations of pre-1940 housing stock, high residential density, and limited home ownership in predominantly Black and Hispanic communities, elevating structural fire risk independent of individual behavior. Third, the 1995 Chicago heat wave mortality data documented a statistically significant disparity in heat-related death rates among African American residents — a disparity that persists in current vulnerability assessments and is directly attributable to the intersection of older housing without air conditioning, economic isolation, and social disconnection (Whitman et al., 1997; Klinenberg, 2002).

Almost 60% of Illinois's minority population, including over 67% of the state's Black population, resides in Cook County, which contains approximately 40% of the total state population. This geographic concentration means that fire service CRR programs targeting minority communities must, at minimum, be anchored in Cook County while also addressing Hispanic concentrations in Kane, Will, and McHenry counties and the growing diversity of several Quad Cities and Champaign-Urbana communities.

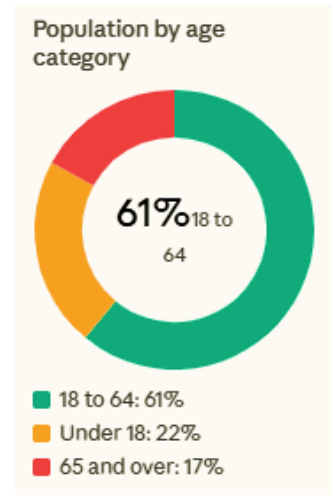
Age Distribution and Fire Risk Implications

The median age of the Illinois population is 38.9 years (ACS 2019–2023), essentially at the national median of 38.7. The age distribution breaks down as follows: 18.1% of the population is under age 15; 19.8% is between 15 and 29; 45.5% is between 30 and 64; 14.6% is between 65 and 84; and 2.0% is 85 or older. The senior population (65 and older) constitutes 16.6% of total state



population, comparable to the national average of 16.8% (ACS 2019–2023; Neilsberg Research, 2025).

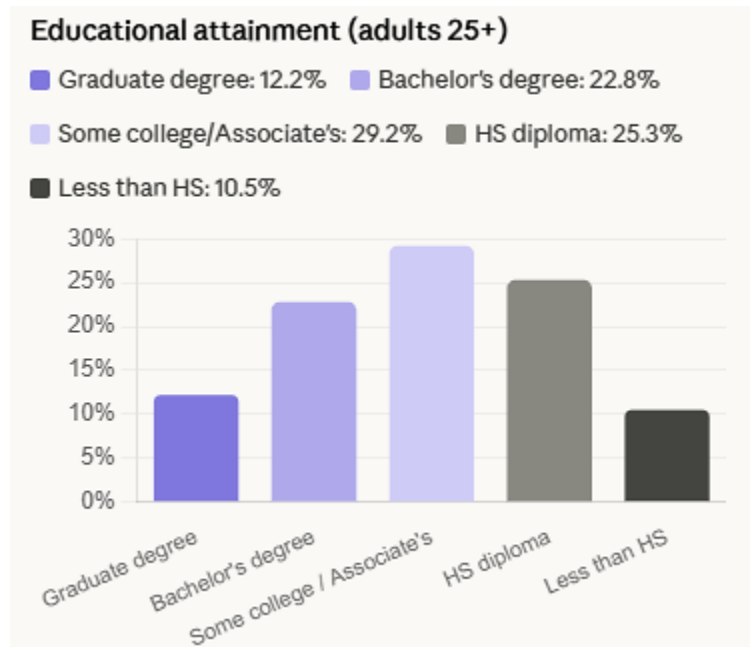
Age is the single strongest demographic predictor of fire fatality risk. Adults aged 65 and older are approximately twice as likely to die in a residential structure fire as the general population, and adults aged 85 and older face a fatality rate more than four times the national average (NFPA, 2023; USFA, 2022). This elevated risk is attributable to factors including reduced mobility and self-rescue capability, greater likelihood of residing in older housing stock, higher rates of smoking, medication-related impairment, and reduced physiological response to heat and smoke (Hall, 2021).



Illinois's 2.1 million residents aged 65 and older represent the primary demographic priority for fire service CRR programs. The old-age dependency ratio in Illinois is 25.3, meaning 25.3 seniors for every 100 working age adults, and is projected to rise sharply as the Baby Boomer cohort continues to age into the high-risk 75-and-older category through 2035. Geographic concentration of elderly residents is particularly pronounced in rural downstate counties where population decline has disproportionately retained older homeowners while younger residents have out-migrated. In several southern and central Illinois counties, the population aged 65 and older exceeds 20–25% of total county population, well above both state and national averages.

Educational Attainment

Educational attainment among Illinois residents 25 years and older reflects both the state's strong higher education infrastructure and the stark urban-rural divide. Statewide, approximately 35% of adults hold a bachelor's degree or higher, including 22.8% holding a bachelor's degree and 12.2% holding a graduate or professional degree. High school graduation or equivalency represents the modal educational attainment at 25.3%, with 21.2% having some



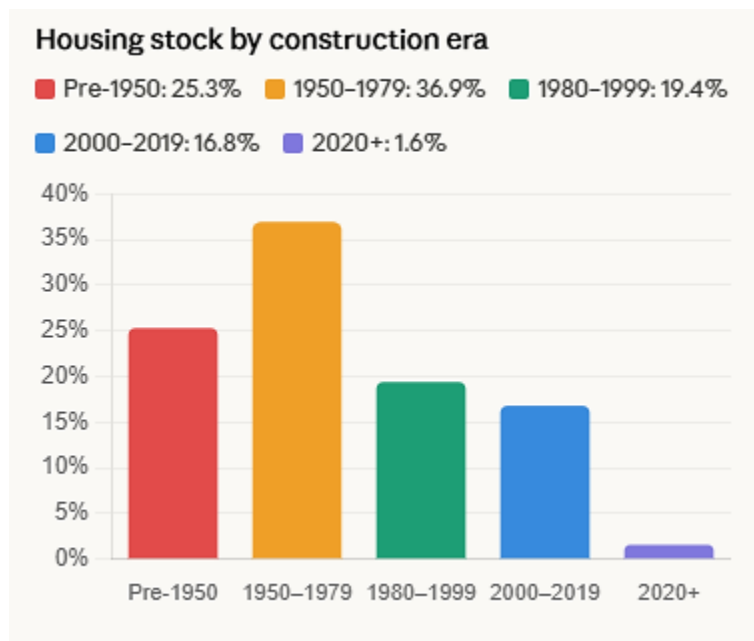
college without a degree and 8.0% holding an associate's degree (U.S. Census Bureau, ACS 2023; Point2Homes Research, 2024).

Educational attainment is a consistently documented predictor of fire risk awareness, smoke alarm installation rates, and fire safety behavior. Research consistently demonstrates that lower educational attainment is associated with reduced fire safety knowledge and lower likelihood of having functional smoke alarms, independent of income effects (Istre et al., 2001; Runyan et al., 2005). Illinois exhibits some of the largest educational attainment disparities of any state: while 47% of white adults hold a postsecondary degree, only 29% of African American adults and 20% of Latino adults do, gaps that are among the ten widest nationally for the African American–white disparity and the seventh widest nationally for the Latino–white disparity (Illinois Board of Higher Education, 2020).

Geographically, bachelor's degree attainment ranges from a low of approximately 15–18% in rural downstate counties to a high exceeding 57% in portions of the Chicago collar counties. Communities in the lower educational attainment tier, particularly in the former coalfield counties and Mississippi River communities, consistently appear in elevated fire risk assessments and represent priority geographies for structured CRR program delivery.

Housing Characteristics and Fire Risk

Illinois has 5,443,501 total housing units (ACS 2019–2023), with a homeownership rate of 66.8%, slightly above the national average of 65.0%. The median property value is \$250,500, or approximately 83% of the national median of \$303,400. The state's housing stock is notably aged: the median construction year for Illinois housing is 1970, and approximately 26% of all housing units were built before 1950. Only 4.6% of housing units



were constructed between 2010 and 2019, and 0.4% represent post-2020 construction, reflecting both the legacy of mid-20th century development and the persistent

underinvestment in housing production that characterizes much of downstate Illinois (U.S. Census Bureau, ACS 2019–2023; Point2Homes Research, 2024).

Housing age is one of the most direct structural correlations of fire risk at the statewide level. Pre-1950 housing is disproportionately likely to lack interconnected smoke alarms, to have ungrounded electrical systems, aging knob-and-tube or aluminum wiring, and degraded chimney and flue infrastructure. The high proportion of pre-1980 housing in Illinois, the cut-point before which smoke detector requirements became widely codified, represents a persistent, structural fire risk factor that cannot be addressed through behavior change alone and requires active hardware installation programs.

Housing type also shapes risk exposure. Illinois's housing stock is 58.3% detached single-family homes, 6.0% attached/townhouse/duplex, and a substantial multifamily component, particularly in the Chicago metropolitan area, where large mid-rise and high-rise residential buildings create distinct fire suppression and evacuation challenges. Mobile homes constitute 2.3% of the statewide housing stock but are disproportionately concentrated in rural areas, where they represent a significantly elevated fire fatality risk compared to site-built structures of equivalent age.

Income, Poverty, and Economic Vulnerability

The median household income in Illinois is \$81,702 (ACS 2023), ranking the state roughly in the upper third nationally. However, this statewide figure obscures extreme geographic and demographic variation. DuPage County leads with a median household income of \$110,502, closely followed by Kendall County (\$110,474) and Lake County (\$108,910). In contrast, multiple downstate counties, including Alexander, Pulaski, Hardin, and Pope, record median household incomes below \$40,000. Income by householder age follows a characteristic arc: households headed by adults under 25 report a median income of \$42,118; those headed by adults 45–64 peak at \$98,419; and households headed by residents 65 and older have a median income of \$57,977, reflecting the transition to fixed retirement incomes (U.S. Census Bureau, ACS 2023).



Low income is the second-strongest demographic predictor of fire fatality risk after advanced age. Economically constrained households are significantly less likely to have functional smoke alarms, to maintain heating equipment properly, to afford fire-safe housing, and to have the resources to quickly evacuate or replace fire-damaged property. Statewide, approximately 11.7% of Illinois residents live below the federal poverty line, with poverty rates substantially higher in the City of Chicago (18.5%), in economically distressed downstate cities including Rockford, Decatur, and East St. Louis, and in the rural counties of extreme southern Illinois.

Social Vulnerability and Compounding Risk Factors

The CDC/Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index (SVI) is a place-based index developed by the Geospatial Research, Analysis, and Services Program (GRASP) to identify communities most likely to require support before, during, and after hazardous events. First published in 2011 and updated biennially, the SVI aggregates 16 U.S. Census Bureau American Community Survey variables into an overall vulnerability score, expressed as a percentile ranking from 0.00 (least vulnerable) to 1.00 (most vulnerable), for every census tract and county in the United States. Variables are organized into four thematic domains:

Theme 1 — Socioeconomic Status: Below poverty, unemployment, housing cost burden, no high school diploma, uninsured population.

Theme 2 — Household Characteristics: Age 65 and older, age 17 and younger, civilian disability, single-parent households, English language proficiency (limited English).

Theme 3 — Racial and Ethnic Minority Status: Minority population (all persons except white, non-Hispanic).

Theme 4 — Housing Type and Transportation: Multi-unit structures, mobile homes, crowding, no vehicle, group quarters population.

Each domain produces an independent theme score, and all four are combined into the overall themes ranking used for program prioritization. The SVI was specifically designed for emergency management and public health planning, and has been adopted by FEMA, state emergency management agencies, and an increasing number of fire departments as a foundational CRR targeting tool.

Illinois SVI Profile: Statewide Overview

Social Vulnerability Index (SVI) — county distribution



The 2022 SVI for Illinois reveals a stark vulnerability gradient running from the affluent Chicago collar counties in the northeast to the economically distressed rural counties of extreme southern Illinois. Statewide, Illinois counties range from an overall SVI score of 0.14 (DuPage County- least vulnerable) to 0.97 (Alexander County - most vulnerable), a spread of 0.83 points that reflects one of the widest intrastate vulnerability ranges in the Midwest.

Examined by vulnerability tier, Illinois counties distribute as follows across the four SVI quartiles:

Very Low Vulnerability (SVI < 0.25) - 7 counties: DuPage (0.14), Kendall (0.17), McHenry (0.21), Monroe (0.23), Lake (0.24), Woodford (0.24), Will (0.25). These counties are concentrated in the Chicago metropolitan collar and reflect high median incomes, newer housing stock, lower minority concentrations, and strong household transportation access. They represent the lowest priority tier for externally funded CRR intervention.

Low–Moderate Vulnerability (SVI 0.25–0.50) - approximately 30 counties: Includes McLean (0.32), Grundy (0.29), Piatt (0.30), Tazewell (0.35), Boone (0.35), Kane (0.37), DeKalb (0.38), Effingham (0.38), and others distributed across the Chicago exurban ring and portions of central Illinois. These counties present moderate CRR needs concentrated primarily in Theme 1 (socioeconomic) variables.

Moderate–High Vulnerability (SVI 0.50–0.75) - approximately 50 counties: The largest tier and the most geographically dispersed, encompassing much of central and downstate Illinois including Cook (0.67), Vermilion (0.67), Macon (0.62), Fayette (0.64), Jefferson (0.65), Franklin (0.72), and Winnebago (0.56). Cook County's presence in this tier reflects the concentrated urban poverty of Chicago's south and west sides, which elevate the county-wide average despite the relatively low vulnerability of the collar suburbs.

High–Very High Vulnerability (SVI \geq 0.75) - 10 counties: The highest-priority tier for statewide CRR investment. All 10 are located in southern Illinois:

County	SVI Score	Primary Drivers
Alexander	0.97	Extreme poverty, aging population, mobile homes, no vehicle access, minority concentration
Pulaski	0.92	Rural poverty, high elderly proportion, limited healthcare access, housing age
Hardin	0.80	Geographic isolation, aging stock, very low income, no transportation infrastructure
Pope	0.78	Rural isolation, low income, elderly concentration, housing vulnerability
Gallatin	0.74	Economic decline, aging population, limited services
Saline	0.74	Former coalfield economy, unemployment, older housing, disability rates
Franklin	0.72	Coalfield legacy, poverty concentration, housing age
Johnson	0.72	Rural poverty, elderly concentration, limited emergency service coverage
Union	0.70	Low income, housing vulnerability, elderly population
Massac	0.69	Rural isolation, poverty, aging infrastructure

Theme Analysis: Fire Service Implications by Domain

The overall SVI score, while useful for geographic prioritization, gains its greatest operational value when examined by individual theme, because each theme maps to distinct fire service CRR program strategies.

Theme 1 (Socioeconomic Status) is the most direct fire risk driver. Counties scoring in the high tier on Theme 1 are characterized by poverty concentrations that reduce smoke alarm ownership, heating equipment maintenance, and ability to self-evacuate. The 10 highest-SVI counties all score 0.80 or above on Theme 1. For fire departments in these counties, the primary CRR intervention is Home Safety Visits, particularly door-to-door smoke alarm installation programs targeting households below 200% of the federal poverty line.

Theme 2 (Household Characteristics) identifies the age and disability dimensions of vulnerability. High Theme 2 scores in rural southern Illinois reflect the compound of elderly residents, disability rates above 20% in some counties, and single-parent households with children under 17, all populations with limited self-rescue capacity. For fire departments, Theme 2 elevates the priority of evacuation planning, personal emergency response system awareness, and coordination with social services agencies.

Theme 3 (Racial and Ethnic Minority Status) scores highest in Cook County and the urban industrial belt. Theme 3 vulnerability in Chicago is compounded by housing density, language barriers (particularly for Spanish and Polish speaking communities), and the structural fire risk of older urban multifamily housing stock. Culturally and linguistically adapted CRR programs are the appropriate response to Theme 3 vulnerability.

Theme 4 (Housing Type and Transportation) is particularly relevant to fire service operations. High mobile home concentrations, scoring above the 75th percentile in Hardin, Pope, Alexander, and Pulaski counties, directly elevate fire fatality risk, as manufactured housing built before HUD 1976 standards has significantly higher fire death rates than site-built construction. High crowding indices in Chicago's immigrant-concentrated communities elevate multifamily fire risk. No-vehicle populations identify households that cannot self-evacuate and are dependent on fire service notification.

Vulnerability-Capacity and CRR Strategic Implications

The most consequential pattern revealed by the Illinois SVI is what the Vision 20/20 framework identifies as the vulnerability-capacity: the counties with the highest social vulnerability, and therefore the greatest objective need for CRR program investment, are the same counties least likely to have local fire service resources sufficient to deliver those programs independently.

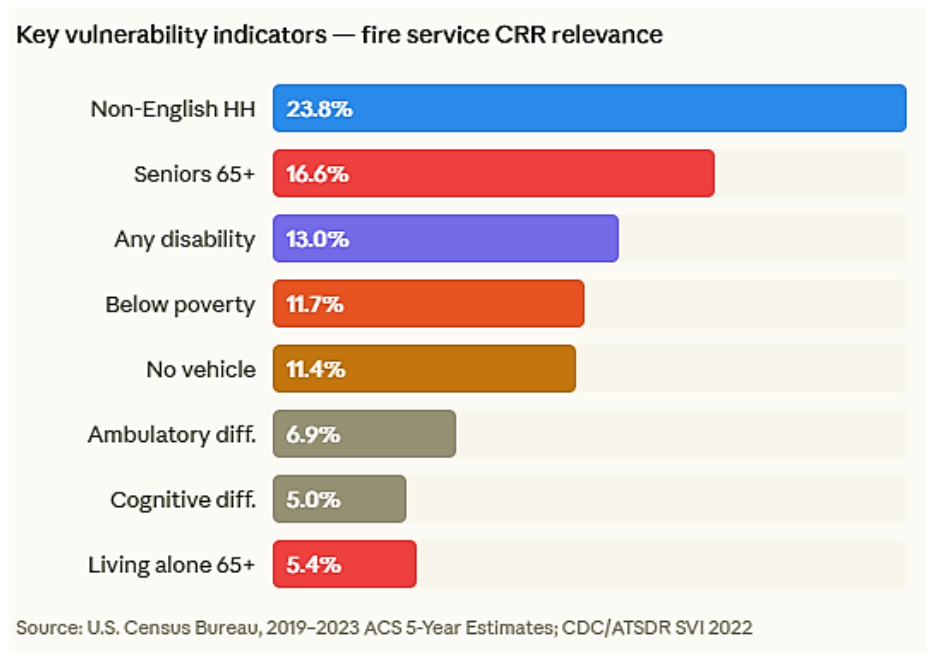
Alexander County (SVI 0.97) is served almost entirely by volunteer fire departments operating from aging facilities with limited prevention budgets, no paid prevention staff, and response areas that include some of the most physically isolated communities in the state. Pulaski County (SVI 0.92) has experienced ongoing population decline that has further eroded both the volunteer firefighter recruitment base and the local tax revenue supporting department operations. In each of the ten highest vulnerability counties, the fire department most needed to deliver prevention programming is the one least equipped to do so without external support.

This paradox cannot be resolved at the county or department level. It is a structural condition that requires the statewide CRR framework to explicitly direct grant-funded resources, technical assistance, and program infrastructure to the highest-SVI geographies,

not merely to the departments that submit the most competitive grant applications. The Illinois statewide CRR implementation strategy addresses this directly through a vulnerability-weighted program allocation framework that prioritizes SVI quartile 4 counties for Home Safety Visit expansion, smoke alarm installation funding, and direct CRR technical assistance.

Disability Status and Fire Service Implications

According to the ACS 2019–2023, approximately 13.0% of Illinois residents, roughly 1.65 million people, report having at least one disability. Disability types with the most direct fire safety relevance include ambulatory difficulty (affecting approximately 6.9% of all Illinois adults and up to 26% of adults 65 and older); cognitive difficulty (5.0% of the adult population); hearing difficulty (3.5%); and independent living difficulty (5.4% of adults 65 and older). Self-care difficulty, the most direct indicator of limited self-rescue capability, affects approximately 2.7% of Illinois adults (U.S. Census Bureau, ACS 2019–2023).



Disability intersects with age and income to produce the highest individual-level fire fatality risk in the state. Elderly residents with mobility impairments living alone in pre-1960 housing without interconnected smoke alarms, a profile disproportionately common in downstate rural communities, represent the population at greatest risk of dying in a residential fire before emergency responders can intervene. Home safety visit programs that specifically target this demographic, installing interconnected alarm systems, conducting mobility assessments, and developing personal evacuation plans, represent the highest-return CRR investment available at the statewide level.

Demographic Risk Summary and Statewide Implications

The demographic analysis presented in this section identifies three distinct geographic risk profiles within Illinois, each requiring a differentiated CRR approach:

Northeastern Illinois (Cook County and collar counties): Highest absolute fire incident volume, concentrated racial and ethnic minority populations in high-density older urban housing, significant linguistic isolation affecting fire safety communication, and the highest absolute count of elderly residents. The CRR priority is scale, reaching large, diverse urban populations with culturally and linguistically accessible programs in high-density residential environments.

Central and Northwestern Illinois (Grand Prairie and Rock River corridor): Moderate absolute fire incident volume, significant agricultural community exposure, aging rural housing stock with limited fire service coverage, and growing elderly population ratios as younger residents migrate to urban centers. The CRR priority is coverage, extending home safety visit programs and community risk education to dispersed rural populations served by volunteer fire departments with limited prevention capacity.

Southern Illinois (Little Egypt and Shawnee Hills): Highest per-capita poverty rates, oldest housing stock, most rapidly aging population, weakest local government fiscal capacity, and highest seismic and WUI risk exposure. The CRR priority is depth — addressing the compound convergence of multiple vulnerability factors through integrated, grant-funded program investment targeted at the highest-SVI communities.

These three profiles are not mutually exclusive, each region contains communities that cross multiple vulnerability thresholds, but they provide the strategic framework for resource prioritization in the statewide CRR implementation plan that follows.

References

Illinois Board of Higher Education. (2020). *Educational attainment in Illinois: Postsecondary outcomes by race and ethnicity*. <https://www.ibhe.org>

Illinois-Demographics.com. (2024). *Illinois demographics: Population, income, and housing data*. Cubit Planning, Inc. <https://www.illinois-demographics.com/>

Centers for Disease Control and Prevention / Agency for Toxic Substances and Disease Registry (CDC/ATSDR). (2022). *Social Vulnerability Index 2022: Illinois*. <https://www.atsdr.cdc.gov/placeandhealth/svi/>

- Hall, J. R., Jr. (2021). *Characteristics of home fire victims*. NFPA Research. National Fire Protection Association.
- Istre, G. R., McCoy, M. A., Osborn, L., Barnard, J. J., & Bolton, A. (2001). Deaths and injuries from house fires. *New England Journal of Medicine*, 344(25), 1911–1916.
- Klinenberg, E. (2002). *Heat wave: A social autopsy of disaster in Chicago*. University of Chicago Press.
- National Fire Protection Association (NFPA). (2023). *Home structure fires*. NFPA Research. <https://www.nfpa.org/education-and-research/research/nfpa-research>
- Neilsberg Research. (2025). *Illinois population by age — 2025 update*. <https://www.neilsberg.com>
- Point2Homes Research. (2024). *Illinois demographics: Population, income, and more*. <https://www.point2homes.com/US/Neighborhood/IL-Demographics.html>
- Runyan, C. W., Johnson, R. M., Yang, J., Waller, A. E., Perkis, D., Marshall, S. W., ... & Coyne-Beasley, T. (2005). Risk and protective factors for fires, burns, and carbon monoxide poisoning in U.S. households. *American Journal of Preventive Medicine*, 28(1), 102–108.
- U.S. Census Bureau. (2024). *2024 Population Estimates Program — Illinois*. <https://www.census.gov/programs-surveys/popest.html>
- U.S. Census Bureau. (2024). *American Community Survey 2019–2023 5-year estimates: Illinois state profile*. <https://data.census.gov>
- U.S. Fire Administration (USFA). (2022). *Fire death rate trends: An international perspective*. Federal Emergency Management Agency. <https://www.usfa.fema.gov>
- Whitman, S., Good, G., Donoghue, E. R., Benbow, N., Shou, W., & Mou, S. (1997). Mortality in Chicago attributed to the July 1995 heat wave. *American Journal of Public Health*, 87(9), 1515–1518.

Illinois State Housing Profile

Label	Estimate	Percent
HOUSING OCCUPANCY		
Total housing units	5,482,133	5,482,133
Occupied housing units	5,105,448	93.1%
Vacant housing units	376,685	6.9%
Homeowner vacancy rate	0.8	(X)
Rental vacancy rate	4.2	(X)
UNITS IN STRUCTURE		
Total housing units	5,482,133	5,482,133
1-unit, detached	3,196,758	58.3%
1-unit, attached	343,187	6.3%
2 units	263,750	4.8%
3 or 4 units	349,940	6.4%
5 to 9 units	327,915	6.0%
10 to 19 units	221,842	4.0%
20 or more units	657,262	12.0%
Mobile home	119,544	2.2%
Boat, RV, van, etc.	1,935	0.0%
YEAR STRUCTURE BUILT		
Total housing units	5,482,133	5,482,133
Built 2020 or later	87,669	1.6%
Built 2010 to 2019	284,549	5.2%
Built 2000 to 2009	636,668	11.6%
Built 1990 to 1999	551,910	10.1%
Built 1980 to 1989	510,650	9.3%
Built 1970 to 1979	779,992	14.2%
Built 1960 to 1969	620,524	11.3%
Built 1950 to 1959	622,488	11.4%
Built 1940 to 1949	290,684	5.3%
Built 1939 or earlier	1,096,999	20.0%
ROOMS		
Total housing units	5,482,133	5,482,133
1 room	164,666	3.0%
2 rooms	190,147	3.5%
3 rooms	486,048	8.9%
4 rooms	835,516	15.2%
5 rooms	971,258	17.7%
6 rooms	931,110	17.0%
7 rooms	629,389	11.5%
8 rooms	503,759	9.2%
9 rooms or more	770,240	14.1%
Median rooms	5.6	(X)

BEDROOMS		
Total housing units	5,482,133	5,482,133
No bedroom	193,375	3.5%
1 bedroom	615,766	11.2%
2 bedrooms	1,502,373	27.4%
3 bedrooms	1,949,082	35.6%
4 bedrooms	945,705	17.3%
5 or more bedrooms	275,832	5.0%
HOUSING TENURE		
Occupied housing units	5,105,448	5,105,448
Owner-occupied	3,449,961	67.6%
Renter-occupied	1,655,487	32.4%
Average household size of owner-occupied unit	2.60	(X)
Average household size of renter-occupied unit	2.08	(X)
YEAR HOUSEHOLDER MOVED INTO UNIT		
Occupied housing units	5,105,448	5,105,448
Moved in 2023 or later	744,338	14.6%
Moved in 2020 to 2022	1,118,299	21.9%
Moved in 2010 to 2019	1,460,735	28.6%
Moved in 2000 to 2009	800,816	15.7%
Moved in 1990 to 1999	500,296	9.8%
Moved in 1989 and earlier	480,964	9.4%
VEHICLES AVAILABLE		
Occupied housing units	5,105,448	5,105,448
No vehicles available	581,024	11.4%
1 vehicle available	1,826,118	35.8%
2 vehicles available	1,762,004	34.5%
3 or more vehicles available	936,302	18.3%
HOUSE HEATING FUEL		
Occupied housing units	5,105,448	5,105,448
Utility gas	3,856,562	75.5%
Bottled or tank gas (propane, butane, etc.)	192,729	3.8%
Electricity	963,404	18.9%
Fuel oil, kerosene, etc.	6,543	0.1%
Coal or coke	917	0.0%
Wood	16,529	0.3%
Solar energy	8,005	0.2%
Other fuel	23,226	0.5%
No fuel used	37,533	0.7%
SELECTED CHARACTERISTICS		
Occupied housing units	5,105,448	5,105,448

Lacking complete plumbing facilities	20,830	0.4%
Lacking complete kitchen facilities	41,492	0.8%
No telephone service available	38,497	0.8%
OCCUPANTS PER ROOM		
Occupied housing units	5,105,448	5,105,448
1.00 or less	4,971,816	97.4%
1.01 to 1.50	91,250	1.8%
1.51 or more	42,382	0.8%
VALUE		
Owner-occupied units	3,449,961	3,449,961
Less than \$50,000	184,752	5.4%
\$50,000 to \$99,999	263,813	7.6%
\$100,000 to \$149,999	301,263	8.7%
\$150,000 to \$199,999	369,071	10.7%
\$200,000 to \$299,999	749,285	21.7%
\$300,000 to \$499,999	1,008,652	29.2%
\$500,000 to \$999,999	465,571	13.5%
\$1,000,000 or more	107,554	3.1%
Median (dollars)	280,700	(X)

Illinois State Housing Profile

The Illinois housing profile, drawn from the 2019-2023 American Community Survey, documents a statewide inventory of 5,482,133 total housing units with an occupancy rate of 93.1 percent, leaving 376,685 units vacant at a rate of 6.9 percent. The vacancy figure carries direct fire service implications, as vacant and unsecured structures represent a disproportionate share of the arson and intentionally set fire incidents documented in this assessment and create ongoing hazards for firefighters conducting searches in buildings whose structural integrity and interior conditions are unknown at the time of response. The tenure distribution of 67.6 percent owner-occupied and 32.4 percent renter-occupied among the 5,105,448 occupied units reflects a homeownership profile slightly above the national average, but the renter-occupied figure of 1,655,487 households is operationally significant given the consistently documented relationship between rental tenure and lower rates of smoke alarm installation, maintenance, and functional presence at the time of a fire event. Renters are statistically less likely than homeowners to install and maintain working smoke alarms, less likely to be aware of building evacuation procedures, and more likely to occupy older multifamily structures where fire protection system coverage is inconsistent and landlord compliance with detector requirements is variably enforced.

The structural composition of Illinois housing is defined by the dominance of detached single-family homes at 58.3 percent of all units, or 3,196,758 structures, which establishes this occupancy type as the primary built environment context for residential fire risk across the state. The multifamily inventory is substantial and diverse, with 2-unit structures at 4.8 percent, 3-to-4 unit buildings at 6.4 percent, 5-to-9-unit buildings at 6.0 percent, 10-to-19 unit buildings at 4.0 percent, and structures with 20 or more units at 12.0 percent, collectively representing approximately 33.2 percent of all housing units or roughly 1.82 million units in multifamily configurations. This multifamily share directly informs the cooking fire distribution anomaly identified earlier in this assessment, where Illinois multifamily cooking fires outnumber single family cooking fires, a pattern that the density and geographic concentration of this multifamily inventory makes structurally predictable. The mobile home inventory at 2.2 percent or 119,544 units carries a fire risk profile disproportionate to its share of total housing stock, as manufactured housing is associated with higher fire fatality rates per incident due to rapid fire spread characteristics, limited egress options, and the concentration of mobile home residents in lower-income rural and exurban communities with extended fire department response times.

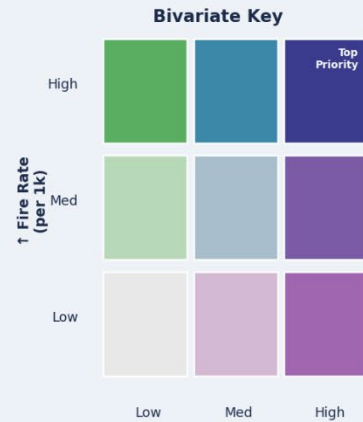
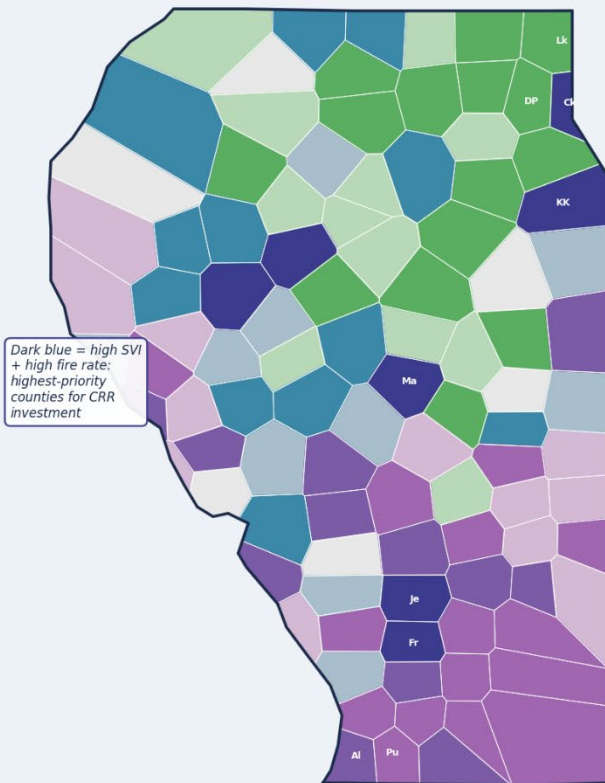
The age distribution of Illinois housing stock is the single most consequential structural fire risk indicator in this dataset. Fully 20.0 percent of all Illinois housing units, representing 1,096,999 structures, were built in 1939 or earlier, a cohort of pre-war construction that predates modern electrical codes, smoke detection requirements, and fire-resistive construction standards by decades. When the pre-1960 housing categories are combined, encompassing units built in 1939 or earlier, the 1940s at 5.3 percent, and the 1950s at 11.4 percent, the total reaches 36.7 percent of all Illinois housing units, or approximately 2.01 million structures, that were built before the widespread adoption of the electrical and construction safety standards that have most significantly reduced residential fire ignition probability and spread rates in newer construction. The 1960s and 1970s cohorts add another 25.5 percent at 1,400,516 units, meaning that more than 62 percent of all Illinois housing was constructed before 1980, before the mandatory smoke detector requirements that became standard in most Illinois jurisdictions began producing measurable reductions in residential fire fatality rates. This aging housing profile is not uniformly distributed across the state but is concentrated most heavily in the communities the SVI analysis identifies as most vulnerable, where the combination of old housing stock and limited household resources for renovation and safety upgrades creates conditions most consistently associated with serious fire outcomes.

The heating fuel distribution carries direct implications for both carbon monoxide risk and fire ignition probability. Utility gas serves 75.5 percent of occupied Illinois households, or 3,856,562 units, establishing natural gas combustion as the dominant residential heating

mechanism and the primary fuel source for the cooking and space heating equipment that generates the majority of residential fire and CO incidents documented in this assessment. Bottled or tank propane and butane serves an additional 3.8 percent or 192,729 households, a category concentrated in rural communities without natural gas distribution infrastructure where the risk profile of combustion appliance malfunction is compounded by greater distance from fire department response resources. The 0.3 percent of households using wood as a primary heating fuel, while a small proportion of the total represents 16,529 units with chimney and flue fire risk that the NFIRS incident data documents as a recurring contributor to residential structure fires. The 11.4 percent of occupied households reporting no vehicle available, or 581,024 units, is relevant to fire service evacuation planning and community resilience, as households without vehicle access face greater barriers to rapid self-evacuation during fire events and are more likely to rely on fire department rescue in scenarios where egress is compromised.

For CRR program design, the Illinois housing profile provides a precise framework for targeting prevention resources at the structural and demographic conditions most directly associated with fire risk. The 2.01 million pre-1960 housing units represent the highest-priority target population for smoke alarm installation and maintenance programs, home fire safety visits, and weatherization-linked safety intervention initiatives that can reach the households in these structures with detection and prevention resources at scale. The 1,655,487 renter-occupied households represent a priority population for landlord compliance outreach, tenant fire safety education, and code enforcement initiatives that address the detection gap most consequential in multifamily and older rental housing stock. The heating fuel profile, with its overwhelming dependence on utility gas, reinforces the CO prevention priorities established in the incident analysis, connecting the geographic concentration of CO incidents in older urban neighborhoods directly to the aging gas appliance inventory in the pre-war and mid-century housing stock that defines those communities.

Fire Risk & Social Vulnerability Bivariate Map by County · Illinois · 2020-2024



→ Social Vulnerability (SVI)
County Labels

- Al = Alexander
- DP = DuPage
- Je = Jefferson
- Lk = Lake
- Pu = Pulaski
- Ck = Cook
- Fr = Franklin
- KK = Kankakee
- Ma = Macon

Source: USFA NFIRS Illinois Extract 2020-2024; U.S. Census Bureau 2024; CDC/ATSDR SVI 2022. Fire rate = annual incidents per 1,000 residents. Each axis divided into tertiles. County boundaries approximated from centroids.

This map is presented here, within the Social Vulnerability section of the demographic profile rather than alongside the fire incident analysis that follows, because its analytical purpose is to close the demographic argument rather than open the incident one. The relationship between social vulnerability and fire risk is the central thesis of this assessment, and the bivariate map provides the geographic evidence for that thesis at the point in the document where the reader has absorbed the full weight of the SVI analysis, before the incident data is introduced. Placing it here allows the incident sections that follow to build on a conclusion already established rather than asking the reader to hold two separate analyses in mind simultaneously.

The bivariate map encodes two independent variables simultaneously, fire incident rate per 1,000 residents and Social Vulnerability Index score, for each of Illinois's 102 counties, producing a nine-cell color framework that identifies where the state's CRR investment should be directed with greater analytical precision than either variable alone can provide. Counties appearing in the dark blue upper-right cell of the bivariate key carry both high social vulnerability and high per-capita fire rates, representing the convergence of greatest need and demonstrated risk that defines the highest-return investment geography for statewide prevention programming. Kankakee, Macon, Jefferson, Franklin, Peoria, Cook, and Fulton counties occupy this designation, spanning the breadth of Illinois from the Chicago metropolitan fringe through the central industrial corridor to the southern coalfield communities. The green upper-left counties, high fire rate but lower SVI, reflect communities with elevated service utilization where department capacity is generally stronger and where the fire burden, while genuine, is not compounded by the population vulnerability factors that make high-SVI incidents more likely to produce fatalities and severe injuries. The lavender and gray lower-right counties, high SVI but low to moderate fire rates, represent the most analytically complex portion of the map and demand careful interpretation before any investment conclusions are drawn from their apparent positioning.

The purple zone across southern Illinois, encompassing the state's most socially vulnerable counties, presents a pattern that cannot be explained by a single factor and that the available data cannot fully resolve. Three forces are operating simultaneously in these geographies. First, genuinely small rural populations generate lower absolute incident counts, and per-capita rates in single and low double digits are plausible for counties with fewer than 6,000 residents even under complete reporting conditions. Second, the comprehensive reporting analysis conducted for this assessment identified 219 of 1,107 registered Illinois departments, or 19.8% of the state's fire service, as non-consistent reporters across the 2020 to 2024 study period, including 88 departments that produced no incidents in the NFIRS extract at any point during the five years. Third, and critically important for accurate interpretation, not all of those reporting gaps represent departments that failed to document their responses. Records Management System upload errors, data transmission failures between local RMS platforms and the NFIRS national warehouse, rejected submissions due to formatting or validation issues, and timing discrepancies between incident date and submission date all produce gaps in the extract that are data infrastructure artifacts rather than genuine non-reporting events. The counties of Alexander, Pulaski, Hardin, Johnson, and Pope carry some of the highest concentrations of non-consistent and never-reported departments in the state, and the degree to which their

low per-capita rates reflect actual low call volume, true non-reporting, or RMS-related upload failures cannot be disaggregated from the statewide data alone.

The practical implication of this interpretive complexity for statewide CRR program design is that the bivariate map should be understood as a targeting framework with two distinct investment profiles rather than a simple priority ranking. The dark blue counties are the highest-priority geographies for immediate CRR program expansion, where the evidence base is reliable enough to direct investment with confidence. The purple southern Illinois counties are equally urgent but require a different initial investment, one focused on reporting infrastructure support, RMS technical assistance, and local Community Risk Assessment capacity building that can produce the ground-level incident documentation the statewide data cannot reliably supply. Supporting those departments to achieve consistent, complete reporting in NERIS is not a bureaucratic compliance objective; it is a precondition for the evidence-based CRR investment those communities deserve, and it is among the most direct contributions the statewide CRR framework can make to the fire service organizations serving Illinois's most vulnerable residents.

State Incident Response Profile

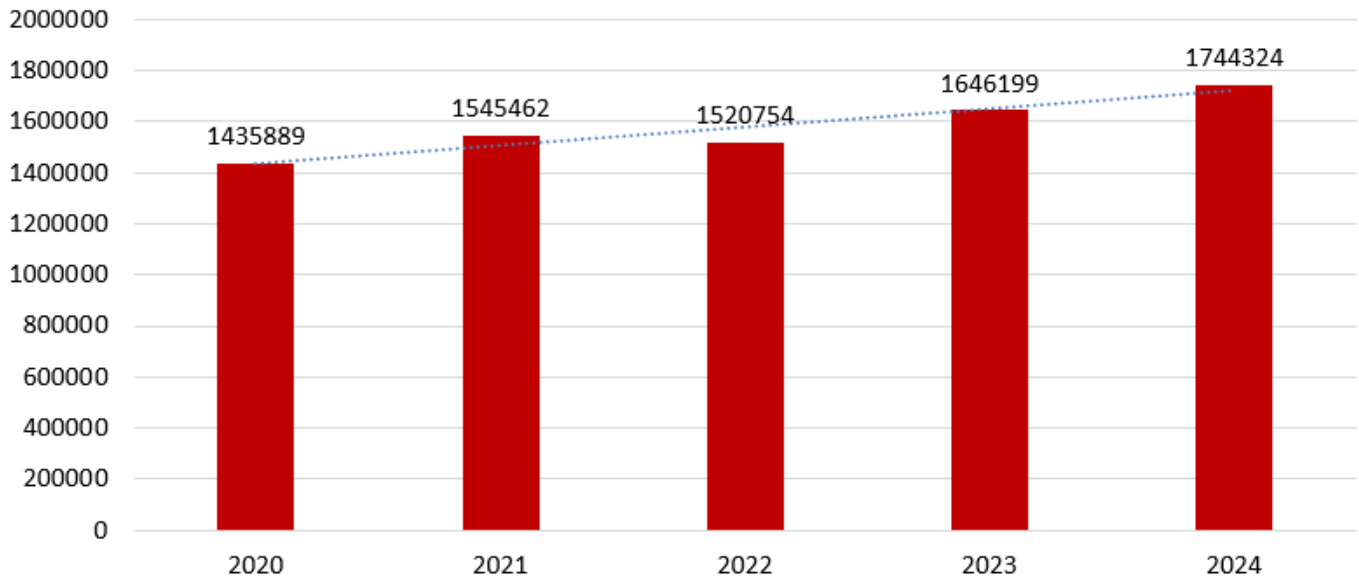
The State Incident Response Profile draws on five years of National Fire Incident Reporting System data submitted by Illinois fire departments for the period 2020 through 2024, encompassing a combined total of more than 8.1 million incidents recorded across



the state's reporting jurisdictions. The analysis examines incident volume trends at the statewide level and proceeds systematically through each of the nine NFIRS incident type categories, providing for each a detailed review of the specific incident descriptions that account for the greatest share of fire department workload within that category. Taken together, the nine-category framework covers the full spectrum of emergency demand placed on Illinois fire departments, from fires and explosions through emergency medical services, hazardous conditions, service calls, good intent calls, false alarms, severe weather responses, and special incident types. For each category the analysis identifies volume patterns, year-over-year trends across the study period, the community conditions and risk factors that drive demand, and the CRR program strategies the evidence supports.

This layered approach, moving from aggregate statewide totals to category-level and description-level detail, is designed to give fire service leaders, state agency administrators, and program planners the granular understanding of incident demand necessary to make informed decisions about where prevention investment will produce the greatest benefit to the communities Illinois fire departments serve. Community risk reduction is ultimately a dual commitment, one that strengthens the relationship between fire departments and the communities they protect while also supporting the long-term health, safety, and wellness of the firefighters who serve them. When communities are safer, firefighters are better positioned to perform at the highest level when it matters most, and the cumulative physical and psychological demands of a career in the fire service are met with the resilience that comes from knowing the department's prevention mission is as strong as its response mission. The data that follows is presented in that spirit, as a foundation for strategies that honor both sides of that commitment.

Illinois Fire Departments Incident Volume



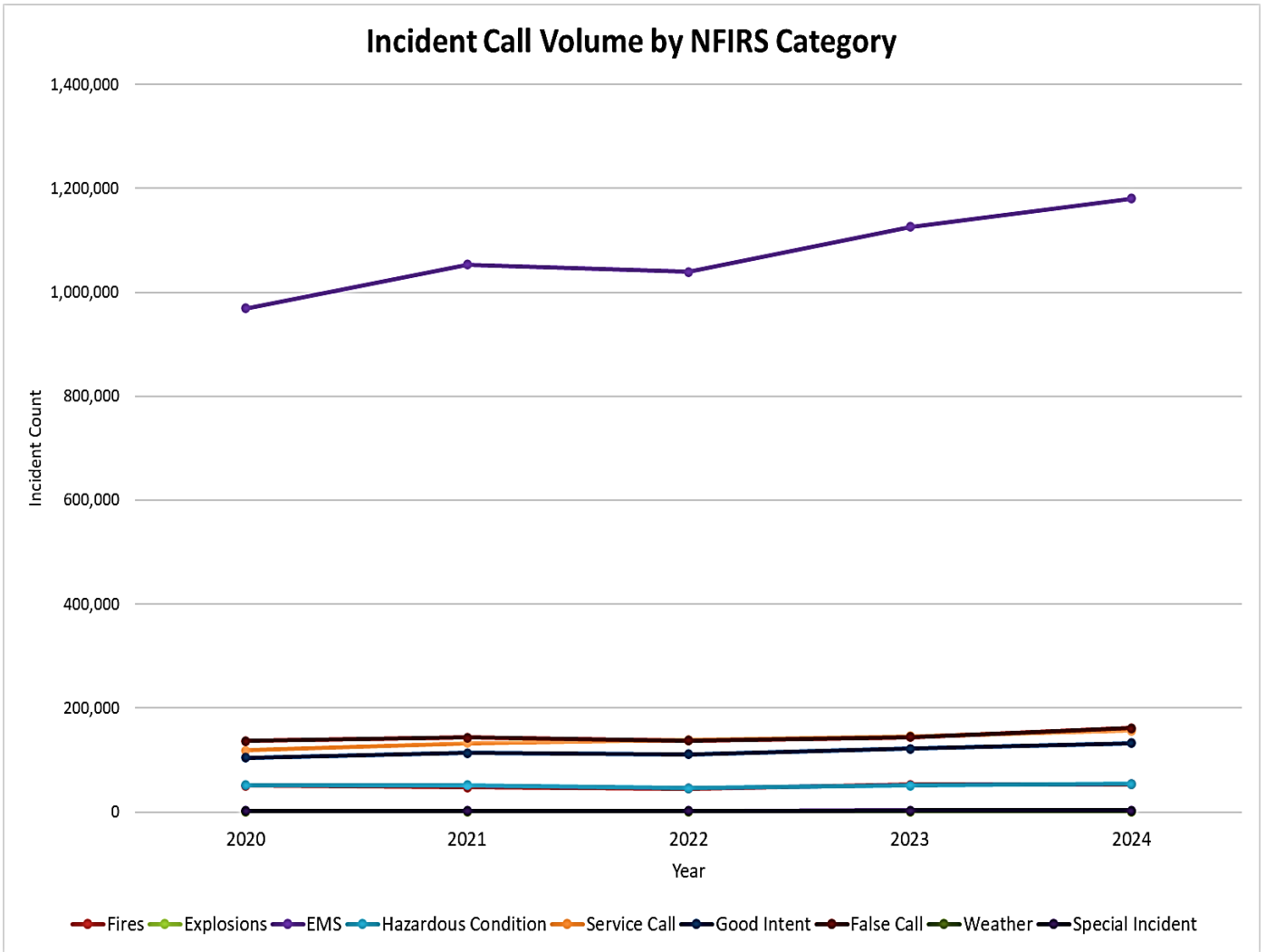
Total Incident Volume by Year

Illinois fire departments collectively responded to 1,435,889 incidents in 2020, a figure that establishes the baseline for the five-year analytical period covered by this assessment. That total rose to 1,545,462 in 2021, representing an increase of approximately 109,573 incidents, or roughly 7.6 percent above the prior year. A modest contraction to 1,520,754 in 2022 interrupted the upward trajectory before volume resumed its climb to 1,646,199 in 2023 and reached a five-year high of 1,744,324 in 2024. The trendline displayed in the chart confirms the overall direction as decisively upward across the period, with net growth from 2020 to 2024 of approximately 308,435 incidents, representing a 21.5 percent increase in total demand on Illinois fire service resources over five years.

The 2020 baseline warrants contextual consideration, as incident volumes in that year were influenced by pandemic-related reductions in human activity, including suppressed vehicle traffic, reduced commercial occupancy, and behavioral changes that temporarily altered both the frequency and character of emergency demand. The partial recovery visible in 2021 and the slight contraction in 2022 likely reflect the uneven normalization of those conditions rather than meaningful structural changes in risk. Beginning in 2023, the sustained acceleration of incident volume suggests that demand growth has become a durable feature of the Illinois fire service landscape, driven by demographic expansion in high-density urban and suburban corridors, the continued aging of the state's population with its associated increase in emergency medical service demand, and the growing complexity of the built environment in both residential and commercial sectors.

The sustained growth in total incident volume carries significant implications for fire department capacity, staffing adequacy, and resource allocation across the state. Departments operating in communities with growing populations and aging infrastructure face compounding pressure as call volumes rise against a backdrop of constrained municipal budgets and persistent volunteer recruitment challenges. The statewide aggregate figure, while useful as a system-level indicator, also masks meaningful variation between urban departments absorbing the highest absolute call volumes and rural or suburban departments where per-capita demand may be growing at rates that exceed their operational capacity to absorb. The gap between 2020 and 2024 volumes is large enough to raise genuine questions about whether staffing levels, apparatus inventories, and mutual aid frameworks have kept pace with the actual workload the system is being asked to carry.

For community risk reduction program design, the five-year growth trajectory reinforces the strategic imperative of demand mitigation as a parallel and complementary investment alongside response capacity expansion. A system absorbing more than 300,000 additional annual incidents over five years cannot sustain service levels through response infrastructure alone. CRR initiatives that reduce preventable emergency demand, particularly in the highest-volume incident categories of emergency medical services, hazardous conditions, and service calls, directly relieve operational pressure on departments that are increasingly stretched. Statewide program priorities should include investment in community paramedicine and mobile integrated health models to address chronic EMS demand drivers, targeted public education campaigns in high-incident ZIP codes, and support for local risk assessment capacity so that departments can identify and address the specific demand patterns driving their share of the statewide volume growth.



Incident Call Volume by NFIRS Category

The distribution of Illinois fire department incident volume across the nine NFIRS categories from 2020 through 2024 reveals a system defined by the overwhelming dominance of Emergency Medical Services, Category 3, which accounted for the vast majority of all incidents recorded across the five-year period. EMS volume grew from 969,270 incidents in 2020 to 1,180,683 in 2024, a net increase of more than 211,000 incidents representing growth of approximately 21.8 percent over the period, with the steepest single-year increases occurring between 2020 and 2021 at 8.6 percent and between 2022 and 2023 at 8.3 percent, interrupted only by a modest 1.3 percent contraction in 2022 that mirrored the overall statewide dip visible in that year's total incident volume. All remaining eight categories cluster in a comparatively narrow band at the lower portion of the chart, with the highest-volume of non-EMS categories each recording sustained growth of their own across the period. False Calls at Category 7 grew from 136,378 in 2020 to 161,152 in 2024, an increase of 18.2 percent, with the sharpest acceleration occurring in the final year of the period when volume rose 11.9 percent in a

single year. Service Calls at Category 5 recorded the most consistent upward trajectory of any non-EMS category, growing from 118,183 in 2020 to 156,334 in 2024, a cumulative increase of 32.3 percent across the five years. Good Intent calls at Category 6 grew from 104,182 to 132,860 over the same period, a 27.5 percent increase, with particularly notable single-year jumps of 9.7 percent between 2022 and 2023 and 9.1 percent between 2023 and 2024.

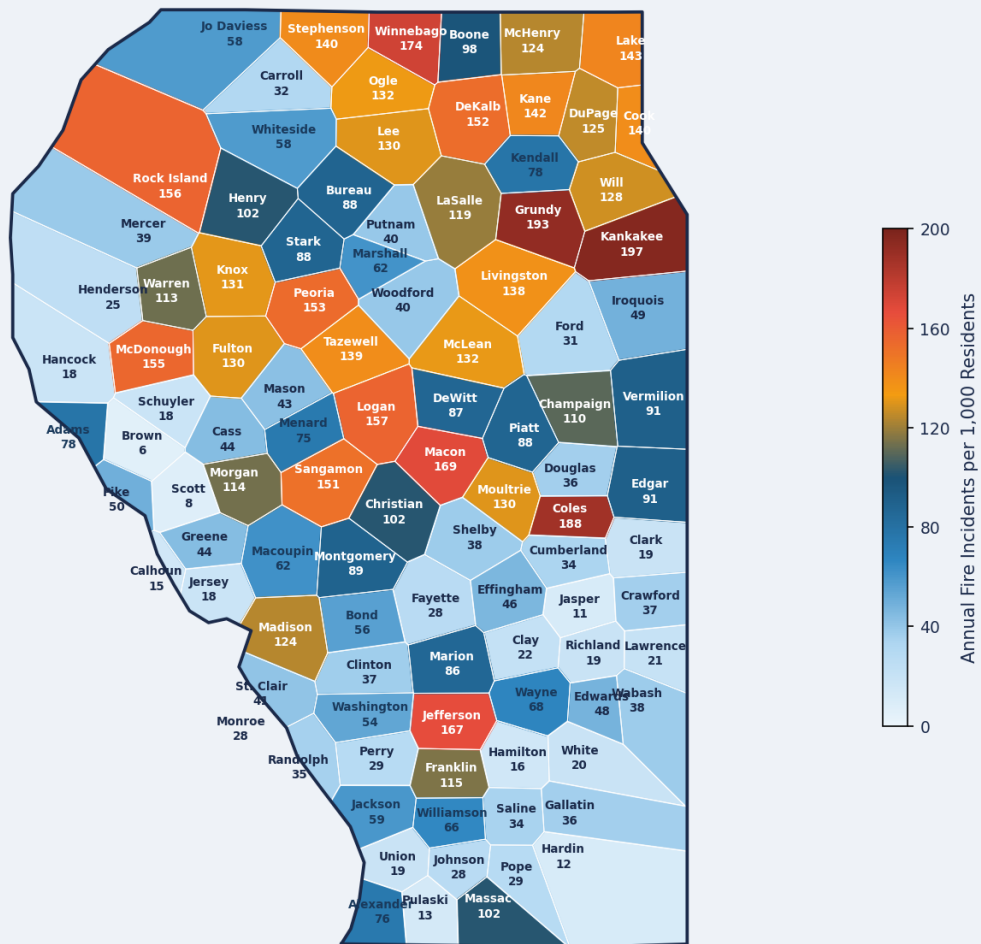
The visual separation between the EMS trendline and all other categories is the defining structural feature of this chart and reflects a long-term shift in the mission profile of Illinois fire departments that has been building for decades. The growth in EMS demand is driven by an aging population requiring more frequent medical intervention, expanding geographic areas where fire departments serve as the primary or sole advanced life support provider, and the ongoing integration of fire and EMS services that has made the fire station the de facto first point of contact for a broad range of medical emergencies. Fires at Category 1 present a more nuanced trend, declining from 51,241 in 2020 to a low of 45,498 in 2022, a drop of 11.2 percent over two years, before recovering sharply with a 16.2 percent single-year increase in 2023 and reaching a five-year high of 53,733 in 2024, a net gain of 4.9 percent above the 2020 baseline. Hazardous Conditions at Category 4 followed a similar pattern, contracting from 51,474 in 2020 to 45,730 in 2022 before recovering to 53,850 by 2024, a net five-year increase of 4.6 percent. Explosions at Category 2 declined 17.8 percent across the period, while Weather-related incidents at Category 8 fell 13.9 percent, though both categories represent such a small share of total volume that their directional movement has limited operational significance at the statewide level. Special Incidents at Category 9, while small in absolute terms, recorded the largest percentage growth of any category at 45.9 percent, rising from 2,209 incidents in 2020 to 3,224 in 2024.

The categorical distribution carries significant implications for how Illinois fire departments are actually deployed on a day-to-day basis. In practical terms, the average Illinois firefighter is far more likely on any given shift to respond to a medical emergency, a service call, or a false alarm than to a structural fire or a hazardous materials incident. The sustained acceleration of Service Calls and Good Intent calls, both growing at rates that exceed the overall statewide average, suggests that community reliance on fire departments for non-emergency assistance is expanding alongside traditional emergency demand, reflecting demographic trends and a broader cultural expectation that the fire service will respond to a widening range of community needs. The recovery and subsequent growth in fire incident volume beginning in 2023, after two years of decline, warrants particular attention as departments assess training priorities, apparatus readiness,

and the balance of fire suppression capability against an increasingly EMS-dominant workload.

For CRR program design at the statewide level, the categorical distribution and its associated growth rates establish a clear priority hierarchy. EMS demand, as the source of roughly two thirds of all incident volume and the category recording the largest absolute growth over the period, warrants the most substantial and sustained prevention investment, with particular attention to community paramedicine models, chronic disease management partnerships, fall prevention programming for older adults, and mobile integrated health strategies that address the underlying health conditions driving repeat utilization. The 32.3 percent growth in Service Calls and the 27.5 percent growth in Good Intent calls together suggest significant opportunity for community education initiatives that help residents better navigate non-emergency resources. False alarm reduction programs targeting the commercial and residential properties generating the highest alarm volumes represent another high-return investment, given both the 18.2 percent five-year growth in that category and its pronounced late-period acceleration. Taken together, the data supports a CRR program architecture that is as diverse and adaptive as the incident profile it is designed to address.

Annual Fire Incident Rate per 1,000 Residents by County · Illinois · 2020-2024 Average



Source: USFA NFIRS Illinois Extract 2020-2024; U.S. Census Bureau 2024 Population Estimates. Rate = 5-year incidents ÷ population ÷ 5. County boundaries approximated from centroids.

The annual fire incident rate per 1,000 residents map fundamentally reframes the geographic risk picture that raw incident count analysis produces, and the reframing is analytically essential for sound CRR resource allocation. When population is removed as a variable, Chicago no longer dominates the statewide picture, and the communities carrying the highest per-capita fire service burden emerge in a configuration that aligns far more directly with the social vulnerability and housing risk arguments built throughout this assessment. Kankakee County leads the state at 197 annual incidents per 1,000 residents,

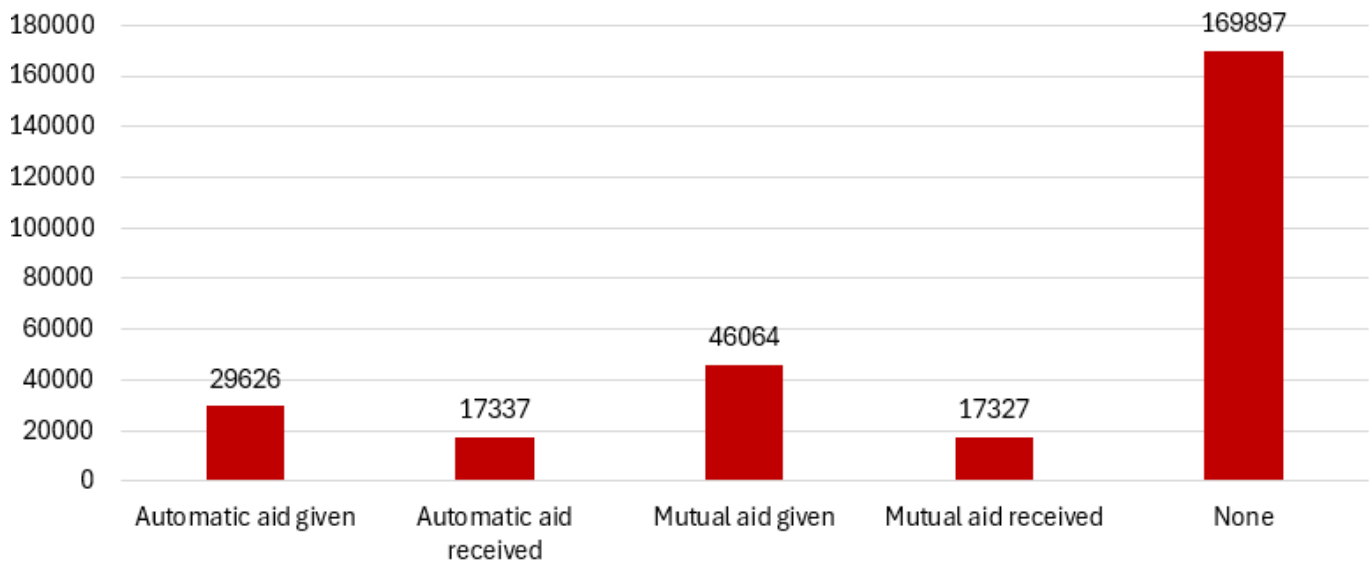
followed by Grundy at 193, Coles at 188, Winnebago at 174, Macon at 169, Jefferson at 167, Logan at 157, Rock Island at 156, and McDonough at 155, a grouping that spans the full breadth of Illinois's mid-size urban and rural-agricultural landscape and shares a common profile of aging housing stock, elevated poverty rates, and EMS demand driven by growing elderly populations in communities where fire departments serve as the primary medical response provider. Several of these counties, including Logan, McDonough, and Fulton at 130, are rural central Illinois counties whose rates are comparable to or above Peoria at 153, a finding that would be invisible in any raw incident count analysis and that confirms the per-capita rate map as the most operationally honest representation of fire service burden in the assessment. The collar communities of Lake County at 143 and Kane at 142, both Tier 1 and Tier 2 SVI counties respectively, appear in warm color bands that reflect the extraordinary EMS demand generated by large suburban populations rather than structural fire vulnerability, confirming that high per-capita incident rates can reflect service utilization patterns as well as community risk conditions.

The placement of Cook County at 140 in the orange rather than deep red range of the map will likely appear counterintuitive to readers familiar with Chicago's fire problem, and that apparent anomaly deserves direct explanation. Cook County's five-year incident total of 3,680,120 events represents the largest absolute incident volume of any county in the state by an extraordinary margin, and the Chicago Fire Department's operational challenge is genuine and severe. However, dividing that volume by Cook County's population of 5,272,775 residents produces a per-capita rate that is high but not extreme, because the denominator is one of the largest county populations in North America. Kankakee County generates 197 incidents per 1,000 residents annually with a population of only 107,359 people, while Cook's 736,000 annual incidents are spread across a population fifty times larger. A second factor compounds this dynamic: the incident counts used in this map encompass all NFIRS incident types, not exclusively fire incidents, and Cook County's 67.7% EMS rate means that approximately two-thirds of its reported volume consists of medical responses rather than fire events. If this map were recalculated using fire-only incidents, Cook's rate would fall meaningfully lower than 140, and the mid-state and rural corridor counties that lead the per-capita ranking would stand in even sharper relief. Chicago's structural fire problem remains real, concentrated, and analytically significant throughout this assessment, but it is a problem of absolute scale and density rather than per-capita frequency, and the per-capita rate map is specifically designed to reveal the risk landscape that raw count analysis obscures.

The comparatively low per-capita rates recorded for the extreme southern Illinois counties require careful interpretation before drawing conclusions about actual fire risk in that region. Pulaski County at 13, Hardin at 12, Johnson at 28, and Brown at 6 represent the

lowest rates in the state, and those figures reflect a combination of two legitimate factors operating simultaneously. First, these are genuinely small rural populations: Pulaski County has 5,180 residents and Hardin County only 3,643, meaning that even complete and accurate reporting would produce modest absolute incident counts by definition. A volunteer department serving 3,000 to 5,000 people across a large rural geography with limited commercial and industrial occupancy may genuinely respond to fewer than 80 incidents per year, and a per-capita rate in the low double digits is not implausible under those conditions. Second, the NFIRS reporting gaps documented throughout this assessment mean that some portion of incidents that do occur in these communities are not captured in the data, and the departments least likely to achieve complete reporting are concentrated in precisely these high-SVI rural geographies. The map cannot disaggregate these two factors, and neither can any statewide data analysis. What it can confirm is that these same counties carry the highest social vulnerability in the state, the most dangerous manufactured housing concentrations, and the longest fire department response times, a convergence of structural risk conditions that makes the actual fire environment almost certainly more hazardous than any per-capita rate derived from incomplete reporting can capture. This is precisely the analytical gap that local Community Risk Assessments are uniquely positioned to address, and supporting the departments in these communities to conduct or participate in that assessment work is among the most direct investments the statewide CRR framework can make in the communities that need it most.

Mutual Aid Given/Received - Fire Incidents



Mutual Aid Utilization

The mutual aid exchange data for Illinois fire incidents reveals a pattern of structural interdependency across the state's fire service that is both a testament to the effectiveness of the MABAS framework and a sobering indicator of where individual department capacity falls short of community risk demand. Of the 280,251 fire incidents captured in the analysis period, 169,897 incidents, representing 60.6% of the total, were handled entirely by the responding department without any form of aid exchange. While this majority figure suggests that most individual departments are able to manage routine incident demand within their own resources, it obscures the more consequential finding: nearly four in ten fire incidents in Illinois required some form of outside resource augmentation to achieve an effective response. That proportion, sustained across the full statewide incident dataset, is not a reflection of isolated departmental weakness but rather a systemic characteristic of a fire service landscape in which the distribution of risk does not align with the distribution of resources. For statewide CRR planning purposes, the 110,354 incidents involving aid exchange must be understood not as operational anomalies but as the baseline condition under which a significant portion of Illinois communities receive fire protection.

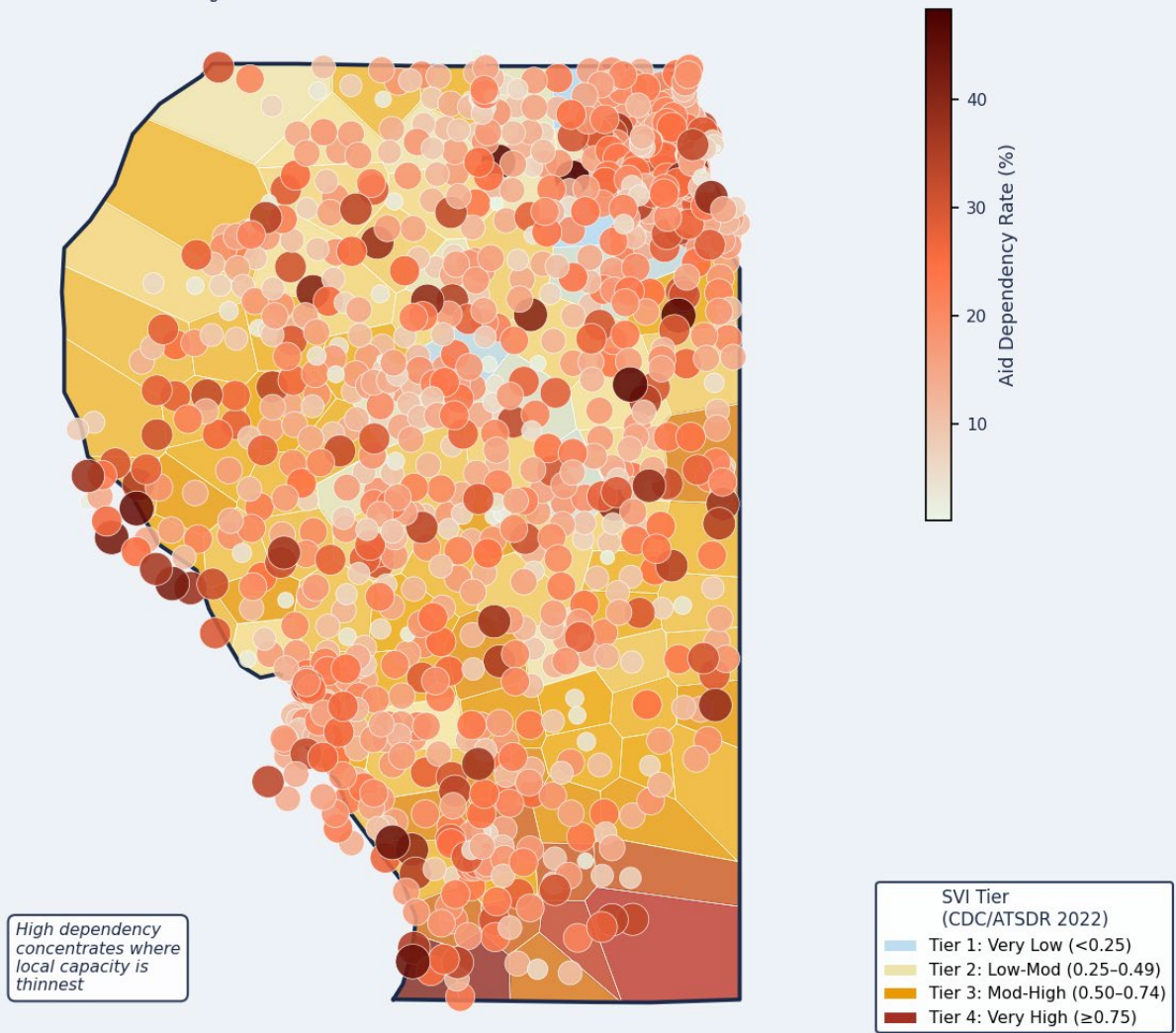
The most analytically significant finding within the mutual aid data is the pronounced asymmetry between mutual aid given and mutual aid received. Illinois fire departments provided mutual aid to neighboring jurisdictions on 46,064 occasions while receiving mutual aid on only 17,327 occasions, a net export of 28,737 incidents. This imbalance is not random. It is the measurable consequence of a fire service architecture in which a

relatively small number of well-resourced career and combination departments, concentrated in the Chicago metropolitan area, the Illinois River corridor cities, and other urban centers, serve as the operational backstop for a much larger number of smaller, primarily volunteer departments covering the state's rural and exurban geographies. The departments giving aid most frequently are those with the staffing depth, apparatus availability, and geographic positioning to absorb additional response demand without immediately compromising their own coverage. The departments receiving aid most frequently are those operating at or near the margins of their local capacity on any given incident, particularly during evening and overnight hours when volunteer availability is most constrained. When viewed through a CRR lens, this disparity identifies a stratum of Illinois communities, disproportionately rural, lower-income, and located in the central and southern regions of the state, where fire risk is being managed not by local capability but by the generosity and proximity of better-resourced neighbors.

Automatic aid patterns present a parallel and equally instructive picture. Automatic aid given totaled 29,626 incidents compared to automatic aid received at 17,337 incidents, again reflecting a net outflow from more capable to less capable jurisdictions. Unlike mutual aid, which is typically requested after the initial responding unit has assessed the incident and determined that additional resources are needed, automatic aid is dispatched simultaneously with the primary response based on pre-established geographic and operational agreements. Its prevalence in this dataset indicates that a substantial number of Illinois communities have formally acknowledged through intergovernmental agreement that their local departments cannot be expected to mount an effective initial response without simultaneous outside support. This is a critical distinction for risk assessment purposes. A community that routinely requires automatic aid is not experiencing episodic resource shortfalls; it is operating under a structural response model that depends on external resources as a designed component of first response. For those communities, any disruption to the automatic aid agreement, whether caused by a concurrent incident in the providing jurisdiction, severe weather impeding apparatus movement, or resource exhaustion during a major event, produces an immediate and potentially life-threatening gap in fire protection coverage. It should be noted that the disparity between automatic aid given and automatic aid received is likely influenced by differential NFIRS reporting completeness. Providing departments have a clear institutional incentive to document their response, while receiving departments may fail to correctly code incoming aid or complete a report at all, a reporting gap that occurs across career, combination, and volunteer agencies alike. As a result, the 17,337 figure for automatic aid received is likely an undercount, and readers should interpret the specific gap with that data quality limitation in mind.

From a community risk reduction standpoint, the aggregate picture painted by this mutual aid dataset demands a recalibration of how statewide fire service resources, prevention investments, and CRR program infrastructure are allocated. The 110,354 incidents involving any form of resource exchange represent the footprint of structural fire service vulnerability across Illinois, and that footprint does not fall evenly across the state's 102 counties. It concentrates in precisely the same geographies identified in the demographic and social vulnerability analysis: rural counties with aging housing stock, elevated poverty rates, high proportions of elderly residents living alone, and limited local government fiscal capacity to fund career or even robust combination fire service operations. A department that is consistently a net recipient of mutual and automatic aid is a department whose personnel are stretched to manage emergency response, leaving little organizational capacity for systematic fire prevention programming, home safety visit campaigns, public education initiatives, or the data-driven CRR activities that reduce incident frequency over time. To address this structural imbalance, the statewide CRR framework should allocate externally funded prevention resources, technical assistance, and program infrastructure not solely to departments most engaged in grant submissions, but rather to communities identified, through incident data and mutual aid dependency patterns, as experiencing the most significant and sustained local response capacity challenges.

Mutual Aid Dependency Rate with Social Vulnerability by ZIP Code · Illinois · 2020-2024



Source: USFA NFIRS Illinois Extract 2020-2024. SVI: CDC/ATSDR 2022. Dependency = aid received ÷ total incidents. ZIPs with <30 incidents excluded.

The mutual aid dependency rate map, layered over county-level Social Vulnerability Index shading, reveals a geographic pattern that is meaningfully different from the cooking fire and incident concentration maps examined elsewhere in this section. Rather than clustering in a single dominant region, high mutual aid dependency, measured as the percentage of a ZIP code's total incidents that required outside resource augmentation, is distributed broadly across the state and appears in communities spanning all four SVI tiers. Orange and red dots indicating dependency rates above 30% appear with notable frequency across

central and northern Illinois, including suburban and exurban communities in Will, Grundy, Kankakee, and Kane counties that carry Tier 2 and Tier 3 SVI classifications. This distribution confirms that mutual aid dependency is not exclusively a southern Illinois or high-vulnerability phenomenon but a structural characteristic of the Illinois fire service wherever individual department coverage areas are large, staffing is thin, and response resources are geographically dispersed. The highest dependency concentrations in the central and southern regions of the state, sitting on Tier 3 and Tier 4 SVI county backgrounds, represent the most consequential convergence on the map: communities where both the fire service infrastructure and the population it serves are simultaneously under-resourced, creating the vulnerability-capacity paradox that the demographic analysis documents in detail.

The most important limitation to acknowledge in interpreting this map is that the communities likely carrying the highest true mutual aid dependency may not appear on it at all. The analysis excluded ZIP codes with fewer than 30 total incidents to ensure statistical reliability, a reasonable threshold that has the unintended consequence of rendering invisible the smallest and most under-resourced departments in the state's highest-SVI rural communities. A volunteer department in Alexander, Pulaski, or Hardin County that responds to fewer than 30 reported incidents per year and relies on neighboring departments for most of its active responses would produce no dot on this map despite being among the most aid-dependent agencies in Illinois. The NFIRS reporting gap compounds this invisibility further, as the departments least likely to report all of their responses are the same departments most likely to require outside assistance for those responses. The absence of dots across much of extreme southern Illinois on this map should therefore be read not as evidence of self-sufficiency but as the combined effect of low incident volume, limited reporting capacity, and the 30-incident threshold, each of which operates to erase from the visual record precisely the communities where structural fire service vulnerability is most acute and where mutual aid dependency, if fully captured, would almost certainly be among the highest in the state.

Fire Response By County

County	Population	Stations	5 Year Incidents	Incidents /1k Residents /Yr	% EMS
Adams	65,679	12	25,555	77.8	60.70%
Alexander	5,231	6	1,976	75.5	55.90%
Bond	16,725	6	4,668	55.8	52.70%
Boone	53,397	4	26,163	98	70.90%
Brown	6,230	3	188	6	11.20%
Bureau	33,213	20	14,685	88.4	79.70%
Calhoun	4,437	4	334	15.1	26.90%
Carroll	15,692	7	2,482	31.6	29.90%
Cass	13,037	6	2,886	44.3	62.60%
Champaign	205,823	25	113,155	110	58.40%
Christian	33,996	9	17,330	102	69.50%
Clark	15,435	5	1,476	19.1	20.70%
Clay	13,270	4	1,439	21.7	56.10%
Clinton	36,801	13	6,774	36.8	52.40%
Coles	46,818	10	44,016	188	76.20%
Cook	5,272,775	114	3,680,120	139.6	67.70%
Crawford	18,678	6	3,424	36.7	45.30%
Cumberland	10,425	3	1,754	33.6	67.70%
De Witt	15,516	6	6,772	87.3	62.30%
DeKalb	100,385	12	76,505	152.4	79.50%
Douglas	19,718	7	3,598	36.5	66.30%
DuPage	932,368	27	583,061	125.1	66.20%
Edgar	16,856	7	7,669	91	66.50%
Edwards	6,245	4	1,508	48.3	71.70%
Effingham	34,654	9	8,062	46.5	41.80%
Fayette	21,487	6	2,990	27.8	61.30%
Ford	13,516	8	2,095	31	64.50%
Franklin	37,777	12	21,696	114.9	75.70%
Fulton	33,569	15	21,771	129.7	62.40%
Gallatin	4,943	6	898	36.3	41.50%
Greene	11,985	4	2,623	43.8	73.70%
Grundy	52,475	8	50,561	192.7	68.80%
Hamilton	7,953	2	616	15.5	27.60%
Hancock	17,592	10	1,616	18.4	58.30%
Hardin	3,643	3	214	11.7	32.70%
Henderson	6,382	5	791	24.8	39.60%
Henry	49,270	13	25,209	102.3	77%
Iroquois	27,072	22	6,588	48.7	48.10%
Jackson	52,912	15	15,709	59.4	35.30%
Jasper	9,278	4	511	11	16.80%

Jefferson	37,082	6	30,913	166.7	73.30%
Jersey	21,501	4	1,930	18	52.60%
Jo Daviess	22,021	9	6,409	58.2	68.40%
Johnson	13,301	6	1,827	27.5	55%
Kane	516,173	22	365,736	141.7	72.70%
Kankakee	107,359	16	105,519	196.6	70%
Kendall	131,852	5	51,174	77.6	75.70%
Knox	49,886	12	32,709	131.1	65.30%
Lake	713,483	29	509,487	142.8	67.10%
LaSalle	109,558	24	65,325	119.3	73.70%
Lawrence	15,271	4	1,576	20.6	35.90%
Lee	34,125	10	22,142	129.8	81.10%
Livingston	35,797	13	24,617	137.5	76.20%
Logan	27,961	11	21,905	156.7	64.80%
Macon	103,930	12	87,590	168.6	67.30%
Macoupin	44,940	11	13,959	62.1	72.10%
Madison	265,727	37	164,428	123.8	71.60%
Marion	37,690	9	16,209	86	61.10%
Marshall	11,735	5	3,608	61.5	63.10%
Mason	13,071	8	2,783	42.6	51.60%
Massac	14,128	4	7,214	102.1	73.20%
McDonough	27,238	8	21,068	154.7	74%
McHenry	310,151	16	191,629	123.6	69.50%
McLean	170,926	23	112,681	131.8	77.50%
Menard	12,284	7	4,587	74.7	64.10%
Mercer	15,683	8	3,033	38.7	70.90%
Monroe	34,896	5	4,880	28	33.80%
Montgomery	28,277	10	12,630	89.3	77.10%
Morgan	32,911	11	18,735	113.9	65%
Moultrie	14,522	5	9,460	130.3	85.30%
Ogle	51,743	11	34,220	132.3	77.90%
Peoria	181,691	13	139,158	153.2	77.80%
Perry	20,924	6	3,027	28.9	40.90%
Piatt	16,660	8	7,348	88.2	55.10%
Pike	14,724	10	3,645	49.5	59.50%
Pope	3,760	2	544	28.9	58.50%
Pulaski	5,180	7	341	13.2	34.90%
Putnam	5,637	5	1,117	39.6	61.90%
Randolph	30,151	11	5,306	35.2	57.40%
Richland	15,809	3	1,484	18.8	19.90%
Rock Island	144,591	17	113,005	156.3	69.10%
Saline	23,693	5	4,081	34.4	57%
Sangamon	196,182	16	148,081	151	60.20%
Schuyler	6,902	2	629	18.2	27.20%

Scott	4,937	3	192	7.8	26%
Shelby	20,974	11	3,964	37.8	54.80%
St. Clair	257,200	37	52,726	41	23.70%
Stark	5,400	4	2,372	87.9	71.70%
Stephenson	44,602	11	31,215	140	75.60%
Tazewell	131,288	19	91,501	139.4	77.90%
Union	17,217	6	1,627	18.9	14.50%
Vermilion	74,163	20	33,843	91.3	56.30%
Wabash	11,347	4	2,129	37.5	60.20%
Warren	16,835	5	9,505	112.9	65.10%
Washington	13,755	6	3,710	53.9	66.60%
Wayne	16,161	5	5,459	67.6	77.60%
White	13,871	5	1,351	19.5	18.20%
Whiteside	55,637	8	16,285	58.5	42.50%
Will	696,135	27	444,996	127.8	66.80%
Williamson	67,101	10	22,275	66.4	54%
Winnebago	285,162	16	247,603	173.7	73.50%
Woodford	38,455	12	7,639	39.7	68.20%

The county-level fire response data reveals a statewide incident burden that varies by more than thirty-fold across Illinois's 102 counties, with profound implications for resource allocation, staffing adequacy, and CRR program targeting. At the high end of the incident rate spectrum, Kankakee County leads at 196.6 incidents per 1,000 residents per year, followed by Grundy (192.7), Coles (188.0), Winnebago (173.7), Macon (168.6), Jefferson (166.7), Logan (156.7), Rock Island (156.3), DeKalb (152.4), and Peoria (153.2), all of which substantially exceed the statewide pattern and reflect the compound effect of population density, aging housing stock, and concentrated socioeconomic vulnerability documented throughout this assessment. At the opposite end of the spectrum, Brown County records just 6.0 incidents per 1,000 residents annually, followed by Scott (7.8), Jasper (11.0), Hardin (11.7), and Pulaski (13.2). Several of these low-rate counties, including Hardin and Pulaski, are among the state's highest-SVI geographies, suggesting that their low incident figures may reflect underreporting, limited department capacity to respond to all incidents, or a population so small and dispersed that absolute incident volume remains low even under conditions of elevated per-capita risk.

The EMS percentage column is among the most operationally significant findings in this dataset and reinforces the all-hazards service profile of Illinois fire departments documented in the Fire Service Profile section. Statewide, most counties report EMS calls comprising between 60% and 80% of total incident volume, with Moultrie County leading at 85.3%, followed by Lee (81.1%), Bureau (79.7%), and DeKalb (79.5%). This pattern

confirms that across most of Illinois, emergency medical response is the dominant workload driver for the fire service, not fire suppression, and that staffing models, apparatus deployment strategies, and CRR program design must account for a service profile in which most of the daily demand is medical rather than fire-related. Counties at the low end of the EMS percentage, including Union (14.5%), Brown (11.2%), Jasper (16.8%), and White (18.2%), present an atypically low medical response share that warrants further examination, as it may reflect limited EMS authorization, gaps in dispatch protocol, or reporting inconsistencies rather than a genuinely different community risk profile. Taken together, the incidents per capita and EMS percentage data provide a county-level targeting framework that the statewide CRR strategy should use to differentiate program investment, directing fire prevention resources to the highest incident-rate counties while ensuring that medical and fall prevention programming receives proportional emphasis in the counties where EMS demand constitutes the clear majority of fire service workload.

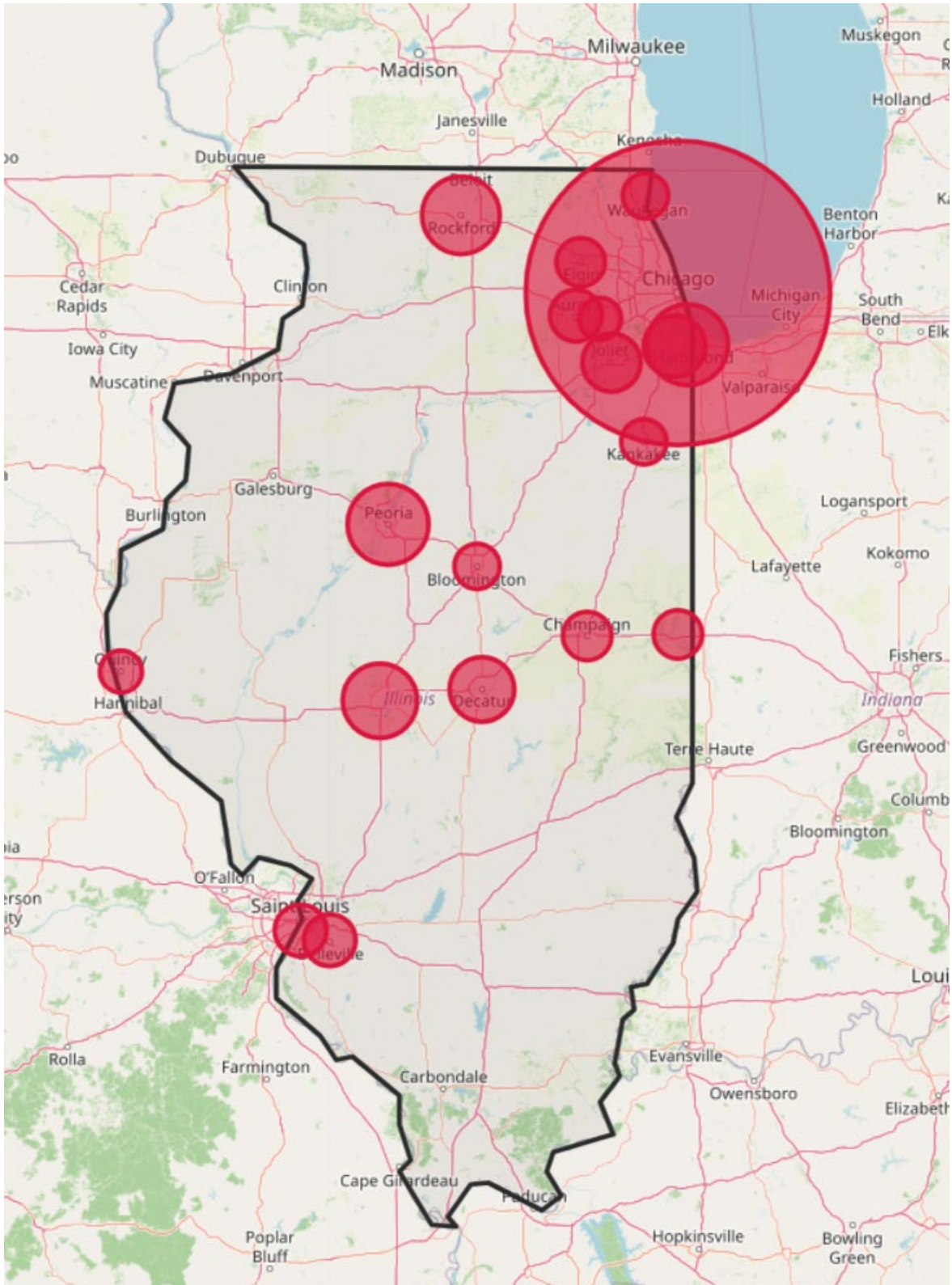
Top 100 Fire Incident Response Cities

52.2% of all fire incident volume

City	Count of Fire Incidents (100 series)
CHICAGO	55354
PEORIA	3995
CALUMET CITY	3874
ROCKFORD	3616
SPRINGFIELD	3175
DECATUR	2403
HARVEY	2147
JOLIET	2015
BELLEVILLE	1696
CAHOKIA	1539
AURORA	1531
DANVILLE	1495
CHAMPAIGN	1483
ELGIN	1397
KANKAKEE	1255
ORLAND PARK	1214
WAUKEGAN	1195
BLOOMINGTON	1144
DOLTON	1113
QUINCY	1080
GRANITE CITY	1056
NAPERVILLE	1043
ALTON	1000
URBANA	995
MT VERNON	991
PEKIN	984
MARION	964
DEKALB	960
CICERO	901
CARBONDALE	886
SOUTH HOLLAND	874
RIVERDALE	862
ADDISON	843
WASHINGTON PARK	834
ARLINGTON HEIGHTS	828
BLUE ISLAND	797
LOMBARD	786
DES PLAINES	782
PLAINFIELD	774
CAHOKIA HEIGHTS	761

JACKSONVILLE	748
BOLINGBROOK	740
ZION	739
CRYSTAL LAKE	727
MOLINE	726
BENTON	726
OAK PARK	713
STERLING	699
COLLINSVILLE	684
WEST FRANKFORT	682
MATTOON	679
MARKHAM	679
CENTRALIA	673
TINLEY PARK	669
LANSING	662
WOODSTOCK	659
ROCK ISLAND	659
OAK LAWN	655
DIXON	647
SKOKIE	637
VILLA PARK	634
EAST ST. LOUIS	633
EAST ST LOUIS	632
PALATINE	629
CHICAGO HEIGHTS	627
SAUK VILLAGE	612
PARK FOREST	610
MORRIS	596
DOWNERS GROVE	592
EAST MOLINE	590
EDWARDSVILLE	589
LINCOLN	587
GLENVIEW	586
EVANSTON	574
MAYWOOD	573
HAZEL CREST	573
ELMHURST	570
SCHAUMBURG	569
CAROL STREAM	566
SALEM	560
MUNDELEIN	549
HOMEWOOD	547
TOWN OF NORMAL	542
BELVIDERE	540
ROMEOVILLE	538

MATTESON	534
MCHENRY	533
LOCKPORT	530
MOUNT PROSPECT	525
BERWYN	520
CALUMET PARK	517
WEST CHICAGO	513
CARPENTERSVILLE	508
TAYLORVILLE	504
GALESBURG	497
WHEELING	491
CITY OF CHARLESTON	489
LOVES PARK	488
FRANKLIN PARK	488
ROBBINS	487



Geographic Concentration of Fire Incident Volume: Top 100 Communities

The geographic distribution of fire incident volume across Illinois reveals a striking concentration of fire risk within a relatively small number of communities that bears profound implications for statewide CRR resource targeting and fire service capacity planning. The top 100 cities by fire incident count collectively account for 52.2% of all

statewide fire incident volume, meaning that more than half of every fire-related emergency response in Illinois originates from a discrete set of municipalities that represent a fraction of the state's 1,300-plus incorporated communities. Chicago dominates this picture in a manner that defies simple comparison: with 55,354 fire incidents, Chicago alone accounts for a disproportionate share of total statewide volume, generating more than 13 times the incident count of the second-ranked city, Peoria (3,995), and more than 17 times the volume of third-ranked Calumet City (3,874). This concentration is not merely a function of population; it reflects the compound interaction of population density, housing age, socioeconomic vulnerability, and the sheer scale of Chicago's built environment, factors that collectively produce a fire risk environment of national significance within a single municipal boundary.

Equally important to the statewide risk picture is what the distribution reveals when Chicago is set aside and the remaining top 100 communities are examined as a group. The communities ranked second through one hundred represent a geographically and economically diverse cross-section of Illinois that extends well beyond the Chicago metropolitan collar. Cities including Peoria, Rockford, Springfield, Decatur, Harvey, Joliet, Belleville, Cahokia, Danville, Kankakee, Waukegan, Quincy, Granite City, Alton, Mount Vernon, Marion, Carbondale, East St. Louis, and West Frankfort span every region of the state and share a common profile that is analytically significant: they are predominantly older industrial and post-industrial communities characterized by aging housing stock, elevated poverty rates, high proportions of rental-occupied units, and concentrated populations of elderly and low-income residents. Many of these communities' rank among the highest in Illinois on the CDC Social Vulnerability Index, and their appearance in the upper tier of fire incident frequency is not coincidental. The correlation between social vulnerability and fire incident concentration is one of the most consistently documented findings in the fire service research literature, and the Illinois statewide data confirms this relationship with clarity.

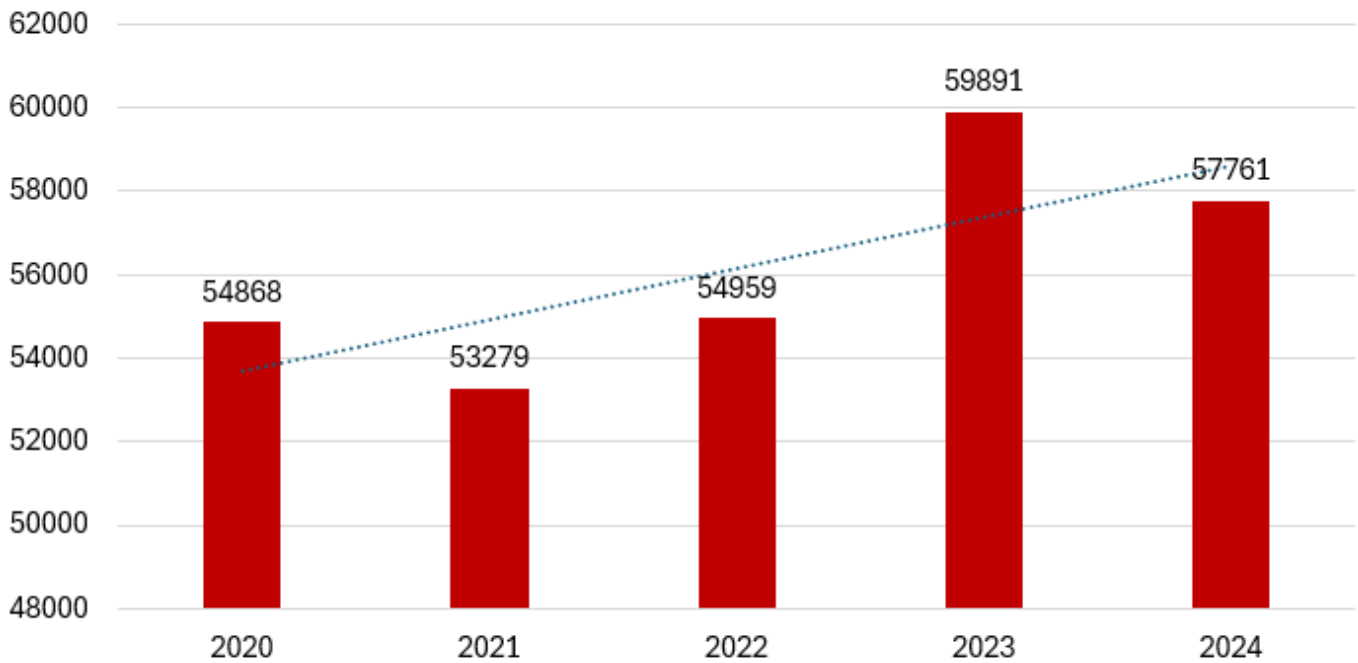
The presence of several south suburban Cook County communities, including Calumet City, Harvey, Dolton, Riverdale, South Holland, Washington Park, Blue Island, Markham, Sauk Village, Park Forest, Hazel Crest, Calumet Park, and Robbins, among the state's highest-volume fire incident municipalities is a finding that warrants specific attention in the statewide CRR framework. These communities collectively form a geographic cluster of high fire incident density immediately south of Chicago that operates largely outside the direct resource umbrella of the Chicago Fire Department while sharing many of Chicago's structural risk characteristics, including dense older housing, high poverty concentration, elevated vacancy rates, and significant populations of elderly residents living alone. Several of these municipalities maintain fire departments that are under sustained fiscal

pressure, operating aging apparatus fleets, reduced staffing levels, and limited prevention program infrastructure in communities where the objective fire risk burden is among the highest in the state. The gap between fire risk concentration and fire service resource availability in the south suburban corridor represents one of the most acute structural vulnerabilities in the Illinois fire service landscape and should be a priority focus of any statewide prevention and capacity-building investment strategy.

The broader pattern across the top 100 list also illuminates a geographic risk gradient that runs from the northeast to the southwest of the state, tracing the arc of Illinois's older industrial cities and their surrounding communities. From Waukegan and Zion on Lake Michigan through the Chicago core, the south suburban cluster, the Kankakee corridor, the Tri-Cities of the Metro East region (Alton, Granite City, Collinsville, Edwardsville, East St. Louis), and southward through Marion, Benton, West Frankfort, and Carbondale, this band of elevated fire incident concentration closely follows the geography of post-industrial economic decline, older manufactured housing stock, and constrained municipal fiscal capacity. For statewide CRR program design, this spatial pattern provides a clear directional signal: prevention investments, home safety visit programs, smoke alarm distribution initiatives, and fire department technical assistance should be concentrated along this corridor of demonstrated fire incident burden, with program intensity calibrated to the compound vulnerability profiles of the communities within it. Treating fire incident volume as a random or uniformly distributed phenomenon would misallocate scarce prevention resources and fail the communities where evidence most clearly demonstrates the need.

Fire Incident Detail (100 Series)

Fire Incidents By Year



Fire Incident Trends: 2020–2024

The five-year fire incident trend for Illinois presents a pattern that should command the attention of every stakeholder in the statewide CRR framework. From 2020 through 2024, Illinois fire departments recorded a total of 280,758 fire incidents across the NFIRS 100 series, with annual volume ranging from a low of 53,279 in 2021 to a peak of 59,891 in 2023. The dotted trend line overlaid on the annual bar chart communicates the essential finding clearly: despite year-to-year fluctuation, the directional trajectory of fire incident volume in Illinois is upward. A state that recorded 54,868 fire incidents in 2020 recorded 57,761 in 2024, an increase of 2,893 incidents representing a 5.3% rise over the five-year period. That figure, expressed as an annualized rate of increase, means Illinois fire departments are responding to roughly 580 additional fire incidents per year compared to the baseline period. For a fire service already operating under the structural resource constraints documented in the mutual aid and geographic concentration analyses, a sustained upward trend in incident demand is not an abstraction; it is a compounding operational and community safety problem that prevention investment must be positioned to interrupt.

The dip to 53,279 incidents in 2021 warrants specific contextual consideration before drawing any conclusions about a temporary improvement in statewide fire risk. The year 2021 coincided with the continued residual effects of the COVID-19 pandemic on

community activity patterns, occupancy utilization, and reporting behaviors across Illinois fire departments. Reduced commercial and institutional occupancy, altered residential patterns, and disruptions to NFIRS reporting completeness in some jurisdictions likely contributed to the apparent decline. The subsequent rebound to 54,959 in 2022 and the sharp increase to 59,891 in 2023, the highest annual total in the analysis period, suggests that the 2021 figure represented a temporary suppression of underlying demand rather than a genuine and sustained reduction in statewide fire risk. Planning and resource allocation decisions that anchored to the 2021 figure as a new baseline would have significantly underestimated the true trajectory of fire incident demand and left departments under-prepared for the surge that materialized in 2023.

The 2023 peak of 59,891 incidents represents an increase of 4,932 incidents over 2022, a single-year jump of approximately 9.0% that is the most significant year-over-year change in the analysis period. Understanding the drivers of that spike is essential for statewide CRR strategic planning. While a single year's data does not establish a cause-and-effect relationship, the 2023 increase coincides with a period of intensifying weather extremes in Illinois, including the heat events, severe storms, and drought conditions documented in the Weather and Natural Hazards section of this assessment, all of which are known contributors to elevated fire incident frequency. Extended drought conditions elevate wildland, agricultural, and outdoor fire risk across the state's vast rural landscape. Extreme heat events stress electrical systems and increase cooking and heating-related ignitions in communities with aging infrastructure. Winter storm and polar vortex conditions generate heating equipment fires, burst pipe ignitions, and electrical faults at rates that can significantly elevate quarterly incident totals. If climate trend projections for Illinois are accurate, the conditions that drove the 2023 spike are likely to become more frequent rather than less, suggesting that the 59,891 figure may ultimately represent not an anomaly but an early preview of the state's future baseline fire incident environment.

The partial moderation to 57,761 incidents in 2024 is encouraging but should not be interpreted as evidence that the upward trend has reversed. At 57,761 incidents, 2024 remains the second-highest year in the analysis period and sits nearly 5,300 incidents above the 2021 trough. The trend line's upward slope is unchanged by a single year of modest reduction, and the structural conditions driving long-term fire incident growth in Illinois, aging housing stock, growing populations of elderly residents living alone, persistent concentrated poverty in high-incident urban communities, and a changing climate that amplifies hazard frequency, have not meaningfully improved over this five-year window. For the Illinois statewide CRR framework, the practical implication of this trend analysis is clear: reactive fire suppression capacity alone cannot bend this curve. Sustained reduction in fire incident volume requires proportional and sustained investment

in the upstream prevention activities, home safety visits, smoke alarm installation programs, targeted public education, and department-level CRR capacity building, that address the behavioral, structural, and socioeconomic conditions that generate incidents before they occur. The trend line in this chart is not a forecast to be passively accepted; it is a performance benchmark against which the effectiveness of statewide CRR investment must ultimately be measured.

FIRE INCIDENT (ONLY) RESPONSE TIME PROFILE

Summary Statistics by Year (2020–2024) • Response Time in Minutes

Year	Total Incidents	Avg Response (min)	Median Response (min)	90th Percentile (min)
2020	54,868	6.49	5.17	13.00
2021	53,279	6.62	5.27	13.05
2022	54,959	6.77	5.43	13.60
2023	59,891	6.77	5.47	13.40
2024	57,761	6.86	5.57	13.62
All Years	280,758	6.70	5.38	13.25

YEAR-OVER-YEAR CHANGE IN AVERAGE RESPONSE TIME

Period	Avg Response (min)	Change (min)	Change (%)
2020 → 2021	6.62	0.14	2.1%
2021 → 2022	6.77	0.14	2.2%
2022 → 2023	6.77	0.00	0.1%
2023 → 2024	6.86	0.09	1.3%
2020 → 2024 (Total)	6.86	0.37	5.7%

RESPONSE TIME BY DEPARTMENT TYPE

Dept Type	Incidents (Filtered)	Avg (min)	Median (min)	90th Percentile (min)
Career	138,003	5.03	4.48	8.23
Mostly career	25,563	6.56	5.57	12.00
Mostly volunteer	37,978	7.49	6.52	14.00
Volunteer	59,665	9.94	10.00	17.00
All Types	261,209	6.70	5.38	13.25

Filtered incidents (1.6%) had no matching FDID in the registry and are excluded from the type totals.

DATA QUALITY & DISTRIBUTION ANALYSIS

Year	Negative Values	Zero Values	Under 5 min	5–15 min	Over 15 min
2020	7	1,566	18,892	29,161	5,230
2021	22	1,274	17,770	28,611	5,576
2022	10	1,195	17,645	29,730	6,360
2023	7	1,290	18,775	32,987	6,810
2024	16	1,129	17,444	32,061	7,088
All Years	62	6,454	90,526	152,550	31,064

DATA QUALITY NOTES

- This excludes 62 records with negative values, 6,454 with zero values, and records over 20 minutes
- 265,846 of 280,758 total incidents (94.7%) fall within the 0–20 minute filter range.
- Excluded outliers include maximums up to 1,157,780 min (~2.2 years) — almost certainly timestamp errors

Statewide Response Time Profile

Statewide Fire Incident Response Time Profile

The statewide fire incident response time profile, drawn from 280,758 incidents with valid response time records across the five-year study period from 2020 through 2024, reveals a pattern of gradual but consistent degradation in response time performance that warrants serious attention from fire service leaders and state program administrators. Average response time increased from 6.49 minutes in 2020 to 6.86 minutes in 2024, a cumulative increase of 0.37 minutes representing a 5.7 percent deterioration across the period. Year-over-year changes were consistent rather than episodic, with average response time increasing 2.1 percent between 2020 and 2021, 2.2 percent between 2021 and 2022, holding essentially flat at 0.1 percent between 2022 and 2023, and then resuming upward movement with a 1.3 percent increase in 2024. The median response time followed the same directional pattern, rising from 5.17 minutes in 2020 to 5.57 minutes in 2024, while the 90th percentile response time, representing the threshold below which 90 percent of all responses are completed, increased from 13.00 minutes to 13.62 minutes over the same period. The consistency of the upward movement across all three statistical measures confirms that the degradation in response time performance is a systemic and distributed characteristic of the statewide response profile rather than an artifact of a small number of outlying incidents.

The breakdown of response time performance by department staffing type provides the most operationally significant analytical dimension in this dataset and reveals a performance gradient that spans nearly five minutes in average response time between the fastest and slowest staffing categories. Career departments, serving 138,003 of the 261,209 incidents with matched department registry records, recorded an average response time of 5.03 minutes, a median of 4.48 minutes, and a 90th percentile of 8.23 minutes, performance figures that are consistent with the benchmarks associated with effective intervention in time-critical fire emergencies. Mostly career departments recorded an average of 6.56 minutes and a 90th percentile of 12.00 minutes, reflecting the modest performance impact of partial volunteer staffing on response time consistency. Mostly volunteer departments recorded an average of 7.49 minutes and a 90th percentile of 14.00 minutes, while fully volunteer departments recorded the longest response times across all measures, with an average of 9.94 minutes, a median of 10.00 minutes, and a 90th percentile of 17.00 minutes. The nearly five-minute gap in average response time between career and volunteer departments, 5.03 minutes versus 9.94 minutes, and the nearly nine-minute gap at the 90th percentile, 8.23 minutes versus 17.00 minutes, represent a structural performance disparity that reflects the fundamental difference between on-duty personnel

available for immediate deployment and volunteer personnel who must be alerted, travel to the station, and assemble before response can begin.

The distribution analysis provides important additional texture to the aggregate trend. The proportion of incidents completed in under five minutes remained relatively stable across the period, ranging from 17,444 to 18,892 annually, indicating that the fastest-response segment of the system has not materially changed in its composition or geographic distribution. The most significant distributional shift occurs at the upper end of the response time spectrum, where incidents exceeding 15 minutes grew from 5,230 in 2020 to 7,088 in 2024, an increase of 1,858 incidents representing growth of 35.5 percent in the longest-response segment over five years. This growth in the over-15-minute tail is the primary driver of the upward movement in the average and 90th percentile figures and points toward specific geographic areas, incident types, or operational conditions where response time performance is degrading most severely. Given the staffing type analysis, it is reasonable to infer that a disproportionate share of the over-15-minute incidents are concentrated in volunteer-dependent jurisdictions, where the structural constraints on response time are most pronounced and where the gap between actual and benchmark performance is widest.

Several important data quality considerations must be acknowledged in interpreting this analysis. The exclusion of 62 records with negative response time values, 6,454 records with zero values, and records exceeding 20 minutes, including outliers with values as high as 1,157,780 minutes, which is equivalent to approximately 2.2 years, confirms the presence of systematic timestamp recording errors in a portion of the underlying data. These errors are almost certainly attributable to records management system configuration issues, incorrect date or time entries at the dispatch or arrival recording stage, and the challenges that many departments, particularly smaller volunteer organizations, face in maintaining accurate electronic timestamps across every incident record. The fact that 94.7 percent of total incidents fall within the analytically valid 0-to-20-minute range is reassuring as a measure of overall data usability, but the zero value population of 6,454 records across five years merits particular attention as a training and records management support priority, as a recorded response time of zero almost certainly represents a data entry failure rather than an instantaneous response. The 1.6 percent of filtered incidents with no matching department identifier in the registry, while relatively small in proportion, represents a records linkage gap that should be addressed through ongoing NFIRS data quality improvement efforts to ensure that department-type performance analysis captures the full incident population.

For statewide fire service program design, the combined findings of consistent average response time degradation and the pronounced performance disparity between career and volunteer departments together define the most urgent operational challenge embedded in this dataset. The growth in the over-15-minute response time segment is the most operationally significant finding, as responses exceeding 15 minutes fall outside the performance benchmarks associated with effective intervention in time-critical emergencies including structure fires with life safety implications, cardiac arrest, and rapidly escalating hazardous conditions. For volunteer-dependent communities, where the structural constraints on response time are greatest and the performance gap relative to career benchmarks is widest, investment in volunteer recruitment and retention, duty crew programs, automatic aid agreements with neighboring career or combination departments, and station location optimization relative to current demand patterns represents the most direct pathway to measurable response time improvement. Addressing the data quality issues that produce zero and negative response time values, particularly in smaller volunteer departments where records management support is most limited, is also an essential precondition for building the reliable performance measurement infrastructure that effective response time management requires.

FIRE INCIDENTS BY DEPARTMENT TYPE

All Incident Types • Dept Type matched via USFA Registry

Incident Type	Career	Mostly Career	Mostly Volunteer	Volunteer	Unknown	Total
Building fires	32,788	11,424	18,097	25,860	1,499	89,668
Cooking fire, confined to container	22,821	2,116	2,453	1,503	78	28,971
Passenger vehicle fire	17,230	2,510	3,372	4,613	306	28,031
Outside rubbish, trash or waste fire	13,793	1,704	2,070	2,673	151	20,391
Trash or rubbish fire, contained	15,959	862	1,078	2,022	171	20,092
Brush, or brush and grass mixture fire	5,477	1,938	3,470	7,774	606	19,265
Fire, other	5,809	828	1,201	4,259	509	12,606
Grass fire	2,209	685	1,702	4,780	412	9,788
Outside rubbish fire, other	6,573	901	891	1,305	108	9,778
Dumpster or other outside trash receptacle fire	4,381	743	751	494	32	6,401
Natural vegetation fire, other	1,822	490	732	1,649	130	4,823
Road freight or transport vehicle fire	1,579	516	879	1,306	70	4,350
Mobile property (vehicle) fire, other	2,035	158	342	960	60	3,555

Fires in structures other than in a building	1,492	338	555	997	71	3,453
Off-road vehicle or heavy equipment fire	298	144	407	1,591	110	2,550
Outside equipment fire	1,200	342	392	450	26	2,410
Forest, woods or wildland fire	471	210	551	1,057	74	2,363
Special outside fire, other	1,228	211	296	397	22	2,154
Cultivated grain or crop fire	57	71	224	1,334	88	1,774
Chimney or flue fire, confined to chimney or flue	688	231	347	402	18	1,686
Fire in mobile home used as fixed residence	216	89	172	407	47	931
Outside storage fire	284	89	155	290	21	839
Cultivated vegetation, crop fire, other	58	33	112	539	43	785
Fuel burner/boiler malfunction, fire confined	430	78	103	110	9	730
Fire in motor home, camper, recreational vehicle	77	31	84	245	19	456
Commercial Compactor fire, confined to rubbish	241	47	50	45	1	384
Camper or recreational vehicle (RV) fire	67	25	75	172	10	349
Fire in portable building, fixed location	118	18	54	102	8	300
Construction or demolition landfill fire	92	52	53	80	4	281
Fire in mobile prop. used as a fixed struc., other	155	7	28	64	5	259
Rail vehicle fire	88	23	26	73	8	218
Incinerator overload or malfunction, fire confined	112	15	46	33	0	206
Garbage dump or sanitary landfill fire	86	36	39	43	0	204
Cultivated trees or nursery stock fire	60	19	42	47	3	171
Water vehicle fire	43	20	26	69	1	159
Outside gas or vapor combustion explosion	62	9	33	36	2	142
Outside stationary compactor/compacted trash fire	63	15	19	6	1	104
Self-propelled motor home or recreational vehicle	11	4	7	22	0	44
Aircraft fire	16	1	13	3	0	33
Outside mailbox fire	13	1	9	6	0	29

Structure fire, other (conversion only)	15	2	1	6	0	24
Cultivated orchard or vineyard fire	0	0	0	1	0	1
Grand Total	140,217	27,036	40,957	67,825	4,723	280,758

Fire Incidents by Department Type

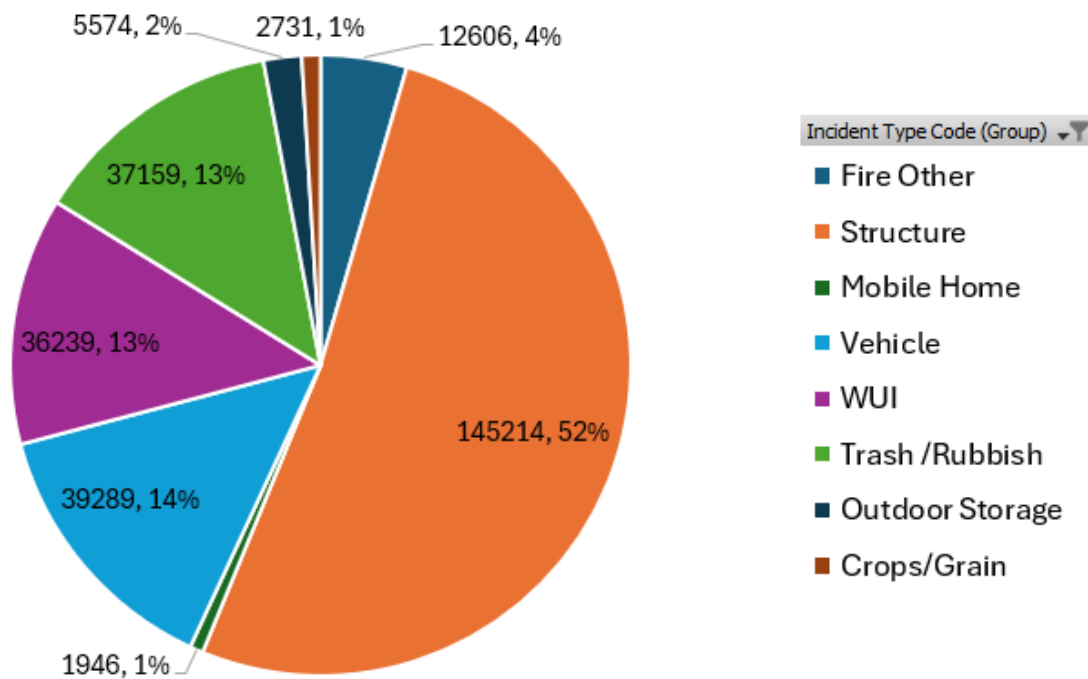
The distribution of fire incidents across department staffing types, matched against the USFA national registry across 280,758 total incidents, reveals a fire service landscape in which volunteer and mostly volunteer departments collectively bear a substantially larger share of fire incident response responsibility than their response time performance profile might suggest is optimal, particularly for the highest-consequence incident types. Career departments handled 140,217 incidents across the study period, representing 49.9 percent of the total, while volunteer departments accounted for 67,825 incidents or 24.2 percent, mostly volunteer departments contributed 40,957 incidents or 14.6 percent, and mostly career departments handled 27,036 incidents or 9.6 percent. The remaining 4,723 incidents, representing 1.7 percent of the total, could not be matched to a department type in the registry and are classified as unknown. Taken together, volunteer and mostly volunteer departments collectively responded to 108,782 incidents, or 38.7 percent of the statewide total, a share of the fire incident workload that is handled by the segment of the system recording the longest response times and operating under the most significant structural constraints on immediate unit availability.

The incident type breakdown reveals important variations in how the fire workload is distributed across staffing categories that the aggregate totals alone do not capture. Building fires, the highest-consequence incident type in the dataset at 89,668 total incidents across the period, are distributed across all staffing types in a pattern that places volunteer departments as the second largest responding category at 25,860 incidents or 28.9 percent of all building fire responses, behind career departments at 32,788 incidents or 36.6 percent. When mostly volunteer departments are added, the combined volunteer-dependent share of building fire responses reaches 43,957 incidents or 49.0 percent of the total, meaning that nearly half of all building fires recorded in Illinois across the five-year period were handled primarily by departments whose response time profile, as documented in the preceding analysis, averages between 7.49 and 9.94 minutes from dispatch to arrival. The implications of that response time gap in the context of building fires, where fire growth models indicate that conditions can transition from incipient to fully involved within minutes of ignition, are operationally significant and represent a genuine life safety concern for the communities served by volunteer-dependent departments across the state.

The vegetation and wildland fire categories present a distinctly different distribution pattern that reflects the geographic reality of where those incident types occur. Volunteer departments handle 7,774 of 19,265 brush and grass mixture fire incidents statewide, or 40.3 percent, and 4,780 of 9,788 grass fire incidents, or 48.8 percent, making them the dominant responding category for both types. Forest and wildland fires follow the same pattern, with volunteer departments handling 1,057 of 2,363 incidents or 44.7 percent of the total. This concentration is consistent with the rural and exurban geographic distribution of vegetation fire risk in Illinois, where volunteer departments are typically the only organized fire service presence and where the interface between developed land and vegetated areas creates the wildland-urban interface risk profile discussed in detail elsewhere in this assessment. By contrast, cooking fires confined to a container show the strongest career department concentration of any significant incident type, with career departments handling 22,821 of 28,971 incidents or 78.8 percent, reflecting the urban density of the populations and occupancy types where confined cooking fires are most frequent and where career department coverage is most complete.

For statewide fire service program design, the incident type distribution by department staffing category defines a set of risk and resource alignment challenges that have direct implications for both operational investment and CRR strategy. The concentration of building fire responses in volunteer-dependent departments, combined with the response time performance gap documented in the preceding analysis, supports a targeted investment strategy focused on improving the initial attack capability and response time performance of volunteer and mostly volunteer departments serving communities where building fire risk is highest. Automatic and mutual aid agreements that provide career department backup to volunteer-primary jurisdictions for confirmed building fire responses, duty crew and paid-on-call staffing models that reduce the assembly time gap inherent in volunteer response, and apparatus pre-positioning strategies informed by historical building fire demand patterns are among the operational interventions most directly supported by this data. On the prevention side, the disproportionate volunteer department exposure to vegetation fires reinforces the importance of wildland-urban interface CRR programming in rural communities, where the combination of fire risk, extended response times, and limited suppression resources creates the conditions under which community-based prevention investment produces its most consequential returns.

Fires By Group



Fire Incident Distribution by Type Group

The count-based distribution of Illinois fire incidents by type group establishes the foundational risk profile against which every element of the statewide CRR strategy must be calibrated. Structure fires account for 52% of all fire incidents, representing 145,214 incidents across the analysis period and confirming structural fire as the dominant operational and community risk challenge facing Illinois fire departments. More than half of every fire response dispatched by an Illinois fire department involves a building, a finding that carries decisive implications for resource allocation, staffing adequacy, and prevention program design. The communities generating the highest structural fire volumes are, without exception, those characterized by pre-1950 housing stock, elevated poverty and rental tenure rates, limited smoke alarm coverage, and constrained local fire service capacity. In Illinois, where 26% of homes were built before 1950 and the median construction year is 1970, it's no surprise that structural fires account for 52% of incidents, this results from an aging housing stock whose passive fire protections can't be relied upon without active prevention measures. This has clear community risk implications: structural fire rates aren't evenly spread across Illinois but are linked to the age of the built environment. It is concentrated in the same geographies and among the same populations identified in the demographic and social vulnerability analysis as carrying the greatest compound vulnerability. Reducing structural fire incidence requires prevention investment targeted precisely at those communities, with home safety visits, smoke alarm installation

programs, and residential fire inspection initiatives scaled to the depth of housing vulnerability present in each target geography.

Vehicle fires at 14% of all incidents (39,289) reflect Illinois's extraordinary transportation and freight infrastructure profile and carry community risk implications that extend well beyond the suppression challenge. The state's position as the freight rail capital of North America, its dense interstate highway network, and its role as a major petroleum refining state collectively generate a vehicle fire environment of significant operational complexity. Vehicle fires on high-speed interstate corridors require rapid deployment of suppression resources, traffic incident management coordination, and in commercial vehicle incidents, hazardous materials assessment capability that is not uniformly available across all 102 counties. The community risk dimension of this burden is most acute in rural jurisdictions along major freight corridors, where a single road freight fire can deplete a small volunteer department's entire available response capacity for multiple hours, leaving surrounding residential areas without meaningful fire protection coverage during that window. Transportation corridor fire risk is simultaneously a highway safety issue and a community fire protection vulnerability, and it demands pre-incident planning, mutual aid coordination, and specialized training investment directed at the rural departments most frequently absorbing this demand without adequate resources to manage it.

Trash and rubbish fires at 13% (37,159 incidents) and wildland-urban interface fires at an equal 13% (36,239 incidents) represent two very different but equally important dimensions of Illinois fire risk, each with distinct community risk profiles. High-frequency trash and rubbish fire concentrations in specific urban geographies are among the most reliable leading indicators of structural fire risk elevation available in the NFIRS dataset. Their presence in concentrated form signals abandoned property proliferation, weakened code enforcement, inadequate waste management infrastructure, and the neighborhood disinvestment conditions that systematically precede increases in residential structure fire frequency. From a CRR standpoint, trash and rubbish fire hotspots are early warning signals that should trigger proactive community engagement, environmental code enforcement coordination, and targeted prevention outreach before the underlying conditions produce the building fire fatalities they forecast. The WUI figure of 36,239 incidents is equally consequential but for different reasons. Illinois fire departments responding to WUI incidents across the Shawnee National Forest corridor, Midewin National Tallgrass Prairie buffer zones, and agricultural perimeter communities are frequently doing so with personnel trained primarily for structural response, apparatus configured for urban operations, and water supply infrastructure that does not extend into the open-land environment. The community risk implication is a structural capability gap: the populations living within or adjacent to WUI zones in southern and central Illinois are

among the state's most socially vulnerable, and the departments protecting them are among the least equipped for the specific fire environment those communities present.

The remaining categories, mobile homes at 1% (1,946 incidents), outdoor storage at 2% (5,574 incidents), crops and grain at 1% (2,731 incidents), and fire other at 4% (12,606 incidents), are modest in percentage terms but carry community risk significance entirely disproportionate to their incident share. Mobile home fires produce civilian fatality rates per incident that the fire service research consistently documents at two to three times the rate of site-built residential structure fires, driven by rapid fire progression in lightweight manufactured construction, limited egress options, and the prevalence of pre-HUD units concentrated in the state's highest-SVI rural counties. In Alexander, Pulaski, Hardin, and Pope counties, where mobile home concentrations are highest and SVI scores reach 0.78 to 0.97, this 1% figure translates into a fatality risk profile that demands prevention attention and resource investment entirely out of proportion to its statewide incident share. Crops and grain fires carry economic consequence and operational complexity far beyond their percentage in a state where grain elevator operations, row crop harvesting, and ethanol production infrastructure are distributed across the majority of Illinois's land area. Taken together, the full type-group profile delivers a clear directive for statewide CRR program design: effective prevention strategy cannot be built around a single dominant risk category. It must account for a genuinely multi-dimensional fire environment in which the communities carrying the heaviest burden are precisely those with the least local capacity to address it without externally structured support.

Fires By Type 2020 - 2024

Fire Type	Count of Incident Type Code (National)
Building fires	89668
Cooking fire, confined to container	28971
Passenger vehicle fire	28031
Outside rubbish, trash or waste fire	20391
Trash or rubbish fire, contained	20092
Brush, or brush and grass mixture fire	19265
Fire, other	12606
Grass fire	9788
Outside rubbish fire, other	9778
Dumpster or other outside trash receptacle fire	6401
Natural vegetation fire, other	4823
Road freight or transport vehicle fire	4350
Mobile property (vehicle) fire, other	3555

Fires in structures other than in a building	3453
Off-road vehicle or heavy equipment fire	2550
Outside equipment fire	2410
Forest, woods or wildland fire	2363
Special outside fire, other	2154
Cultivated grain or crop fire	1774
Chimney or flue fire, confined to chimney or flue	1686
Fire in mobile home used as fixed residence	931
Outside storage fire	839
Cultivated vegetation, crop fire, other	785
Fuel burner/boiler malfunction, fire confined	730
Fire in motor home, camper, recreational vehicle	456
Commercial Compactor fire, confined to rubbish	384
Camper or recreational vehicle (RV) fire	349
Fire in portable building, fixed location	300
Construction or demolition landfill fire	281
Fire in mobile prop. used as a fixed structure (other)	259
Rail vehicle fire	218
Incinerator overload or malfunction, fire confined	206
Garbage dump or sanitary landfill fire	204
Cultivated trees or nursery stock fire	171
Water vehicle fire	159
Outside gas or vapor combustion explosion	142
Outside stationary compactor/compacted trash fire	104
Self-propelled motor home or recreational vehicle	44
Aircraft fire	33
Outside mailbox fire	29
Structure fire, other (conversion only)	24
Cultivated orchard or vineyard fire	1
Grand Total	280758

Fire Incident Distribution by Specific Incident Type

The granular breakdown of Illinois fire incidents by specific NFIRS incident type code provides the most operationally precise risk inventory in this assessment, identifying not only what is burning in Illinois but the community conditions that produce ignition, the populations most exposed to harm, and the prevention strategies most likely to reduce incident frequency over time. Building fires lead all specific incident types at 89,668 incidents, representing 31.9% of total statewide volume and an average of approximately 49 building fires every day across Illinois's 102 counties. That figure is not an abstraction. It is the daily operational reality of a fire service responding to the consequences of aging housing stock, deferred maintenance, inadequate fire protection systems, and the concentration of vulnerable populations in structures least equipped to contain fire once it

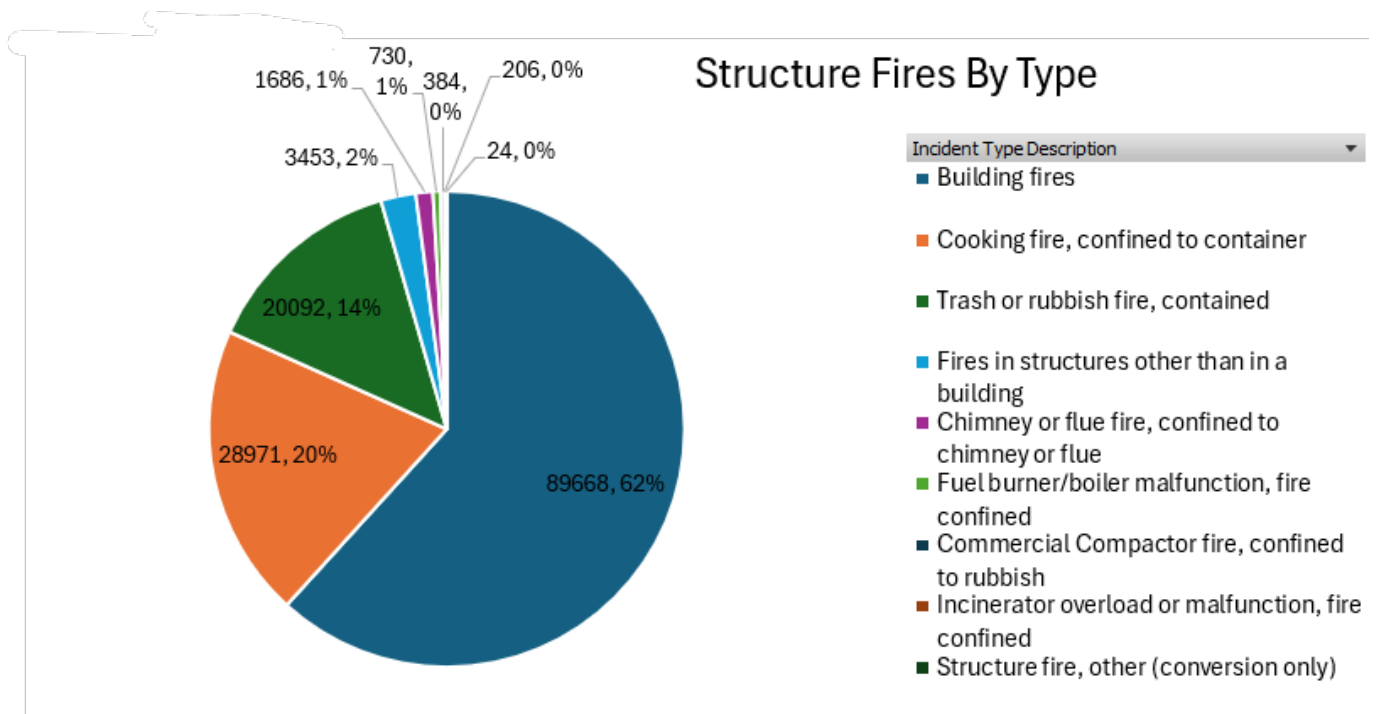
starts. The communities generating the highest building fire volumes are, without exception, the same communities identified in the demographic and social vulnerability analysis as carrying the greatest concentrations of pre-1950 housing, poverty, elderly residents living alone, and limited access to working smoke alarms. The relationship between structural vulnerability and fire incident frequency is not coincidental; it is causal, and it defines the primary target population for statewide CRR investment.

The cooking fire category at 28,971 confined-to-container incidents is the second most frequent specific type and the data point with the most direct and actionable community risk implication in this entire dataset. Cooking is the leading cause of residential structure fires nationally, and Illinois confirms that pattern with an average of approximately 16 cooking fire incidents every day. The NFIRS confined-to-container designation is critically important from a CRR perspective: it indicates that in the majority of these events, the fire did not escalate beyond its point of origin, meaning that working detection equipment, functional suppression systems, or immediate occupant intervention prevented a contained cooking fire from becoming a building fire. Every confined cooking fire in this dataset represents a near-miss that prevention infrastructure caught. The inverse is equally true: in communities where smoke alarm coverage is lowest, where elderly or cognitively impaired residents are most prevalent, and where housing density compresses the margin between a contained cooking fire and a fatal residential structure fire, the failure of that prevention infrastructure produces the fatalities documented later in this assessment. Cooking fire education programs, smoke alarm installation initiatives, and targeted outreach to elderly and low-income households are not supplemental prevention activities; they are the direct operational response to what this data identifies as the state's second most common fire event.

The vehicle fire subcategories, when disaggregated, reveal a transportation risk profile with distinct community risk dimensions that the top-level vehicle percentage obscures. Passenger vehicle fires at 28,031 incidents represent the core burden, but road freight and transport vehicle fires at 4,350 incidents, off-road vehicle and heavy equipment fires at 2,550, and rail vehicle fires at 218 collectively add more than 10,000 additional incidents involving non-passenger transportation assets. The community risk implication of these figures extends beyond the operational challenge of vehicle fire suppression. Road freight vehicle fires on Illinois's major interstate corridors disproportionately affect communities that are already resource-constrained, because the departments most frequently called to highway incidents in rural areas are the same volunteer and combination departments covering large geographic service areas with limited staffing. A road freight fire on I-57 in Kankakee County or I-57 in southern Illinois does not represent the same organizational challenge as a comparable incident in a Chicago suburb with immediate backup available;

it represents a resource-depleting event that can strip a small rural department of its entire on-duty or on-call capacity for multiple hours, leaving the surrounding community without meaningful fire protection coverage during that window. Transportation corridor fire risk is therefore simultaneously a highway safety issue and a community fire protection vulnerability.

The outdoor and vegetation fire subcategories, when their individual components are summed, reveal a combined open-land fire burden that is far larger than its aggregate category share suggests. Outside rubbish and trash fires, dumpster fires, and related refuse categories together account for more than 56,000 incidents over the analysis period, the largest single operational grouping when outdoor fire subtypes are combined. Vegetation, wildland, and agricultural categories including brush and grass fires, grass fires, natural vegetation fires, forest and wildland fires, and cultivated crop fires collectively produce more than 38,000 additional incidents. The community risk implications of these figures operate on two levels. At the neighborhood level, the concentration of outdoor refuse fires in specific urban geographies is a leading indicator of community distress, signaling the presence of abandoned properties, illegal dumping, weakened code enforcement, and the social conditions that correlate with elevated structural fire risk in adjacent residential blocks. At the rural and agricultural level, the vegetation and crop fire burden falls most heavily on departments in central and southern Illinois that are least equipped to manage it, with limited tanker capacity, extended response distances, minimal wildland firefighting training, and water supply infrastructure that does not extend into the open-land interface environment. Both dimensions demand targeted CRR responses: urban refuse fire concentration calls for community engagement, environmental code enforcement, and neighborhood stabilization investment, while rural vegetation fire burden calls for interagency coordination, wildland-urban interface pre-planning, and targeted apparatus and training investment directed by the statewide CRR framework toward the departments and communities where the data most clearly demonstrates the need.



Structure Fires by Incident Type: NFIRS Group 11 Analysis

Within the 145,214 structure fire incidents recorded across the analysis period, the distribution by specific incident type reveals a risk hierarchy that is both analytically precise and directly actionable for statewide CRR program design. Building fires account for 62% of all structure fire incidents, representing 89,668 events and establishing occupied building fires as the single most consequential fire category in the Illinois incident profile by every measure that matters: civilian fatality risk, firefighter injury exposure, property loss, and community displacement. At an average of approximately 17,934 building fires per year, or roughly 49 per day statewide, the operational demand generated by this single incident type alone defines the baseline around which Illinois fire department staffing, apparatus deployment, and mutual aid frameworks must be organized. The community conditions producing this volume are well established in the preceding analysis: aging housing stock concentrated in high-poverty urban neighborhoods and rural communities with limited prevention infrastructure, insufficient smoke alarm coverage in the households of elderly and low-income residents, and the absence of systematic residential fire inspection programs in the jurisdictions carrying the highest building fire burden.

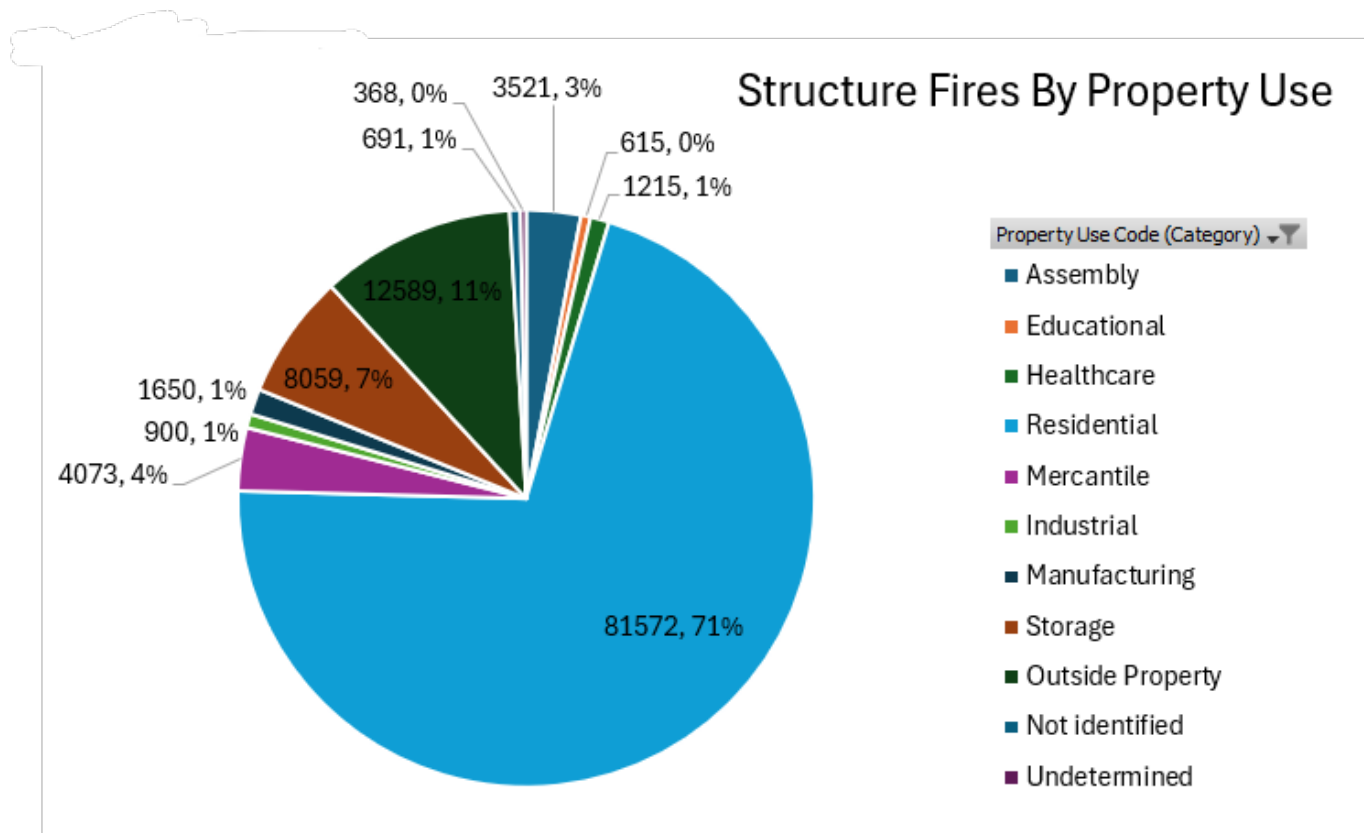
Cooking fires confined to container represent 20% of all structure fire incidents at 28,971 events, making them the second most frequent structure fire type and the category with the most direct and immediately actionable community risk implication in this dataset. The confined-to-container designation carries a meaning that is essential to CRR interpretation: in each of these nearly 29,000 incidents, the fire did not escalate beyond its vessel of

origin. Working detection systems, functional suppression equipment, or immediate occupant response interrupted what could have become a building fire. Every one of these contained events is a documented near-miss in which prevention infrastructure performed as designed. The community risk corollary is equally precise: in households where that infrastructure is absent, where elderly residents with impaired mobility or cognition are cooking alone, where smoke alarms are missing or non-functional, and where poverty constrains access to safe cooking equipment, the contained cooking fire becomes the fatal building fire. The geographic and demographic profile of Illinois's highest cooking fire burden communities overlaps almost exactly with the state's highest-SVI geographies, identifying cooking fire education, smoke alarm installation, and targeted outreach to elderly and isolated residents as among the highest-return prevention investments available to the statewide CRR framework.

Trash or rubbish fires contained within structures account for 14% of structure fire incidents at 20,092 events, a figure that warrants more analytical attention than its category label might suggest. These are not outdoor refuse fires; they are containment events occurring within the building envelope, in compactor rooms, storage areas, utility spaces, and common areas of multifamily and commercial structures. Their concentration in older multifamily housing stock, high-density urban buildings with shared waste management infrastructure, and commercial occupancies with inadequate rubbish handling practices makes them a meaningful structural fire risk indicator for the specific community types where Illinois's highest compound vulnerability populations are concentrated. The remaining categories, fires in structures other than buildings at 2% (3,453), chimney and flue fires at 1% (1,686), fuel burner and boiler malfunctions at 1% (730), commercial compactor fires at 384, and incinerator malfunctions at 206, collectively account for less than 5% of structure fire volume but each represent confined failure events in building systems that, when prevention and maintenance programs are absent, escalate into the building fire category that dominates this dataset.

The community risk implications of this structure fire profile are specific and directional. The 62% building fire share, the 20% cooking fire share, and the 14% contained rubbish fire share together account for 96% of all structure fire incidents in Illinois, and all three categories are disproportionately concentrated in the same community profiles: older housing stock in high-poverty urban and rural geographies, multifamily and rental-occupied buildings with deferred maintenance and absent or non-functional fire protection systems, and households occupied by elderly, disabled, or economically constrained residents with limited capacity for self-protective action. For the statewide CRR framework, this concentration of structure fire risk within a clearly defined community and housing profile is not a complication; it is a targeting map. It identifies with specificity

where home safety visit programs, smoke alarm installation initiatives, cooking fire education campaigns, and residential inspection activities will generate the greatest reduction in structure fire frequency and severity. The inverse is equally clear: statewide prevention resources distributed without regard to this risk concentration will systematically underinvest in the communities where structure fire risk is highest and overinvest in communities where the housing stock, occupant demographics, and existing prevention infrastructure already produce lower incident rates.



Structure Fires by Property Use

The distribution of Illinois structure fires by property use category provides the most operationally specific targeting framework in the incident analysis, establishing with precision not only where structure fires occur but what those locations reveal about the populations at risk, the built environment conditions that generate ignition and support fire progression, and the prevention strategies most likely to reduce loss. Residential properties account for 71% of all structure fires with captured property use data, representing 81,572 incidents and confirming that the American home remains the primary theater of structure fire risk in Illinois by an overwhelming margin. This proportion is consistent with national fire loss patterns but its community risk implication in Illinois is amplified by the specific character of the residential stock generating the highest incident volume. The pre-1950

housing concentrated in Chicago's south and west sides, the aging rental stock in Rockford, Peoria, Decatur, Danville, Kankakee, and the south suburban Cook County corridor, and the older single-family housing in downstate communities across the central and southern regions are not merely old buildings. They are structures in which original fire protection features have degraded, electrical systems have been modified without permit, heating equipment has been deferred past its service life, and the residents least able to self-evacuate are most likely to be living alone without functioning smoke alarms. Reducing residential structure fire frequency in Illinois is, above all else, a question of reaching the right households with the right prevention interventions before the next ignition event.

Outside property fires at 11% (12,589 incidents) represent the second largest property use category and a finding that requires careful CRR interpretation. Outside property structure fires encompass incidents in detached garages, sheds, outbuildings, abandoned structures, and other non-primary residential and commercial buildings within developed property boundaries. Their concentration in specific community geographies, particularly in urban neighborhoods with high rates of property vacancy, deferred maintenance, and abandoned structure inventory, links this category directly to the same community distress conditions identified in the trash and rubbish fire analysis. Abandoned and vacant structures are a well-documented accelerant of neighborhood fire risk: they attract arson activity, provide ignition pathways to adjacent occupied structures, and generate response demands for departments that must commit resources to buildings with no life safety value while adjacent occupied housing remains unprotected. In the communities along the high-incident corridor from the south suburbs through Kankakee, Decatur, East St. Louis, and into southern Illinois, elevated outside property fire frequency is both a symptom of neighborhood disinvestment and a driver of escalating risk for the residents living alongside vacant and deteriorating structures. Community risk reduction in these geographies requires coordination between fire departments, municipal code enforcement agencies, and community development organizations to address the abandoned property inventory that generates a disproportionate share of this incident category.

Storage fires at 7% (8,059 incidents) carry an operational and community risk profile that extends well beyond their percentage share, particularly in the Illinois context. Storage occupancy fires encompass a broad range of facility types including commercial warehouses, agricultural storage structures, bulk petroleum storage, grain elevator complexes, chemical storage facilities, and industrial material storage operations distributed across the state's urban, suburban, and rural landscapes. In the Chicago metropolitan area, large commercial warehouse and distribution facilities concentrated along major freight corridors represent storage fire environments with significant

hazardous materials exposure and the potential for rapid large-scale fire development that can overwhelm initial attack resources. In rural Illinois, grain storage and agricultural commodity facilities present a specific fire and explosion hazard profile, with combustible dust accumulation, confined space characteristics, and limited water supply access creating conditions that demand specialized pre-incident planning and interagency coordination well beyond what routine structural response protocols provide. The assembly (1%, 1,215), mercantile (1%, 1,650), industrial (1%, 900), manufacturing (1%, 691), healthcare (0%, 615), and educational (0%, 368) categories each represent occupancy types where life safety consequences per incident can far exceed those in single-family residential fires due to occupant density, mobility limitations, hazardous materials presence, or the critical community service function of the facility affected.

The most significant data quality finding in this chart is the 29,961 incidents, representing approximately 20.6% of all structure fire incidents in the analysis period, for which property use was not captured in the incident report. This is not a minor reporting gap; it is a structural deficit in Illinois's NFIRS data completeness that materially affects the precision of property use risk analysis at the statewide level. The absence of property use coding in more than one in five structure fire reports means that the 71% residential share, while directionally accurate, is likely an undercount of the true residential proportion if missing records follow the same distribution pattern as captured ones, which available national research suggests they broadly do. For the statewide CRR framework, this data quality gap carries a dual implication. First, NFIRS reporting compliance and data field completion must be treated as a CRR infrastructure priority, because prevention programs that cannot accurately characterize where fires are occurring cannot be efficiently targeted to where they are most needed. Second, the 29,961 uncoded incidents represent a population of fire events whose community risk implications remain invisible to analysis, a condition that the OSFM, through training investment, reporting standards enforcement, and technical assistance to departments with the lowest data completeness rates, must prioritize correcting in the next reporting cycle.

Building Fires By Area of Origin

Row Labels	Count of Incident Type Code (National)
Undetermined	8998
Cooking area, kitchen	8258
Vehicle storage area; garage, carport	2959
Bedroom - < 5 persons; included are jail or prison	2903
Wall surface: exterior	2105

Common room, den, family room, living room, lounge	1990
Outside area, other	1785
Laundry area, wash house (laundry)	1558
Attic: vacant, crawl space above top story, cupola	1199
Exterior balcony, unenclosed porch	1162
Other	1076
Bathroom, checkroom, lavatory, locker room	947
Storage area, other	775
Wall assembly	763
Roof surface: exterior	662
Function area, other	644
Structural area, other	593
Exterior, exposed surface	550
Substructure area or space, crawl space	544
Exterior stairway, ramp, or fire escape	497
Open area - outside; included are farmland, field	494
Courtyard, patio, porch, terrace	471
Chute/container - trash, rubbish, waste	450
Heating room or area, water heater area	397
Storage: supplies or tools; dead storage	370
Ceiling & floor assembly, crawl space b/t stories	349
Egress/exit, other	313
Interior stairway or ramp	309
Storage room, area, tank, or bin	305
Duct: hvac, cable, exhaust, heating, or AC	303
Entrance way, lobby	298
Processing/manufacturing area, workroom	294
Equipment or service area, other	286
Closet	280
Vacant structural area	255
Corridor, mall	250
Multiple areas	236
Dining room, cafeteria, bar area, beverage service	220
Vehicle area, other	204
Office	174
Maintenance shop or area, paint shop or area	161
Conduit, pipe, utility, or ventilation shaft	151
Machinery room or area; elevator machinery room	142
Highway, parking lot, street: on or near	124
Bedroom - 5+ persons; including barrack/dormitory	102
Sales area, showroom (exclude display window)	100
Shipping/receiving area; loading area, dock or bay	87
Engine area, running gear, wheel area	79
Assembly or sales area, other	65

Service facilities, other	58
Assembly area - less than 100 persons	51
Switchgear area, transformer vault	39
Technical processing areas, other	38
Chimney (conversion only)	37
Wildland, woods	36
Construction/renovation area	32
Incinerator area	30
Conveyor	29
Personal service area, barber/beauty salon area	27
Cargo/trunk area - all vehicles	25
Operator/passenger area of transportation equip.	25
Awning	24
Assembly area without fixed seats - 100+ persons	23
Laboratory	21
Chute; laundry or mail, excluding trash chutes	20
Fuel tank, fuel line	18
Records storage room, storage vault	15
Display window	12
Arena, assembly area w/ fixed seats - 100+ persons	11
Railroad right of way: on or near	9
Computer room, control room or center	9
Escalator - exterior, interior	7
Swimming pool	6
Dumbwaiter or elevator shaft	6
Separate operator/control area of transportation	6
Enclosure, pressurized air	4
Light shaft	4
Art gallery, exhibit hall, library	4
Treatment - first aid area, surgery area	3
Enclosure with enriched oxygen atmosphere	2
Projection room, spotlight area	2
Cell, test	1
Stage area - performance, basketball court, boxing	1
Dark room, photography area, or printing area	1
Grand Total	47873

Building Fires by Area of Origin

Among the 47,873 Illinois building fire incidents for which area of origin was recorded, the distribution identifies with precision the physical locations within the built environment where fire most frequently begins and the community conditions that make those locations disproportionately productive of ignition. The undetermined category leads at 8,998 incidents (18.8%), a figure that reflects the investigative limitations inherent in

fires that have progressed beyond the point where origin determination is feasible at the time of reporting, and which itself carries a community risk signal: fires that burn long enough to obscure their origin are fires that were not detected early, not reported promptly, or not reached by fire service resources before significant progression had occurred. Setting undetermined aside, the cooking area and kitchen emerges as the single most identified area of origin at 8,258 incidents (17.2%), confirming at the room-of-origin level what the cooking fire analysis established at the incident level: the kitchen is the primary fire ignition environment in Illinois's built structures, and the community conditions that produce uncontrolled cooking fires, inattentive cooking behaviors, aging equipment, absent or non-functional detection, and the specific vulnerability profile of elderly residents cooking alone, are the primary upstream drivers of building fire incidence in the state.

The bedroom category at 2,903 incidents (6.1%) and the common room, den, family room, and living room category at 1,990 incidents (4.2%) together account for more than 10% of all captured origin areas and identify the sleeping and primary living environments of residential occupancies as the second most productive fire origin zone in Illinois buildings. Bedroom fires carry the highest fatality risk of any area of origin category because they most frequently involve occupants who are asleep, incapacitated, or otherwise unaware of the fire until it has progressed to a stage that limits egress options. The community risk profile of bedroom-origin fires in Illinois maps directly onto the elderly, low-income, and socially isolated populations identified throughout this assessment as the state's highest fire fatality risk group: residents who sleep with bedroom doors open in unsprinklered buildings, who lack functioning smoke alarms in the correct locations, and who may have mobility or cognitive limitations that extend evacuation time beyond what undetected fire progression will allow. The living and common room category reflects a similar occupant vulnerability profile, with fires originating in spaces where smoking materials, electrical equipment, and heating appliances interact with the upholstered furnishings and accumulated household materials that characterize the living environments of the populations most at risk.

The vehicle storage area and garage category at 2,959 incidents (6.2%) and the exterior wall surface category at 2,105 incidents (4.4%) represent two distinct fire origin environments with important community risk dimensions that extend beyond the structures themselves. Garage and vehicle storage fires are disproportionately concentrated in older attached garage configurations common to Illinois's pre-1970 housing stock, where the absence of fire-rated separation between the garage and the living space allows fire to extend rapidly into occupied areas before detection occurs. Exterior wall surface fires, which encompass both wildland-urban interface ignitions from ember deposition and

urban fire spread from adjacent burning structures, are particularly consequential in the dense older neighborhoods and manufactured housing communities already identified as the state's highest structural vulnerability environments. The laundry area category at 1,558 incidents (3.3%) identifies dryer-related ignitions, primarily from accumulated lint in exhaust systems, as a meaningful and highly preventable building fire origin environment, with a prevention solution, annual dryer vent cleaning and inspection, that is straightforward to communicate and implement through community education programming.

The attic and crawl space category at 1,199 incidents (2.5%), the exterior balcony and unenclosed porch at 1,162 incidents (2.4%), and the wall assembly category at 763 incidents (1.6%) collectively identify the concealed and semi-concealed structural spaces of older Illinois buildings as a significant fire origin environment with particularly challenging suppression characteristics. Attic and wall assembly fires are among the most operationally dangerous building fire scenarios because fire traveling through concealed spaces can compromise structural integrity rapidly, present without visible flame until significant progression has occurred, and require extensive overhaul operations that extend firefighter exposure time substantially beyond the initial attack phase. Their concentration in older housing stock reinforces the building age dimension of Illinois's structural fire risk and adds an occupational safety dimension to the community risk implications of inadequate housing maintenance and absent residential fire inspection programs. The data completeness finding for this chart, 97,317 incidents submitted without area of origin recorded, representing 67.0% of all building fire reports, is the most significant reporting gap encountered in the structure fire analysis. Area of origin data is among the most operationally valuable prevention intelligence available in the NFIRS system because it directly informs where within buildings ignition risk is concentrated and what physical or behavioral interventions are most likely to interrupt the ignition pathway. The loss of that intelligence in two-thirds of Illinois building fire reports represents a substantial constraint on the precision of statewide prevention program design and addressing it through targeted reporting support and training investment must be treated as a foundational priority of the statewide CRR infrastructure.

Structure Fires By Building Type

Building Type	Count of Incident Type Code (National)
Air supported structure	14
Connective structure	179
Enclosed building	38461
Fixed portable or mobile structure	680
Open platform	145
Open structure	588
Structure type, other	1187
Tent	18
Underground structure work areas	24
Grand Total	41296

Structure Fires by Building Type

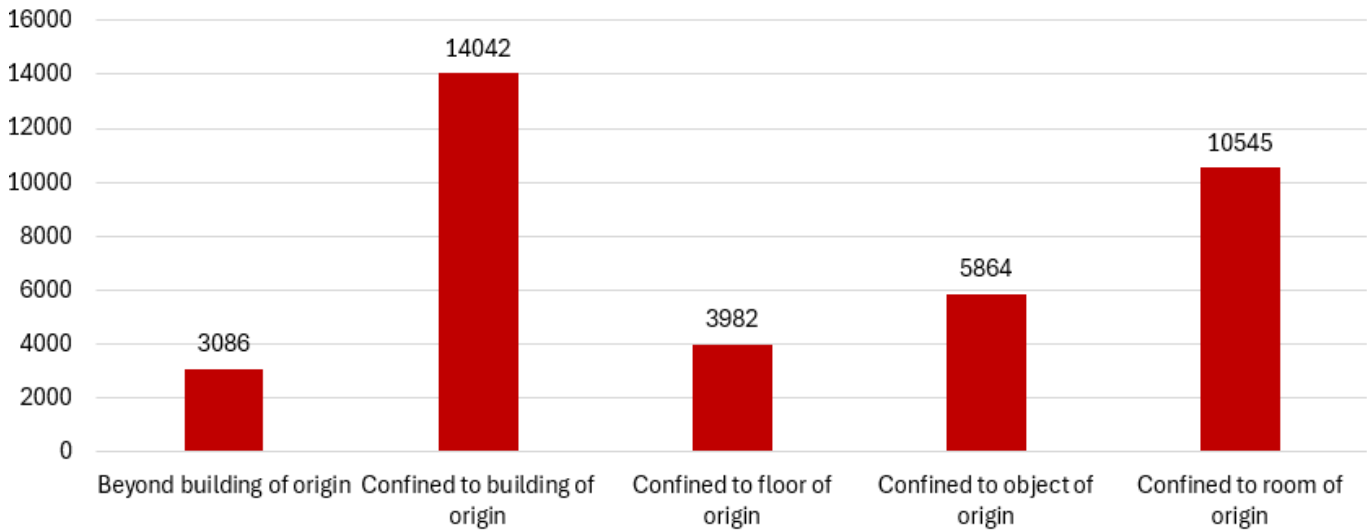
Among the 41,296 Illinois structure fire incidents for which building type was recorded, enclosed buildings account for 93.2% of the total at 38,461 incidents, a proportion so dominant that it effectively confirms what the property use analysis established: the overwhelming majority of Illinois structure fire risk is concentrated within fully enclosed, permanently fixed buildings of the residential, commercial, storage, and institutional types already identified as the state's primary fire loss environment. The remaining building type categories, fixed portable or mobile structures at 680 incidents (1.6%), structure type other at 1,187 incidents (2.9%), open structures at 588 incidents (1.4%), connective structures at 179 incidents (0.4%), open platforms at 145 incidents (0.4%), underground structure work areas at 24 incidents, tents at 18 incidents, and air supported structures at 14 incidents, collectively represent less than 7% of captured volume. Each of these categories carries specific operational considerations, particularly fixed portable and mobile structures, which encompass the manufactured and mobile home environments documented elsewhere in this assessment as producing fatality rates two to three times higher than site-built construction. Their modest combined share of captured incidents does not diminish their individual community risk significance, particularly in the rural southern Illinois counties where mobile and manufactured housing concentrations are highest.

The community risk implications of the building type data are meaningful in what they confirm rather than in what they reveal as new information. The near-total concentration of structure fire incidents within enclosed buildings reinforces the targeting precision already established in the property use and incident type analyses: Illinois's structure fire prevention strategy should be organized around the enclosed residential and commercial building environment, with particular emphasis on the pre-1950 housing stock, older

multifamily rental buildings, and deteriorating commercial structures in high-incident urban communities where building age, deferred maintenance, and occupant vulnerability converge to produce the highest consequence fire events. Pre-incident planning, residential inspection programs, smoke alarm installation initiatives, and community education efforts directed at enclosed building occupants will capture the vast majority of structure fire risk in Illinois within a single, well-defined strategic focus.

It would be remiss, however, not to address the data completeness picture this chart presents alongside its findings. Of the total structure fire incidents in the analysis period, 103,918 incidents, representing approximately 71.5% of all structure fire reports, were submitted without a building type classification recorded. That is a substantial reporting gap, and it reflects not a failure of commitment by Illinois's fire service but rather the real-world constraints facing departments, many of them small volunteer agencies operating without dedicated prevention or administrative staff, that are being asked to complete detailed NFIRS data fields while simultaneously managing the operational, training, and fiscal demands of running a fire department. The statewide CRR framework should approach this as a support challenge rather than a compliance problem. Targeted NFIRS training, streamlined data entry tools, and direct technical assistance to the departments with the lowest reporting completion rates will do more to improve data quality over time than enforcement pressure alone. The practical consequence of improving building type completion rates is not administrative, it is analytical: better data produces better risk targeting, better targeted programs produce better outcomes, and better outcomes are ultimately what every Illinois fire department and every Illinois community deserves from a statewide risk assessment investment of this scope.

Structure Fire Flame Spread



Structure Fire Flame Spread Analysis

Among the 37,519 Illinois structure fire incidents for which flame spread was recorded, the distribution reveals a fire containment profile that is simultaneously encouraging in its dominant pattern and sobering in its exceptions. The largest single category is confined to building of origin at 14,042 incidents (37.4%), followed by confined to room of origin at 10,545 incidents (28.1%), confined to object of origin at 5,864 incidents (15.6%), confined to floor of origin at 3,982 incidents (10.6%), and beyond building of origin at 3,086 incidents (8.2%). Reading these figures in aggregate, 91.8% of captured structure fire incidents were contained within the building of origin or smaller, a pattern that reflects the combined effect of fire department response capability, built-in fire protection features where they exist, and in many cases the early detection and occupant notification that functional smoke alarms provide. That containment rate is not accidental; it is the measurable outcome of decades of investment in fire suppression capability, building code enforcement, and detection equipment distribution across Illinois communities.

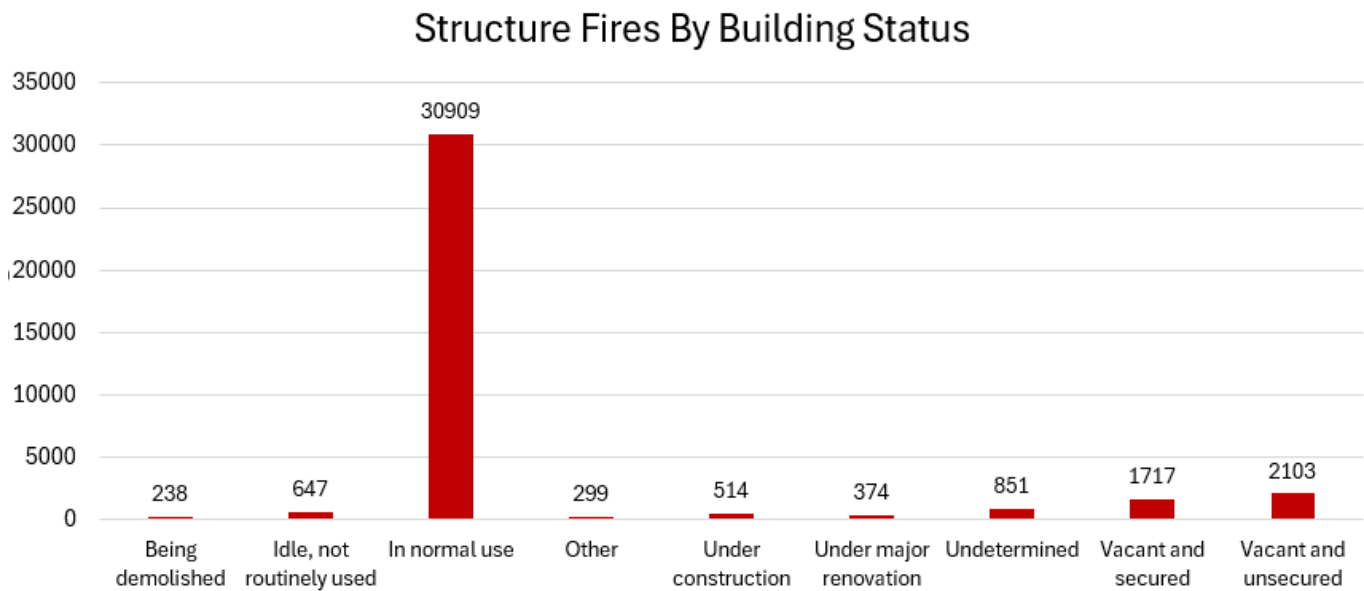
The beyond building of origin category at 3,086 incidents demands specific analytical attention because it represents the point at which a structure fire has overcome every available containment mechanism and begun consuming the surrounding built environment. Fire extension beyond the building of origin produces the most severe community consequences in the Illinois fire loss picture: civilian fatalities and injuries in adjacent occupied structures, displacement of multiple households, loss of community anchor businesses and institutions, and the neighborhood destabilization that follows the destruction of multiple properties in a concentrated area. The geographic and structural

conditions that produce fire extension beyond building of origin are well established in the fire service literature, and they map directly onto the community profiles already identified in this assessment. Dense urban neighborhoods with narrow lot spacing and aging wood-frame construction, manufactured housing communities where units are sited in close proximity without adequate setback, and rural communities with extended response times where fire has progressed significantly before the first apparatus arrives are the environments where flame spread beyond the building of origin occurs with greatest frequency and consequence. In each of these environments, earlier detection through functioning smoke alarms is the single most reliable intervention for interrupting fire progression before it reaches the beyond-building threshold.

The confined to room of origin category at 28.1% of captured incidents represents the most favorable containment outcome within the building fire environment and functions as a direct performance indicator for the smoke alarm and early detection infrastructure that CRR programs are designed to build and sustain. A fire confined to its room of origin is, in the overwhelming majority of cases, a fire that was detected early, that generated an alarm that prompted evacuation or suppression action, and that was reached by fire department resources before it had time to extend into the broader building. The community risk implication is precise: every household in Illinois that has a functioning smoke alarm in the correct location is a household where the probability of a room-of-origin containment outcome is significantly higher than in a household without one. Smoke alarm installation and maintenance programs are not peripheral prevention activities; they are the direct operational mechanism through which the room-of-origin containment rate is produced and sustained.

As with the building type analysis, the data completeness picture here requires honest acknowledgment delivered in the same spirit of constructive partnership. The 52,149 structure fire incidents submitted without flame spread data represent 58.3% of all building fire reports in the analysis period, meaning that the containment distribution described above is drawn from less than half of the total incident population. This is a significant analytical limitation, and it reflects the same operational realities facing small and volunteer departments that were noted in the building type discussion. Recording flame spread requires a post-incident documentation step that demands both the time and the on-scene situational awareness to assess fire progression accurately, conditions that are not always present in the aftermath of a working structure fire. The statewide CRR framework's response to this gap should be the same as its response to other data completeness challenges: targeted training, simplified reporting tools, and direct technical assistance to the departments most in need of support, because the flame spread data that Illinois's fire service is not currently capturing contains within it the most precise available

picture of where fire containment is failing and where prevention investment will produce the greatest reduction in loss.



Structure Fires by Building Status

Among the 37,652 Illinois structure fire incidents for which building status was recorded, fires in buildings in normal use account for 82.1% of the total at 30,909 incidents, establishing occupied and actively used structures as the dominant fire loss environment and reinforcing the residential and commercial occupancy targeting priorities established throughout this analysis. Buildings in normal use are where Illinois residents live, work, sleep, and gather, and they are where the human consequences of structure fire are most severe. The community risk profile of this category is inseparable from the occupant vulnerability factors documented in the demographic analysis: elderly residents aging in place in older housing without updated fire protection systems, low-income households in substandard rental units with deferred maintenance and absent smoke alarms, and families in high-density urban neighborhoods where fire in a normally occupied building can displace dozens of households simultaneously. The 30,909 incidents in this category represent the core target population for every residential prevention program in the statewide CRR framework, and their concentration in the high-SVI communities identified throughout this assessment defines where that programming must be most intensively deployed.

The combined vacant property categories represent the most significant community risk finding in this dataset beyond the in-normal-use figure. Vacant and unsecured structures

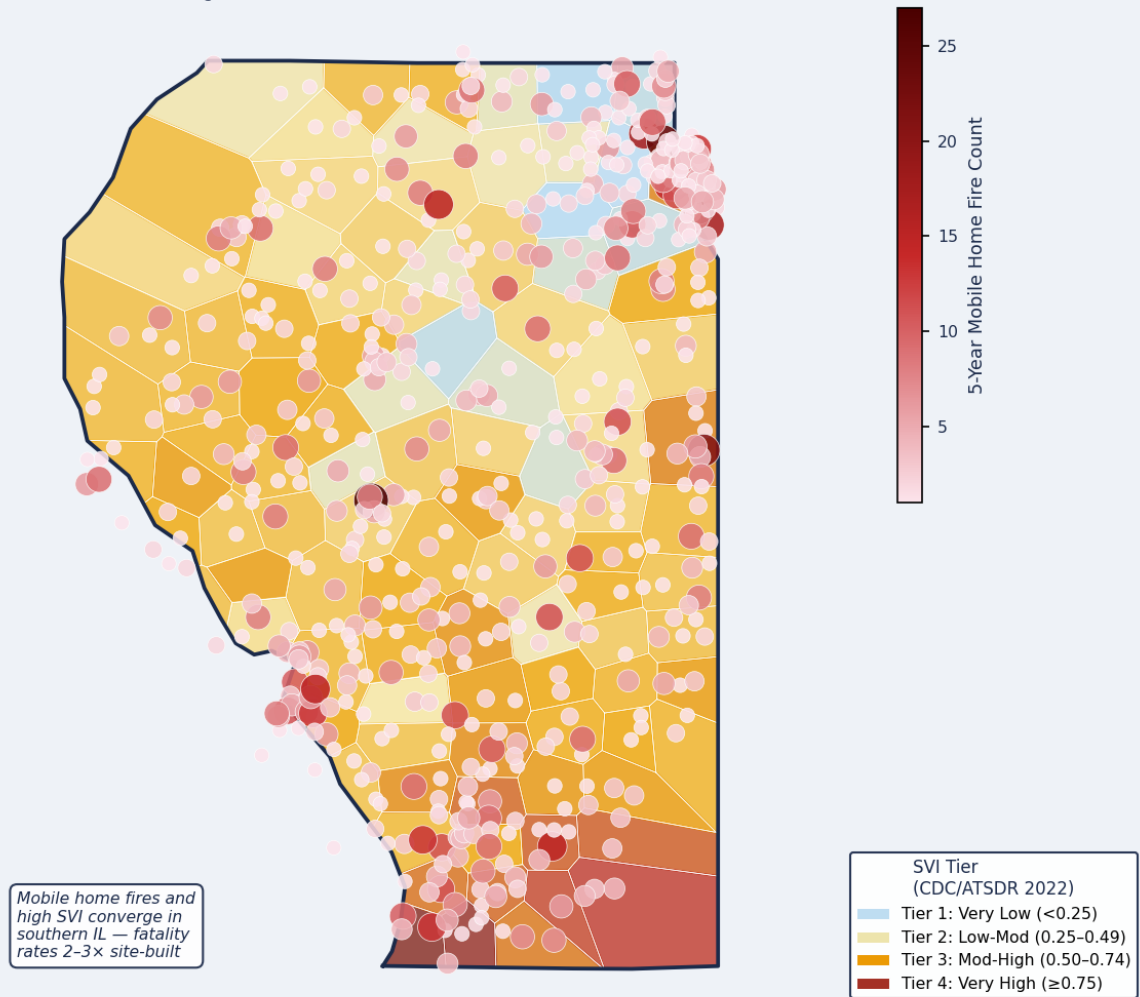
account for 2,103 incidents (5.6%) and vacant and secured structures for 1,717 incidents (4.6%), together producing 3,820 incidents representing 10.1% of all captured structure fire events. This combined vacant property fire burden is not a peripheral finding; it is a direct measurement of the abandoned and vacant structure problem that is among the most consequential drivers of neighborhood fire risk in Illinois's post-industrial urban communities. Vacant and unsecured structures are among the most dangerous fire environments in the Illinois fire service landscape for reasons that compound beyond their incident count. They attract unauthorized entry, arson activity, and illicit occupation. They burn with greater intensity than maintained structures because deferred maintenance, accumulated debris, and deteriorated building systems remove the passive fire resistance that slows progression in occupied buildings. They are frequently adjacent to occupied residential structures in the dense urban neighborhoods where they are most concentrated, making fire extension beyond the building of origin, the most severe outcome in the flame spread analysis, substantially more probable. And they are disproportionately concentrated in the same high-SVI communities where fire department resources are most constrained and mutual aid dependency is highest, creating a convergence of elevated ignition risk and reduced response capacity in the same geographic footprint.

The under construction (514), under major renovation (374), idle not routinely used (647), and being demolished (238) categories collectively represent an additional 1,773 incidents occurring in structures outside their normal occupancy and use cycle. Each of these building status conditions introduces specific fire risk factors that differ meaningfully from the occupied building environment. Construction and renovation sites accumulate combustible materials, generate ignition sources from hot work operations, and frequently lack the detection and suppression systems that will be installed upon completion. Idle and routinely unused structures develop the same deterioration characteristics as vacant buildings over time, and demolition activities create both direct ignition exposure and the structural instability that makes firefighting operations in these environments among the most hazardous in the incident profile. For fire departments in communities with active construction and redevelopment activity, pre-incident planning for construction site fires and coordination with building permit and inspection processes represents a meaningful prevention opportunity that the building status data confirms is generating a measurable incident burden.

The data completeness picture for building status follows the now-familiar pattern of the preceding analyses, with 52,016 incidents, representing 58.0% of all structure fire reports, submitted without a building status field completed. As has been noted throughout this section, this gap reflects the operational realities of Illinois's fire service rather than a lack of professional commitment, and the appropriate response is the same: targeted support,

training, and technical assistance directed at the departments with the lowest reporting completion rates. The specific importance of building status data for CRR purposes is that it enables identification of vacant and abandoned property fire concentrations at the community level with a precision that no other data source provides. A fire department that consistently captures building status data can map its vacant structure fire incidents geographically, share that analysis with municipal code enforcement and community development partners, and build the interagency case for prioritized vacant property remediation in the neighborhoods generating the highest fire risk. That analytical capability, which the 52,016 uncoded incidents currently represent as lost intelligence, is precisely the kind of evidence-based community partnership infrastructure that transforms a fire department from a reactive response agency into an active community risk reduction organization.

Mobile Home Fire Concentration with Social Vulnerability by ZIP Code · Illinois · 2020-2024

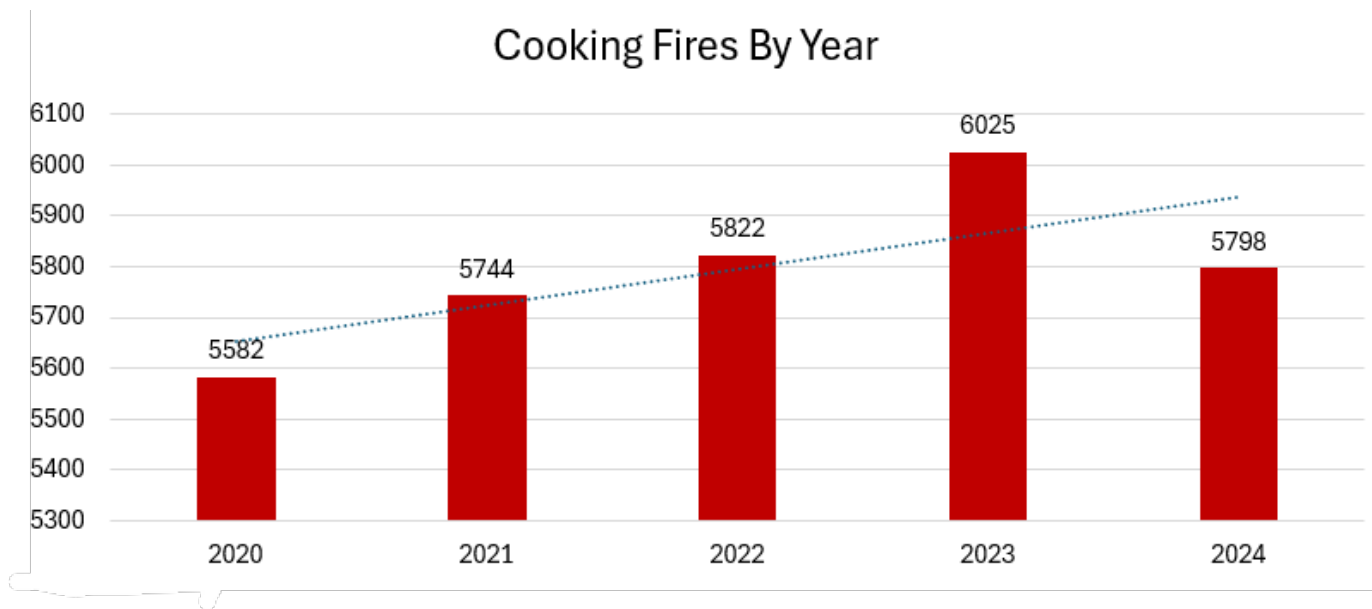


Source: USFA NFIRS Illinois Extract 2020-2024 (Group 12). SVI: CDC/ATSDR 2022. County boundaries approximated from centroids. Each dot = one ZIP code centroid.

The mobile home fire concentration map with Social Vulnerability Index overlay reveals a geographic pattern that is more evenly distributed across the state than any other fire type examined in the assessment's map portfolio, and that distribution is itself analytically significant. Unlike cooking fires, which cluster intensely in Chicago's high-density urban core, or WUI fires, which concentrate along the southern Shawnee corridor, mobile home fires appear with moderate but persistent frequency across central and southern Illinois's Tier 2 and Tier 3 SVI counties, following the geography of manufactured housing stock rather than population density or urban infrastructure. The central Illinois agricultural counties, Carroll, Fulton, Mason, Schuyler, McDonough, and their neighbors, show a

steady scatter of dots across yellow and orange SVI backgrounds, reflecting the rural manufactured housing communities distributed throughout the Grand Prairie region where single-wide and double-wide units represent a meaningful share of the residential stock. The convergence of mobile home fire dots with Tier 3 SVI county backgrounds across this mid-state band is the map's most actionable finding for CRR program targeting: these are communities where manufactured housing age, poverty levels that preclude replacement or upgrade, extended fire department response times, and absent or non-functional smoke alarm coverage combine to create the conditions that produce fatality rates two to three times higher per incident than site-built residential fires, a consequence profile that the small absolute dot sizes on this map dramatically underrepresent.

The most consequential outlier pattern on this map, and the one most directly attributable to reporting limitations, is the sparse mobile home fire dot presence across the Tier 4 Very High SVI counties of extreme southern Illinois, particularly Alexander, Pulaski, Hardin, and Pope counties. These four counties carry the highest manufactured housing concentrations in the state relative to their total housing stock, a pattern documented in the housing characteristics section of this assessment and confirmed by Census Bureau American Community Survey data showing mobile home occupancy rates well above the statewide average in each county. By every structural indicator, these communities should carry the heaviest mobile home fire burden in Illinois, and yet the map shows virtually no dot presence there. The explanation is the same underreporting dynamic identified across every other fire type in this analysis, compounded by the specific character of mobile home fire events in rural communities: a structure that burns rapidly, in a remote location, served by a volunteer department that may not submit a complete NFIRS report for the incident, in a county where the state fire marshal's compliance monitoring has limited practical enforcement capacity. The result is that the geographic area carrying the greatest objective mobile home fire fatality risk in Illinois is the area most invisible to the data-driven targeting framework this assessment is designed to support. This gap more than any other in the assessment makes the case for local Community Risk Assessments in the state's highest-SVI counties as a non-negotiable component of the statewide CRR strategy, because the life safety consequences of manufactured housing fires in those communities are too severe and too invisible to NFIRS-based analysis to be addressed through statewide data alone.



Cooking Fires by Year: 2020–2024

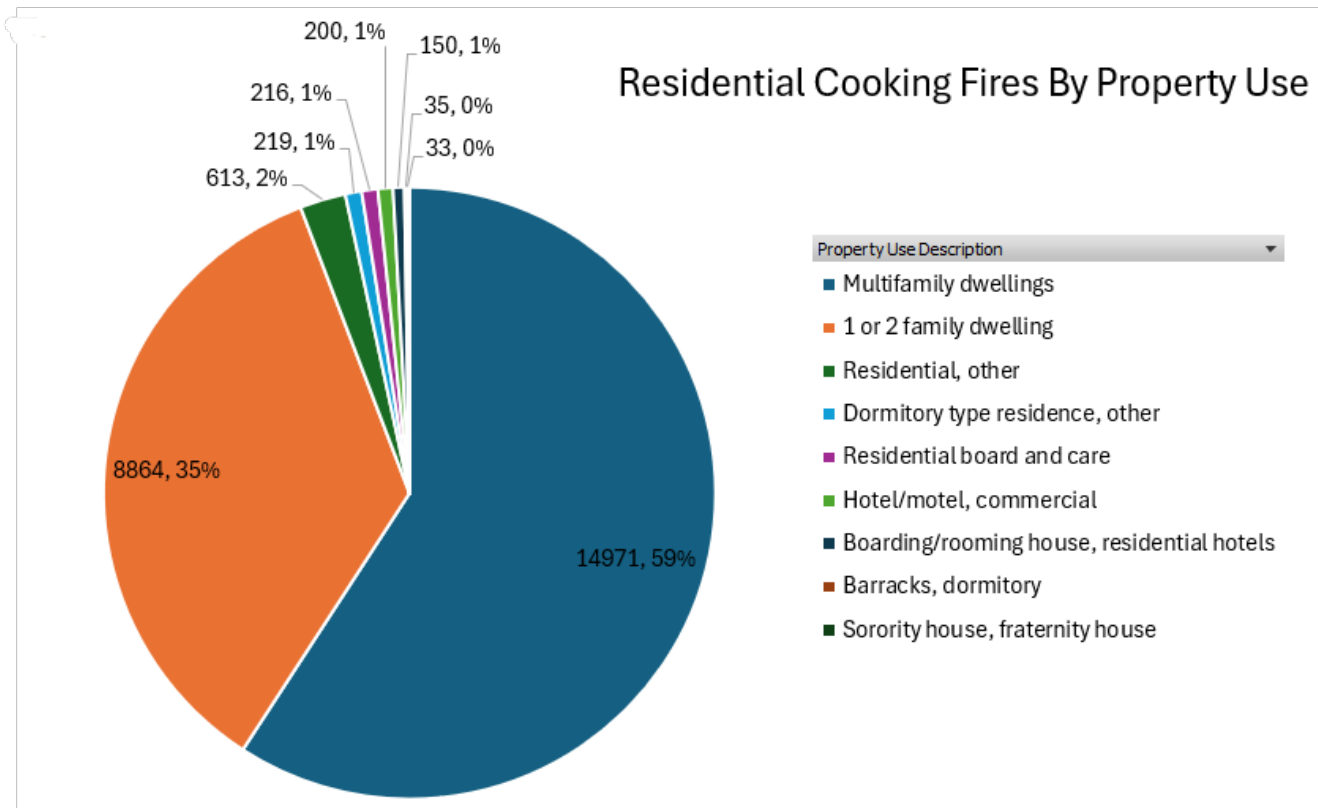
The five-year trend in Illinois cooking fires traces a pattern that closely mirrors the overall fire incident trajectory documented earlier in this assessment and delivers an equally clear directive for statewide prevention investment. From a baseline of 5,582 cooking fire incidents in 2020, annual volume has increased to 5,798 in 2024, a net increase of 216 incidents representing a 3.9% rise over the analysis period. The upward trend line is consistent and unambiguous across four of the five years, interrupted only by the 2023 peak of 6,025 incidents followed by a modest reduction in 2024. Expressed in operational terms, Illinois fire departments responded to an average of 5,794 cooking fires per year over this period, a figure that represents approximately 16 cooking fire responses every single day, sustained across all five years without interruption. For a prevention category that is both the leading cause of residential structure fires nationally and one of the most amenable to behavioral intervention through community education, a trend line moving consistently upward over a five-year window is a clear signal that current prevention activity is not keeping pace with the conditions generating demand.

The year-over-year progression from 5,582 in 2020 to 5,744 in 2021, 5,822 in 2022, and 6,025 in 2023 represents three consecutive years of uninterrupted increase totaling 443 additional cooking fire incidents, or a 7.9% rise from the 2020 baseline to the 2023 peak. As with the overall fire incident trend analysis, the 2020 baseline warrants contextual consideration: pandemic-related disruptions to occupancy patterns, including reduced commercial food service activity and altered residential cooking behaviors, likely suppressed the true underlying cooking fire demand in that year, meaning the actual rate of increase from a pre-pandemic baseline may be somewhat steeper than the 2020-anchored figures suggest. The 2021 increase, occurring as communities and commercial occupancies

returned to normal operational patterns, is consistent with this interpretation and reinforces the conclusion that the upward trajectory reflects genuine growth in cooking fire risk conditions rather than a statistical artifact of an unusual baseline year.

The 2023 peak of 6,025 incidents is the most analytically significant data point in this chart for CRR program planning purposes. At 6,025 cooking fire events, 2023 represents a single-year total that exceeds the five-year average by 231 incidents and surpasses the 2020 baseline by 443 events. The drivers of this spike are consistent with the broader 2023 incident surge documented in the overall fire trend analysis: intensifying weather extremes, economic pressures that constrain household investment in appliance maintenance and replacement, and the continued growth of Illinois's highest-risk occupancy populations, elderly residents living alone in aging housing without updated kitchen equipment or functioning smoke alarms. The modest moderation to 5,798 in 2024, while encouraging, leaves annual cooking fire volume well above the 2020 baseline and does not alter the directional conclusion that the trend line demands a response.

The community risk implication of a sustained upward cooking fire trend in Illinois is direct and operationally specific. Cooking fires are among the most preventable fire events in the entire incident profile, with evidence-based interventions including smoke alarm installation at correct kitchen-adjacent locations, unattended cooking education campaigns, and targeted outreach to elderly and isolated residents producing measurable reductions in incident frequency when deployed at sufficient scale and with sufficient targeting precision. The fact that cooking fire volume in Illinois has increased by nearly 4% over five years while these intervention tools exist and have been demonstrated to work in other jurisdictions is an indication that the scale, geographic reach, and population targeting of current prevention activity is insufficient relative to the demand. The statewide CRR framework must treat the cooking fire trend line as a performance benchmark, establishing a measurable annual reduction target and directing the program infrastructure, home safety visits, community education partnerships, multilingual outreach in high-density immigrant communities, and cooking fire-specific smoke alarm placement programs, necessary to bend that trend line downward over the next planning cycle.



Residential Cooking Fires by Property Use

The distribution of Illinois residential cooking fires by property use category delivers one of the most community-risk-specific findings in the entire incident analysis, identifying with precision the occupancy environments where cooking fire risk is most concentrated and the populations most exposed to harm when prevention infrastructure is absent. Multifamily dwellings accounted for 59% of all residential cooking fires at 14,971 incidents, a proportion that substantially exceeds the multifamily share of Illinois's total housing inventory and confirms that cooking fire risk in Illinois is disproportionately concentrated in high-density residential occupancies. One- and two-family dwellings account for the remaining 35% at 8,864 incidents, with all other residential property types collectively representing 6% of the total. The dominance of multifamily occupancies in this dataset is not a coincidence of housing distribution; it is the predictable outcome of the specific community conditions present in Illinois's multifamily residential stock. Older apartment buildings in Chicago, Rockford, Peoria, Decatur, and the south suburban corridor concentrate the populations most vulnerable to cooking fire risk, including elderly residents living alone, low-income households without functional smoke alarms, recent immigrants unfamiliar with local cooking equipment standards, and high-density occupancy patterns that compress the margin between a contained cooking fire and a multi-unit displacement event.

The 14,971 multifamily cooking fire incidents represent an average of nearly 2,995 events per year, or approximately eight multifamily cooking fires every day across Illinois. The operational and community risk implications of that daily frequency are compounded by the specific characteristics of multifamily fire environments. A cooking fire that escapes containment in a multifamily building does not threaten a single household; it threatens every occupant on the floor of origin, every resident sharing a common corridor or utility chase, and in older buildings without compartmentalization upgrades, potentially every occupant in the structure. The flame spread data presented earlier in this assessment documented 3,086 incidents where fire extended beyond the building of origin, and multifamily residential cooking fires represent one of the most likely pathways to that outcome when early detection fails. The community risk profile of Illinois's highest-burden multifamily cooking fire geographies, concentrated in the same high-SVI urban communities identified throughout this assessment, means that the populations most exposed to cooking fire escalation risk are simultaneously the least likely to have functioning smoke alarms, the least likely to have received fire safety education in their primary language, and the least likely to reside in buildings whose fire protection systems have been maintained to current standards.

The one- and two-family dwelling category at 35% (8,864 incidents) carries a distinct but equally important community risk dimension. Cooking fires in single-family and two-family structures disproportionately produce the fatality outcomes that make cooking the leading cause of residential fire deaths nationally, because the occupant most likely to be alone in a single-family home when a cooking fire occurs is an elderly resident aging in place, a demographic that constitutes the highest-risk population in the Illinois fire fatality profile. In Illinois's rural and small-town communities, where single-family owner-occupied housing predominates and where elderly residents represent a growing share of the population, cooking fires in one- and two-family dwellings generate a fatality risk that is severe relative to incident volume. The absence of nearby neighbors, the greater time required for fire department response in areas with extended travel distances, and the higher prevalence of functional impairment among elderly residents cooking alone combine to make the single-family cooking fire in a rural or small-town setting a higher-consequence event on average than its urban multifamily counterpart despite the lower absolute incident count.

The remaining property use categories, residential board and care at 1% (200 incidents), dormitory type residences at 1% (216), hotel and motel commercial at 1% (219), and boarding and rooming houses at 1% (150), are modest in volume but represent occupancy environments where cooking fire consequences per incident can be severe due to high occupant density, the presence of mobility-limited or cognitively impaired residents, and

the shared cooking infrastructure that creates both elevated ignition risk and rapid smoke and heat propagation pathways. Residential board and care facilities, in particular, house some of Illinois's most vulnerable populations, including adults with developmental disabilities, individuals in substance use recovery, and elderly residents requiring assisted living support, in settings where a single cooking fire event can affect dozens of residents simultaneously. The community risk implication of the full cooking fire property use profile is clear and actionable: cooking fire prevention programming in Illinois must be differentiated by occupancy type, with multifamily-focused campaigns prioritizing high-density urban buildings and culturally adapted outreach to the diverse populations residing in them, single-family programs targeting elderly residents aging in place with specific emphasis on alarm placement and unattended cooking behaviors, and targeted inspection and education efforts directed at the board and care and rooming house environments where the most vulnerable residents face the highest consequence exposure.

Non-Residential Cooking Fires By Property Use

Property Use Type	Count of Incident Type Code (National)
Restaurant or cafeteria	762
24-hour care Nursing homes, 4 or more persons	357
Food and beverage sales, grocery store	215
Mercantile, business, other	96
Mental retardation/development disability facility	82
Manufacturing, processing	73
Hospital - medical or psychiatric	70
Eating, drinking places	60
Business office	60
Street, other	52
Day care, in commercial property	43
Adult education center, college classroom	29
Bar or nightclub	29
Church, mosque, synagogue, temple, chapel	29
Outside or special property, other	28
Residential street, road or residential driveway	24
Elementary school, including kindergarten	24
High school/junior high school/middle school	22
Specialty shop	22
Open land or field	21
Clinics, Doctors offices, hemodialysis centers	20
Alcohol or substance abuse recovery center	20

Service station, gas station	19
Convenience store	17
Schools, non-adult	16
Health care, detention, & correction, other	16
General retail, other	14
Public or government, other	13
Preschool	13
Clubhouse	10
Educational, other	10
Assembly, other	10
Doctor, dentist or oral surgeon's office	9
Vehicle parking area	9
Graded and cared-for plots of land	9
Fire station	9
Fixed use recreation places, other	9
Department or discount store	8
Vacant lot	8
Movie theater	8
Athletic/health club	8
Laundry, dry cleaning	8
Professional supplies, services	8
Warehouse	8
Motor vehicle or boat sales, services, repair	7
Variable use amusement, recreation places	7
Clinic, clinic-type infirmary	7
Street or road in commercial area	6
Parking garage, (detached residential garage)	6
Personal service, including barber & beauty shops	6
Day care, in residence, licensed	5
Outbuilding or shed	5
Casino, gambling clubs	5
Campsite with utilities	5
Rapid transit station	4
Library	4
Stadium, arena	4
Jail, prison (not juvenile)	4
Swimming facility: indoor or outdoor	3
Hemodialysis unit	3
Reformatory, juvenile detention center	3
Asylum, mental institution	3
Dump, sanitary landfill	3
Places of worship, funeral parlors	3
Outbuilding, protective shelter	3
Police station	3

Bank	3
Office: veterinary or research	3
Bowling alley	3
Household goods, sales, repairs	3
Recreational, hobby, home repair sales, pet store	2
Amusement center: indoor/outdoor	2
Forest, timberland, woodland	2
Electronic amusement center	2
Clubs, other	2
Playground	2
Courthouse	2
Convention center, exhibition hall	2
Gas distribution, pipeline, gas distribution	2
Laboratory or science laboratory	2
Storage, other	2
Railroad right of way	2
Railroad yard	2
Residential or self storage units	2
Industrial plant yard - area	1
Textile, wearing apparel sales	1
Auditorium or concert hall	1
Water utility	1
Outside material storage area	1
Post office or mailing firms	1
Bridge, trestle	1
Energy production plant, other	1
Highway or divided highway	1
Lake, river, stream	1
Utility, defense, agriculture, mining, other	1
Dock, marina, pier, wharf	1
Hospices	1
Steam or heat generating plant	1
Parking garage, general vehicle	1
Aircraft loading area	1
Airport passenger terminal	1
Beach	1
Grand Total	2534

Cooking Fires in Non-Residential Occupancies

The 2,534 cooking fires recorded in non-residential occupancies across the analysis period represent a relatively modest share of Illinois's total cooking fire burden but carry community risk implications that are disproportionate to their volume, particularly in the

institutional and care facility environments where the populations most dependent on others for their safety are concentrated. Restaurants and cafeterias account for the largest single non-residential category at 762 incidents (30.1%), a figure consistent with the commercial cooking environment's elevated ignition risk profile, characterized by high-BTU cooking equipment operating under sustained load, accumulated grease in exhaust systems and hood assemblies, and the compressed timelines of commercial kitchen operations that create conditions for rapid escalation when suppression systems are absent or poorly maintained. The community risk implication of commercial cooking fire frequency extends beyond the restaurant itself to the surrounding commercial district: a working kitchen fire in a mixed-use building with residential units above, a common configuration throughout Chicago's neighborhood commercial corridors and in older downstate main street commercial buildings, represents a simultaneous threat to business continuity, residential occupancy, and the economic vitality of the surrounding block. Commercial cooking fire prevention programming, anchored in hood and suppression system inspection compliance and targeted outreach to independent restaurant operators who often lack the corporate safety infrastructure of chain establishments, represents a meaningful prevention opportunity in Illinois's highest-density commercial districts.

The institutional care categories in this dataset represent the most consequential community risk finding in the non-residential cooking fire profile. Nursing homes and 24-hour care facilities account for 357 incidents (14.1%), making them the second highest non-residential cooking fire environment by a substantial margin. Mental retardation and developmental disability facilities contribute 82 incidents (3.2%), hospitals 70 incidents (2.8%), alcohol and substance abuse recovery centers 20 incidents (0.8%), and asylums and mental institutions 3 incidents, together producing a combined institutional care cooking fire total of more than 530 incidents occurring in environments that house Illinois's most mobility-limited, cognitively impaired, and medically fragile populations. A cooking fire in a nursing home or care facility does not present the same evacuation dynamics as a fire in an able-bodied residential or commercial occupancy. The residents of these facilities are, by definition, individuals who cannot self-evacuate without assistance, who may be on supplemental oxygen that dramatically accelerates fire conditions, and who are dependent on staff response protocols that may or may not have been drilled to the standard required for effective emergency action. The community risk consequence of a cooking fire that escapes containment in a licensed care facility is not measured in property loss; it is measured in the lives of residents who have no alternative means of escape. Fire department pre-incident planning, suppression system verification, and coordination with facility administrators on staff evacuation training are the prevention levers most directly connected to protecting this population.

The educational occupancy categories, including elementary schools (24 incidents), high schools and junior high schools (22), adult education centers and college classrooms (29), preschools (13), and other educational settings (26), collectively produce approximately 114 cooking fire incidents over the analysis period, a modest absolute figure that nonetheless warrants specific attention given the populations involved. Schools represent the highest-density daytime occupancy of children in any Illinois community, and cooking fire events in cafeteria and food service environments during school hours place large numbers of young people in proximity to fire and evacuation conditions. The community risk implication here is not primarily about fire severity, given that schools are generally subject to more rigorous inspection and fire protection standards than residential occupancies, but about the operational demand a school evacuation event places on fire departments, many of them volunteer or combination agencies that must draw personnel from their daytime-limited available pools to respond to a school incident while simultaneously maintaining coverage for the remainder of their service area.

The breadth of the remaining non-residential cooking fire categories, spanning food and beverage sales at 215 incidents, business offices at 60, day care facilities at 43, bars and nightclubs at 29, churches and houses of worship at 29, service stations at 19, convenience stores at 17, and extending across more than 80 distinct property use classifications down to single-incident locations including airport passenger terminals, hospices, railroad yards, and beach areas, communicates a fundamental truth about cooking fire risk in Illinois: it follows people wherever they gather, prepare food, and eat. The community risk implication of this breadth is that no single-focus cooking fire prevention program can address the full scope of non-residential cooking fire exposure. An effective statewide CRR strategy must combine commercial kitchen inspection and suppression system compliance programs for the high-volume restaurant and food service sector, targeted institutional care facility outreach for the highest-consequence occupancy types, and a broader community education framework that reaches the diverse range of settings where cooking fire ignitions occur with sufficient frequency to generate measurable incident burden across the state's 102-county fire service landscape.

Area of Origin for Building Fire in Residential Occupancies

Area of Origin	Count of Incident Type Code (National)
Cooking area, kitchen	7416
Undetermined	6052
Bedroom - < 5 persons; included are jail or prison	2833

Common room, den, family room, living room, lounge	1930
Vehicle storage area; garage, carport	1739
Wall surface: exterior	1577
Laundry area, wash house (laundry)	1298
Exterior balcony, unenclosed porch	1129
Attic: vacant, crawl space above top story, cupola	1113
Outside area, other	997
Bathroom, checkroom, lavatory, locker room	787
Other	729
Wall assembly	605
Function area, other	558
Substructure area or space, crawl space	509
Exterior stairway, ramp, or fire escape	472
Courtyard, patio, porch, terrace	428
Structural area, other	399
Exterior, exposed surface	371
Roof surface: exterior	324
Heating room or area, water heater area	320
Storage area, other	300
Interior stairway or ramp	295
Ceiling & floor assembly, crawl space b/t stories	287
Egress/exit, other	265
Closet	253
Open area - outside; included are farmland, field	239
Corridor, mall	209
Entrance way, lobby	198
Dining room, cafeteria, bar area, beverage service	189
Duct: hvac, cable, exhaust, heating, or AC	186
Multiple areas	184
Chute/container - trash, rubbish, waste	178
Vacant structural area	157
Storage: supplies or tools; dead storage	129
Storage room, area, tank, or bin	115
Conduit, pipe, utility, or ventilation shaft	115
Bedroom - 5+ persons; including barrack/dormitory	94
Vehicle area, other	82
Equipment or service area, other	76
Office	57
Chimney (conversion only)	37
Service facilities, other	30
Engine area, running gear, wheel area	28
Highway, parking lot, street: on or near	23
Machinery room or area; elevator machinery room	19
Construction/renovation area	18

Awning	17
Wildland, woods	14
Maintenance shop or area, paint shop or area	13
Operator/passenger area of transportation equip.	10
Chute; laundry or mail, excluding trash chutes	9
Assembly area - less than 100 persons	7
Incinerator area	7
Assembly area without fixed seats - 100+ persons	7
Cargo/trunk area - all vehicles	7
Personal service area, barber/beauty salon area	7
Fuel tank, fuel line	7
Records storage room, storage vault	6
Processing/manufacturing area, workroom	6
Switchgear area, transformer vault	5
Assembly or sales area, other	5
Swimming pool	5
Escalator - exterior, interior	4
Display window	4
Sales area, showroom (exclude display window)	3
Dumbwaiter or elevator shaft	3
Light shaft	2
Arena, assembly area w/ fixed seats - 100+ persons	2
Railroad right of way: on or near	1
Stage area - performance, basketball court, boxing	1
Technical processing areas, other	1
Computer room, control room or center	1
Enclosure, pressurized air	1
Separate operator/control area of transportation	1
Laboratory	1
Grand Total	35506

Area of Origin for Residential Building Fires

The area of origin data for residential building fires delivers one of the most compelling and actionable findings in the entire Illinois fire incident analysis. Among the 35,506 residential building fire incidents for which area of origin was recorded, the cooking area and kitchen ranks as the single most identified point of origin at 7,416 incidents, representing 20.9% of all captured residential building fire origins. This figure stands apart from every other category in the dataset by a margin that is not subtle: the next most frequent identified origin, the bedroom at 2,833 incidents, accounts for less than half the kitchen's volume, and every other area of origin category trails further still. When the undetermined category at 6,052 incidents is set aside as reflecting investigative limitations rather than a true origin environment, the kitchen emerges not merely as the leading fire origin location in Illinois residential buildings but as the dominant one by a factor that demands it be treated as the organizing priority of the statewide residential fire prevention strategy. Taken together with the 28,971 confined cooking fire incidents documented in the broader incident analysis, this area of origin finding confirms from two independent analytical directions the same fundamental conclusion: cooking is the primary driver of residential fire risk in Illinois, and reducing cooking fire frequency is the single highest-leverage prevention investment available to the statewide CRR framework.

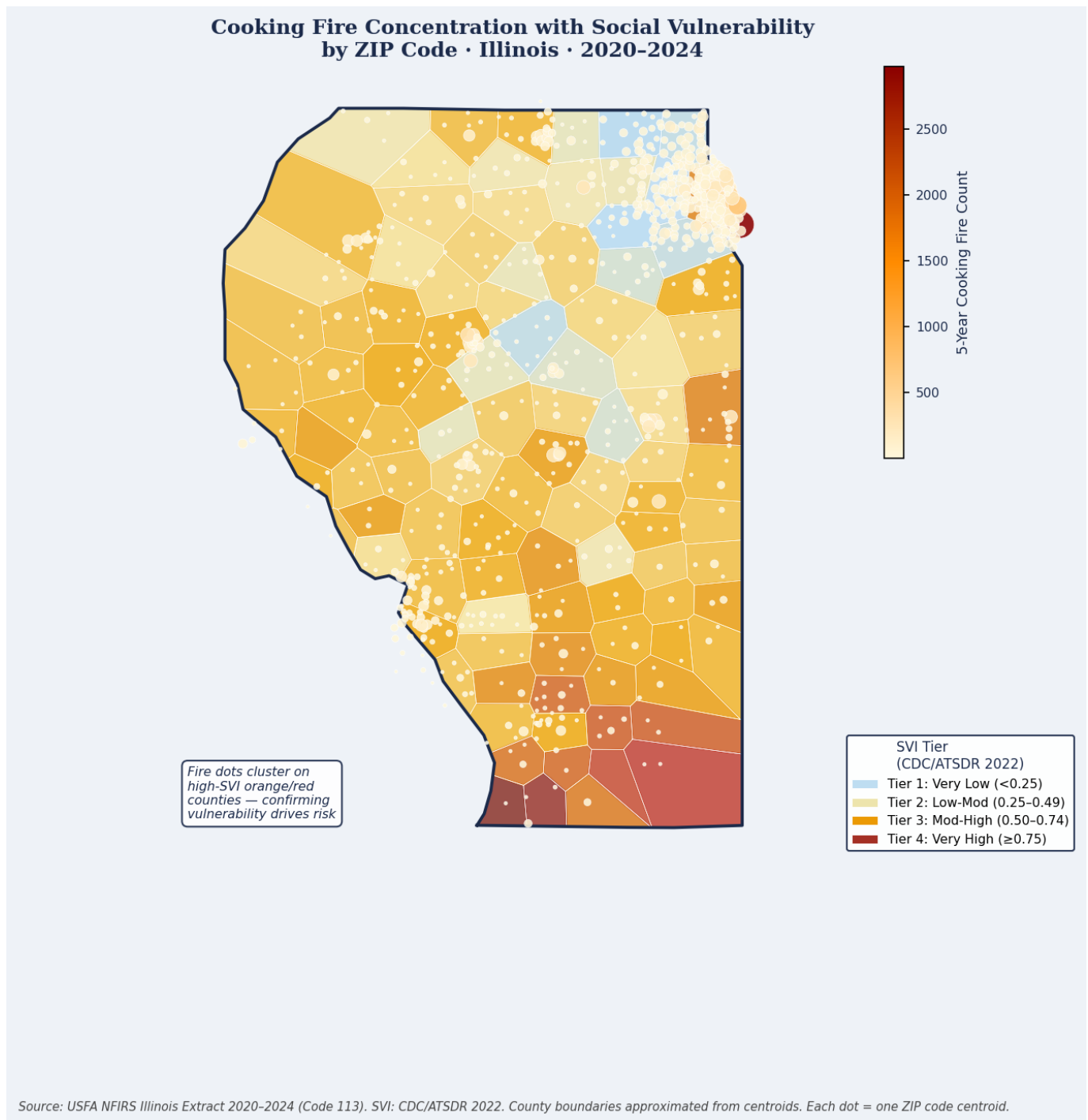
The scale of the kitchen origin finding takes on additional significance when examined in the context of the 46,059 residential building fire incidents for which area of origin was not recorded, representing 56.5% of all residential building fire reports in the analysis period. The 7,416 kitchen-origin incidents represent the confirmed floor of the cooking fire problem in Illinois residential buildings, not its ceiling. If the unrecorded incidents follow even a broadly similar distribution pattern to the captured data, the true number of residential building fires originating in the kitchen or cooking area over the five-year period is likely to be substantially higher than 7,416, potentially exceeding 15,000 to 17,000 events when projected against the full incident population. That projection, while necessarily conservative, reinforces rather than diminishes the prevention targeting signal: the cooking and kitchen environment is producing residential building fires in Illinois at a volume and frequency that no other area of origin category approaches, and the gap between current prevention investment in cooking fire reduction and the scale of the problem this data reveals is a gap that the statewide CRR framework must be designed to close.

The bedroom at 2,833 incidents (8.0%) and the common room, living room, and family room at 1,930 incidents (5.4%) represent the second and third most frequently identified residential building fire origin areas and together define the primary living and sleeping

environment of Illinois households as the secondary fire origin zone after the kitchen. Bedroom-origin fires carry the highest fatality risk of any residential area of origin because they most frequently involve occupants who are asleep or incapacitated at the time of ignition, circumstances in which the margin between early detection and fatal outcome is measured in seconds rather than minutes. The community risk profile of bedroom-origin fires in Illinois is concentrated in the same vulnerable populations identified throughout this assessment: elderly residents sleeping alone in older housing without interconnected smoke alarms, individuals under the influence of alcohol or substances whose self-rescue capacity is compromised, and low-income households where the combination of older electrical systems, heating equipment operated beyond its safe service life, and the absence of functioning detection creates an environment where a bedroom ignition can become a fatal fire before any alarm sounds. Living room and common room fires at 1,930 incidents reflect a similar vulnerability profile, with smoking materials, electrical equipment failures, and portable heating device misuse representing the dominant ignition pathways in the Illinois residential living environment.

The vehicle storage area and garage category at 1,739 incidents (4.9%), the exterior wall surface at 1,577 incidents (4.4%), and the laundry area at 1,298 incidents (3.7%) collectively identify three additional residential origin environments that are both highly preventable and disproportionately concentrated in the aging housing stock that characterizes Illinois's highest-risk communities. Attached garage fires in pre-1970 construction, where fire-rated separation between the garage and the living space is frequently absent or deteriorated, represent a rapid fire extension pathway into occupied residential areas that building age and deferred maintenance make significantly more dangerous than current code-compliant construction. Exterior wall surface fires, driven by both urban fire spread in dense neighborhoods and ember ignition in WUI-proximate communities, reinforce the housing density and wildland interface risk dimensions documented throughout this assessment. Laundry area fires, driven overwhelmingly by dryer lint accumulation in exhaust systems, represent perhaps the most straightforwardly preventable origin category in the residential fire dataset: a single community education message, clean your dryer vent annually, delivered consistently through home safety visit programs, multilingual community outreach, and utility and landlord partnerships, addresses the primary ignition pathway for this entire category. The full residential area of origin profile, read in aggregate, delivers a prevention strategy that is specific, targeted, and evidence-grounded: lead with kitchen and cooking fire education and smoke alarm placement at cooking-adjacent locations, extend into bedroom and living area detection coverage for elderly and high-risk occupants, and address the mechanical and structural ignition pathways of garage, wall, and laundry area fires through inspection, education,

and housing rehabilitation investment in the communities where aging stock concentrates all of these risks simultaneously.

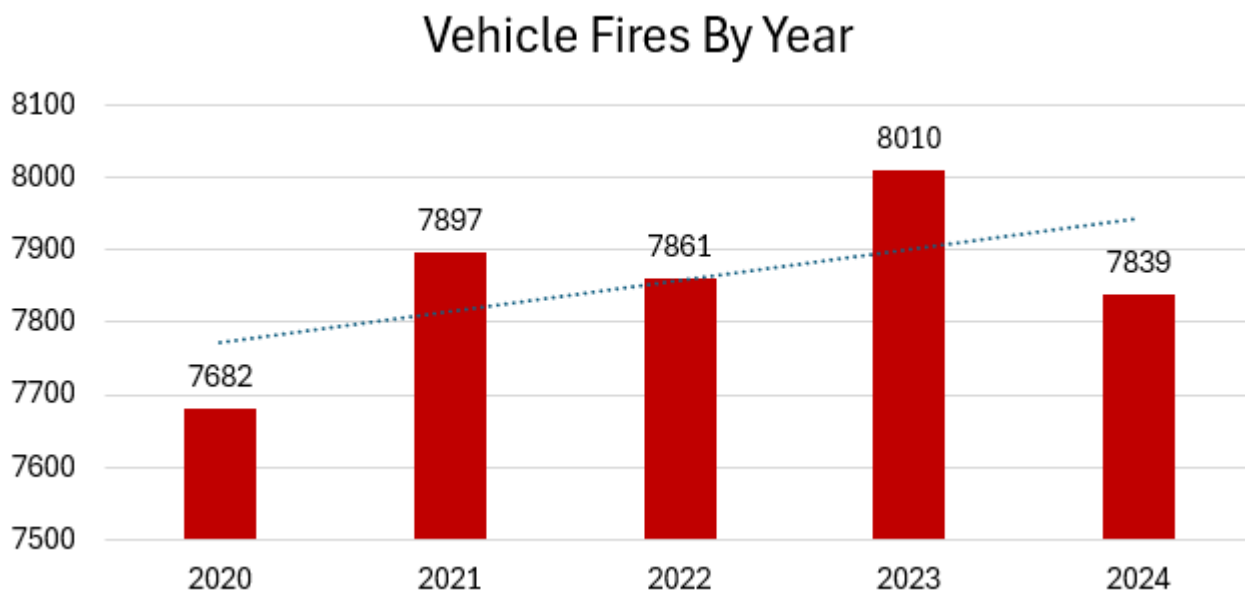


The cooking fire concentration map, overlaid with county-level Social Vulnerability Index shading, confirms one of the assessment's central analytical arguments with visual clarity: cooking fire burden in Illinois is not randomly distributed across the state's population but concentrates with striking consistency in communities carrying moderate to high social vulnerability. The dominant pattern is the cluster of dark orange and red dots in the northeastern corner of the map, representing Chicago's south and west side ZIP codes

sitting squarely on the Tier 3 Mod-High SVI counties of the Chicago metropolitan region. Cook County's overall SVI of 0.67 reflects the structural conditions that produce this concentration, pre-1950 multifamily housing stock, high poverty and rental occupancy, elderly residents aging in place without functional smoke alarms, and a dense immigrant population where multilingual cooking fire education has historically been underprovided. The collar counties immediately north and west of Chicago, rendered in light blue as Tier 1 Very Low SVI, show comparatively modest cooking fire dot presence despite their population, confirming that vulnerability rather than density alone drives the incident burden. Secondary concentrations are visible in the Peoria, Macon, Madison, and Sangamon county areas, all of which fall within the Tier 3 SVI band, reinforcing the pattern across downstate Illinois's mid-size cities.

The most analytically significant outlier in this map is the near-absence of cooking fire dots across the Tier 4 Very High SVI counties of extreme southern Illinois, including Alexander, Pulaski, Hardin, and Pope, all of which carry SVI scores between 0.78 and 0.97. By the logic of the vulnerability-incident relationship the map is designed to illustrate, these counties should show elevated cooking fire presence. Their near-invisibility on the map is almost certainly not a reflection of safer conditions but rather a direct consequence of the NFIRS reporting gap documented in this assessment. As established earlier, 112 registered Illinois fire departments did not report to NFIRS in 2023, and non-reporting agencies are disproportionately concentrated in the smallest, most under-resourced volunteer departments serving precisely these high-SVI rural communities. A cooking fire in Alexander County that is responded to but not reported produces a blank space on this map, not a dot, creating a visual impression of low risk in the geographies where the compounding factors of manufactured housing concentration, absent smoke alarm coverage, extended response times, and deep poverty suggest the actual fire risk per capita may be as high or higher than anywhere in the state. Readers should interpret the absence of cooking fire dots in southern Illinois's darkest SVI counties not as evidence of low risk but as a data artifact that reinforces the case for targeted reporting capacity building, local community risk assessments, and direct program investment in communities that the statewide incident data cannot adequately characterize from NFIRS alone.

Vehicle Fires



Vehicle Fires by Year: 2020–2024

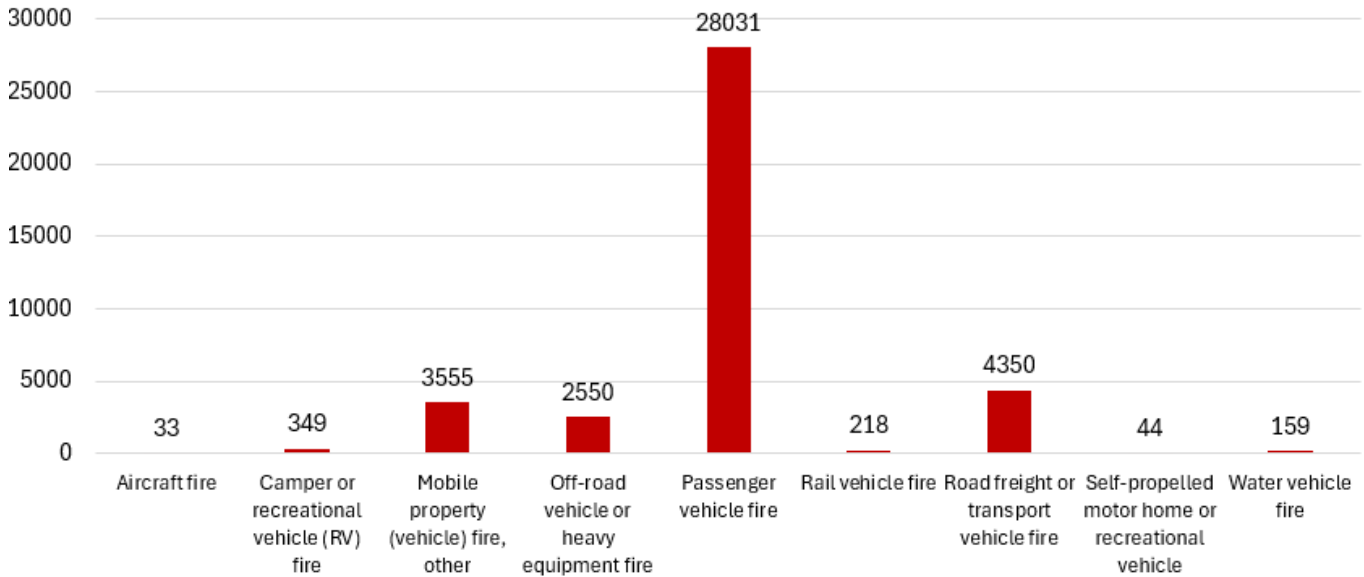
Illinois vehicle fires present the most stable trend line of any fire category examined in this assessment, a characteristic that carries its own community risk implications distinct from the more volatile trajectories observed in WUI and overall fire incident data. From a baseline of 7,682 incidents in 2020, annual vehicle fire volume has remained within a relatively narrow band, rising to 7,897 in 2021, moderating slightly to 7,861 in 2022, peaking at 8,010 in 2023, and returning to 7,839 in 2024. The five-year total of 39,289 incidents represents an annual average of 7,858 vehicle fires, or approximately 22 vehicle fire responses every day across Illinois for five consecutive years without significant interruption. The upward trend line, while modest in slope compared to the steeper trajectories of WUI and overall fire incident trends, is nonetheless consistent and unbroken across the full analysis period. From 2020 to 2024, vehicle fire volume increased by 157 incidents representing a 2.0% rise, and the 2023 peak of 8,010 incidents marks the first time in the analysis period that annual vehicle fire volume exceeded 8,000 events, a threshold that may represent a new operating baseline as Illinois's vehicle fleet ages and freight volumes on the state's transportation corridors continue to grow.

The stability of the vehicle fire trend line relative to other categories is itself analytically informative. Unlike WUI fires, which are acutely sensitive to precipitation variability and drought conditions, and unlike overall structure fire volume, which responds to a complex interaction of housing conditions, population vulnerability, and seasonal factors, vehicle fires are driven primarily by the size, age, and composition of the vehicle fleet operating on Illinois roads and by the volume of vehicle miles traveled across the state's

transportation network. Both of those drivers are relatively insensitive to short-term weather or economic fluctuations, which explains the narrow year-to-year variance in this dataset. The practical consequence of this stability for fire service planning is that vehicle fire demand in Illinois is highly predictable, consistently generating approximately 7,800 to 8,000 incidents per year, and departments serving high-volume transportation corridors can plan staffing, apparatus positioning, and mutual aid agreements around a vehicle fire baseline that shows no sign of meaningful reduction. The 2023 peak coinciding with the broader statewide incident surge suggests that even this stable category is not immune to the compound environmental and economic conditions that elevated fire demand across all categories in that year.

The community risk dimension of a consistently elevated vehicle fire baseline is most acute for the rural and small-town departments serving Illinois's major freight corridors, where the operational consequences of vehicle fire response are most disproportionate to local resource availability. A passenger vehicle fire on a low-volume rural road presents a manageable incident for even a small volunteer department. A commercial truck fire on I-57 in White County, a road freight tanker incident on I-55 in Logan County, or a rail vehicle fire in a remote section of the southern Illinois freight network presents a fundamentally different operational and hazardous materials challenge that can overwhelm local response capacity entirely and generate mutual aid draws that deprive surrounding communities of fire protection coverage for the duration of the incident. The 4,350 road freight and transport vehicle fire incidents documented in the specific incident type analysis, distributed across a rural highway network served primarily by volunteer departments, represent the most consequential subset of the vehicle fire burden from a community protection standpoint. For the statewide CRR framework, vehicle fire risk along major freight corridors demands pre-incident planning investment, specialized training for departments serving high-volume routes, and mutual aid coordination frameworks that position hazardous materials and heavy rescue resources within manageable response distances of the corridors generating the highest commercial vehicle fire exposure.

Vehicle Fires By Type



Vehicle Fires by Type

The breakdown of Illinois vehicle fires by specific type establishes the operational and community risk profile of the state's 39,289 vehicle fire incidents with the precision necessary to guide both fire service response planning and prevention investment. Passenger vehicle fires dominate at 28,031 incidents, representing 71.3% of all vehicle fire volume and confirming that the personal automobile is the primary vehicle fire environment in Illinois by an overwhelming margin. At an average of 5,606 passenger vehicle fires per year, this category alone generates a daily response demand of approximately 15 incidents distributed across the state's transportation network, from Chicago's expressway system to rural two-lane highways in the southernmost counties. The community risk dimension of passenger vehicle fire frequency is most acute for the populations least able to self-protect in a vehicle fire emergency: elderly drivers with limited mobility, individuals with disabilities, and occupants of older vehicles whose fire suppression and electrical systems have degraded beyond reliable performance. Vehicle age is a meaningful risk factor in this context, as older vehicles lacking modern fire suppression technology and with deteriorating fuel and electrical system integrity generate ignition and escalation risk that newer fleet vehicles do not present to the same degree.

Road freight and transport vehicle fires at 4,350 incidents (11.1%) and mobile property vehicle fires at 3,555 incidents (9.0%) together account for more than 20% of total vehicle fire volume and represent the categories with the greatest consequence per incident in the Illinois vehicle fire profile. As documented throughout this assessment, road freight fires on Illinois's major interstate and state highway corridors create hazardous materials exposure, traffic management complexity, and mutual aid demand that is fundamentally

different in character from passenger vehicle response. Mobile property vehicle fires encompass a broad range of vehicle types including utility trailers, equipment carriers, and other towed or mobile assets that present unique suppression and access challenges. Off-road vehicle and heavy equipment fires at 2,550 incidents (6.5%) are disproportionately concentrated in the agricultural and industrial environments of rural Illinois, where farm machinery fires during harvest season, construction equipment ignitions at major infrastructure project sites, and industrial vehicle fires at manufacturing and processing facilities generate a response demand that rural volunteer departments serving these areas absorb without the specialized training and equipment that these incident types warrant.

The smaller categories in this dataset carry significance beyond their individual percentages. Rail vehicle fires at 218 incidents, while modest in annual average terms at approximately 44 events per year, represent the highest potential consequence vehicle fire scenario in the Illinois incident profile given the volumes of hazardous commodities moving through the state's rail network daily. A single tank car fire involving a flammable liquid, toxic inhalation hazard, or cryogenic material on a main line corridor passing through a populated community can generate an evacuation, environmental, and suppression response that exceeds the combined capacity of multiple jurisdictions. Camper and recreational vehicle fires at 349 incidents and water vehicle fires at 159 incidents each represent specialized fire environments with distinct operational characteristics, the former concentrated in campground and recreational corridor communities during the summer season and the latter requiring water rescue integration and marine firefighting capability that only a limited number of Illinois departments maintain. Aircraft fires at 33 incidents, while the smallest category in the dataset, represent the highest life safety consequence per event of any vehicle fire type and demand pre-incident planning and specialized response capability at every commercial and general aviation airport in the state. The full vehicle fire type profile confirms that effective statewide vehicle fire risk management requires a differentiated approach calibrated to the specific operational demands of each vehicle category, the geographic distribution of incidents across Illinois's transportation network, and the capability profile of the local departments absorbing that demand.

Vehicle Fires By Top 25 Zip Codes

Zip Code	Count of Incident Type Code (National)
60609	552
CHICAGO	552
60628	495

CHICAGO	494
CPK	1
60644	450
CHICAGO	449
CIC	1
60624	439
CHICAGO	439
60620	414
CHICAGO	414
60623	404
CHICAGO	404
60621	398
CHICAGO	398
60632	396
CHICAGO	395
CICERO	1
60629	386
BED	3
CHICAGO	383
60651	374
CHICAGO	374
60617	360
CHICAGO	360
60608	323
CHICAGO	323
60639	309
CHICAGO	309
60636	308
CHICAGO	308
60616	305
CHICAGO	305
60612	299
CHICAGO	299
60619	283
CHICAGO	283
60411	274
CHICAGO HEIGHTS	125
CITY OF CHICAGO HEIG	1
COOK (COUNTY)	6
FORD HEIGHTS	33
GLENWOOD	1
GLENWOOD UNIC	1
LYNWOOD	30
SAUK VILLAGE	42
SOUTH CHICAGO HEIGHT	35

60827	260
BLUE ISLAND	1
CALUMET PARK	109
CHICAGO	71
RID	1
RIVERDALE	78
60643	245
CALUMET PARK	7
CCK	1
CHICAGO	237
60426	224
DIXMOOR	12
HARVEY	199
MARKHAM	3
PHOENIX	10
60637	220
CHICAGO	220
62206	205
ALORTON	1
CAHOKIA	125
CAHOKIA HEIGHTS	45
EAST SAINT LOUIS	2
SAUGET	32
60641	191
CHICAGO	191
62864	189
INA	2
MT VERNON	187
62040	189
GRANITE CITY	137
MADISON	5
MITCHELL	1
PONTOON BEACH	46
Grand Total	8492

Vehicle Fires by ZIP Code: Geographic Concentration

The geographic distribution of Illinois vehicle fires by ZIP code reveals a concentration pattern that is more pronounced and more geographically specific than any other fire category examined in this assessment. The top ZIP codes in this dataset account for 8,492 vehicle fire incidents, and the defining characteristic of the list is unmistakable: the overwhelming majority of the highest-volume vehicle fire ZIP codes are concentrated within the City of Chicago, specifically in the south and west side neighborhoods that also

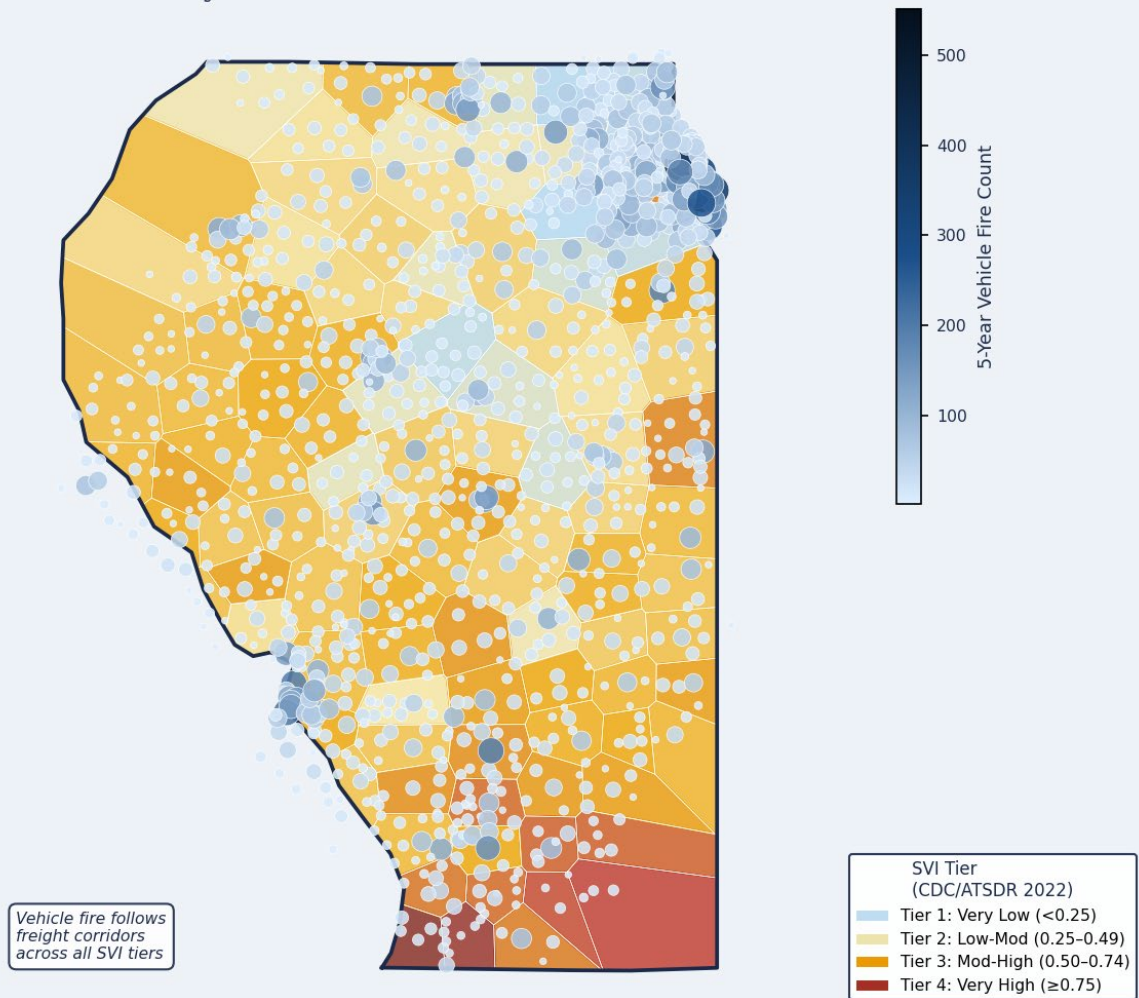
carry the highest structural fire burden, the highest social vulnerability scores, and the most constrained household economic resources in the state. ZIP code 60609 leads all geographies at 552 incidents, followed by 60628 at 495, 60644 at 450, 60624 at 439, 60620 at 414, 60623 at 404, 60621 at 398, 60632 at 396, 60629 at 386, and 60651 at 374, with every one of these top ten ZIP codes representing Chicago neighborhoods on the south and west sides of the city. The concentration of vehicle fire incidents in these specific geographies is not a function of vehicle count alone; it reflects the intersection of an older vehicle fleet, higher rates of deferred vehicle maintenance among lower-income households, street parking density that concentrates vehicle fire exposure in residential corridors, and the same community disinvestment conditions that drive elevated incident frequency across every fire category in these neighborhoods.

The community risk implications of this geographic concentration are significant and extend beyond the vehicle fire category itself. Vehicle fires in densely developed urban residential neighborhoods present escalation risk to adjacent structures, parked vehicles, and street-level infrastructure that is qualitatively different from a vehicle fire in a parking lot or on a rural highway. In the south and west side Chicago neighborhoods dominating this list, street parking is dense, building setbacks are minimal, and the proximity between a burning vehicle and an occupied residential structure can be measured in feet rather than yards. The potential for a vehicle fire to extend to an adjacent building, or for radiant heat from a vehicle fire to compromise the structural integrity of a neighboring occupied building, is a genuine escalation pathway in these environments that demands rapid response and effective initial attack capability. The Chicago Fire Department's ability to maintain that response capability in the neighborhoods generating the highest vehicle fire volume is a direct function of the station coverage, staffing levels, and apparatus deployment strategy that the city maintains across its south and west side districts.

Beyond Chicago, the ZIP codes appearing in the lower portion of the top list identify a secondary tier of vehicle fire concentration that spans the south suburban Cook County corridor and the Metro East region of southwestern Illinois. ZIP code 60411, covering the Chicago Heights, Sauk Village, Ford Heights, and Lynwood communities, recorded 274 incidents. ZIP code 60827, covering Calumet Park and Riverdale, recorded 260. ZIP code 60426, covering Harvey, Dixmoor, Phoenix, and Markham, recorded 224. In southwestern Illinois, ZIP code 62206 covering Cahokia and Cahokia Heights recorded 205 incidents, and 62864 in the Mount Vernon area recorded 189. These communities share a common profile that links them analytically to the Chicago neighborhoods at the top of the list: they are predominantly lower-income communities with aging vehicle fleets, limited household economic capacity for vehicle maintenance and replacement, and fire departments operating under sustained fiscal and staffing pressure. The vehicle fire burden in these

communities falls on the same departments that are simultaneously absorbing the highest structural fire demand, the highest mutual aid dependency, and the lowest local prevention program capacity in the Illinois fire service landscape. For the statewide CRR framework, the vehicle fire ZIP code concentration map reinforces the same geographic targeting signal that every preceding analysis in this section has produced: the communities carrying the highest fire burden across every category are the same communities, and the prevention and capacity-building investment strategy must be concentrated accordingly.

Vehicle Fire Concentration with Social Vulnerability by ZIP Code · Illinois · 2020-2024



Source: USFA NFIRS Illinois Extract 2020-2024 (Group 13). SVI: CDC/ATSDR 2022. County boundaries approximated from centroids. Each dot = one ZIP code centroid.

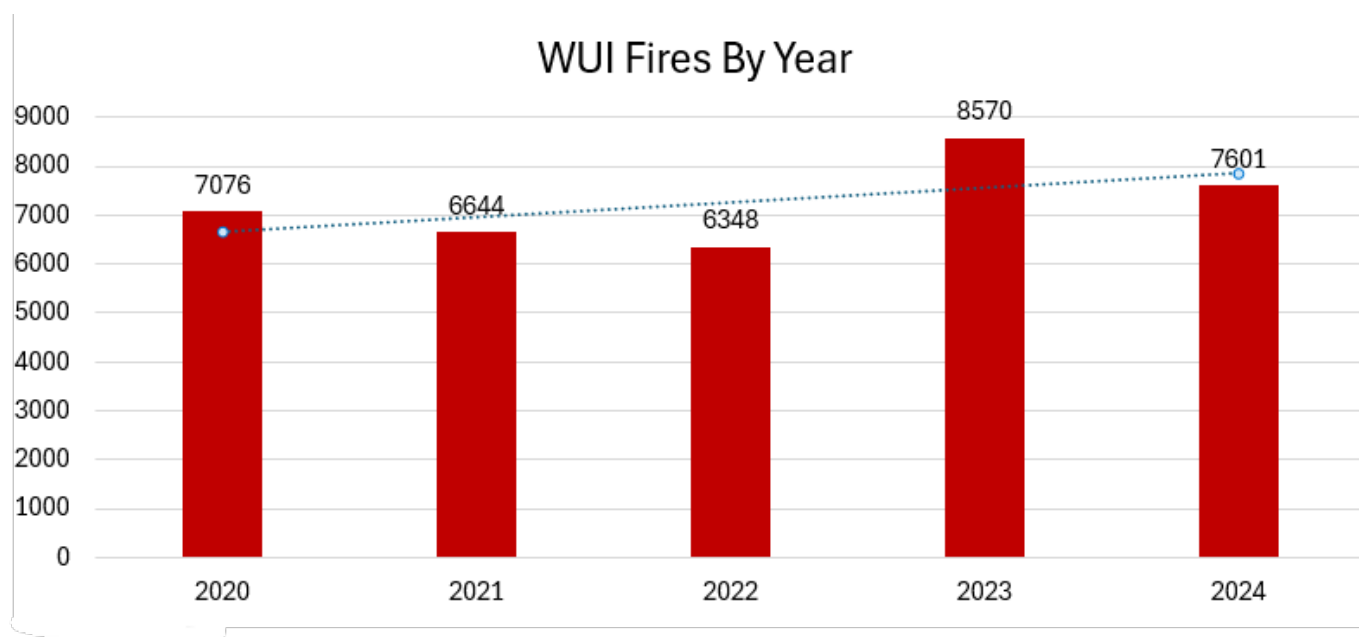
The vehicle fire concentration map with Social Vulnerability Index overlay tells a distinctly different geographic story than the cooking fire and mutual aid dependency maps, and that difference is itself analytically important. Where cooking fires cluster tightly in urban residential cores aligned with high-SVI populations, vehicle fires distribute along a pattern shaped primarily by transportation infrastructure rather than population vulnerability. The most significant concentrations appear in Chicago's south and west side ZIP codes, consistent with the vehicle fire ranking analysis documented earlier in the assessment, but the secondary pattern traces the state's major freight and interstate corridors, with visible dot clusters along the I-80 corridor through Will and Grundy counties, the I-55 corridor through the central region, and the I-57 corridor extending southward. These corridor communities span multiple SVI tiers, with Will and Grundy counties sitting in Tier 2 Low-Mod and Tier 3 Mod-High respectively, confirming that vehicle fire burden is distributed across Illinois's fire service landscape in a way that reflects the state's transportation network as much as its social vulnerability geography. The practical implication for departments serving high-volume freight corridors is significant regardless of their SVI classification: a commercial truck fire or road freight incident on a major interstate requires hazardous materials assessment capability, traffic incident management coordination, and heavy rescue resources that are not uniformly available across the rural and exurban departments absorbing the highest per-capita commercial vehicle fire demand.

As with the cooking fire and mutual aid maps, the sparse dot presence across the Tier 4 Very High SVI counties of extreme southern Illinois warrants specific scrutiny before drawing conclusions about actual vehicle fire risk in that region. The I-57 corridor passes directly through some of the state's highest-SVI counties as it runs south toward Cairo and the Kentucky border, and the volume of freight traffic on that corridor would predict a meaningful vehicle fire burden in those communities. The relative absence of dots in that area is consistent with the reporting gaps documented throughout this analysis, as the departments serving those communities are among the most likely to have incomplete NFIRS submission records and the least likely to meet the data density needed to generate a visible proportional dot at the ZIP code level. The Tier 1 Very Low SVI collar counties in the northeast, meanwhile, show moderate vehicle fire presence that is disproportionate to their vulnerability profile, a pattern explained entirely by transportation density: DuPage, Lake, and Kendall counties sit astride the most heavily trafficked freight corridor network in North America, and their vehicle fire burden reflects that geographic reality rather than any social vulnerability condition. This divergence between the vehicle fire pattern and the SVI pattern is not a weakness of the map but one of its more instructive findings, demonstrating that effective statewide vehicle fire risk management requires a

transportation-corridor planning framework that operates in parallel with, but does not simply follow, the social vulnerability targeting logic that governs residential fire prevention investment.

Wildland Urban Interface

The Wildland-Urban Interface (WUI) is defined as the zone where human development and settlement meet or intermingle with undeveloped wildland vegetation, creating a fire environment that combines the ignition potential of natural fuels with the structural exposure and life safety consequences of the built environment. In the WUI, fires that originate in grass, brush, forest understory, or agricultural residue can transition rapidly to structures, and conversely, structural ignitions can extend into adjacent vegetation and spread across the landscape under the influence of wind, terrain, and fuel conditions. For the fire service, the WUI presents a uniquely demanding operational environment because it requires simultaneous application of structural firefighting and wildland suppression capabilities, water supply strategies adapted for areas beyond hydrant coverage, and community protection tactics that differ fundamentally from those employed in fully urbanized settings. In Illinois, the WUI is not confined to a single geographic region or a single fuel type; it encompasses the forested terrain of the Shawnee National Forest in the south, the tallgrass prairie restoration areas of the north-central region, the agricultural field perimeters of the Grand Prairie, and the river bluff woodland communities of the northwest, each presenting a distinct interface fire environment with its own seasonal risk profile, ignition pathway, and community vulnerability characteristics.



Wildland-Urban Interface Fires by Year: 2020–2024

The five-year WUI fire trend for Illinois presents a pattern that is more volatile than any other fire category examined in this assessment and carries climate-driven community risk

implications that distinguish it from the relatively stable upward trajectories observed in structural and cooking fire trends. From a baseline of 7,076 WUI fire incidents in 2020, annual volume declined through 2021 (6,644) and 2022 (6,348) before surging to a five-year peak of 8,570 in 2023, then moderating to 7,601 in 2024. The total five-year volume of 36,239 incidents confirms WUI fire as the third most frequent fire category in the Illinois incident profile, equal in share to trash and rubbish fires at 13% of all fire incidents. The overall trend line is upward despite the 2021 to 2022 trough, and the 2024 figure of 7,601 incidents, while below the 2023 peak, remains 7.4% above the 2022 low and represents the second-highest annual total in the analysis period. The directional signal is unambiguous: WUI fire demand in Illinois is growing, its trajectory is being amplified by climatic conditions, and the fire service infrastructure responsible for managing it is concentrated in the regions least equipped to do so.

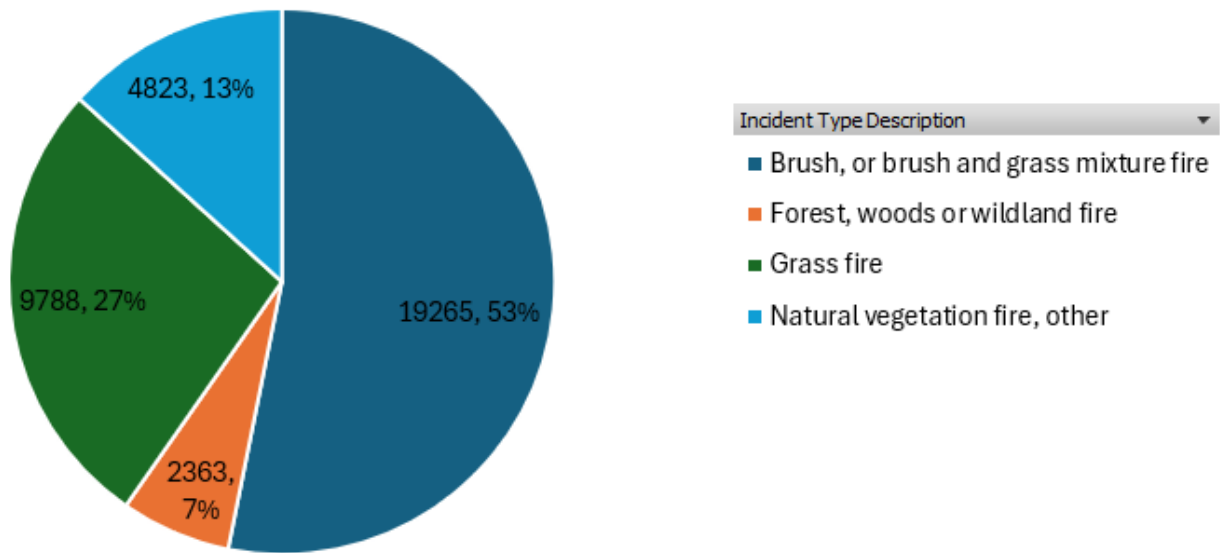
The 2021 to 2022 decline from 7,076 to 6,348 incidents, a reduction of 728 events over two years, warrants careful interpretation before it is attributed to any prevention or suppression program improvement. The 2021 and 2022 growing seasons in Illinois were characterized by above-average precipitation across significant portions of the state, particularly in the central and northern regions, conditions that directly suppress vegetation fire ignition potential by maintaining higher fuel moisture content in grass, brush, and forest understory. The reduction in WUI fire volume during those years is more accurately attributed to favorable weather conditions than to any structural change in the underlying risk environment. The 2023 surge to 8,570 incidents, the sharpest single-year increase in the dataset at a 35.0% jump from 2022, occurred during a period of intensified drought conditions across central and southern Illinois, confirming that WUI fire frequency in this state is acutely sensitive to precipitation variability and soil moisture deficits of the type that the Weather and Natural Hazards section projects will become more frequent and more severe under documented climate trends.

The 2023 peak of 8,570 WUI fire incidents is the most consequential data point in this chart for statewide CRR program design, and its community risk implications extend well beyond the incident count itself. The communities most exposed to WUI fire risk in Illinois are, with very few exceptions, the same communities identified as carrying the highest social vulnerability in the demographic analysis: rural southern Illinois counties adjacent to the Shawnee National Forest, agricultural perimeter communities in central Illinois where row crop harvesting creates seasonal grass and stubble fire exposure, and river bluff woodland communities in the northwest where topographic complexity amplifies fire behavior. These communities are served predominantly by volunteer fire departments with limited wildland firefighting training, apparatus configured primarily for structural response, and water supply infrastructure that does not extend into the open-land

and forested environments where WUI fires originate and spread. When 8,570 WUI fire incidents are distributed across a rural fire service landscape of this character, the operational gap between incident demand and local response capability is not a planning abstraction; it is a condition that produces delayed suppression, extended fire progression, and community loss that adequate prevention and preparedness investment could reduce.

The community risk implications of the WUI trend data demand a statewide response that operates on two parallel tracks simultaneously. The first is operational: mutual aid pre-planning for WUI fire scenarios, targeted wildland firefighting training and equipment investment directed at the rural departments most frequently absorbing WUI fire demand, and formal interagency coordination agreements with the Illinois Department of Natural Resources, the U.S. Forest Service, and the Illinois Department of Agriculture that position state and federal resources alongside local departments before major fire seasons rather than after incidents have escalated. The second track is preventive: community education programs in WUI-proximate communities addressing debris burning regulations, defensible space creation around residential structures, vegetation management in the interface zone, and the seasonal burning behavior modifications that the data identifies as the primary controllable ignition pathway in Illinois's agricultural and forested landscapes. The upward trend line in this chart is not an inevitable feature of the Illinois fire risk environment; it is a measurable outcome of the gap between current prevention and preparedness investment and the scale of WUI fire risk that the evidence demands be addressed.

WUI Fires By Fire Type



WUI Fires by Fire Type

The distribution of Illinois WUI fires by fire type reveals a fuel environment profile that has direct implications for both fire service operational planning and community risk reduction program design across the state's diverse interface landscapes. Brush and brush-grass mixture fires dominate at 53% of all WUI incidents with 19,265 events, confirming that the transitional fuel environment where herbaceous grasses mix with shrubby woody vegetation is the primary ignition and spread medium for WUI fire activity in Illinois. This fuel type is characteristic of the state's most extensive interface environments: the agricultural field edges and hedgerow corridors of central Illinois, the scrub and shrub understory of the Shawnee Hills, the restored and remnant prairie landscapes of the Midewin National Tallgrass Prairie buffer zone, and the brushy drainage corridors and vacant lot vegetation that characterize the urban-edge interface in many of the high-volume ZIP codes identified in the preceding analysis. Brush and grass mixture fuels are particularly consequential from a community risk standpoint because they respond rapidly to drought conditions, carry fire effectively under wind influence, and can transition from open-land burning to structural ignition when interface development lacks adequate defensible space or vegetation management between the fuel bed and the building envelope.

Grass fires at 27% (9,788 incidents) represent the second most frequent WUI fire type and the category most directly connected to Illinois's agricultural landscape and land

management practices. Grass fires in Illinois occur in a range of settings from maintained turf along roadways and utility corridors to dormant agricultural fields, CRP grassland conservation areas, and the extensive tallgrass prairie remnants and restorations distributed across the state. Their seasonality is an important community risk dimension: grass fires peak in the late winter and early spring burn window when cured standing grass from the previous growing season is at its driest and before green-up provides natural fuel moisture suppression, a period that coincides with the end of the winter fire season and precedes the staffing and resource mobilization that many departments associate with the summer fire season. Communities adjacent to large grassland tracts, agricultural field perimeters, and conservation areas face a grass fire exposure window that begins earlier in the calendar year and extends into conditions that many rural volunteer departments are not staffed or equipped to address during the late-winter period when daytime volunteer availability is at its seasonal low.

Forest, woods, and wildland fires at 7% (2,363 incidents) represent the smallest category by volume but the highest consequence fire type per incident in the Illinois WUI profile. Forest fires in the Shawnee National Forest and associated oak-hickory woodland communities of southern Illinois produce the most complex suppression environments in the state's WUI incident inventory, requiring aerial support coordination, extended attack capability, interagency command integration with the U.S. Forest Service, and the kind of sustained multi-operational-period response that exceeds the organizational capacity of the volunteer and small combination departments serving the communities most proximate to forested interface terrain. The seven southern Illinois counties encompassing the Shawnee National Forest, including Hardin, Pope, Massac, Pulaski, Johnson, Union, and Alexander, carry the highest forest fire exposure in the state and simultaneously include four of the five highest-SVI counties in Illinois. The convergence of the state's most complex WUI fire environment with its most socially vulnerable and least fire-service-resourced communities defines the southern Illinois WUI risk condition as the single most acute structural vulnerability in the statewide WUI fire profile.

Natural vegetation fires at 13% (4,823 incidents) encompass a range of open-land fire types that do not fit neatly into the brush, grass, or forest categories, including fires in wetland margins, riparian corridors, prairie restoration areas, and other native vegetation communities distributed across all four Illinois regions. Their 13% share confirms that the Illinois WUI fire environment is genuinely multi-fuel in character, demanding a prevention and preparedness approach that accounts for the full spectrum of vegetative fuel types present across the state rather than a single-fuel strategy calibrated to the dominant brush and grass category alone. Taken together, the four fire type categories confirm that the statewide WUI prevention framework must operate across a diverse fuel landscape with

region-specific characteristics: brush and grass mixture fire education and defensible space programming in the agricultural interface communities of central and southern Illinois, grass fire prevention and prescribed burn coordination in the prairie and agricultural perimeter environments of the north and central regions, forest fire pre-planning and interagency response coordination in the Shawnee Hills corridor, and natural vegetation fire management across the riparian and wetland interface communities distributed throughout the state's river systems and conservation landscapes.

Top 25 Zip Codes for WUI fires

Row Labels	Count of Incident Type Code (National)
62864	273
MT VERNON	269
BLUFORD	3
BONNIE	1
62959	213
MARION	209
SPILLERTOWN	1
PITTSBURG	1
CREAL SPRINGS	1
CARTERVILLE	1
62206	192
CAHOKIA	130
CAHOKIA HEIGHTS	39
SAUGET	18
CENTREVILLE	2
EAST SAINT LOUIS	1
ALORTON	1
EAST ST LOUIS	1
62040	178
GRANITE CITY	133
PONTOON BEACH	43
MADISON	2
62025	175
EDWARDSVILLE	167
PONTOON BEACH	6
GLEN CARBON	1
HARTFORD	1
60901	171
KANKAKEE	139
CITY OF KANKAKEE	27
VILLAGE OF IRWIN	5

60958	169
PEMBROKE TOWNSHIP	162
PEMBROKE	7
61604	168
PEORIA	154
WEST PEORIA	11
BARTONVILLE	1
BELLEVUE	1
LIMESTONE TOWNSHIP	1
62812	164
BENTON	160
WEST CITY	4
62002	161
ALTON	160
FOSTERBURG	1
60477	161
TINLEY PARK	131
ORLAND HILLS	19
ORLAND PARK	5
COUNTRY CLUB HILLS	2
OAK FOREST	2
COOK COUNTY	2
60446	151
ROMEDEVILLE	141
LEMONT	5
CREST HILL	2
LOCKPORT	2
PLAINFIELD	1
60450	147
MORRIS	141
CITY OF MORRIS	3
GC164	1
CHANNAHON	1
GARDNER	1
60010	143
BARRINGTON	39
BARRINGTON HILLS	32
SOUTH BARRINGTON	15
DEER PARK	13
LAKE BARRINGTON	12
NORTH BARRINGTON	8
INVERNESS	5
VILLAGE OF BARRINGTO	5
TOWER LAKES	3

LAKE ZURICH	3
PALATINE	3
PORT BARRINGTON	2
HOFFMAN ESTATES	1
KILDEER	1
LAKE FOREST	1
61554	142
PEKIN	120
NORTH PEKIN	11
CITY OF PEKIN	10
CINCINNATI (TOWNSHIP	1
62901	141
CARBONDALE	139
MARION	1
MAKANDA	1
60481	139
WILMINGTON	104
CUSTER PARK	31
MANTENO	1
MINOOKA	1
CUSTER	1
MANHATTAN	1
60440	138
BOLINGBROOK	133
ROMEOVILLE	2
LEMONT	2
NAPERVILLE	1
62650	137
JACKSONVILLE	116
SOUTH JACKSONVILLE	17
HILLVIEW	3
LYNNVILLE	1
62226	136
SWANSEA	83
BELLEVILLE	49
CAHOKIA	2
BELLVILLE	1
ST CLAIR COUNTY	1
62521	133
DECATUR	133
62801	132
CENTRALIA	129
CENTRAL CITY	1
WAMAC	1

IRVINGTON	1
61021	128
DIXON	125
DIXON, LEE CO	2
ROCK FALLS, LEE CO	1
60491	127
HOMER GLEN	119
LOCKPORT	6
ORLAND PARK	2
60411	123
SAUK VILLAGE	41
CHICAGO HEIGHTS	35
LYNWOOD	16
SOUTH CHICAGO H	17
FORD HEIGHTS	10
STEGER	3
COOK (COUNTY)	1
Grand Total	3942

WUI Fire Concentration: Top 25 ZIP Codes

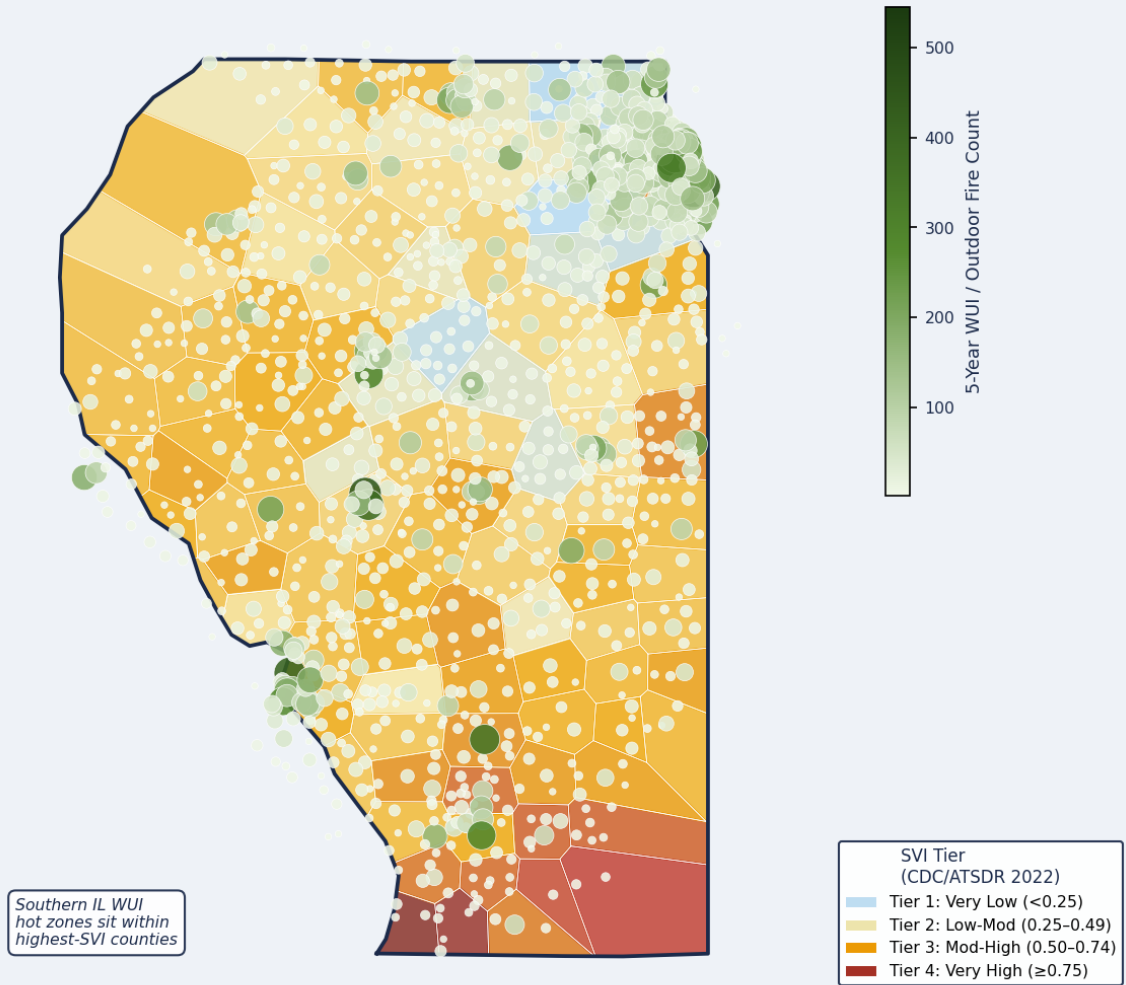
The top 25 ZIP codes by WUI fire incident volume account for 3,942 incidents over the analysis period, representing a meaningful concentration of the statewide WUI fire burden within a discrete and identifiable set of geographies that span every region of Illinois. The leading ZIP code, 62864 in the Mount Vernon area of Jefferson County, recorded 273 incidents over the five-year period, followed by 62959 in the Marion and Williamson County area at 213, and 62206 covering the Cahokia and Cahokia Heights communities of St. Clair County at 192. The presence of three southern Illinois ZIP codes in the top three positions is consistent with the forested terrain, seasonal drought exposure, and interface development patterns of the Shawnee Hills corridor documented in the Weather and Natural Hazards section of this assessment. The southern Illinois dominance of the upper rankings extends further down the list, with Benton (62812, 164), Alton (62002, 161), Carbondale (62901, 141), Jacksonville (62650, 137), Swansea and Belleville (62226, 136), Decatur (62521, 133), and Centralia (62801, 132) all appearing in the top 25, collectively confirming that the southern and central Illinois interface environment generates the highest concentration of WUI fire incidents in the state on an absolute basis.

The geographic breadth of the top 25 list is among its most analytically significant characteristics for statewide CRR planning purposes. High-volume WUI fire ZIP codes are not confined to forested or rural southern Illinois; they appear across the full range of Illinois community types. Kankakee (60901, 171 incidents), Tinley Park and Orland Hills

(60477, 161 incidents), Romeoville (60446, 151 incidents), Morris (60450, 147 incidents), Barrington and its surrounding communities (60010, 143 incidents), Pekin (61554, 142 incidents), Wilmington (60481, 139 incidents), Bolingbrook (60440, 138 incidents), and Dixon (61021, 128 incidents) all appear alongside southern Illinois communities, demonstrating that WUI fire risk in Illinois is a statewide condition that manifests wherever the interface between developed land and open vegetated space creates the fuel continuity and ignition exposure that drives incidents. Suburban and exurban communities in Will, Grundy, Lake, and Cook counties are generating WUI fire volumes comparable to those in communities directly adjacent to the Shawnee National Forest, a finding that challenges any statewide prevention strategy that treats WUI fire as an exclusively rural or downstate concern.

Several specific community profiles within the top 25 carry community risk implications that extend beyond their incident counts. The Pembroke Township ZIP code (60958) at 169 incidents is perhaps the most consequential entry in the list from a vulnerability standpoint. Pembroke Township in Kankakee County is one of the most persistently impoverished rural communities in Illinois, with a majority African-American population, extremely limited municipal services, minimal fire protection infrastructure, and one of the highest social vulnerability scores in the northeastern Illinois region. WUI fire incidents in Pembroke Township are occurring in a community that lacks the fire service capacity, water supply infrastructure, and prevention program resources to manage them effectively, representing a convergence of high fire frequency and high community vulnerability that places it among the highest-priority geographies for targeted statewide CRR investment. The Cahokia and Cahokia Heights communities appearing in ZIP codes 62206 and 62207 present a similar profile, with a combined 311 WUI incidents occurring in densely developed interface environments where older residential structures are interspersed with undeveloped lots, drainage corridors, and vegetated open spaces that provide fuel continuity between outdoor ignitions and adjacent residential buildings. For the statewide CRR framework, the top 25 ZIP code list is not simply a ranking of fire frequency; it is a targeting map that identifies where WUI prevention investment, community education, defensible space programming, and interagency coordination with land management agencies will produce the greatest reduction in fire risk for the communities bearing the highest burden.

WUI & Outdoor Fire Concentration with Social Vulnerability by ZIP Code · Illinois · 2020-2024



Source: USFA NFIRS Illinois Extract 2020-2024 (Groups 15-17). SVI: CDC/ATSDR 2022. County boundaries approximated from centroids. Each dot = one ZIP code centroid.

The WUI and outdoor fire concentration map with Social Vulnerability Index overlay produces a geographic pattern that is among the most compelling in the assessment's map portfolio because it confirms two distinct and equally important risk dimensions simultaneously. The southern Illinois concentration, where the largest and darkest green dots cluster across the Tier 3 Mod-High SVI counties of the Shawnee Hills corridor including Jefferson, Williamson, Jackson, Franklin, and Saline counties, makes the most direct argument in the entire map set for the convergence of wildland fire exposure and community vulnerability. These counties carry SVI scores between 0.58 and 0.74 and are home to the agricultural interface communities, river bluff woodland corridors, and

Shawnee National Forest buffer zones that generate the highest WUI fire volumes in the state. The departments serving them are predominantly volunteer agencies with structural firefighting training, apparatus configured for residential response, and limited access to the water supply infrastructure, wildland personal protective equipment, and interagency coordination frameworks that sustained WUI fire operations demand. The northeast corner of the map presents a visually counterintuitive pattern, with dense small dots appearing in the Chicago metropolitan area and its Tier 3 Cook County background, a concentration that reflects outdoor vegetation and rubbish fires in urban fringe environments rather than true wildland fire, and that reinforces the earlier finding that WUI fire risk in Illinois is not a phenomenon confined to forested or agricultural landscapes but a statewide operational condition that manifests wherever fuel continuity exists adjacent to developed land.

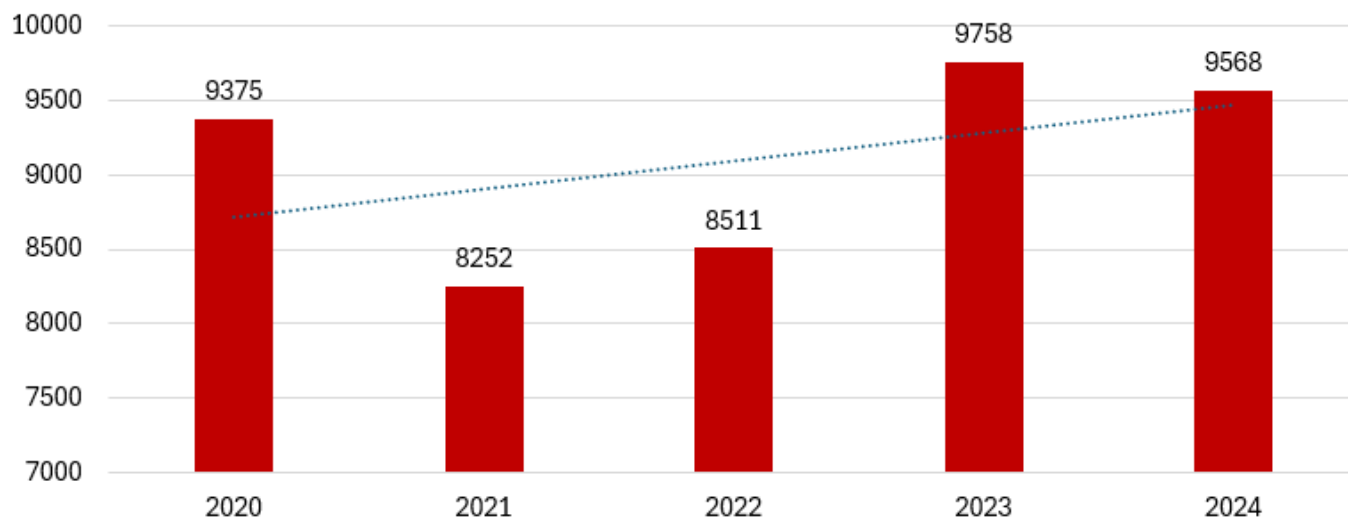
The most significant outlier pattern on this map is the near-absence of WUI fire dots across the Tier 4 Very High SVI counties of extreme southern Illinois, particularly Hardin, Pope, Johnson, and Union counties, all of which sit immediately adjacent to or within the Shawnee National Forest and would be expected to carry substantial WUI fire exposure. As documented in the reporting analysis section of this assessment, these counties are served by some of the most under-resourced and least-reporting volunteer departments in the state, and the absence of dots in this portion of the map almost certainly understates the true WUI fire burden rather than reflecting a genuine absence of incidents. The I-57 and Route 13 corridors running through this region carry consistent agricultural and woodland interface exposure that the USFA WUI fire trend data confirms is generating incidents statewide, and the gap between that documented statewide trend and the sparse representation of incidents in the highest-SVI southern counties is precisely the kind of data blind spot that local Community Risk Assessments are uniquely positioned to fill. A CRA conducted in Alexander or Hardin County would capture the fire environment intelligence, the department capability gaps, and the community vulnerability conditions that the statewide NFIRS extract cannot document for communities where the reporting infrastructure may be under-resourced.

Trash & Rubbish Fires

Outside, Vegetation, and Special Fire Groups: Analytical Framework

For the purposes of this statewide analysis, NFIRS incident groups 15 (Outside Rubbish Fires), 16 (Special Outside Fires), and 17 (Natural Vegetation Fires) are consolidated into a single analytical grouping. While each group represents a distinct incident classification within the NFIRS coding structure, the three categories share a common operational and community risk profile: they are fires occurring outside the building envelope, in the open environment, and in fuel types ranging from accumulated refuse and debris to grass, brush, and natural vegetation. Examined individually, each group's incident volume understates its contribution to the statewide fire burden and its relationship to the structural fire risk conditions documented in the preceding sections. Consolidated, they represent a combined outside fire environment that accounts for a substantial share of total Illinois fire incident volume, generates disproportionate demand on rural and small combination departments, and functions as a leading indicator of the community disinvestment, vacant property proliferation, and landscape fuel accumulation conditions that elevate structural fire risk in the same geographies. The analysis that follows treats these three groups as a unified outside fire category while preserving the specific incident type distinctions necessary to support targeted prevention and response planning at the community level.

Outdoor Trash & Rubbish Fires By Year



Outdoor Trash and Rubbish Fires by Year: 2020–2024

The five-year trend for outdoor trash and rubbish fires in Illinois presents a pattern that mirrors the broader statewide fire incident trajectory in its directional movement while

revealing specific community risk dynamics that distinguish this category from the structural and vegetation fire environments analyzed elsewhere in this section. From a baseline of 9,375 incidents in 2020, annual outdoor trash and rubbish fire volume declined to 8,252 in 2021 and partially recovered to 8,511 in 2022, before surging to a five-year peak of 9,758 in 2023 and remaining elevated at 9,568 in 2024. The five-year total of 45,464 incidents represents an annual average of 9,093 events, or approximately 25 outdoor trash and rubbish fire responses every day across Illinois without interruption. The overall trend line is unambiguously upward, and the 2024 figure of 9,568 incidents represents the second-highest annual total in the analysis period, confirming that the 2023 peak was not an anomaly but rather a leading indicator of a new and elevated operating baseline for this fire category. Between 2020 and 2024, the number of outdoor trash and rubbish fires rose by 193 incidents, reflecting a net increase of 2.1%. The escalation became notably pronounced during the last two years of the analysis period, highlighting the need for targeted statewide prevention strategies.

The 2021 decline from 9,375 to 8,252 incidents follows the same pattern observed across multiple fire categories in this assessment and reflects the residual effects of pandemic-related disruptions to community activity patterns, commercial occupancy, and outdoor gathering behaviors that temporarily suppressed certain ignition pathways during that year. The subsequent recovery and surge through 2023 and 2024 represents the reassertion of the underlying community conditions that generate outdoor trash and rubbish fire demand in Illinois, and those conditions are structural rather than behavioral: concentrated poverty, abandoned and vacant property proliferation, inadequate waste management infrastructure in lower-income urban neighborhoods, and the progressive deterioration of neighborhood physical conditions in the post-industrial communities that dominate the high-incident geographies identified throughout this assessment. The 2023 peak coinciding with the broader statewide incident surge reinforces the interpretation that outdoor fire categories are sensitive to the same compound environmental and economic stressors that elevated all fire categories in that year, including drought conditions that increase the ignition potential of accumulated outdoor debris and economic pressures that reduce household and municipal investment in waste management and property maintenance.

The community risk implication of a sustained and rising outdoor trash and rubbish fire baseline operates on two levels that are equally important for statewide CRR program design. At the operational level, nearly 9,100 outdoor trash and rubbish fire responses per year represent a meaningful consumption of fire service resources, apparatus hours, and personnel availability that accumulates into a significant operational burden over time, particularly for the urban departments in Chicago, Rockford, Peoria, and the south suburban corridor that absorb the majority of this incident volume while simultaneously

managing the highest structural fire demand in the state. At the community risk level, outdoor trash and rubbish fire frequency functions as one of the most reliable leading indicators of neighborhood structural fire risk elevation available in the NFIRS dataset. Communities generating high volumes of outdoor refuse fires are communities experiencing the property vacancy, abandonment, and disinvestment conditions that systematically preceded increases in structural fire frequency in adjacent residential blocks. The statewide CRR framework must treat elevated outdoor trash and rubbish fire concentration not as a standalone operational problem but as an early warning signal that triggers proactive community engagement, code enforcement coordination, and targeted structural fire prevention investment in the neighborhoods where this data most clearly forecasts escalating risk.

Outdoor Trash, Rubbish & Special Outside Fires

Row Labels	Count of Incident Type Code (National)
Outside rubbish, trash or waste fire	20391
Outside rubbish fire, other	9778
Dumpster or other outside trash receptacle fire	6401
Outside equipment fire	2410
Special outside fire, other	2154
Cultivated grain or crop fire	1774
Outside storage fire	839
Cultivated vegetation, crop fire, other	785
Construction or demolition landfill fire	281
Garbage dump or sanitary landfill fire	204
Cultivated trees or nursery stock fire	171
Outside gas or vapor combustion explosion	142
Outside stationary compactor/compacted trash fire	104
Outside mailbox fire	29
Cultivated orchard or vineyard fire	1
Grand Total	45464

Outdoor Trash, Rubbish, and Special Outside Fires by Type

The breakdown of Illinois outdoor trash, rubbish, and special outside fire incidents by specific type provides the granular incident profile necessary to understand both the operational character of this fire category and the community conditions driving its sustained volume. Outside rubbish, trash, and waste fires lead all specific types at 20,391

incidents, representing 44.8% of the consolidated group total and confirming that uncontained outdoor refuse accumulation is the dominant ignition environment within this category. Outside rubbish fire other at 9,778 incidents and dumpster and outside trash receptacle fires at 6,401 incidents together add another 16,179 events, bringing the combined refuse-related outdoor fire total to 36,570 incidents, or 80.4% of the entire outside fire group. The concentration of four in five incidents within the refuse and waste fire subcategories is not a coincidence of reporting; it is a direct measurement of the waste management, property maintenance, and neighborhood physical condition failures that generate outdoor ignition opportunities at the community level. In the Chicago south and west side neighborhoods, south suburban corridor communities, and downstate post-industrial cities that generate the highest outdoor fire volumes in the statewide incident data, refuse fire frequency is the most visible and most measurable symptom of the disinvestment conditions that elevate structural fire risk in the same geographies.

Outside equipment fires at 2,410 incidents (5.3%) and special outside fire other at 2,154 incidents (4.7%) represent the operational and industrial dimensions of the outdoor fire profile, encompassing a broad range of ignition environments from utility infrastructure and construction equipment to the miscellaneous outdoor fire scenarios that NFIRS other classifications capture when specific type designations do not apply. The agricultural subcategories (cultivated grain and crop fires) at 1,774 incidents (3.9%), cultivated vegetation and crop fires at 785 incidents (1.7%), and cultivated trees and nursery stock fires at 171 incidents, together produce 2,730 agricultural fire events representing 6.0% of the consolidated group total. As documented throughout this assessment, agricultural fire incidents in Illinois carry economic and operational consequence far beyond their percentage share in a state where row crop production, grain storage infrastructure, and ethanol processing facilities are distributed across the majority of the state's 102 counties. A single large, cultivated grain fire during a drought-stressed harvest season can generate a multi-department, multi-hour response that exhausts regional mutual aid capacity and produces agricultural economic losses affecting entire rural communities, consequences that the raw incident count does not adequately convey.

The remaining categories, outside storage fires at 839 incidents, construction and demolition landfill fires at 281, garbage dump and sanitary landfill fires at 204, outside gas and vapor combustion explosions at 142, outside stationary compactor fires at 104, outside mailbox fires at 29, and cultivated orchard and vineyard fires at 1, collectively represent less than 4% of group volume but each carry specific community risk dimensions that extend beyond their incident count. Outside gas and vapor combustion explosions at 142 incidents are among the highest consequence per-event scenarios in the outdoor fire profile, with the potential for rapid escalation, structural damage to adjacent buildings, and

firefighter injury exposure that demand immediate and aggressive response. Construction and demolition landfill fires at 281 incidents reflect the outdoor fire exposure generated by Illinois's ongoing infrastructure investment activity, concentrated in the urban and suburban communities where the Rebuild Illinois program and private development are generating the highest volume of construction debris accumulation. The full outside fire type profile reinforces the community risk targeting directive established throughout this section: the statewide CRR framework should address outdoor fire frequency not as a peripheral operational category but as a primary community risk indicator whose geographic concentration maps the neighborhoods most in need of coordinated prevention investment, code enforcement partnership, and structural fire risk intervention before the conditions generating outdoor ignitions produce the building fire fatalities that this category reliably forecasts.

Outdoor Trash, Rubbish & Special Outside Fires by Zip Code

Row Labels	Count of Incident Type Code (National)
60623	546
CHICAGO	546
60624	527
CHICAGO	527
60620	459
CHICAGO	459
60608	455
CHICAGO	455
62702	449
GRANDVIEW	7
SPRINGFIELD	442
60628	437
CHICAGO	437
60636	419
CHICAGO	419
60617	412
CHICAGO	412
62040	409
GLEN CARBON	1
GRANITE CITY	361
MADISON	4
MITCHELL	1
PONTOON BEACH	42

60609	408
CHICAGO	408
60644	397
CHICAGO	395
CICERO	1
OAK PARK	1
60651	385
CHICAGO	385
60621	384
CHICAGO	384
62703	379
SPRINGFIELD	379
60612	371
CHICAGO	371
62864	343
BLUFORD	1
MT VERNON	341
OPDYKE	1
60804	310
CICERO	303
STICKNEY	7
60426	303
DIXMOOR	13
HARVEY	269
HIVERY	1
MARKHAM	11
PHOENIX	9
60647	303
CHICAGO	303
61554	291
CITY OF PEKIN	47
MARQUETTE HEIGHTS	20
NORTH PEKIN	9
PEKIN	213
PEKIN (TOWNSHIP OF)	2
62959	287
MARION	287
60625	286
CHICAGO	286
60640	279
CHICAGO	279
62206	273
CAHOKIA	198
CAHOKIA HEIGHTS	51
CENTREVILLE	1

EAST SAINT LOUIS	8
SAUGET	15
60639	264
CHICAGO	264
Grand Total	9376

Outside Fires by ZIP Code: Geographic Concentration

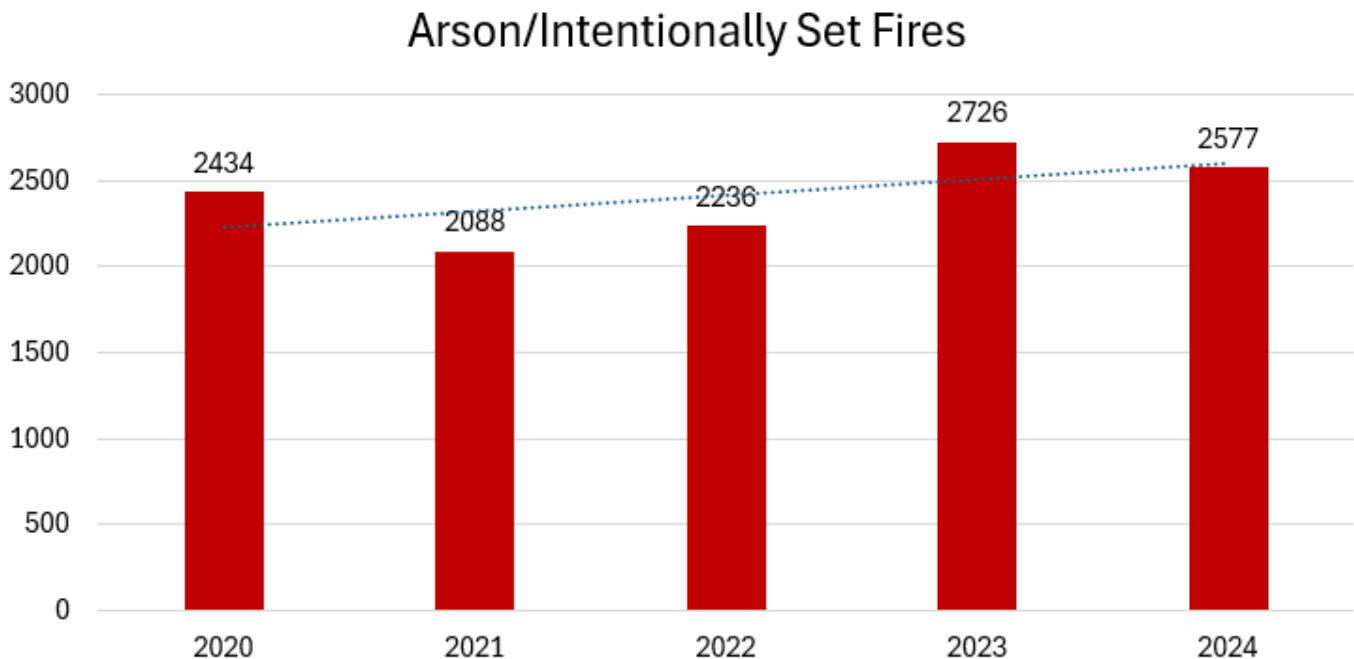
The geographic distribution of Illinois outside fires by ZIP code produces the most concentrated urban clustering of any fire category in this assessment, and the pattern it reveals is analytically inseparable from the structural fire risk and social vulnerability findings that run throughout this section. The top ZIP codes in this dataset account for 9,376 outside fire incidents, and the list is dominated by Chicago's south and west side neighborhoods to a degree that surpasses even the vehicle fire geographic concentration documented earlier. ZIP code 60623 leads at 546 incidents, followed by 60624 at 527, 60620 at 459, 60608 at 455, 60628 at 437, 60636 at 419, 60617 at 412, 60609 at 408, 60644 at 397, 60651 at 385, 60621 at 384, and 60612 at 371, with every one of these leading ZIP codes representing Chicago neighborhoods on the south and west sides of the city. The concentration of the twelve highest volume outside fire ZIP codes within a contiguous geographic band spanning Chicago's south and west sides is not a distributional artifact; it is the measurable spatial footprint of the concentrated poverty, abandoned property proliferation, and neighborhood disinvestment conditions that generate outdoor ignition opportunities at a frequency found nowhere else in the state.

The community risk significance of this geographic concentration cannot be overstated. The Chicago south and west side neighborhoods producing the highest outside fire volumes are simultaneously the neighborhoods carrying the highest structural fire incident rates, the highest social vulnerability scores, and the most constrained local prevention program resources in the Illinois fire service landscape. The relationship between outdoor refuse fire density and structural fire risk elevation in these communities is not correlational; it is causal and well documented in the fire service research literature. Vacant lots accumulating combustible debris, abandoned structures providing fuel and shelter for unauthorized burning, inadequate municipal waste collection creating refuse accumulation on residential blocks, and the social conditions that reduce community capacity for self-protective environmental management all converge in these neighborhoods to produce an outdoor fire environment that functions as a continuous ignition source adjacent to occupied residential buildings. From a CRR standpoint, the outside fire ZIP code concentration map identifies the specific Chicago neighborhoods where coordinated fire department, code enforcement, community development, and municipal services

investment will produce the greatest reduction in both outdoor fire frequency and the structural fire escalation risk it generates.

Beyond Chicago, the list identifies a secondary tier of outside fire concentration that spans the same geographic corridor of post-industrial community distress identified in earlier analyses. Springfield's ZIP codes 62702 and 62703 together contribute 828 incidents, making the state capital's lower-income neighborhoods a significant outside fire concentration point that receives less analytical attention than Chicago but generates a comparable per-capita outdoor fire burden. Granite City and Pontoon Beach in ZIP code 62040 contribute 409 incidents, the Mount Vernon area in 62864 contributes 343, Harvey and surrounding communities in 60426 contribute 303, Cicero in 60804 contributes 310, Pekin in 61554 contributes 291, Marion in 62959 contributes 287, and Cahokia and Cahokia Heights in 62206 contribute 273. Each of these communities shares the profile established throughout this assessment: aging housing stock, elevated poverty and vacancy rates, high social vulnerability, and fire departments operating under fiscal and staffing constraints that limit both outdoor fire response capacity and the prevention program infrastructure needed to address the community conditions generating incident demand. The outside fire ZIP code distribution is, in its essentials, a map of where Illinois's statewide CRR investment must be most concentrated to address the upstream conditions that the outdoor fire data identifies as the clearest available leading indicator of escalating structural fire risk.

Arson/Intentionally Set Fires



Arson and Intentionally Set Fires by Year: 2020–2024

Illinois arson and intentionally set fires present a five-year trend that is among the most concerning in the statewide incident profile, not simply because of its upward trajectory but because of what intentionally set fires reveal about the community conditions generating them and the populations most exposed to their consequences. From a baseline of 2,434 incidents in 2020, annual arson volume declined to 2,088 in 2021, partially recovered to 2,236 in 2022, surged to a five-year peak of 2,726 in 2023, and remained elevated at 2,577 in 2024. The five-year total of 12,061 incidents represents an annual average of 2,412 intentionally set fires, or approximately seven arson incidents every day across Illinois without interruption. The overall trend line is unambiguously upward, and the 2024 figure of 2,577 incidents, while below the 2023 peak, represents the second-highest annual total in the analysis period and sits 5.9% above the 2020 baseline. The directional signal is clear: intentionally set fire frequency in Illinois is growing, and the community conditions producing that growth have not been meaningfully addressed by current prevention, intervention, or enforcement strategies operating at the statewide level.

The 2023 surge to 2,726 incidents, a single-year increase of 490 events representing a 21.9% jump from 2022, is the most significant year-over-year change in the arson dataset and demands specific analytical attention. Arson frequency is known in the fire service research literature to be sensitive to economic stress, concentrated poverty, vacant and abandoned property density, and the social disorganization conditions that correlate with elevated crime rates more broadly. The 2023 spike coincides with a period of intensifying

economic pressure on lower-income Illinois households, continued post-pandemic vacancy accumulation in urban neighborhoods, and the broader statewide incident surge that elevated every fire category in that year. The correlation between economic distress and arson frequency is not speculative; it is one of the most consistently documented findings in decades of fire loss research, and the Illinois data confirms that relationship with a clarity that should inform both the statewide CRR framework and the broader community investment strategies of the agencies and organizations that partner with the fire service in Illinois's highest-risk geographies.

The community risk implications of sustained arson frequency at the statewide level are profound and operate across multiple dimensions simultaneously. At the most immediate level, intentionally set fires in occupied residential structures represent a direct and deliberate threat to the lives of the residents least able to protect themselves, the elderly, the disabled, children, and the socially isolated individuals concentrated in the aging residential stock of Illinois's highest-SVI communities. Arson in vacant and abandoned structures, while not directly threatening occupants in the fire building itself, creates escalation risk to adjacent occupied residences, generates toxic smoke exposure for surrounding residents, and consumes fire department resources in buildings with no life safety value while neighboring occupied housing remains without coverage. At the neighborhood level, sustained arson activity accelerates the physical deterioration and population displacement cycle that transforms distressed neighborhoods into environments where structural fire risk for remaining residents is compounded by every additional vacancy that arson activity produces. The communities in Illinois experiencing the highest arson frequency are, without exception, the communities already identified in this assessment as carrying the greatest compound vulnerability, creating a feedback loop in which community distress generates arson activity and arson activity deepens community distress.

For the statewide CRR framework, arson is not a law enforcement problem with peripheral fire service implications; it is a community risk condition with direct fire service consequences that demands a coordinated multi-agency response. Effective arson reduction requires the simultaneous deployment of fire investigation capacity to improve detection and prosecution rates, vacant property remediation programs to eliminate the abandoned structure inventory that provides both fuel and opportunity for intentional ignition, community engagement and youth intervention programming in the highest-arson geographies to address the behavioral and social conditions that generate juvenile and young adult fire-setting activity, and economic development investment in the concentrated poverty environments where arson frequency correlates most strongly with household and neighborhood distress. The trend line in this chart measures the cumulative

failure of those interventions to keep pace with the conditions generating demand, and reversing it requires the statewide CRR framework to treat arson reduction as a primary prevention priority rather than a secondary consequence of broader community improvement efforts.

Intentionally Set Fires By Building Status

Row Labels	Count of Incident Type Code (National)
Being demolished	49
Idle, not routinely used	60
In normal use	1191
Other	23
Under construction	25
Under major renovation	12
Undetermined	36
Vacant and secured	192
Vacant and unsecured	397
(blank)	10076
Grand Total	12061

Arson and Intentionally Set Fires by Building Status

Among the 1,985 arson and intentionally set fire incidents for which building status was recorded, the distribution confirms and quantifies what fire service professionals and community risk researchers have long understood about the relationship between property vacancy and intentional fire-setting in Illinois's most distressed communities. Vacant and unsecured structures account for 397 incidents (20.0%) and vacant and secured structures for 192 incidents (9.7%), together producing 589 incidents representing 29.7% of all captured arson events. In the context of arson specifically, the vacancy finding carries a weight that exceeds its already significant share of the structural fire building status data presented earlier in this assessment. Vacant and unsecured structures are not passive victims of arson activity; they are the primary enabling environment for it. An unsecured vacant building in a distressed urban neighborhood provides unrestricted access, accumulated combustible material, social isolation from surveillance, and the physical conditions that make intentional ignition both easy to execute and difficult to investigate. The 397 arson incidents in vacant and unsecured structures represent the most direct and actionable data point in this entire dataset for community risk intervention: every vacant and unsecured structure that is secured, rehabilitated, or demolished removes an arson opportunity from the community risk environment before the next ignition event occurs.

Buildings in normal use account for 1,191 incidents (60.0%) of captured arson events, a figure that carries the most severe community risk implication in this dataset because it identifies intentional fires set in occupied, actively used structures. Arson in occupied buildings represents a deliberate act directed at structures where people are living, working, or gathering, and the fatality and injury risk profile of occupied building arson is fundamentally different from vacancy-targeted fire-setting. The populations most frequently victimized by occupied building arson in Illinois are the same populations identified throughout this assessment as the state's highest structural fire risk group: elderly residents in older multifamily housing, low-income households in deteriorating single-family structures, and residents of the densely developed urban neighborhoods where arson activity is most concentrated. The 1,191 occupied building arson incidents over the analysis period represent an average of 238 deliberate fires in occupied structures per year, a sustained threat to community safety that demands both aggressive fire investigation and prosecution capacity and the community engagement infrastructure necessary to address the social conditions generating intentional fire-setting behavior.

The remaining building status categories, being demolished at 49 incidents, idle and not routinely used at 60, under construction at 25, under major renovation at 12, and undetermined at 36, collectively represent 182 incidents occurring in structures at various stages of the building life cycle outside normal occupancy. Each of these settings presents specific investigative and community risk dimensions: construction and renovation site arsons are frequently motivated by insurance fraud, labor disputes, or targeted harassment, while demolition site fires reflect the opportunistic ignition potential of structures in the final stages of their useful life. The data completeness picture for this chart is the most significant reporting gap in the arson dataset, with 10,076 incidents, representing 83.5% of all arson reports, submitted without a building status field completed. That figure means the building status analysis presented here is drawn from fewer than one in six arson incidents in the statewide record, a limitation that substantially constrains the precision of vacancy-arson relationship analysis at the community level. Given that building status data for arson incidents is among the most operationally valuable intelligence available to both fire investigators and community risk planners, improving the completion rate of this field through targeted training and reporting support represents a foundational investment in the statewide arson reduction strategy that the trend data in the preceding analysis demands.

Top 25 Zip Code for Arson/Intentionally Set Fires

Row Labels	Count of Incident Type Code (National)
62864	309
MT VERNON	308
BONNIE	1
62702	287
SPRINGFIELD	284
GRANDVIEW	3
61605	235
PEORIA	235
62703	208
SPRINGFIELD	207
SOUTHERN VIEW	1
61603	194
PEORIA	194
62812	193
BENTON	191
WEST CITY	2
62002	184
ALTON	184
62204	166
WASHINGTON PARK	111
EAST ST LOUIS	53
CAHOKIA HEIGHTS	1
CENTERVILLE	1
61604	136
PEORIA	130
WEST PEORIA	5
BELLEVUE	1
61832	135
DANVILLE	118
DANVILLE (TOWNSHIP O	17
62901	114
CARBONDALE	114
60085	107
WAUKEGAN	105
PARK CITY	2
62226	106
SWANSEA	86
BELLEVILLE	19
EAST ST. LOUIS	1
60426	106
HARVEY	96
PHOENIX	5

DIXMOOR	4
RIVERDALE	1
62896	101
WEST FRANKFORT	101
62040	97
GRANITE CITY	81
PONTOON BEACH	16
61701	96
BLOOMINGTON	96
62704	95
SPRINGFIELD	95
61611	94
EAST PEORIA	93
CITY OF EAST PEORIA	1
60901	86
KANKAKEE	86
62650	78
JACKSONVILLE	71
SOUTH JACKSONVILLE	7
62521	78
DECATUR	78
62206	75
CAHOKIA	72
SAUGET	2
CAHOKIA HEIGHTS	1
61101	68
ROCKFORD	68
62234	65
COLLINSVILLE	65
Grand Total	3413

Arson and Intentionally Set Fires: Top 25 ZIP Codes

The geographic distribution of Illinois arson incidents across the top 25 ZIP codes produces a concentration map that is both analytically precise and deeply revealing about the community conditions driving intentional fire-setting across the state. The 3,413 incidents captured in this list represent 28.3% of total statewide arson volume concentrated within a discrete set of geographies that share a common and consistently documented community profile. Unlike the vehicle fire ZIP code list, which was dominated overwhelmingly by Chicago's south and west side neighborhoods, the arson concentration pattern is strikingly different: Chicago is largely absent from the top 25, and the list is instead led by downstate and mid-size city communities that carry some of the highest social vulnerability scores, the highest poverty concentrations, and the most constrained

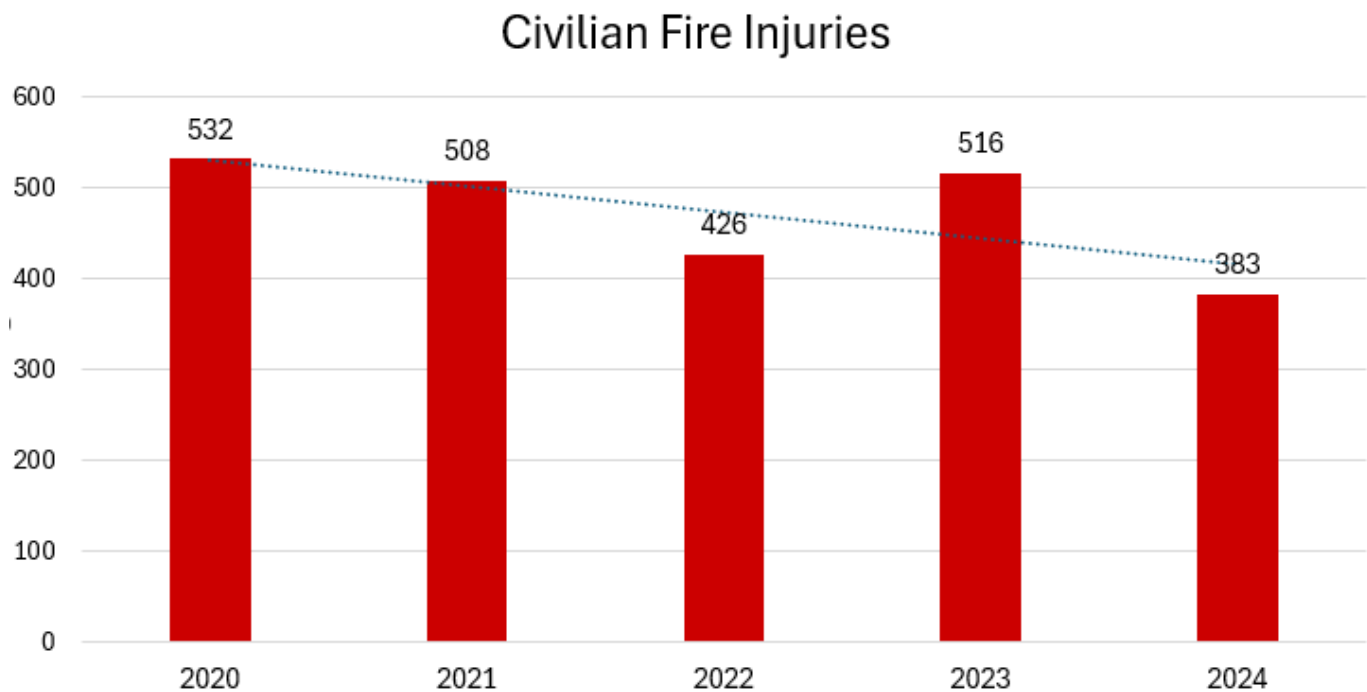
fire service resources in the state. ZIP code 62864 in the Mount Vernon area of Jefferson County leads all geographies at 309 incidents, followed by 62702 in Springfield at 287, 61605 in Peoria at 235, 62703 in Springfield at 208, 61603 in Peoria at 194, 62812 in Benton at 193, and 62002 in Alton at 184. The presence of two Springfield ZIP codes combining for 495 incidents and three Peoria ZIP codes combining for 565 incidents establishes those two mid-size Illinois cities as the state's most significant arson concentration environments outside the Chicago metropolitan area, a finding that demands specific attention in any statewide arson reduction strategy.

The geographic profile of the top 25 arson ZIP code list aligns with near-perfect precision to the community characteristics that the fire service research literature most consistently associates with elevated intentional fire-setting: concentrated poverty, high rates of property vacancy and abandonment, limited economic opportunity, weakened neighborhood social cohesion, and the physical deterioration of the built environment that both signals and accelerates community disinvestment. Washington Park in ZIP code 62204, which recorded 166 arson incidents with 111 attributed to Washington Park itself, is among the most illustrative examples in the dataset. Washington Park is one of the most economically distressed communities in Illinois, with poverty rates that consistently exceed 40%, a high proportion of vacant and deteriorating housing, limited municipal service capacity, and a social vulnerability profile that places it among the highest-risk communities in the Metro East region. Its appearance near the top of the statewide arson list is not a coincidence; it is the predictable outcome of the community conditions that generate both the opportunity and the motivation for intentional fire-setting at elevated frequency. Similar profiles characterize West Frankfort (62896, 101 incidents), Danville (61832, 135 incidents), Kankakee (60901, 86 incidents), Harvey (60426, 106 incidents), and Waukegan (60085, 107 incidents), each of which combines economic distress, aging housing stock, and limited local fire prevention resources in the configuration that the arson data consistently identifies as the highest-risk community profile for intentional fire-setting.

The Peoria concentration warrants particular analytical attention. The three Peoria ZIP codes appearing in the top 25, 61605, 61603, and 61604, together account for 565 arson incidents representing 16.6% of the entire top 25 total. Peoria's high rate of arson stems from its shifting post-industrial economy, numerous vacant properties in older neighborhoods, and economic challenges following years of manufacturing decline. The Peoria Fire Department, while a well-resourced career department by downstate Illinois standards, is absorbing an arson burden that demands coordinated response well beyond what any single fire department can address through suppression and investigation capacity alone. Effective arson reduction in Peoria, as in Springfield, Alton, Danville, and

the other mid-size cities dominating this list, requires the simultaneous deployment of fire investigation and prosecution capacity, vacant property remediation and demolition programs, community engagement and youth intervention initiatives in the highest-arson neighborhoods, and the economic development investment that addresses the concentrated poverty conditions generating intentional fire-setting activity at the community level. The statewide CRR framework must treat the arson ZIP code concentration map as a priority targeting document, directing technical assistance, grant-funded prevention resources, and interagency coordination capacity toward specific communities where the evidence most clearly demonstrates that intentional fire-setting is both a symptom and an accelerant of the community risk conditions this assessment is designed to address.

Fire Injuries & Fatalities



Civilian Fire Injuries by Year: 2020–2024

Illinois civilian fire injuries across the five-year study period present one of the most encouraging trend lines in the entire statewide incident analysis, with total reported injuries declining from 532 in 2020 to 383 in 2024, a net reduction of 149 injuries representing a 28.0 percent decrease from baseline. The year-over-year pattern is not a simple linear decline but rather a volatile sequence that reveals important nuance beneath the favorable overall trajectory. Injuries fell from 532 in 2020 to 508 in 2021, a modest 4.5 percent reduction, before dropping sharply to 426 in 2022, a single-year decline of 16.1 percent that represents the most significant year-over-year improvement in the dataset. The 2023 figure of 516 injuries reversed that progress entirely with a 21.1 percent increase that returned injury totals to near the 2020 baseline, before 2024 produced the lowest annual total of the study period at 383, a 25.8 percent decline from the 2023 peak. The downward trendline across the full period is statistically meaningful and directionally consistent with the goals of statewide fire prevention investment, but the 2023 surge confirms that the progress achieved is not yet structurally embedded and remains vulnerable to reversal.

The 2022 reduction in civilian injuries coinciding with a year of elevated fire property loss is analytically significant and warrants careful interpretation. Property loss peaked in 2022 while injuries reached a mid-period low, a pattern that is counterintuitive if one assumes

that more severe fires necessarily produce more civilian injuries. The more likely explanation is that the fires driving elevated property loss in 2022 were concentrated in occupancy types, times of day, or building conditions where civilian occupants had already evacuated before fire conditions became injurious, while the 2023 injury surge reflects a different distribution of fire events that more frequently placed occupants in proximity to fire before detection and egress were achieved. This interpretation is consistent with the area of origin data documented earlier in the assessment, which identifies sleeping areas and living spaces as significant residential fire origin zones where delayed detection is most likely to result in civilian injury.

The 2024 total of 383 civilian fire injuries, the lowest in the study period, carries genuine significance for the statewide CRR program framework but must be contextualized against the data completeness considerations that affect all NFIRS-derived injury statistics. Civilian injury reporting in NFIRS is subject to the same jurisdictional variation in reporting completeness that affects all elements of the dataset, and the downward trend in reported injuries may partially reflect changes in reporting behavior or threshold definitions across Illinois fire departments rather than exclusively representing a genuine reduction in the number of civilians harmed by fire. The Office of the Illinois State Fire Marshal's supplementary injury surveillance data, where available, provides a valuable cross-reference for validating the NFIRS trend, and integration of hospital emergency department data for fire-related burn and smoke inhalation admissions would substantially strengthen the reliability of the injury trend analysis for future assessment cycles.

For CRR program design, the civilian injury trend delivers a message that is simultaneously encouraging and cautionary. The 28.0 percent net reduction in civilian fire injuries over five years, if confirmed as a genuine rather than a reporting artifact, represents a meaningful public health achievement that is consistent with the sustained investment in smoke alarm programs, home fire safety visits, and community fire education that Illinois fire departments and prevention stakeholders have maintained across the period. The 2023 spike, however, confirms that injury reduction gains are fragile and can be erased in a single year by changes in fire conditions, population behavior, or the geographic distribution of fire events. Sustaining and extending the injury reduction trajectory requires maintaining prevention program intensity in the highest-risk communities identified throughout this assessment, with particular focus on the residential occupancy types, the time-of-day patterns, and the population groups that produce the greatest proportion of civilian fire injuries relative to their share of total fire incidents.

Top 10 Area of Origin for Fatal Fire Civilian Fire Injuries

AREA OF ORIGIN	NUMBER OF FIRE INJURIES
COOKING AREA, KITCHEN	408
BEDROOM - < 5 PERSONS; INCLUDED ARE JAIL OR PRISON	352
UNDETERMINED	320
COMMON ROOM, DEN, FAMILY ROOM, LIVING ROOM, LOUNGE	244
(BLANK)	179
VEHICLE STORAGE AREA; GARAGE, CARPORT	95
LAUNDRY AREA, WASH HOUSE (LAUNDRY)	48
OTHER	47
OUTSIDE AREA, OTHER	46
BATHROOM, CHECKROOM, LAVATORY, LOCKER ROOM	43
GRAND TOTAL	1782

Top 10 Areas of Origin for Civilian Fire Injuries

The distribution of Illinois civilian fire injuries by area of origin across the five-year study period identifies with precision the physical locations within the built environment where fire most frequently produces harm to occupants, and the pattern it reveals is both analytically specific and directly actionable for CRR program design. The cooking area and kitchen leads all categories at 408 injuries, representing 22.9 percent of the 1,782 total injuries captured in the top 10, a finding that confirms the kitchen as not only the most frequent point of fire origin in residential occupancies but also the location generating the greatest absolute volume of civilian injury events across the period. The bedroom category follows at 352 injuries, or 19.7 percent of the total, a finding that carries particular severity implications because bedroom fires are disproportionately likely to occur during sleeping hours when occupant detection and response time is longest and the margin between early escape and entrapment is narrowest. Together, the kitchen and bedroom categories account for 760 injuries, or 42.6 percent of all captured injury origins, establishing these two residential spaces as the dominant injury-producing environments in the Illinois fire profile and the priority target locations for both detection hardware and behavioral prevention programming.

The 320 undetermined origin injuries, representing 18.0 percent of captured events, and the 179 injuries recorded with no area of origin at all together account for 499 events or 28.0 percent of the top 10 total, a data completeness gap that is consequential for injury analysis in a way that is distinct from its impact on incident frequency counts. For frequency analysis, undetermined origin is an inconvenience that limits geographic precision but does not fundamentally alter the aggregate picture. For injury causation

analysis, the inability to identify origin area for more than a quarter of all injury events represents a meaningful gap in the causal chain that CRR program designers need to understand, because the interventions appropriate for a kitchen injury, a bedroom injury, and a living room injury are substantially different in their targeting, their educational content, and their hardware components. Improving area of origin documentation for injury-producing fires is a data quality investment with direct programmatic returns, and the OSFM fire investigation and reporting support framework should specifically address injury-associated incident reporting as a priority training topic.

The common room, den, family room, and living room category at 244 injuries, or 13.7 percent of the top 10 total, represents the third highest area of confirmed origin and identifies the primary residential living space as a significant injury environment that extends well beyond its role as a secondary fire ignition point. Living room and common area fires producing injuries are associated with a distinct behavioral profile that includes upholstered furniture ignition from open flame sources, electrical equipment and cord fires, and smoking material ignition, each of which produces fires capable of rapid spread to adjacent spaces and generating toxic combustion products that cause injury before flame contact occurs. The vehicle storage area and garage category at 95 injuries, the laundry area at 48, and the bathroom category at 43 each identify specific residential micro-environments with distinct ignition and injury mechanisms, including automotive fluid fires, dryer vent and electrical fires, and heating appliance and chemical storage events, that warrant targeted prevention messaging as components of a comprehensive home fire safety visit program curriculum.

For CRR program design, the area of origin injury distribution delivers a targeting framework that is fully consistent with and reinforces the prevention priorities established throughout the incident analysis sections of this assessment. The 408 kitchen injuries confirm cooking fire prevention as the single highest-return injury reduction investment in the statewide CRR portfolio, with particular urgency in multifamily occupancies where the Illinois data has already established an anomalous concentration of cooking fire events that distinguishes the state from typical national residential fire profiles. The 352 bedroom injuries establish working smoke alarm coverage and interconnected detection systems as the most critical life safety hardware intervention for residential fire injury prevention, as functional detection in sleeping areas is the primary mechanism by which bedroom fire injuries are prevented through early warning before incapacitation occurs. The combined kitchen and bedroom injury burden of 760 events across five years, averaging 152 injuries annually from these two locations alone, provides the quantitative foundation for prioritizing home fire safety visit programs, smoke alarm installation initiatives, and

cooking fire education campaigns as the core investments of the Illinois statewide CRR implementation strategy.

Top 25 Cities For Fire Injuries

CITY	NUMBER OF CIVILIAN INJURIES
CHICAGO	587
PEORIA	176
ROCKFORD	64
SPRINGFIELD	43
DECATUR	35
MOLINE	29
BLOOMINGTON	25
DEKALB	24
AURORA	24
ELGIN	23
MT VERNON	21
CITY OF CHARLESTON	17
ADDISON	16
RIGHTON PARK	15
BUFFALO GROVE	15
ARLINGTON HEIGHTS	14
COUNTRY CLUB HILLS	14
PRINCETON	13
PARK FOREST	13
TAYLORVILLE	13
NAPERVILLE	13
EVANSTON	12
DES PLAINES	12
DANVILLE	12
MCHENRY	11
CARBONDALE	11
BOLINGBROOK	11
BELLEVILLE	11
ORLAND PARK	11
LAKE ZURICH	11
NORTH RIVERSIDE	11
MUNDELEIN	11
GRAND TOTAL	1318

Top 25 Cities for Civilian Fire Injuries

The geographic distribution of Illinois civilian fire injuries across the top 25 cities by injury volume produces a concentration pattern that is analytically consistent with the

broader incident and loss data documented throughout this assessment while revealing several community-specific findings that carry independent significance for statewide CRR program targeting. Chicago leads the ranking by an extraordinary margin at 587 injuries across the five-year study period, representing 44.5 percent of the 1,318 total injuries captured across all 25 listed communities, a concentration that reflects both the city's scale as the state's dominant population center and the structural fire risk conditions of its oldest and most densely occupied residential neighborhoods. Peoria follows at 176 injuries, a figure that is disproportionate to its population relative to other Illinois cities of comparable size and confirms Peoria as the highest per-capita injury burden city outside of Chicago in the statewide dataset. The presence of three Peoria ZIP codes in the top 25 arson ranking, documented earlier in this assessment, combined with this injury concentration, establishes Peoria as the single most urgent downstate CRR intervention priority in the Illinois statewide fire risk profile. Rockford at 64 injuries and Springfield at 43 complete the top four, both consistent with their size and their documented presence in multiple high-incident geographic rankings throughout this analysis.

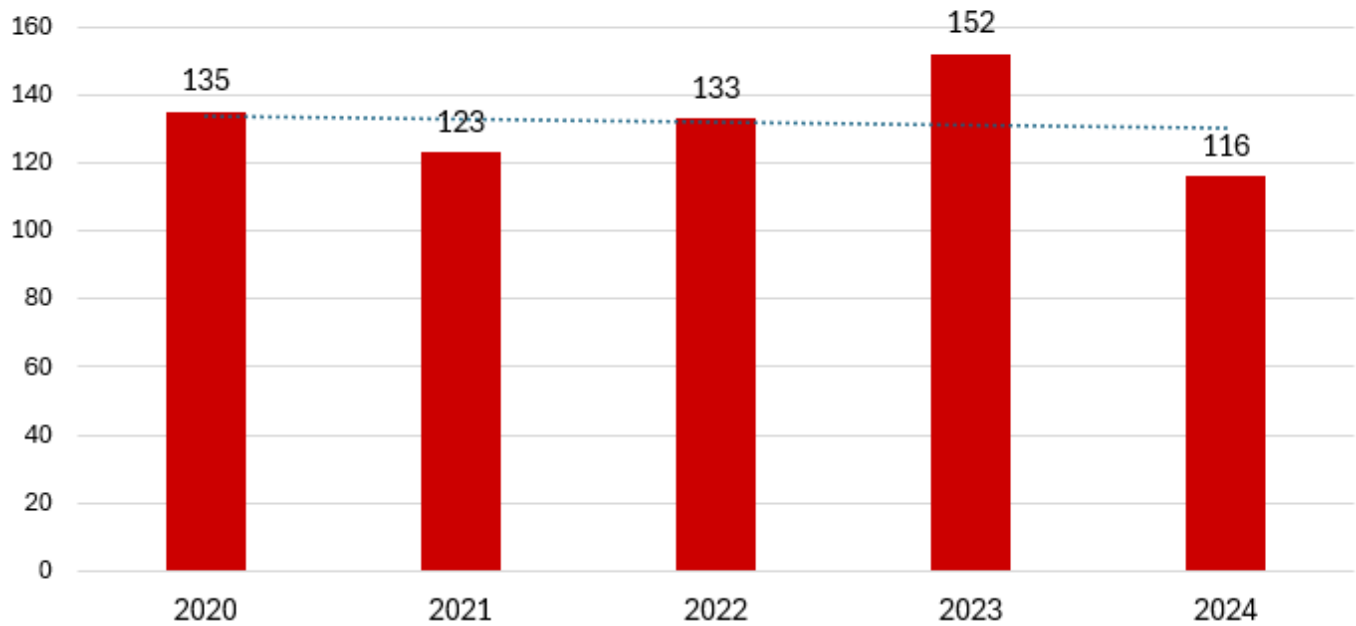
The middle tier of the injury ranking, from Decatur at 35 injuries through Aurora and Elgin at 23 to 24 injuries each, reveals a secondary geographic risk layer that spans the full breadth of Illinois's mid-sized urban centers. The presence of Moline at 29 injuries and Bloomington at 25 in this tier, both communities with significant industrial and agricultural economic profiles and older residential housing stock in their core neighborhoods, is consistent with the structural fire risk factors identified in the housing characteristics analysis. DeKalb at 24 injuries warrants specific attention given its relatively modest population, as the injury total suggests a per-capita rate that is elevated relative to its size and may reflect the combination of older rental housing stock associated with its substantial university population and the response time characteristics of a community transitioning between suburban and rural service coverage models. The appearance of Mt. Vernon at 21 injuries places a southern Illinois community in the upper half of the ranking, consistent with the Social Vulnerability Index analysis that identifies the broader southern Illinois region as carrying the highest per-capita fire risk in the state.

The lower portion of the top 25 list produces several findings that are analytically significant precisely because they are unexpected within the typical urban fire risk framework. The appearance of Buffalo Grove at 15 injuries and Arlington Heights at 14 injuries, both affluent Chicago collar communities with newer housing stock and strong local fire service capacity, suggests that fire injury risk is not entirely confined to the highest-poverty and oldest-housing communities that dominate most fire risk analyses. These collar community injury events are more likely associated with specific incident types including vehicle fires, cooking fires in newer residential kitchens, and garage and

workshop fires than with the chronic structural fire risk conditions driving injury volume in Chicago and Peoria. Country Club Hills at 14 injuries and Richton Park at 15 injuries, both south suburban Cook County communities with demographic and housing profiles more consistent with the high-risk urban tier, represent a geographic extension of the Chicago south suburban fire burden documented in the incident frequency and loss analyses. The appearance of Taylorville at 13 injuries and Princeton at 13 injuries identifies two smaller downstate communities where injury events are likely driven by individual large-loss incidents rather than chronic elevated frequency, reinforcing the interpretation that downstate injury concentration is more episodic and less structural than the chronic urban injury burden in Chicago and Peoria.

For CRR program design, the top 25 city injury ranking establishes a tiered geographic investment framework with three distinct intervention profiles. Chicago, as the source of 44.5 percent of all captured injuries, requires a scaled, sustained, and culturally differentiated prevention program infrastructure that operates continuously across the highest-injury south and west side neighborhoods rather than relying on episodic outreach campaigns. Peoria, with its injury total disproportionate to its population and its documented concentration of arson activity, building vacancy, and socioeconomic vulnerability, requires a targeted intensive intervention that integrates fire prevention, housing code enforcement, and community disinvestment remediation as complementary components of a unified risk reduction strategy. The remaining communities in the ranking, from Rockford and Springfield through the collar suburbs and downstate centers, represent a third tier where data-informed home safety visit programs, smoke alarm installation initiatives, and cooking fire prevention education targeted at the specific occupancy types and population groups producing the majority of local injury events can produce measurable reductions within planning horizons appropriate for grant-funded program cycles.

Civilian Fire Fatalities by Year



Civilian Fire Fatalities by Year: 2020–2024

Illinois civilian fire fatalities across the five-year study period present a pattern that is defined by volatility rather than consistent directional movement, with annual totals fluctuating significantly around a central range that makes the identification of a genuine long-term trend more analytically complex than the injury data examined in the preceding section. Fatalities stood at 135 in 2020, declined to a five-year low of 123 in 2021, recovered to 133 in 2022, surged to a five-year high of 152 in 2023, and then fell sharply to 116 in 2024, the lowest annual total in the study period and a 23.7 percent decline from the 2023 peak. The net change from 2020 to 2024 is a reduction of 19 fatalities, representing a 14.1 percent decrease from baseline, and the overall trendline across the period is modestly downward, a directional result that is encouraging but must be interpreted with significant caution given the year-over-year volatility that characterizes the dataset. The cumulative five-year total of 659 civilian fire fatalities establishes the human cost of the Illinois fire problem at its most irreducible level and provides the moral and programmatic foundation for every prevention investment described in this assessment.

The 2023 peak of 152 fatalities is the most consequential single data point in this chart for statewide CRR program design and demands specific analytical attention. A single-year increase of 19 fatalities from 2022, representing a 14.3 percent jump, occurring in the same year that saw a comparable surge in civilian injuries suggests a common causal thread rather than statistical coincidence. The 2023 fire season in Illinois was characterized by elevated incident frequency, with total fire incidents reaching their five-year peak of

59,891 in that year, and the combination of peak incident volume with peak fatality outcomes confirms that 2023 represented a genuinely elevated risk environment rather than a reporting artifact. The factors most likely contributing to the 2023 fatality surge include the documented increase in WUI fire activity, the concentration of high-severity building fires in the vulnerable communities identified throughout this assessment, and the potential influence of post-pandemic behavioral patterns including increased smoking, altered home occupancy schedules, and deferred smoke alarm maintenance that accumulated across the preceding years.

The 2024 fatality total of 116 is the most analytically significant positive finding in the entire five-year fatality dataset, and its implications for statewide CRR program evaluation are substantial. A reduction from 152 to 116 fatalities in a single year, representing 36 lives preserved relative to the prior year, is a meaningful public health outcome by any standard of measurement. However, the same interpretive caution applied to the 2024 injury reduction applies here with equal force. A single year of favorable data following a peak does not confirm a structural improvement in the underlying risk environment, and the volatility of the fatality series, which has oscillated by as much as 29 fatalities in a single year in both directions, means that a return to elevated fatality levels in 2025 or beyond remains entirely plausible without sustained and expanded prevention program investment. The 2024 figure should be received as an encouraging indicator of progress, not as evidence that the underlying structural fire risk conditions that produced 659 fatalities over five years have been resolved.

For CRR program design, the civilian fatality data carries a weight and an urgency that the incident frequency and property loss analyses cannot fully replicate. Each of the 659 fatalities documented across the study period represents a preventable death in the overwhelming majority of cases, as the fire fatality research literature consistently documents that working smoke alarms, functional suppression systems, and basic fire safety behavior prevent the vast majority of fire deaths that occur under conditions where detection and egress were available but not operational or utilized. The five-year average of approximately 132 civilian fire fatalities per year in Illinois, against a backdrop of a modest downward trendline and a 2024 low of 116, establishes a clear and measurable prevention target for the Illinois statewide CRR program. Reducing the annual fatality rate by 25 percent from the five-year average, a goal achievable through sustained smoke alarm installation, home safety visit expansion, and high-risk population targeting in the communities identified throughout this assessment, would represent approximately 33 lives preserved annually, a public health return that justifies significant and sustained statewide prevention investment by any cost-benefit standard applied to life safety programs.

Top 10 Area of Origin for Fatal Fires (556 events/659 fatalities)

ROW LABELS	COUNT OF INCIDENT TYPE CODE (NATIONAL)
UNDETERMINED	145
BEDROOM - < 5 PERSONS; INCLUDED ARE JAIL OR PRISON	75
COMMON ROOM, DEN, FAMILY ROOM, LIVING ROOM, LOUNGE	71
COOKING AREA, KITCHEN	53
(BLANK)	44
ENGINE AREA, RUNNING GEAR, WHEEL AREA	19
VEHICLE AREA, OTHER	15
OTHER	15
FUNCTION AREA, OTHER	13
VEHICLE STORAGE AREA; GARAGE, CARPORT	10
GRAND TOTAL	460

Top 10 Areas of Origin for Fatal Fires

The area of origin distribution for Illinois fatal fires across the five-year study period, drawn from 556 fatal fire events producing 659 civilian fatalities with area of origin captured for 460 incidents, reveals a fatality risk profile that differs from the injury origin distribution in ways that are analytically critical and carry direct implications for life safety program design. The undetermined category leads the fatal fire origin ranking at 145 incidents, representing 31.5 percent of all captured fatal fire origin records, a proportion substantially higher than its share of the injury origin dataset and one that demands interpretive attention before the remaining categories are examined. The elevated undetermined proportion in fatal fires reflects the forensic reality that fires producing fatalities are more likely to burn longer, spread further, and consume more of the structural evidence that investigators use to establish area of origin, creating an inherent bias toward origin uncertainty in the most severe events. The 44 incidents with no origin recorded at all further compounds the data gap, meaning that 189 of 460 captured fatal fire events, or 41.1 percent, cannot be assigned to a specific origin location, a limitation that must be acknowledged while recognizing that the remaining 271 events with confirmed origin provide a statistically meaningful and analytically actionable distribution.

The most analytically significant contrast between the injury origin data and the fatal fire origin data is the shift in the relative positions of the kitchen and the bedroom. In the injury dataset, the cooking area and kitchen led all categories at 408 events, with the bedroom second at 352. In the fatal fire dataset, the bedroom leads confirmed-origin categories at 75

events while the kitchen falls to fourth at 53, with the common room, den, family room, and living room ranking second at 71 events. This inversion is not a statistical artifact but a reflection of a fundamental difference in the fire dynamics and occupant circumstances that distinguish fatal fires from injury-producing fires. Kitchen fires that injure occupants typically do so because the occupant is present and actively engaged with the ignition source, producing immediate injury but also immediate awareness and the capacity for response and escape. Bedroom fires that kill occupants are far more likely to occur during sleeping hours when the occupant has no awareness of ignition, when smoke inhalation incapacitates before the thermal environment triggers consciousness, and when the absence of a working interconnected smoke alarm removes the only early warning mechanism available to overcome the physiological vulnerability of sleep. The bedroom origin fatality count of 75 events is therefore not simply a frequency statistic but a direct measure of the smoke alarm detection gap in the highest-risk residential environments across Illinois.

The common room and living room category at 71 fatal fire origin events, nearly matching the bedroom total, identifies the primary residential living space as the second most consequential confirmed fatal fire environment in the statewide dataset. Living room and common area fatal fires are associated with a distinct and well-documented ignition profile dominated by upholstered furniture ignition from smoking materials, electrical equipment failures, and open flame sources including candles and space heaters, each of which produces fires capable of generating lethal toxic gas concentrations in adjacent sleeping areas within minutes of ignition. The vehicle-related categories collectively represent a meaningful fatality dimension that is distinctive to the fatal fire profile and largely absent from the residential injury analysis. The engine area and running gear category at 19 events, vehicle area other at 15, and vehicle storage area and garage at 10 together account for 44 fatal fire origin events, or 9.6 percent of the top 10 total, establishing vehicle fire fatalities as a substantive component of the Illinois civilian fire death burden that the aggregate vehicle fire incident statistics alone, given their generally contained consequence profile, do not fully communicate.

For CRR program design, the fatal fire origin data delivers a prevention targeting framework that complements and in several important respects sharpens the priorities established by the injury and incident analyses. The bedroom fatality concentration, surpassing the kitchen in confirmed fatal origins, establishes working smoke alarm coverage in sleeping areas as the single most life-critical hardware intervention in the Illinois statewide prevention portfolio, more directly connected to fatality prevention than any behavioral or educational program operating alone. Every home safety visit program, smoke alarm installation initiative, and residential fire safety campaign in Illinois should be designed and evaluated against the specific question of whether it is reaching the

sleeping environments of the highest-risk households in the highest-risk communities with functional, interconnected detection equipment. The living room fatality burden reinforces the case for smoking materials safety education, electrical safety awareness, and space heater use guidelines as core components of residential fire safety curricula. The vehicle-related fatality cluster supports enhanced focus on vehicle fire prevention education, particularly around garage fire safety, EV and battery storage practices, and the fire risk of vehicle maintenance activities conducted in attached garages adjacent to occupied living spaces.

Cities With Fatal Fires With Multiple Victims

ROW LABELS	NUMBER OF MULTIPLE FATALITY FIRES	TOTAL NUMBER OF VICTIMS
CHICAGO	12	28
BELLEVILLE	3	7
VIRGINIA	2	4
MINOOKA	2	4
MT VERNON	2	4
ORANGEVILLE	2	6
ROCKFORD	2	4
RIVER GROVE	2	6
VERNON HILLS	1	2
OAK FOREST	1	4
CACHE	1	2
EAST ST LOUIS	1	2
PARIS	1	2
EAST ST. LOUIS	1	5
ZEIGLER	1	3
FITHIAN	1	2
DANVILLE	1	2
FREEPORT	1	2
DES PLAINES	1	5
GARDEN PR	1	5
DIAMOND	1	2
GEORGETOWN	1	2
CHAMPAIGN	1	2
GODFREY	1	2
ARLINGTON HEIGHTS	1	2
GREENVILLE	1	2
MORRIS	1	2

HARVEY	1	4
NORRIS CITY	1	2
RINGWOOD	1	2
OLIVE BRANCH	1	2
CAHOKIA	1	2
OTTAWA	1	2
RUSHVILLE	1	5
PAWNEE	1	2
SOUTH JACKSONVILLE	1	2
UNION	1	2
KANE	1	2
ROCKWOOD	1	2
LASALLE	1	2
SCHELLER	1	3
LEMONT	1	2
STERLING	1	3
LEXINGTON	1	3
VERMILION	1	2
LINCOLN	1	3
VILLAGE OF DIVERNON	1	2
MACOMB	1	2
WILSONVILLE	1	2
MARION	1	2
ZION	1	3
MAYWOOD	1	2
MC CLURE	1	2
GRAND TOTAL	72	175

Cities With Fatal Fires With Multiple Victims

The multiple fatality fire dataset covering 72 events and 175 total victims across the five-year study period represents the most severe end of the Illinois civilian fire fatality spectrum and delivers findings that are analytically distinct from the aggregate fatality trend data in ways that carry specific and urgent implications for statewide CRR program design. Chicago leads the multiple fatality ranking with 12 events producing 28 victims, a concentration that is proportionate to its dominance of virtually every other fire incident category in the statewide dataset but that carries a per-event average of 2.33 victims reflecting the multifamily and high-density residential environments where Chicago's most severe fire events are concentrated. Belleville follows with 3 events and 7 victims, a disproportionate representation for a mid-sized Metro East community that places it as the most significant downstate multiple fatality fire location in the dataset and connects

directly to the southern Illinois vulnerability profile identified throughout this assessment. The communities of Orangeville and River Grove each recorded 2 events producing 6 victims, yielding a per-event average of 3.0 victims that is among the highest in the dataset and suggests fire events involving rapid spread through shared or multi-occupant residential spaces. The five communities of Virginia, Minooka, Mt. Vernon, Rockford, and River Grove each recorded 2 multiple fatality events, establishing a secondary tier of recurring multiple fatality risk that extends from the Chicago metropolitan area through central Illinois to the southern region.

The most striking characteristic of the multiple fatality fire geographic distribution is the extraordinary breadth of small and rural communities that appear on the list with single events producing two or more fatalities. Communities including Orangeville, Cache, Fithian, Norris City, Rockwood, Olive Branch, Scheller, Wilsonville, Pawnee, South Jacksonville, and Mc Clure, many of which are small rural villages and townships served entirely by volunteer fire departments with response times documented in the preceding analysis as averaging nearly ten minutes, represent a fundamentally different fire risk environment than the urban multiple fatality fires driving the Chicago total. In these small community events, the combination of older and more isolated housing stock, delayed detection from absent or non-functional smoke alarms, extended response times from volunteer departments covering large geographic areas and limited on-scene personnel and equipment resources creates the conditions under which a single residential fire event can produce multiple fatalities before suppression resources arrive in sufficient strength to interrupt the event. The appearance of Garden Prairie, Rushville, Des Plaines, and East St. Louis each producing single events with five victims confirms that the catastrophic multiple fatality potential is not limited by community size or geographic region and can materialize wherever the convergence of occupant vulnerability, detection failure, and suppression delay occurs.

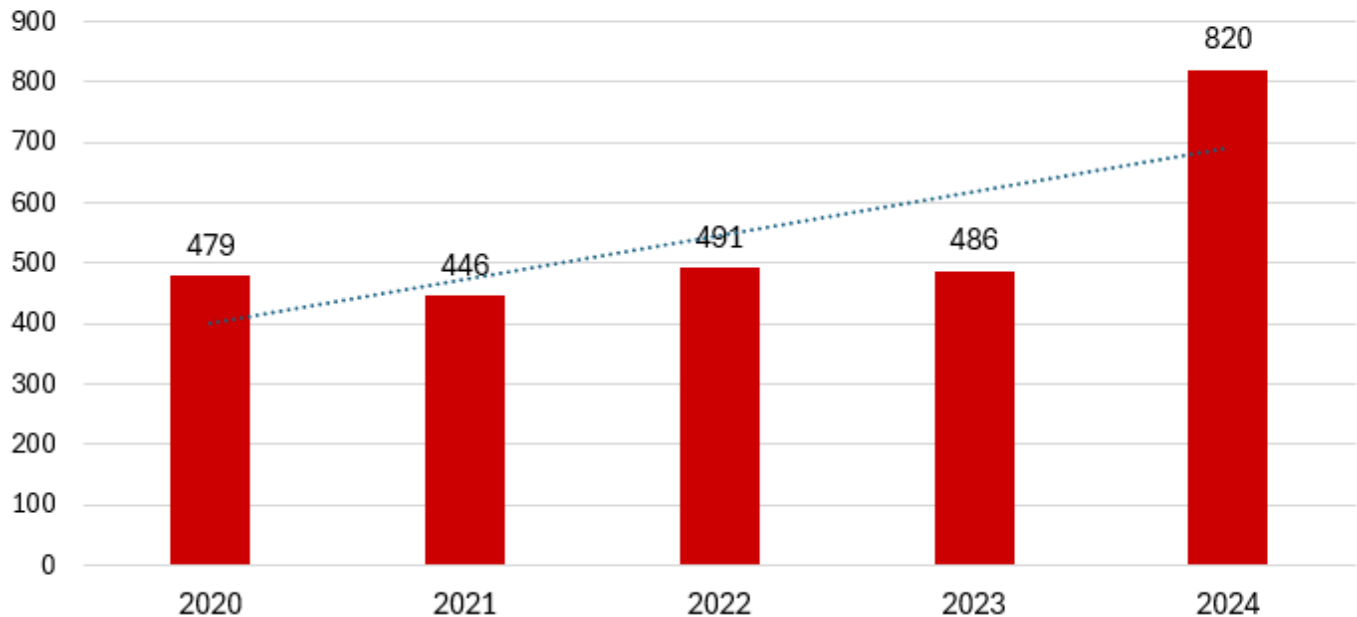
The single entry for East St. Louis appearing twice in the dataset under slightly different name formats, producing a combined total of 2 events and 7 victims when the entries are reconciled, warrants specific attention both as a data quality observation and as a community risk finding. East St. Louis is among the most economically distressed communities in Illinois, with poverty rates, housing age, and population vulnerability indicators placing it in the highest risk tier across virtually every demographic dimension analyzed in this assessment, and its combined multiple fatality fire burden of 7 victims from 2 events across the study period is consistent with the structural conditions that produce the most severe residential fire outcomes. The duplicate entry also illustrates a data normalization challenge in the NFIRS reporting system that understates geographic concentration when community names are recorded inconsistently across reporting

jurisdictions, a quality issue with direct implications for the accuracy of any geographic targeting framework built on these data. Similar name variation issues likely affect other communities in the dataset at lower volumes, suggesting that the geographic concentration of multiple fatality events in specific communities may be modestly understated in the raw data.

For CRR program design, the multiple fatality fire dataset delivers a targeting imperative that operates simultaneously at the community scale and at the individual household level. At the community scale, the 53 distinct communities represented in this dataset, spanning the full geographic breadth of Illinois from the Chicago metropolitan area to the smallest rural townships of southern and western Illinois, confirm that multiple fatality fire risk is a statewide phenomenon that cannot be addressed through geographically narrow program investment. The volunteer-dependent communities producing multiple fatality events with single-event casualty counts of two to five victims represent the most urgent case for home safety visit programs, smoke alarm installation, and evacuation planning initiatives that function as the primary life safety mechanism in environments where response time alone cannot prevent fatal outcomes. At the individual household level, the bedroom and living room origin data from the preceding analysis, combined with the small community and rural character of many multiple fatality locations, establishes the specific intervention profile that is most likely to prevent future events, namely interconnected smoke alarm systems that provide early warning in sleeping areas before fire conditions become unsurvivable, installed in the pre-1960 rural and small-town housing stock where detection gaps are most prevalent and response resources most constrained.

Fire Service Injuries and Fatalities

Fire Service Injuries by Year



Fire Service Injuries by Year: 2020–2024

Illinois fire service injuries across the five-year study period present the most alarming trend line of any dataset examined in this assessment, defined not by the modest volatility of the civilian fatality series or the encouraging net decline of the civilian injury series but by a sudden and dramatic spike in 2024 that fundamentally alters the trajectory of the entire period. Fire service injuries held within a relatively narrow and stable band across the first four years of the study period, recording 479 in 2020, 446 in 2021, 491 in 2022, and 486 in 2023, a four-year range of only 45 injuries reflecting a fire service injury baseline that was essentially flat and arguably trending modestly downward after the 2021 low. The 2024 figure of 820 injuries shatters that stable baseline entirely, representing a single-year increase of 334 injuries or 68.7 percent above the 2023 total, a year-over-year surge with no precedent in the study period and one that demands immediate and serious analytical attention from every stakeholder in the Illinois statewide fire service safety framework. The cumulative five-year total of 2,722 fire service injuries establishes the human cost of fire department operations in Illinois at a scale that is both individually significant for each affected firefighter and collectively significant for the organizations, families, and communities that depend on a healthy and capable fire service workforce.

The 2024 spike of 820 injuries is the single most consequential data point in the fire service section of this assessment, and the causal analysis it demands is both urgent and necessarily preliminary given the limitations of NFIRS-based injury classification. Several explanatory frameworks warrant consideration and investigation before any definitive causal attribution is made. The first is a genuine operational increase in fire service injury events, driven by the combination of rising incident volume, the response time degradation documented earlier in this assessment, the growing complexity of the incident environment including EV fires, lithium-ion battery events, and expanding WUI responses, and the accelerating lift assist workload that places cumulative biomechanical stress on personnel across repeated physically demanding responses. The second is a reporting change, whether through improved injury documentation practices, revised threshold definitions for what constitutes a reportable injury, or changes in workers compensation reporting requirements that may have captured a broader range of injury events in 2024 than in prior years. The third is the influence of a small number of high-casualty incidents in 2024 that produced elevated injury counts in individual events, a pattern analogous to the large-loss fire events that distort property loss data in specific years. Determining which of these mechanisms, individually or in combination, produced the 2024 figure requires analysis of the injury type, incident type, and department-level distribution of 2024 injuries that goes beyond what the aggregate annual totals alone can provide.

The contrast between the civilian injury trend and the fire service injury trend across the same period is analytically significant and operationally important. Civilian fire injuries declined 28.0 percent from 2020 to 2024, a pattern consistent with the prevention investments and public safety programs documented throughout this assessment. Fire service injuries increased 71.2 percent across the same period when the 2024 spike is included in the net calculation, a divergence that reflects the fundamental difference between the risk environment experienced by civilians, which is shaped primarily by prevention, detection, and behavioral factors, and the risk environment experienced by firefighters, which is shaped by operational exposure, physical demands, organizational safety culture, and the inherent hazards of interior fire suppression and rescue operations. A fire service that is succeeding in reducing civilian harm while simultaneously experiencing a surge in personnel injuries is not achieving the full mission of a comprehensive CRR framework, because the health, safety, and wellness of the firefighters delivering that mission is an inseparable component of the statewide risk reduction agenda. For CRR program design, the fire service injury trajectory, and particularly the 2024 spike, reinforces the foundational argument that has threaded through this entire assessment, namely that prevention investment that reduces fire incident frequency and severity protects firefighters as directly and as measurably as it protects civilians. Every residential

fire prevented through a smoke alarm installation program is a structure fire that Illinois firefighters will not enter under interior attack conditions. Every cooking fire interrupted by a functioning suppression system is a building fire that will not escalate to the level requiring aggressive interior operations. Every lift assist call addressed through a fall prevention program is a biomechanical injury exposure that firefighters will not face. The 2024 fire service injury total of 820 events, whatever its ultimate causal explanation, is a data point that the Illinois fire service leadership, the OSFM, and every grant-funding agency with a stake in statewide fire service health should treat as a call to action, both for immediate investigation of the 2024 surge and for sustained investment in the prevention programs that reduce the operational conditions from which fire service injuries arise.

Area of Origin for Fire Service Injuries

AREA OF ORIGIN	NUMBER OF FIRE SERVICE INJURIES
(BLANK)	350
UNDETERMINED	334
COOKING AREA, KITCHEN	116
BEDROOM - < 5 PERSONS; INCLUDED ARE JAIL OR PRISON	105
COMMON ROOM, DEN, FAMILY ROOM, LIVING ROOM, LOUNGE	83
VEHICLE STORAGE AREA; GARAGE, CARPORT	71
ATTIC: VACANT, CRAWL SPACE ABOVE TOP STORY, CUPOLA	39
EXTERIOR BALCONY, UNENCLOSED PORCH	35
ENGINE AREA, RUNNING GEAR, WHEEL AREA	33
WALL SURFACE: EXTERIOR	30
GRAND TOTAL	1196

Area of Origin for Fire Service Injuries

The area of origin distribution for Illinois fire service injuries across the five-year study period presents a data completeness challenge that is more acute than any comparable dataset examined in this assessment and must be addressed directly before the confirmed origin categories can be interpreted with analytical confidence. The combined total of 350 injuries with no area of origin recorded and 334 injuries classified as undetermined accounts for 684 events, representing 57.2 percent of the 1,196 injuries captured in the top 10 categories, meaning that a majority of all fire service injuries in this dataset cannot be assigned to a specific fire origin location. This proportion is substantially higher than the corresponding undetermined and blank shares in both the civilian injury and civilian

fatality origin datasets, a disparity that likely reflects the operational conditions under which fire service injuries occur and are documented. Firefighters sustaining injuries during active interior suppression operations, rapid intervention scenarios, or multi-company working fires are frequently injured in dynamic and rapidly evolving environments where precise area of origin attribution is secondary to immediate medical treatment and incident stabilization, and the department members responsible for completing NFIRS reports after these events may have limited information about the specific location within the structure where the injurious event occurred. Improving fire service injury origin documentation is a training and reporting support priority that would substantially enhance the analytical value of this dataset in future assessment cycles.

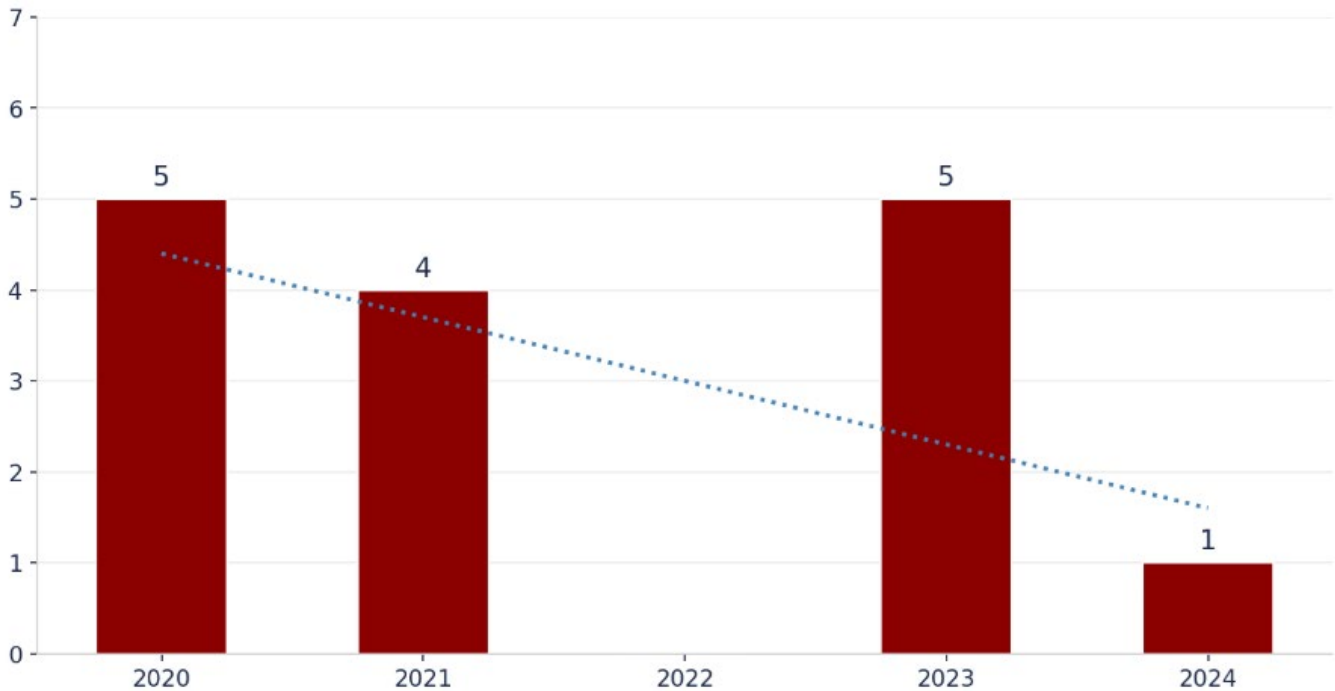
Among the 512 fire service injuries for which a confirmed area of origin was recorded, the cooking area and kitchen leads at 116 events, representing 9.7 percent of the total top 10 and 22.7 percent of confirmed-origin injuries, a finding that is consistent with the kitchen's dominance of both the civilian injury and civilian fatality origin rankings and reflects the operational reality that cooking fires represent the most frequent confirmed structure fire type in the Illinois incident profile. Firefighters sustaining injuries in kitchen fire environments are exposed to a distinct set of hazard conditions including grease fire flare-ups during suppression, steam burns from water application to hot cooking surfaces, and the thermal environment generated by confined cooking fires in residential kitchens where ceiling heights are low and ventilation is limited. The bedroom category follows at 105 confirmed fire service injuries, or 8.8 percent of the top 10 total, with the common room and living room category close behind at 83 injuries or 6.9 percent. The pattern of confirmed fire service injury origins across these three residential categories closely mirrors the civilian injury origin distribution, reflecting the direct operational relationship between where fires occur and where firefighters are deployed in suppression and search activities, and confirming that the residential occupancy environments producing the greatest civilian harm are simultaneously the environments generating the greatest fire service personnel injury burden.

The structural fire environment categories in the lower portion of the confirmed origin ranking carry firefighter safety implications that are disproportionate to their individual injury counts and represent some of the most consequential operational hazard environments in the statewide fire service profile. The attic and crawl space category at 39 injuries identifies a fire environment associated with the most severe structural collapse and entrapment risks in the residential building inventory, as fires in concealed attic and crawl space spaces can compromise structural integrity across wide areas before their presence is visually apparent to operating crews, creating the conditions for rapid and unexpected floor or roof failure. The exterior balcony and unenclosed porch category at 35

injuries and the exterior wall surface category at 30 injuries together identify the building envelope as a meaningful firefighter injury environment, encompassing both the direct thermal exposure of exterior suppression operations and the structural hazard of wall assembly fires that can compromise facade integrity and create falling debris risks for crews operating at ground level. The vehicle storage area and garage category at 71 injuries, ranking fourth among confirmed origin categories, reflects the complex fire environment of attached and detached garage fires, where the combination of stored flammable liquids, vehicle fuel systems, compressed gas cylinders, and increasingly lithium-ion battery storage creates a hazard profile that is more chemically complex and tactically demanding than a typical residential room fire.

For CRR program design and statewide fire service safety investment, the area of origin data for fire service injuries delivers a message that connects directly to the prevention priorities established throughout this assessment while adding a firefighter safety dimension that gives those priorities additional urgency. The kitchen origin dominance among confirmed fire service injuries reinforces the case for cooking fire prevention as a firefighter safety investment, not only a civilian safety investment, because every cooking fire prevented is a kitchen fire environment that Illinois firefighters will not enter under active suppression conditions. The attic and crawl space injury category reinforces the case for building construction awareness training, pre-incident planning for residential occupancy types common in Illinois's pre-1960 housing stock, and the operational protocols that reduce firefighter exposure to concealed space fire conditions. The 2024 fire service injury surge documented in the preceding analysis, viewed alongside the area of origin distribution, suggests that the operational environments producing the highest fire service injury burden are the same residential and structural environments where prevention investment is most capable of reducing exposure at its source, and that a statewide CRR strategy that reduces the frequency and severity of residential structure fires is simultaneously the most effective firefighter safety strategy available to Illinois fire service leadership.

Illinois Fire Service Line of Duty Deaths by Year



Fire Service Line of Duty Deaths: 2020–2024

The concept of a fire service line of duty death has evolved substantially over the past two decades, expanding well beyond its original definition of a firefighter killed at the scene of a fire or emergency incident. In the earlier decades of organized fire service record keeping, a line of duty death was understood primarily as a death occurring at or in direct response to an active incident, a firefighter trapped in a burning structure, struck by a vehicle while operating at a motor vehicle collision, or killed by a collapse during active suppression operations. Today, the fire service recognizes that the occupational hazards of firefighting extend far beyond the fireground, encompassing cardiovascular disease accelerated by repeated physiological stress, occupational cancer linked to cumulative carcinogen exposure across a career, infectious disease acquired through patient contact or community exposure, and fatalities occurring during training, response travel, and other duty-related activities. The National Fallen Firefighters Foundation, the USFA, and state-level line of duty death programs all reflect this expanded definition, and it is within this broader framework that the Illinois fire service fatality record for the 2020 to 2024 study period must be understood.

NFIRS was designed as an incident reporting system, not a fatality surveillance system, and its scope reflects that origin. The system captures line of duty deaths associated with specific fire incidents to which a department responded and for which an incident report was submitted. That definitional boundary excludes by design the substantial and growing

proportion of firefighter fatalities that occur from occupational disease, cardiovascular events not immediately associated with an active incident, training accidents, and response travel fatalities that do not generate a corresponding fire incident report. A firefighter who dies of occupational cancer years after retirement from active service, a firefighter who suffers a fatal cardiac event during a training drill, a firefighter who contracts and dies from COVID-19 through occupational exposure, and a firefighter killed in a personal vehicle while responding to an emergency call are all recognized as line of duty deaths under current national standards. None of them would be expected to appear in an NFIRS fire incident extract, because none of them are associated with a fire incident report. The gap between what NFIRS captures and what actually constitutes a line of duty death in contemporary fire service practice is not a data quality failure. It is the predictable and structurally embedded consequence of applying an incident-reporting framework to a fatality landscape that has grown well beyond the incident-specific events the system was built to document.

The NFIRS dataset for Illinois produced 5 line of duty deaths across the five-year study period, with 3 recorded in 2021 and 2 recorded in 2023, and no fatalities recorded in 2020, 2022, or 2024. The absence of recorded fatalities in those three years does not indicate zero fire service deaths. It reflects the combination of NFIRS reporting scope limitations and the reality that incident-associated firefighter fatalities are statistically rare events in any single year within a state fire service of Illinois's size. The actual Illinois line of duty death record for the same period, drawn from USFA Firefighter Fatalities database records and National Fallen Firefighters Foundation memorial documentation, confirms 15 line of duty deaths across the study period, a total three times the NFIRS figure. That gap, 10 deaths entirely invisible to the NFIRS dataset, defines the analytical boundary within which the incident data must be read and explains why NFIRS figures alone cannot serve as the authoritative measure of fire service fatality risk in Illinois or any other state.

The following table documents all 15 Illinois fire service line of duty deaths occurring during the 2020 to 2024 study period, identifying which events were captured in the NFIRS dataset and which were not.

Year	Firefighter	Department	Cause of Death	NFIRS Captured
2020	Mario Araujo	Chicago FD	COVID-19 exposure	No
2020	Edward Singleton	Chicago FD	COVID-19 exposure	No

Year	Firefighter	Department	Cause of Death	NFIRS Captured
2020	Robert Truvillian	Chicago FD	COVID-19 exposure	No
2020	Dylan Cunningham	South Holland FD	Drowning during SCUBA training	No
2020	Robert Reisinger	River Grove FD	COVID-19 exposure	No
2021	Mehdi Mourad	Wabash FPD	Motor vehicle accident responding to scene	No
2021	Michael Pickering	Chicago FD	COVID-19 exposure	No
2021	MaShawn Plummer	Chicago FD	SCBA malfunction, apartment building structure fire	Yes
2021	Garret Ramos	Sterling FD	Floor collapse, residential structure fire	Yes
2023	Jermaine Pelt	Chicago FD	Dislodged SCBA facepiece, residential structure fire	Yes
2023	Andrew Price	Chicago FD	Fell through floor, apartment building structure fire	Yes
2023	Jan Tchoryk	Chicago FD	Cardiovascular event, high-rise fire	Yes
2023	Kevin Ward	Chicago FD	Trapped in basement, residential structure fire	Yes
2023	Larry Peasley	Maroa Countryside FPD	Cardiovascular event responding to mutual aid call	No
2024	Christian Medrano	Aurora FD	Cardiovascular event after search and rescue training	No

Examining the full 15 line of duty death records by cause reveals a profile that is both instructive and actionable for statewide fire service safety investment. COVID-19 exposure accounts for 5 of the 15 deaths, all concentrated in 2020 and 2021, making it the single largest cause category across the study period. These five deaths are entirely absent from the NFIRS record for the straightforward reason that they are occupational disease deaths with no corresponding fire incident report, not because they were unreported or unrecognized. Their invisibility in the incident data is a structural feature of NFIRS, not a gap in Illinois fire service documentation. Cardiovascular events account for 3 deaths occurring across 2023 and 2024, a cause category that the fire service research literature consistently identifies as the leading cause of firefighter fatality nationally over multi-decade study periods, driven by the acute physiological demands of active firefighting combined with the chronic cardiovascular stress of repeated high-acuity response over a career. Structural failure and entrapment, including floor collapses and basement entrapment during residential structure fires, account for 3 of the 5 incident-associated deaths and directly implicate building construction type, pre-incident planning, and tactical decision-making as intervention points. SCBA-related failures account for 2 incident-associated deaths and implicate equipment maintenance, fit testing, and operational protocol as prevention levers. Training and response travel account for the remaining 2 non-incident deaths.

The geographic concentration of Illinois line of duty deaths within the Chicago Fire Department across the study period warrants specific acknowledgment. Of the 15 total deaths, 9 involved members of the Chicago Fire Department, representing 60% of the statewide total. This concentration is in part a function of scale, as the Chicago Fire Department's 4,881 career firefighters represent 30.8% of all career firefighter positions in Illinois, and a department of that size operating in one of the nation's most demanding urban structural fire environments will disproportionately appear in any incident-associated fatality record. It also reflects the specific fire environment documented throughout this assessment, where Chicago's aging high-density housing stock, older multifamily occupancies, and sustained high incident volume create repeated exposure to the floor collapse, entrapment, and SCBA-failure scenarios that produced the majority of the incident-associated deaths in this record.

Area of Origin for Fire Service Fatal Fires Captured in NFIRS

Area of Origin	Count of Fire Service Fatalities
Undetermined	2
Blank	2
Vehicle Storage Area, Garage, Carport	1
Grand Total	5

The area of origin distribution for the 5 Illinois fire service fatalities captured in the NFIRS dataset is the most data-limited table in the entire assessment, and its analytical value lies less in what it confirms than in what it illustrates about the inherent boundaries of incident-based reporting as a tool for understanding fire service fatality causation. Of the 5 total NFIRS-captured fatalities, 2 are classified as undetermined origin and 2 carry no area of origin recorded at all, meaning that 4 of the 5 events, representing 80% of the entire captured dataset, cannot be assigned to a specific fire origin location. The undetermined and blank classifications in these records are not simply reporting failures. They reflect a structural reality of line of duty death investigation that is distinct from the routine reporting completeness challenges affecting other elements of the NFIRS dataset. Fire service fatalities trigger formal investigation processes through the OSFM, the USFA, and in many cases NIOSH, producing detailed narrative reports that examine the circumstances, contributing factors, and causal chain of each event with a depth and rigor that NFIRS incident reporting was never designed to replicate. In those investigations, area of fire origin may be secondary or entirely irrelevant to the personnel, operational, and equipment factors that line of duty death investigations are specifically designed to identify, and the blank and undetermined origin classifications in the NFIRS fatality records reflect that investigative reality.

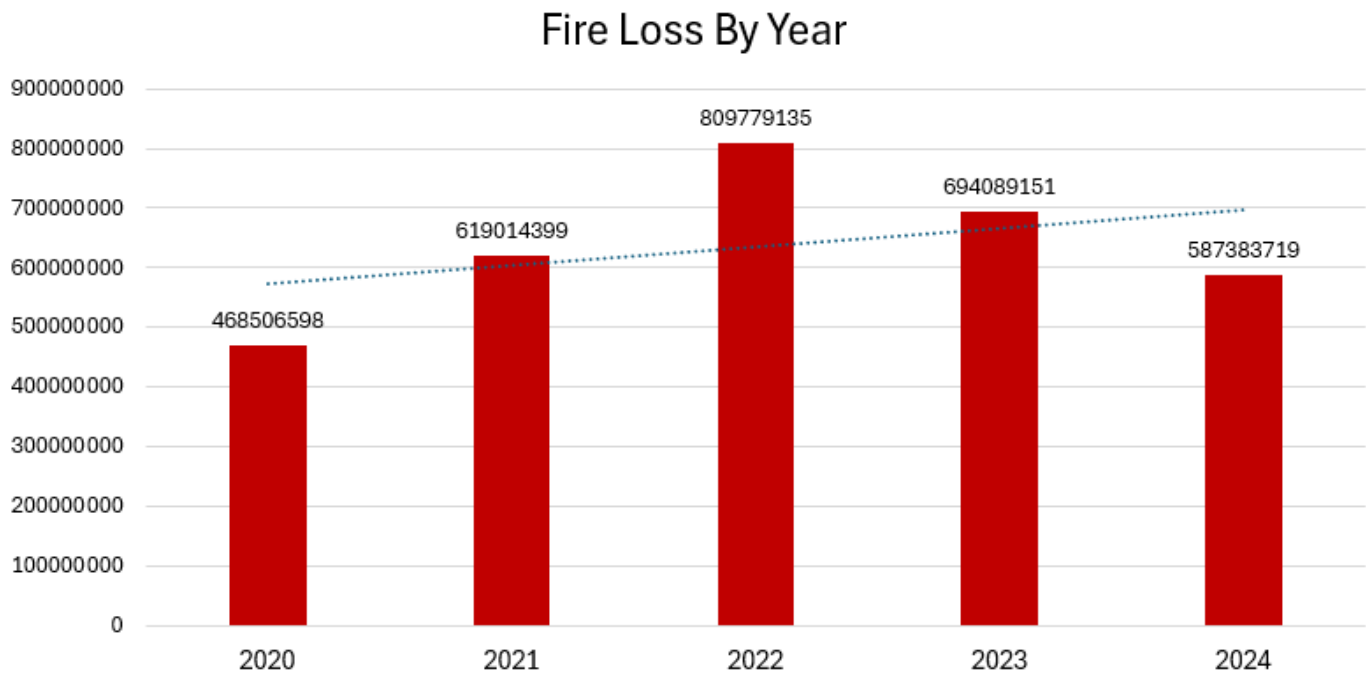
The single confirmed origin entry, a vehicle storage area, garage, or carport fatality representing the remaining 20% of the NFIRS-captured record, is nonetheless analytically meaningful when examined in the context of the broader fire service injury and fatality literature. Garage and vehicle storage fires represent one of the most hazardous operational environments in the residential fire inventory, combining the rapid fire development characteristics of flammable liquid storage with the structural hazard of attached garage construction, the potential for pressurized container failure and BLEVE events, and the increasingly prevalent risk of lithium-ion battery fires from electric vehicles and stored

power equipment that produce thermal runaway conditions resistant to conventional suppression tactics. This finding reinforces the importance of pre-incident planning for residential occupancies with attached garages, tactical protocols for garage fire operations, and the emerging training requirements around EV and battery fire management that the Illinois fire service is actively developing.

The contrast between the NFIRS fatality count of 5 and the full study period LODD total of 15 is analytically important for understanding the complete occupational health burden of Illinois fire service operations. Fatalities represent only the most visible dimension of a much broader spectrum of occupational harm that also includes the 2,722 cumulative fire service injuries documented in the preceding analysis, acute injuries, exposure-related illness, cumulative musculoskeletal damage from repeated physically demanding responses, and the cardiovascular and carcinogenic disease burden that the research literature has documented as the leading causes of premature firefighter mortality over career timelines. The NFIRS dataset captures only the acute operational end of this spectrum, leaving the chronic occupational disease dimension entirely uncharacterized, a gap that is particularly consequential given the growing body of evidence connecting firefighter cancer rates to cumulative occupational carcinogen exposure across career service.

For CRR program design and statewide fire service safety investment, the complete LODD record reinforces that firefighter health and safety is not a separate program strand from community risk reduction but an integral dimension of it. Departments with lower structural fire call volumes, more effective prevention programming, and fewer high-acuity incident exposures accumulate lower cumulative cardiovascular and carcinogen burdens across the careers of their personnel. Every residential fire prevented through a home safety visit, every cooking fire interrupted by a properly placed smoke alarm, and every arson opportunity eliminated through vacant property remediation represents an incident that does not place an Illinois firefighter in the floor collapse, entrapment, or SCBA-failure scenario documented in this record. The Illinois fire service leadership, the OSFM, and the Illinois Fire Chiefs Association should collectively maintain and regularly review the complete narrative record of Illinois line of duty deaths, drawing on NIOSH investigation reports, USFA fatality records, and OSFM investigation findings to ensure that operational, organizational, and equipment factors are directly incorporated into training standards, tactical protocols, and procurement decisions at the statewide level. Integrating firefighter health and safety outcome data from these sources into future assessment cycles will substantially strengthen the statewide fire service fatality analysis and provide the comprehensive occupational health picture that the NFIRS incident framework alone cannot deliver.

Fire Loss



Fire Loss by Year

Illinois fire departments reported total property loss from fire incidents of \$468,506,598 in 2020, establishing the baseline for a five-year loss trajectory that is defined by extraordinary volatility rather than the steady directional movement observed in incident volume trends. Property loss climbed 32.1 percent to \$619,014,399 in 2021 before surging to a five-year peak of \$809,779,135 in 2022, a single-year increase of 30.8 percent that pushed annual fire loss above the \$800 million threshold for the first time in the study period. The subsequent two years produced a sustained decline, with loss falling 14.3 percent to \$694,089,151 in 2023 and a further 15.4 percent to \$587,383,719 in 2024. Despite the encouraging downward movement in the final two years, the 2024 figure remains 25.4 percent above the 2020 baseline, and the overall trendline across the period is upward, confirming that the net direction of fire property loss in Illinois is moving in an unfavorable direction even as the most recent years suggest some moderation. The cumulative five-year total of approximately \$3.18 billion in reported fire property loss establishes the economic scale of the fire problem in Illinois and provides the financial context within which prevention investment should be evaluated.

The 2022 peak of \$809,779,135 warrants specific analytical attention because it occurs in a year when incident volume was actually slightly lower than 2021, confirming that the spike in property loss was driven by the severity of individual incidents rather than by an increase in their frequency. This decoupling of incident volume and property loss is a

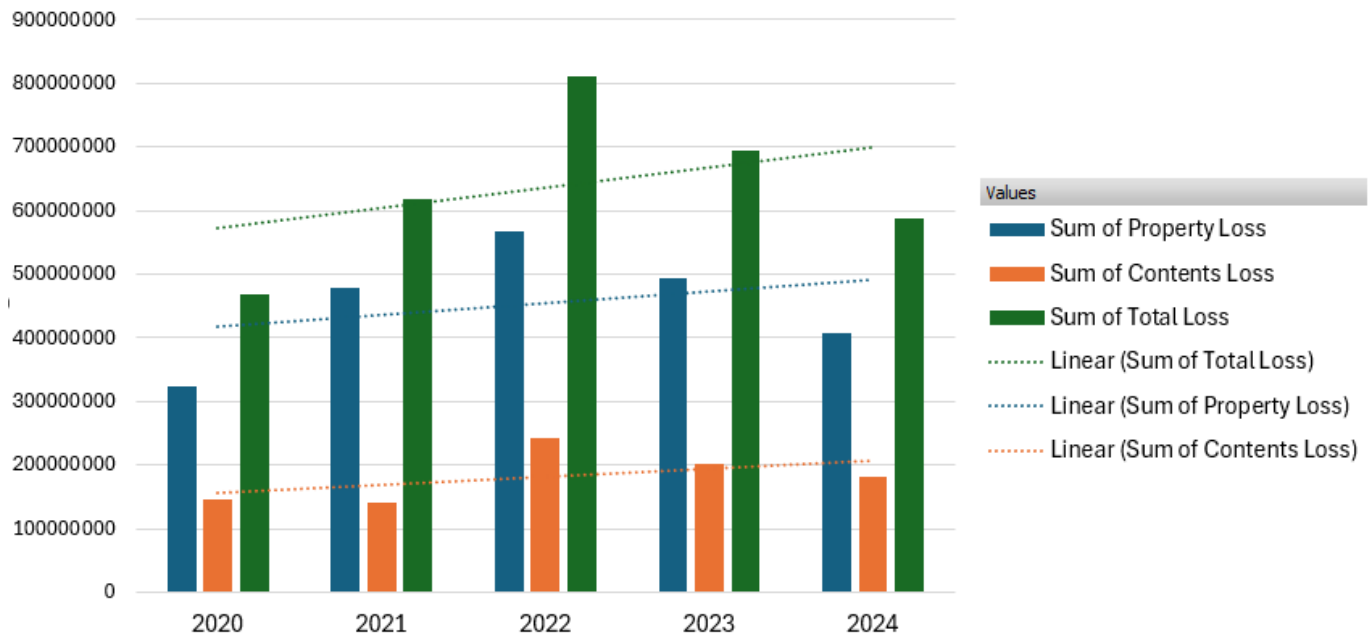
critically important finding for CRR program design, as it indicates that the fires occurring in 2022 were on average more destructive per incident than those in surrounding years. Several factors may contribute to this pattern, including the influence of a small number of catastrophic large-loss events that can dramatically distort annual aggregate figures, inflation in construction and replacement costs that inflates the dollar value of equivalent physical damage relative to prior years, and potential changes in the mix of occupancy types experiencing significant fires in that year. The concentration of high-loss events in specific occupancy types and geographic areas, rather than a uniform distribution of elevated loss across all categories, is the more analytically productive lens through which to examine this peak.

The correlation between fire property loss and the incident categories documented throughout this assessment is direct and operationally significant. Building fires, which account for approximately 62 percent of all structure fire incidents in the Illinois data, generate the overwhelming majority of total property loss, as vehicle fires, cooking fires confined to container, and outdoor fire categories produce substantially lower average loss per incident. The flame spread analysis documented earlier in this assessment, which found that fires extending beyond the room of origin represent a meaningful proportion of captured incidents, is directly relevant to the loss data, as the transition from confined to extended fire represents the threshold at which property loss increases exponentially. Suppression system coverage, early detection, and rapid response time all function as loss limitation mechanisms, and the response time degradation documented in the preceding analysis, from an average of 6.49 minutes in 2020 to 6.86 minutes in 2024, carries a measurable implication for property loss outcomes that the aggregate dollar figures in this chart partially reflect.

For CRR program design, the five-year fire loss trajectory reinforces the economic case for prevention investment with a clarity that complements the life safety arguments made throughout this assessment. A statewide fire loss burden averaging approximately \$635 million annually across the study period, and trending upward from a \$468 million baseline, represents a substantial and recurring economic drain on Illinois communities, property owners, businesses, and insurance markets that prevention programs are specifically designed to reduce. Smoke alarm installation and maintenance programs, cooking fire prevention education, building code enforcement, and fire protection system compliance initiatives each produce measurable reductions in both the frequency and severity of fire loss events, and the return on investment for those programs should be evaluated against the backdrop of the \$3.18 billion in cumulative losses documented here. The moderation in loss visible in 2023 and 2024, if sustained and confirmed as a genuine trend rather than a regression from an anomalous 2022 peak, would represent a meaningful

early indicator that CRR and prevention investments are beginning to produce measurable results at the statewide level.

Fire Loss Detail



Fire Loss Detail: Property Loss and Contents Loss by Year

The disaggregation of Illinois fire loss into its property and contents components across the five-year study period reveals important dimensions of the aggregate loss trajectory that the total figure alone does not capture. Property loss, representing damage to the structure itself, grew from approximately \$320 million in 2020 to a peak of approximately \$562 million in 2022, an increase of roughly 75.6 percent over two years, before declining to approximately \$495 million in 2023 and further to approximately \$410 million in 2024. Contents loss, representing the destruction of personal property, furnishings, equipment, and inventory within affected structures, followed a more volatile pattern, holding relatively stable between approximately \$145 million in 2020 and \$140 million in 2021 before surging to approximately \$243 million in 2022, a single-year increase of approximately 73.6 percent, then declining to approximately \$198 million in 2023 and \$178 million in 2024. Across all five years, property loss consistently represents the larger share of total fire loss, averaging approximately 70 percent of the combined total, while contents loss accounts for the remaining 30 percent, a ratio that is broadly consistent with national fire loss distribution patterns.

The near-simultaneous peak of both property and contents loss in 2022 is the most significant feature of this disaggregated view and reinforces the interpretation developed in the preceding analysis that the 2022 aggregate loss spike was driven by incident severity rather than frequency. The proportional increase in contents loss between 2021 and 2022 was essentially identical to the proportional increase in property loss over the same period, suggesting that the fires producing elevated losses in 2022 were burning longer, spreading further, and consuming more of both the structural and personal property dimensions of affected occupancies before suppression was achieved. This pattern is consistent with fires that achieve significant extension beyond the room of origin before first water application, a finding directly connected to the response time degradation and flame spread data documented elsewhere in this assessment.

The trendlines displayed in the chart tell a nuanced story that the raw annual figures alone do not fully communicate. The total loss trendline is upward across the full period despite the post-2022 decline, reflecting the mathematical influence of the 2022 peak pulling the fitted line above the 2020 and 2024 endpoints. Both the property loss and contents loss trendlines are similarly upward, confirming that the net direction of both loss components is adverse even after accounting for the post-peak moderation. The contents loss trendline is notably steeper in its upward slope relative to the property loss trendline when examined proportionally against their respective baselines, suggesting that personal property loss is growing at a faster rate than structural loss across the period. This differential may reflect the increasing value of contents in Illinois residences and commercial occupancies, driven by inflation in consumer goods and electronics, the concentration of fire incidents in densely occupied multifamily buildings where multiple households' contents are at risk from a single incident, and the expanding inventory value in commercial and storage occupancies experiencing fire events.

For CRR program design, the property and contents loss breakdown provides two distinct and complementary investment rationales. The property loss dimension makes the case for structural fire prevention, suppression system compliance, and early detection programs that limit fire spread within the building envelope, reducing the per-incident structural repair and replacement cost that dominates the aggregate loss total. The contents loss dimension makes the case for residential fire safety programs that protect the personal property of the households most frequently affected by fire, which the demographic analysis throughout this assessment identifies as predominantly low-income households in older urban housing stock where contents replacement after a fire event can represent a financially devastating loss from which recovery is prolonged and incomplete. For these households, fire is not simply a property damage event but a poverty-deepening crisis that removes household assets, displaces families, and compounds the economic vulnerability

that already elevates their fire risk in the first place. Prevention investment that reduces the frequency and severity of fire events in these communities addresses both the loss statistics in this chart and the underlying cycle of vulnerability that those statistics represent.

Top 25 Zip Codes for Fire Loss

Zip Code	Sum of Total Loss from Fire
61072	163556260
61602	96074612
61301	52797152
60103	43541457
60181	35284831
60085	34961280
60954	26796352
60491	24929903
62621	22445250
60623	22204778
62095	21176445
60098	20819602
60585	19439489
60411	19265002
61603	19137672
62258	18131700
60018	17703050
60624	17253234
61604	16912784
60047	16086036
62301	14743042
60505	14440400
60426	14370135
60621	14274201
60115	13293745
Grand Total	779638412

Fire Loss by ZIP Code: Top 25 Statewide

The geographic concentration of Illinois fire property and contents loss across the five-year study period reveals a distribution that is simultaneously more geographically dispersed and more dominated by individual high-loss events than any other geographic analysis in this assessment. The top 25 ZIP codes account for a combined total of \$779,638,412 in fire loss, representing a substantial share of the approximately \$3.18 billion in cumulative statewide loss across the period. ZIP code 61072, encompassing the

Rockton area in Winnebago County in northern Illinois, leads the statewide ranking by an extraordinary margin at \$163,556,260 in total fire loss, a figure more than 70 percent higher than the second-ranked ZIP code and almost certainly reflective of one or more catastrophic large-loss events, including the well-documented 2021 Chemtool industrial fire in Rockton that produced one of the largest single fire loss events in Illinois history during the study period. The presence of this ZIP code at the top of the ranking by such a wide margin is a statistical artifact of that single catastrophic event rather than an indicator of chronic elevated fire loss risk in the community, and it illustrates with precision the degree to which aggregate fire loss figures at any geographic level can be distorted by individual large-loss incidents.

ZIP code 61602, encompassing central Peoria, ranks second at \$96,074,612, a figure that reflects both the chronic building fire burden documented in the Peoria area arson and fire incident analyses presented earlier in this assessment and the economic impact of fires in the older commercial and institutional building stock concentrated in central Peoria's downtown and near-downtown neighborhoods. The third-ranked ZIP code, 61301 in La Salle County at \$52,797,152, similarly reflects the vulnerability of older industrial and commercial building stock in downstate Illinois communities where aging infrastructure, limited fire protection system coverage, and constrained local fire service resources combine to produce elevated per-incident loss outcomes. The presence of both 61603 and 61604 in the top 25, representing additional Peoria ZIP codes at \$19,137,672 and \$16,912,784 respectively, confirms Peoria as the most consistently high-loss metropolitan area outside of the Chicago region in the statewide dataset, with three ZIP codes collectively accounting for \$132,124,068 in fire loss or approximately 16.9 percent of the top 25 total.

The geographic diversity of the top 25 list is among its most analytically significant characteristics for statewide CRR planning purposes. Unlike the CO and lift assist ZIP code rankings, which are almost entirely concentrated in the Chicago metropolitan south and west side corridor, the fire loss ranking spans the full geographic breadth of Illinois, with high-loss ZIP codes appearing in Rockton, La Salle, Peoria, the Chicago suburbs, the Metro East region, and rural downstate communities. This reflects the different mechanisms driving fire loss at the community level. In the Chicago metropolitan ZIP codes including 60103 in Bartlett, 60181 in Villa Park, 60085 in Waukegan, 60623 in Chicago, and 60624 in Chicago, fire loss is driven by the combination of incident frequency, housing density, and the economic value of the affected structures and contents. In downstate and rural ZIP codes, elevated loss is more commonly driven by individual high-consequence events in agricultural, commercial, or industrial facilities where the replacement value per incident is high even when annual fire frequency is modest.

For CRR program design, the fire loss ZIP code ranking provides a geographically specific investment framework that complements but does not replicate the incident frequency rankings developed earlier in the assessment. Communities appearing in both the high-incident-frequency rankings and the high-loss rankings, including 60623, 60624, and 60085, represent the highest-priority dual-intervention targets where both prevention programming to reduce incident frequency and fire protection system compliance initiatives to limit loss severity are simultaneously warranted. Communities appearing in the loss ranking primarily due to individual large-loss events, most notably 61072, require a different analytical lens focused on industrial and commercial hazard pre-planning, facility inspection, and fire protection system adequacy rather than the residential prevention programming appropriate for chronically high-frequency communities. The cumulative \$779,638,412 in loss represented by the top 25 ZIP codes alone provides a compelling economic foundation for the argument that targeted, geographically focused prevention investment in a defined set of high-priority communities can produce measurable and fiscally significant returns at the statewide level.

Regional Fire Incident Detail

The statewide analysis in the preceding sections tells the Illinois fire story at an aggregate level, but averages and totals can mask the significant differences in fire risk, incident mix, and fire service capacity that exist across the state. This section breaks the statewide data down by the seven MABAS divisions that define how Illinois fire departments coordinate and support one another, examining structure fires, cooking fires, WUI exposure, arson, building vacancy, department staffing composition, and fire investigation capacity region by region. The MABAS geographic framework was chosen for this analysis because it reflects real operational boundaries, captures meaningful differences in community character and housing stock across Illinois's diverse regions, and provides a practical planning geography for the regionally differentiated CRR strategies and resource investments that the statewide data clearly supports.



MABAS Region Fire Incident Volume & Key Risk Metrics

Metric	East Central	NW Suburbs	North West	SW Suburbs	South	South Central	West Central	Statewide Total
Total Incidents	18,374	123,548	17,794	45,225	32,927	34,669	7,935	280,472
Structure Fires	8,243	67,247	8,525	26,909	15,042	15,979	3,163	145,108
WUI / Vegetation	3,260	9,145	3,463	5,096	6,891	6,355	1,953	36,163
Vehicle Fires	2,399	18,441	2,194	5,940	4,683	4,601	982	39,240
Cooking Fires	1,773	16,328	824	6,351	1,127	2,936	349	29,688
Arson (Intentional)	1,024	3,494	769	1,140	2,183	3,060	374	12,044
Mutual Aid Received	2,820	11,549	2,696	7,194	5,215	3,673	1,410	34,557

MABAS Region Fire Incident Volume and Key Risk Metrics

The distribution of Illinois fire incident volume and key risk metrics across the seven MABAS regions provides the most operationally specific geographic risk framework in the statewide assessment, moving beyond the ZIP code and city-level analyses of preceding sections to align incident data with the mutual aid coordination geography that

defines how Illinois fire departments actually deploy and support one another during large-scale and complex events. The NW Suburbs region dominates every metric in the table by a substantial margin, recording 123,548 total incidents across the study period and accounting for 44.0 percent of the 280,472 statewide total captured in this regional dataset, a concentration that reflects the extraordinary population density, incident volume, and organizational complexity of the Chicago metropolitan area and its immediately surrounding suburban fire service landscape. Structure fires follow the same pattern, with the NW Suburbs region recording 67,247 structure fires or 46.3 percent of the statewide regional total of 145,108, confirming that nearly half of all Illinois structure fire suppression activity is concentrated within a single MABAS region. The SW Suburbs region ranks second across most metrics at 45,225 total incidents and 26,909 structure fires, establishing the south suburban Cook County corridor as the second most fire-active region in the state and consistent with the community risk profiles documented for that geography throughout the incident and casualty analyses. The remaining five regions, East Central at 18,374 incidents, Northwest at 17,794, South at 32,927, South Central at 34,669, and West Central at 7,935, represent significantly lower absolute incident volumes but carry risk profiles that are not proportionally lower in consequence given the response time, staffing, and resource constraints that characterize the departments serving those geographies.

The risk metric distribution across regions reveals several analytically significant patterns that the aggregate incident totals obscure. The arson and intentionally set fire distribution is perhaps the most striking departure from the incident volume hierarchy, with the South-Central region recording 3,060 arson incidents and the South region recording 2,183, together accounting for 43.5 percent of the 12,044 statewide regional arson total despite representing only 24.1 percent of total incident volume. The NW Suburbs region, which dominates total and structure fire volume, accounts for only 3,494 arson incidents or 29.0 percent of the statewide total, a share that is substantially below its 44.0 percent share of total incidents, confirming that arson is disproportionately concentrated in the southern and south-central regions relative to their overall fire activity levels. This pattern is consistent with the community conditions documented in the arson analysis, where building vacancy, economic disinvestment, and population distress are most pronounced in the downstate geographies that dominate the South and South-Central regions. The WUI and vegetation fire distribution similarly diverges from the total incident hierarchy, with the South region at 6,891 events and the South Central region at 6,355 events together accounting for 36.6 percent of the 36,163 statewide regional WUI total, despite representing only 23.9 percent of total incident volume, reflecting the agricultural and open-land character of those

regions and the elevated grassland and brush fire exposure documented in the WUI incident analysis.

The cooking fire and mutual aid distributions complete the regional risk picture with findings that have direct implications for both CRR program targeting and operational resource planning. Cooking fires are dramatically concentrated in the NW Suburbs region at 16,328 incidents or 55.0 percent of the 29,688 statewide regional total, a proportion that reflects both the absolute population dominance of that region and the specific multifamily housing density that the statewide cooking fire analysis identified as producing Illinois's anomalous residential cooking fire distribution. The SW Suburbs region follows at 6,351 cooking fires or 21.4 percent of the regional total, together with the NW Suburbs accounting for 76.4 percent of all regional cooking fire volume and establishing these two regions as the overwhelming priority geography for multifamily cooking fire prevention investment. The mutual aid received distribution reveals a different but equally important operational picture. The NW Suburbs region leads mutual aid received at 11,549 incidents, consistent with its incident volume dominance, but the SW Suburbs region at 7,194 and the South region at 5,215 represent mutual aid dependency rates that are elevated relative to their total incident shares, suggesting that departments in those regions are drawing on external resources at rates disproportionate to their incident volume and reflecting the resource constraints of the communities they serve. The West Central region's 1,410 mutual aid received events against only 7,935 total incidents represents a mutual aid utilization rate of 17.8 percent, the highest in the dataset, confirming that the most rural and resource-constrained region in the statewide framework is also the most dependent on mutual aid support for managing its fire incident workload.

For statewide CRR program design, the MABAS regional framework provides the geographic organizing structure that bridges the gap between statewide aggregate analysis and community-level program delivery. The NW Suburbs and SW Suburbs regions, together accounting for more than 60 percent of statewide structure fire volume and more than 76 percent of cooking fire events, represent the highest-priority regions for scaled, sustained, and multifamily-focused prevention programming, with particular urgency in the Chicago south and west side communities and south suburban corridor where the casualty, loss, and social vulnerability data all converge on the same geographic footprint. The South and South-Central regions, where arson rates and WUI fire volumes are disproportionately elevated relative to total incident shares, require a differentiated prevention strategy that integrates community disinvestment remediation, arson awareness and reporting programs, and WUI preparedness initiatives alongside the residential fire safety programming appropriate across all regions. The West Central region, as the smallest and most mutual-aid-dependent region in the state, represents the clearest case in

the entire assessment for statewide CRR program infrastructure investment that reaches departments with limited independent prevention capacity through regional coordination mechanisms, shared program resources, and the technical assistance frameworks that the Illinois CRR Stakeholder Task Force is specifically positioned to deliver.

Rate as Percentage of Region Total Incidents

Metric	East Central	NW Suburbs	North West	SW Suburbs	South	South Central	West Central	Statewide Total
Structure Fires	44.9%	54.4%	47.9%	59.5%	45.7%	46.1%	39.9%	51.7%
WUI / Vegetation	17.7%	7.4%	19.5%	11.3%	20.9%	18.3%	24.6%	12.9%
Vehicle Fires	13.1%	14.9%	12.3%	13.1%	14.2%	13.3%	12.4%	14.0%
Cooking Fires	9.6%	13.2%	4.6%	14.0%	3.4%	8.5%	4.4%	10.6%
Arson (Intentional)	5.6%	2.8%	4.3%	2.5%	6.6%	8.8%	4.7%	4.3%
Mutual Aid Received	15.3%	9.3%	15.2%	15.9%	15.8%	10.6%	17.8%	12.3%

Key Metrics as Percentage of Regional Total

The normalization of Illinois fire incident metrics as a percentage of each MABAS region's total incident volume transforms the raw count data examined in the preceding analysis into a comparative risk intensity framework that reveals the structural character of each region's fire problem independent of its size. When absolute volume is removed from the equation and each metric is expressed as a share of regional activity, the NW Suburbs region, which dominated every raw count category, no longer presents as the highest-intensity risk environment across most dimensions, and the regions that appeared modest in absolute terms emerge as carrying proportionally heavier fire burdens relative to their overall operational activity. This rate-based perspective is analytically essential for statewide CRR resource allocation decisions, because a region with a smaller department serving a smaller population but a higher proportion of its incidents involving structure fires or arson carries a fundamentally different prevention priority profile than a larger region whose dominance of raw counts reflects population scale rather than elevated risk intensity.

Structure fires as a percentage of total regional incidents reveal the SW Suburbs region as the highest-intensity structure fire environment in the state at 59.5 percent of all regional incidents, substantially above the statewide rate of 51.7 percent and meaningfully higher than the NW Suburbs region at 54.4 percent despite the NW Suburbs' dominance of

absolute structure fire counts. The North West region at 47.9 percent, the East Central region at 44.9 percent, the South region at 45.7 percent, and the South Central region at 46.1 percent all cluster within a relatively narrow band that reflects a broadly consistent structural fire share across the non-metropolitan regions, while the West Central region at 39.9 percent presents the lowest structure fire rate in the state, a finding that likely reflects the higher proportion of vegetation, agricultural, and outdoor fire activity in the most rural region of the framework relative to the structural built environment that dominates incident profiles in more developed regions. The cooking fire rate distribution produces perhaps the starkest regional contrast in the normalized dataset. The NW Suburbs at 13.2 percent and the SW Suburbs at 14.0 percent of regional totals stand in sharp relief against the North West region at 4.6 percent, the South region at 3.4 percent, and the West Central region at 4.4 percent, a differential of more than three to one between the highest and lowest cooking fire rate regions that reflects the multifamily housing density of the metropolitan regions and the predominantly single-family and rural residential character of the lower-rate geographies. The statewide anomaly of multifamily cooking fire dominance documented throughout this assessment is fundamentally a metropolitan phenomenon, and the rate-based analysis confirms that cooking fire prevention programming designed for the NW Suburbs and SW Suburbs environment would be inappropriate in character and targeting for the North West, South, and West Central regions where cooking fire rates are low and the residential fire burden is driven by a different mix of occupancy types and ignition sources.

The WUI and vegetation fire rate distribution inverts the cooking fire pattern with equal analytical force. The West Central region leads all geographies at 24.6 percent of total regional incidents, followed by the South region at 20.9 percent, the North West region at 19.5 percent, the East Central region at 17.7 percent, and the South Central region at 18.3 percent, while the NW Suburbs region, despite its absolute dominance of most metrics, records the lowest WUI rate in the state at 7.4 percent and the SW Suburbs follows at 11.3 percent. This distribution confirms that WUI and vegetation fire risk is fundamentally a non-metropolitan phenomenon in Illinois, concentrated in the agricultural, prairie, and open-land geographies of the regions surrounding the Chicago metropolitan core, and that the prevention and preparedness investments appropriate for WUI risk management are most urgently needed in the five regions where WUI events represent 17 to 25 percent of all fire activity rather than the 7 to 11 percent rates characterizing the two suburban metropolitan regions. The arson rate distribution completes the regional risk intensity picture with its most operationally consequential finding. The South-Central region at 8.8 percent of total regional incidents and the South region at 6.6 percent carry arson rates more than double the NW Suburbs rate of 2.8 percent and the SW Suburbs rate of 2.5

percent, establishing intentionally set fires as a proportionally dominant component of the southern Illinois fire burden in a way that the absolute count data understated. At 8.8 percent of all incidents, arson in the South-Central region is not a peripheral fire type but a structural feature of the regional fire problem that shapes the operational environment, the community risk profile, and the prevention program requirements of every department in that geography.

The mutual aid received rate distribution provides the clearest summary of regional resource adequacy relative to incident demand and carries the most direct implications for statewide fire service infrastructure investment. The West Central region at 17.8 percent leads all regions, confirming its status as the most mutual-aid-dependent geography in the state, followed by the SW Suburbs at 15.9 percent, the South region at 15.8 percent, the East Central region at 15.3 percent, and the Northwest region at 15.2 percent, all clustering between 15 and 18 percent mutual aid utilization. The NW Suburbs at 9.3 percent and South Central at 10.6 percent present notably lower mutual aid rates, reflecting the denser concentration of fire department resources and the stronger local response capacity of those regions. The five regions with mutual aid received rates above 15 percent represent the geographies where the gap between incident demand and local response capacity is most structurally significant, and where the MABAS framework is functioning not as a supplementary resource for exceptional events but as a routine operational necessity integrated into the day-to-day response capacity of the regional fire service. For CRR program design, these high mutual aid dependency rates reinforce the foundational argument of this assessment, that reducing incident frequency through prevention investment in high-dependency regions produces a compounding operational benefit that extends beyond the immediate incident avoided to the preservation of regional mutual aid capacity for the complex and high-consequence events that prevention programs cannot eliminate entirely.

Share of Statewide Total by Region

Metric	East Central	NW Suburbs	North West	SW Suburbs	South	South Central	West Central	Statewide Total
Total Incidents	6.6%	44.1%	6.3%	16.1%	11.7%	12.4%	2.8%	100.0%
Structure Fires	5.7%	46.3%	5.9%	18.5%	10.4%	11.0%	2.2%	100.0%
WUI / Vegetation	9.0%	25.3%	9.6%	14.1%	19.1%	17.6%	5.4%	100.0%
Vehicle Fires	6.1%	47.0%	5.6%	15.1%	11.9%	11.7%	2.5%	100.0%
Cooking Fires	6.0%	55.0%	2.8%	21.4%	3.8%	9.9%	1.2%	100.0%

Arson (Intentional)	8.5%	29.0%	6.4%	9.5%	18.1%	25.4%	3.1%	100.0%
Mutual Aid Received	8.2%	33.4%	7.8%	20.8%	15.1%	10.6%	4.1%	100.0%

MABAS Region Share of Statewide Fire Incidents

The share of statewide total analysis represents the third lens through which the MABAS regional fire incident data is examined in this assessment, moving beyond both raw counts and internal rate ratios to establish each region's proportional contribution to the Illinois fire problem as a whole. This perspective is analytically essential for statewide resource allocation decisions because it answers the question that neither absolute volume nor regional rate analysis can answer independently, specifically which regions are generating the largest share of Illinois's total fire burden across each risk category, and whether the geographic distribution of that burden is proportionate to each region's share of overall incident activity or whether specific categories are systematically over-concentrated in particular regions. The NW Suburbs region accounts for 44.1 percent of all statewide incidents and carries shares above that baseline in structure fires at 46.3 percent, vehicle fires at 47.0 percent, and cooking fires at 55.0 percent, confirming that its dominance of the absolute count metrics is genuine and not simply a function of population scale. The SW Suburbs region at 16.1 percent of total incidents carries a structure fire share of 18.5 percent and a cooking fire share of 21.4 percent, both above its total incident baseline, establishing this region as the second most disproportionately affected geography for the two highest-consequence fire categories in the statewide profile. Together the NW Suburbs and SW Suburbs account for 60.2 percent of all statewide incidents, 64.8 percent of all structure fires, 76.4 percent of all cooking fires, and 62.1 percent of all vehicle fires, a concentration that is both analytically definitive and programmatically directive for the allocation of cooking fire prevention, multifamily fire safety, and structure fire suppression support resources.

The arson share distribution produces the most dramatic regional departure from the total incident baseline of any metric in the dataset and delivers the most analytically consequential finding in the share-of-statewide-total analysis. The South-Central region accounts for 25.4 percent of all statewide regional arson incidents despite representing only 12.4 percent of total incidents, a disproportionality ratio of more than two to one that establishes intentionally set fires as the most regionally concentrated risk category in the entire dataset. The South region similarly accounts for 18.1 percent of statewide arson against an 11.7 percent total incident share. Together the South and South Central regions account for 43.5 percent of all Illinois arson events while generating only 24.1 percent of

total fire incidents, a finding that quantifies with precision the degree to which arson is not a uniformly distributed statewide challenge but a structurally concentrated condition in the southern Illinois geographies where the community conditions most consistently associated with intentionally set fires, including building vacancy, economic disinvestment, and population distress, are most prevalent. The NW Suburbs region, by contrast, accounts for only 29.0 percent of statewide arson despite its 44.1 percent share of total incidents, confirming that arson is one of the few major fire categories where the metropolitan core does not dominate the statewide distribution and where downstate-focused prevention and community investment strategies are the appropriate primary response.

The WUI and vegetation fire share distribution completes the geographic risk picture by confirming the rural and agricultural character of the categories with the most climate-sensitive trajectories in the statewide incident profile. The NW Suburbs region, which accounts for 44.1 percent of total incidents, claims only 25.3 percent of WUI fire events, while the South region at 11.7 percent of total incidents accounts for 19.1 percent of WUI fires and the South-Central region at 12.4 percent of total incidents accounts for 17.6 percent. The Northwest and East Central regions similarly exceed their total incident shares in the WUI category at 9.6 and 9.0 percent respectively against total incident shares of 6.3 and 6.6 percent. The five non-metropolitan regions collectively account for 74.7 percent of all statewide WUI fire events despite generating only 39.9 percent of total incident volume, a distribution that is the mirror image of the cooking fire and structure fire patterns and confirms that WUI fire risk and residential structure fire risk represent geographically distinct challenges requiring differentiated regional strategies rather than a uniform statewide program. The mutual aid received share distribution adds a final operational dimension to the regional picture, with the SW Suburbs region receiving 20.8 percent of all statewide mutual aid despite its 16.1 percent total incident share, and the South region receiving 15.1 percent against an 11.7 percent total incident share, both reflecting elevated mutual aid dependency relative to incident volume that is consistent with the resource constraint profiles documented for those regions throughout this analysis.

For statewide CRR program design and grant resource allocation, the three-table MABAS regional analysis, encompassing raw counts, internal rates, and statewide shares, collectively establishes a regional investment framework that is both empirically grounded and operationally specific. Cooking fire and multifamily structure fire prevention resources should be concentrated in the NW Suburbs and SW Suburbs regions where those categories account for 76.4 and 64.8 percent of statewide totals respectively, with program designs calibrated for high-density urban and suburban multifamily residential

environments where the Illinois cooking fire distribution anomaly is most pronounced. Arson prevention, community investment, and blight remediation resources should be directed with urgency toward the South and South Central regions where intentionally set fires account for 43.5 percent of the statewide total from communities generating only 24.1 percent of total incident volume, a disproportionality that cannot be addressed through fire service response optimization and requires the multi-agency, community development approach that the CRR framework is specifically designed to facilitate. WUI preparedness investment, mutual aid pre-planning, and vegetation fire prevention resources should be prioritized for the five non-metropolitan regions accounting for 74.7 percent of statewide WUI volume, with particular urgency in the South, South Central, and North West regions where WUI share exceeds total incident share by the widest margins and where volunteer-dependent departments with the most constrained resources are managing the most disproportionate wildland fire burden in the statewide portfolio.

Percentage of Region's Structure Fire Building Status

Building Status	East Central	NW Suburbs	North West	SW Suburbs	South	South Central	West Central	Statewide Total
In normal use	83.0%	84.8%	83.3%	83.9%	73.4%	81.4%	82.3%	82.1%
Vacant and unsecured	5.6%	3.2%	4.2%	4.9%	10.6%	7.0%	4.5%	5.5%
Vacant and secured	3.4%	4.0%	3.9%	4.2%	5.7%	4.6%	5.1%	4.4%
Idle, not routinely used	2.8%	0.9%	3.1%	0.9%	3.2%	2.2%	3.1%	1.8%
Under construction	0.8%	1.7%	0.9%	1.5%	1.2%	0.9%	0.6%	1.3%
Under major renovation	0.5%	1.1%	0.8%	0.9%	1.0%	0.9%	0.6%	0.9%
Being demolished	1.2%	0.3%	0.9%	0.3%	1.0%	1.0%	0.6%	0.6%
Undetermined	1.9%	3.0%	2.0%	2.4%	3.1%	1.4%	2.2%	2.5%
Other	0.9%	0.9%	0.9%	1.0%	1.0%	0.7%	0.9%	0.9%

Structure Fire Building Status by MABAS Region

The distribution of structure fire building status across MABAS regions provides a geographically disaggregated view of one of the most operationally consequential dimensions of the Illinois fire environment, establishing with regional precision the proportion of structure fire activity occurring in occupied versus vacant, transitional, and non-routine use buildings. The in-normal-use category, representing fires in actively occupied structures and carrying the highest life safety consequence per event, ranges from

a low of 73.4 percent in the South region to a high of 84.8 percent in the NW Suburbs region, with the statewide average of 82.1 percent falling within a relatively narrow band across most regions. The South region's substantially lower in-normal-use rate is the most significant finding in this row, reflecting not a lower absolute risk to occupants but a higher proportion of fire activity in the non-occupied building categories that carry their own distinct operational and community risk dimensions. The NW Suburbs and SW Suburbs regions at 84.8 and 83.9 percent respectively confirm that the metropolitan core's structure fire burden is most heavily concentrated in occupied residential and commercial buildings, consistent with the population density and housing occupancy rates documented in the demographic analysis and directly connected to the life safety priority of those regions' fire prevention programs.

The vacant and unsecured building category produces the most analytically significant regional departure from the statewide average and the finding with the most direct implications for both firefighter safety and community risk reduction program design. The South region leads all geographies at 10.6 percent of structure fires occurring in vacant and unsecured buildings, more than double the NW Suburbs rate of 3.2 percent and nearly double the statewide average of 5.5 percent. The South-Central region follows at 7.0 percent and the SW Suburbs at 4.9 percent, with the remaining regions clustering between 3.2 and 5.6 percent. The South region's elevated vacant and unsecured rate is directly connected to the population decline, economic disinvestment, and property abandonment patterns documented in the demographic and social vulnerability analyses, where decades of outmigration from coalfield and Mississippi River bottomland communities have left behind a housing stock that is aging, partially abandoned, and increasingly concentrated in the hands of owners with limited resources or motivation for property maintenance and security. Vacant and unsecured structure fires represent one of the most hazardous operational environments in the fire service, as responding crews encounter unknown interior conditions, compromised structural integrity, potential squatter occupancy, and the absence of the utility service information that normally informs tactical decision-making, making the South region's 10.6 percent rate a firefighter safety concern of the first order as well as a community risk indicator.

The combined vacant and secured category adds an additional dimension to the vacancy picture that the unsecured rate alone understates. When vacant secured and vacant unsecured rates are combined, the South region reaches 16.3 percent of all structure fires occurring in vacant buildings of either security status, compared to 7.2 percent in the NW Suburbs, 8.1 percent in the Northwest, 9.1 percent in the SW Suburbs, 11.6 percent in the South Central, 9.6 percent in the East Central, and 9.6 percent in the West Central. The South region's combined vacancy rate of 16.3 percent means that approximately one in six

structure fires in that region occurs in a building that is not in normal active use, a proportion that fundamentally shapes the operational risk environment and the community risk profile of the region's fire service in ways that prevention programs targeting occupied residential structures alone cannot address. The idle and not routinely used category reinforces this pattern, with the South region at 3.2 percent, the North West and West Central regions each at 3.1 percent, and the East Central region at 2.8 percent all substantially above the NW Suburbs rate of 0.9 percent, reflecting the agricultural building inventory, seasonal use structures, and partially abandoned commercial properties that characterize the non-metropolitan fire environment across multiple regions.

For CRR program design and statewide fire service safety investment, the building status regional distribution establishes a differentiated intervention framework that must operate simultaneously on the occupied building prevention dimension and the vacant property risk management dimension, with the relative emphasis between those two tracks varying significantly by region. In the NW Suburbs and SW Suburbs regions, where in-normal-use rates exceed 83 percent, the priority is unambiguously residential and commercial occupancy fire prevention targeting occupied households and buildings with functioning detection and suppression systems. In the South region, where the combined vacancy rate reaches 16.3 percent and the vacant and unsecured rate is more than double the statewide average, the prevention strategy must integrate property registration and inspection programs, vacant building securing and demolition initiatives, and coordination with local government code enforcement and community development agencies to address the structural disinvestment conditions that produce the vacancy environment from which elevated vacancy fire rates emerge. The firefighter safety implications of these regional vacancy patterns are equally important, as departments in the South and South Central regions operating with the mutual aid dependency rates and volunteer staffing constraints documented in the preceding analyses are simultaneously managing the highest proportions of the most tactically hazardous building status categories in the statewide fire service profile, a convergence of operational risk and resource constraint that represents one of the most urgent unaddressed challenges in the Illinois statewide fire service safety framework.

Department Type Composition by Region

Department Type	East Central	NW Suburbs	North West	SW Suburbs	South	South Central	West Central	Statewide Total
Career	5,827	91,552	3,392	20,067	5,452	12,057	1,864	140,211
Mostly career	340	12,938	1,484	8,981	1,498	1,733	0	26,974

Mostly volunteer	1,440	13,382	3,009	11,634	6,798	4,234	459	40,956
Volunteer	9,738	5,206	9,572	4,542	18,290	15,410	4,996	67,754
Total	17,345	123,078	17,457	45,224	32,038	33,434	7,319	275,895

Department Type Composition by MABAS Region

The distribution of fire incidents across department staffing types within each MABAS region reveals the most operationally consequential dimension of the Illinois regional risk profile, establishing with precision the degree to which each region's fire incident workload is carried by career, combination, or volunteer departments and connecting that staffing reality directly to the response time, operational capacity, and prevention program delivery findings documented throughout this assessment. The NW Suburbs region is defined by career and mostly career dominance, with career departments handling 91,552 incidents or 74.4 percent of the region's 123,078 total and mostly career departments contributing an additional 12,938 or 10.5 percent, meaning that 84.9 percent of all NW Suburbs fire incident activity is managed by predominantly career-staffed organizations. The SW Suburbs region presents a more balanced but still career-leaning distribution, with career departments handling 20,067 incidents or 44.4 percent of the regional total, mostly career departments adding 8,981 or 19.9 percent, and mostly volunteer and volunteer departments together accounting for the remaining 35.8 percent. These two metropolitan regions together account for 111,619 career department incidents, representing 79.6 percent of all career department fire activity in the statewide regional dataset, confirming that career fire service capacity in Illinois is overwhelmingly concentrated in the northeastern metropolitan corridor while the remainder of the state operates under a fundamentally different staffing model.

The volunteer and mostly volunteer dominance of the non-metropolitan regions is the defining structural feature of the Illinois fire service outside the Chicago metropolitan area and the finding with the most direct implications for both response capability and prevention program capacity across the majority of the state's geographic territory. The South region presents the most pronounced volunteer dependency in the dataset, with volunteer departments handling 18,290 incidents or 57.1 percent of the region's 32,038 total and mostly volunteer departments contributing an additional 6,798 or 21.2 percent, meaning that 78.3 percent of all South region fire incident activity is managed by volunteer or mostly volunteer organizations. The career share in the South region is only 17.0 percent at 5,452 incidents, the lowest career penetration rate among the seven regions and a figure that reflects the rural community character, limited municipal tax bases, and workforce availability constraints that define the fire service landscape of southern Illinois.

The South-Central region follows a similar pattern with volunteer departments handling 15,410 incidents or 46.1 percent of the regional total and mostly volunteer departments adding 4,234 or 12.7 percent, for a combined volunteer-dependent share of 58.8 percent. The Northwest, East Central, and West Central regions are similarly volunteer-dominant, with the West Central region recording zero mostly career incidents and managing 68.2 percent of its activity through volunteer departments, the highest volunteer-only share in the statewide dataset.

The contrast between the career-dominated metropolitan regions and the volunteer-dependent non-metropolitan regions takes on its sharpest analytical significance when it is examined alongside the response time data documented earlier in this assessment. The nearly five-minute average response time gap between career departments at 5.03 minutes and volunteer departments at 9.94 minutes, and the nearly nine-minute gap at the 90th percentile, means that the South region's 78.3 percent volunteer-dependent incident share is not merely a staffing statistic but a life safety condition that shapes the probability of fatal outcomes for every residential fire event in that geography. The combination of the South region's highest vacancy rate, its highest arson rate, its most rapidly aging population, its oldest housing stock, and its lowest career fire service penetration creates a convergence of risk amplifiers that positions that region as the most structurally vulnerable fire service environment in the Illinois statewide profile by a substantial margin. The West Central region's 100 percent volunteer and mostly volunteer incident share, while occurring at lower absolute volume, presents a parallel risk concentration in the state's most rural and resource-constrained geography where the absence of any career fire service presence means that every fire incident response depends entirely on the availability, response time, and operational capacity of on-call volunteer personnel.

For statewide CRR program design, the department type regional distribution establishes the most fundamental argument in this assessment for directing prevention resources toward the volunteer-dependent regions rather than distributing them proportionally to incident volume. If statewide CRR grant funding were allocated in proportion to incident share, the NW Suburbs region would receive 44.1 percent of all resources while the South and South Central regions together would receive 24.1 percent, a distribution that would direct the majority of prevention investment toward the regions with the strongest career fire service capacity and the lowest per-capita fire risk burden, and the smallest proportional investment toward the regions where prevention is most urgently needed as a substitute for the rapid response capability that career staffing provides. A vulnerability-weighted allocation framework that accounts for volunteer dependency rates, regional vacancy and arson concentrations, mutual aid utilization rates, and social vulnerability indices would direct substantially greater per-incident resources to the South, South

Central, West Central, East Central, and North West regions, recognizing that prevention investment in those geographies produces a compounding return that extends from the immediate incident avoided to the preservation of the volunteer workforce capacity and the mutual aid system integrity on which the entire non-metropolitan Illinois fire service depends.

Percentage of MABAS Region Incidents by Department Type

Department Type	East Central	NW Suburbs	North West	SW Suburbs	South	South Central	West Central	Statewide Total
Career	33.6%	74.4%	19.4%	44.4%	17.0%	36.1%	25.5%	50.8%
Mostly career	2.0%	10.5%	8.5%	19.9%	4.7%	5.2%	0.0%	9.8%
Mostly volunteer	8.3%	10.9%	17.2%	25.7%	21.2%	12.7%	6.3%	14.8%
Volunteer	56.1%	4.2%	54.8%	10.0%	57.1%	46.1%	68.3%	24.6%

Percentage of MABAS Region Incidents by Department Type

The percentage distribution of fire incidents by department staffing type within each MABAS region distills the staffing composition data into its most analytically accessible form and produces a regional risk matrix that is simultaneously the simplest and the most consequential table in the MABAS regional analysis series. The statewide totals establish the baseline against which regional variation is measured, with career departments handling 50.8 percent of all statewide fire incidents, mostly career departments contributing 9.8 percent, mostly volunteer departments 14.8 percent, and volunteer departments 24.6 percent. This aggregate distribution, however, conceals a regional variation so pronounced that the statewide average is essentially unrepresentative of any individual region's actual staffing reality. The NW Suburbs region at 74.4 percent career and 10.5 percent mostly career presents a fire service environment that is 84.9 percent career-staffed, more than thirty percentage points above the statewide career share, while the West Central region at 68.3 percent volunteer and 6.3 percent mostly volunteer presents a fire service environment that is 74.6 percent volunteer-dependent, three times the statewide volunteer share. A single statewide average does not reflect the real conditions in either region. Any program or resource allocation plan that uses statewide standards without considering regional differences will consistently distribute resources in a way that does not match actual needs or capabilities.

The career percentage gradient across the seven regions follows a geographic logic that maps directly onto the population density and municipal fiscal capacity patterns

documented in the demographic and SVI analyses. Career department percentage ranges from 74.4 percent in the NW Suburbs at the high end through 44.4 percent in the SW Suburbs, 36.1 percent in the South Central, 33.6 percent in the East Central, 25.5 percent in the West Central, 19.4 percent in the Northwest, and 17.0 percent in the South at the low end, a range spanning 57.4 percentage points from highest to lowest that represents not merely a staffing preference difference but a fundamentally different fire service delivery model with profoundly different operational capabilities, response time characteristics, and prevention program capacity. The South region's 17.0 percent career share, the lowest in the dataset, means that the vast majority of fire incident responses in the region with the highest vacancy rate, the highest arson concentration, the oldest housing stock, and the most socially vulnerable population are handled by departments whose operational availability depends on volunteer response rather than on-duty career staffing. The Northwest region at 19.4 percent career presents a nearly identical structural challenge across a different geographic character, with its agricultural and rural residential fire environment managed predominantly by volunteer organizations that collectively handle 54.8 percent of all regional incident activity.

The mostly volunteer category distribution adds important nuance to the binary career-volunteer framing that the extreme regional poles might otherwise suggest. The SW Suburbs region at 25.7 percent mostly volunteer presents the highest mostly volunteer share in the dataset, reflecting the substantial number of combination departments in the south suburban Cook County corridor where the transition from predominantly volunteer to predominantly career staffing is ongoing but not yet complete, and where the operational characteristics of mostly volunteer organizations, including variable on-duty staffing levels and reliance on call-back and mutual aid for significant events, shape the response environment for the region's elevated structure fire and vacancy fire burdens. The South region at 21.2 percent mostly volunteer and the North West region at 17.2 percent mostly volunteer each present meaningful combination department shares that partially offset the career deficit in those regions, though the response time data documented earlier in the assessment confirms that mostly volunteer departments average 7.49 minutes compared to the career average of 5.03 minutes, a gap that remains operationally significant even if it is narrower than the volunteer-only differential. The West Central region's complete absence of mostly career department activity at 0.0 percent is the starkest single data point in the table, confirming that the state's most rural region operates without any significantly career-staffed organizational presence in its fire service landscape and relies entirely on the volunteer and mostly volunteer model for all of its fire incident management.

For statewide CRR program design, the percentage distribution by department type translates directly into a differentiated program delivery framework that must be calibrated to the staffing realities of each region rather than to a uniform statewide model. In the NW Suburbs region, where 84.9 percent of incidents are handled by career-staffed organizations with dedicated prevention divisions, paid fire prevention officers, and institutional capacity for sustained community outreach, the CRR program delivery infrastructure already exists, and the statewide investment role is one of coordination, data sharing, and augmentation of existing capacity. In the South, Northwest, West Central, and East Central regions, where volunteer departments handle 54 to 68 percent of all incident activity and the career prevention infrastructure is largely absent, the statewide CRR framework must function as the primary program delivery mechanism rather than a supplementary support layer, providing the staffing resources, program materials, training infrastructure, and grant funding that volunteer departments cannot generate independently. The percentage distribution table is, in this sense, not simply a staffing statistic but a map of where the statewide CRR investment must go to close the prevention capacity gap that the volunteer-dependent regions cannot close on their own, and a quantitative foundation for the vulnerability-weighted resource allocation framework that the Illinois statewide CRR implementation strategy requires.

Arson / Incendiary Fire Profile by MABAS Region

Metric	East Central	NW Suburbs	North West	SW Suburbs	South	South Central	West Central	Statewide
Total Arson / Incendiary	991	3,473	739	1,140	2,134	2,984	345	11,806
Structure Arson	235	644	142	263	570	809	49	2,712
Non-Structure Arson	756	2,829	597	877	1,564	2,175	296	9,094
Cause Under Investigation	1,055	10,946	985	2,343	2,371	1,750	342	19,792
Cause Undetermined After Investigation	1,621	10,635	1,208	3,500	3,239	3,293	666	24,162
Investigation Backlog (Under Inv. + Undetermined)	2,676	21,581	2,193	5,843	5,610	5,043	1,008	43,954

Arson and Incendiary Fire Profile by MABAS Region

The regional arson and incendiary fire profile reveals a distribution pattern that amplifies and geographically specifies the statewide arson findings documented earlier in this

assessment while adding an investigation capacity dimension that is among the most consequential data findings in the entire regional analysis series. Total confirmed arson and incendiary fires across the statewide regional dataset reach 11,806 events, with the South-Central region leading at 2,984 incidents and the South region following at 2,134, together accounting for 43.3 percent of all confirmed arson activity despite representing only 24.1 percent of total statewide incident volume, a disproportionality consistent with and confirming the share-of-statewide-total analysis presented earlier. The NW Suburbs region at 3,473 confirmed arson events leads in absolute count, reflecting its overall incident volume dominance, but its 29.4 percent share of statewide arson is substantially below its 44.1 percent share of total incidents, confirming that arson intensity relative to overall fire activity is dramatically higher in the southern regions than in the metropolitan core. The structure arson subcategory, representing the highest consequence arson type given its direct life safety and property loss implications, follows the same geographic pattern with the South Central region at 809 structure arson events and the South region at 570 together accounting for 50.6 percent of all statewide structure arson from regions generating 24.1 percent of total incident volume, a concentration ratio that establishes structure arson in southern Illinois as a regional emergency rather than a distributed statewide challenge. Non-structure arson, encompassing vehicle, outdoor, and rubbish arson events, follows a similar pattern with the South Central and South regions together at 3,739 events or 41.1 percent of the 9,094 statewide non-structure arson total, confirming that the arson concentration in those regions extends across all fire type categories rather than being limited to a specific incident type.

The investigation backlog data, combining causes under investigation and causes undetermined after investigation into a composite measure of fire cause resolution capacity, produces what is arguably the most operationally significant finding in the MABAS regional analysis and one that has direct implications for both the accuracy of the arson dataset and the fire investigation infrastructure capacity of Illinois fire departments and law enforcement agencies. The total investigation backlog of 43,954 incidents across the statewide regional dataset, encompassing 19,792 causes still under investigation and 24,162 causes that remained undetermined after investigation was completed, dwarfs the 11,806 confirmed arson total by a ratio of 3.7 to one. This means that for every confirmed arson event in the regional dataset, there are 3.7 additional incidents whose cause was either unresolved or unresolvable through the investigation resources available to the reporting jurisdiction, a finding that almost certainly means the true arson total is substantially higher than the confirmed figure and that the geographic concentration of arson in the South and South Central regions is itself understated by the limitations of investigation capacity in those regions. The NW Suburbs region carries the largest absolute

investigation backlog at 21,581 incidents, reflecting both its overall incident volume and the investigative complexity of the metropolitan fire environment, but its backlog ratio of 6.2 unresolved incidents per confirmed arson event is actually higher than several downstate regions, suggesting that metropolitan investigation resources are not keeping pace with metropolitan incident volume despite the stronger institutional capacity of the region's fire service organizations.

The structure versus non-structure arson ratio carries operational and community risk implications that are distinct across regions and that illuminate different dimensions of the arson problem in each geography. Statewide, non-structure arson at 9,094 events accounts for 77.0 percent of all confirmed arson, with structure arson at 2,712 events representing the remaining 23.0 percent. The South-Central region presents a structure arson share of 27.1 percent, the highest in the dataset, meaning that a larger proportion of its arson activity is directed at buildings rather than vehicles, outdoor areas, and rubbish, a pattern consistent with the building vacancy and disinvestment conditions that produce the highest structure arson concentrations documented in the statewide building status analysis. The South region at 26.7 percent structure arson share closely mirrors the South-Central pattern. In contrast, the NW Suburbs region at 18.5 percent structure arson share and the Northwest region at 19.2 percent present lower structure arson proportions, reflecting a different arson environment in which vehicle and outdoor fires constitute a larger share of intentionally set fire activity. The East Central region at 23.7 percent and the West Central region at 14.2 percent complete the regional range, with the West Central's low structure arson share reflecting the rural character of a region where building vacancy is less concentrated and outdoor arson in agricultural settings is a more common pattern than in the urban and post-industrial geographies of the South and South-Central regions.

For CRR program design and statewide fire investigation infrastructure investment, the arson and investigation backlog data establishes a dual imperative that operates simultaneously on the prevention and the institutional capacity dimensions of the arson challenge. The prevention dimension, addressed through community investment, blight remediation, vacant property programs, and the multi-agency arson prevention partnerships documented in the statewide arson analysis, is most urgently needed in the South and South-Central regions where confirmed arson rates are most disproportionate to incident volume and where structure arson concentrations are highest. The institutional capacity dimension, addressed through fire investigation staffing, regional investigation task force development, prosecutor coordination, and the data infrastructure that supports cause determination at scale, is most urgently needed in the regions with the largest absolute investigation backlogs and the highest backlog-to-confirmed-arson ratios, which the NW Suburbs, SW Suburbs, South, and South Central regions all present in different

but equally significant ways. The 43,954 incident investigation backlog represents not merely an administrative challenge but a genuine public safety gap, as the unresolved causes within that backlog include an unknown but statistically significant number of intentionally set fires that were never identified as arson, never prosecuted, and never incorporated into the geographic and behavioral intelligence that effective arson prevention and deterrence programs require. Addressing that gap through investment in regional fire investigation capacity is as directly a community risk reduction intervention as any smoke alarm installation program, and its inclusion in the Illinois statewide CRR investment framework is both analytically justified and programmatically essential.

Arson / Incendiary Incidents by Region × Department Type

MABAS Region	Career	Mostly career	Mostly volunteer	Volunteer	Total
East Central	377	29	57	528	991
NW Suburbs	2,329	357	559	228	3,473
Northwest	209	143	107	280	739
SW Suburbs	624	203	240	73	1,140
South	627	198	583	726	2,134
South Central	1,849	238	207	690	2,984
West Central	134	0	18	193	345
Total	6,149	1,168	1,771	2,718	11,806

Arson and Incendiary Incidents by MABAS Region and Department Type

The cross-tabulation of arson and incendiary fire incidents by MABAS region and department staffing type produces a compound risk matrix that connects the geographic concentration of intentionally set fires with the organizational characteristics of the departments responsible for suppressing, investigating, and ultimately preventing them, and the patterns it reveals are among the most operationally significant in the entire regional analysis series. Career departments handle 6,149 of the 11,806 total confirmed arson incidents, representing 52.1 percent of the statewide regional arson total, a share roughly consistent with career departments' 50.8 percent share of total fire incident volume and suggesting that at the aggregate level, career and volunteer departments encounter arson events in rough proportion to their overall incident activity. However, the regional breakdown dismantles that aggregate equivalence entirely. In the NW Suburbs region, career departments handle 2,329 of 3,473 arson events or 67.1 percent, consistent with the region's 74.4 percent career incident share and reflecting the career-dominated operational environment of the metropolitan core. In the South Central region, career departments handle 1,849 of 2,984 arson events or 62.0 percent despite career departments accounting

for only 36.1 percent of the region's total incident activity, meaning that career departments in South Central Illinois are encountering arson events at a rate nearly double their proportional share of all fire activity, a finding that reflects the geographic concentration of intentionally set fires in the urbanized and post-industrial communities of that region where career departments are most likely to be stationed. The contrast with the East Central and Northwest regions, where volunteer departments handle 528 and 280 arson events respectively representing the largest single staffing category in each region, illustrates that in the most rural geographies, arson response falls predominantly to the volunteer organizations that carry the majority of all fire incident activity in those areas.

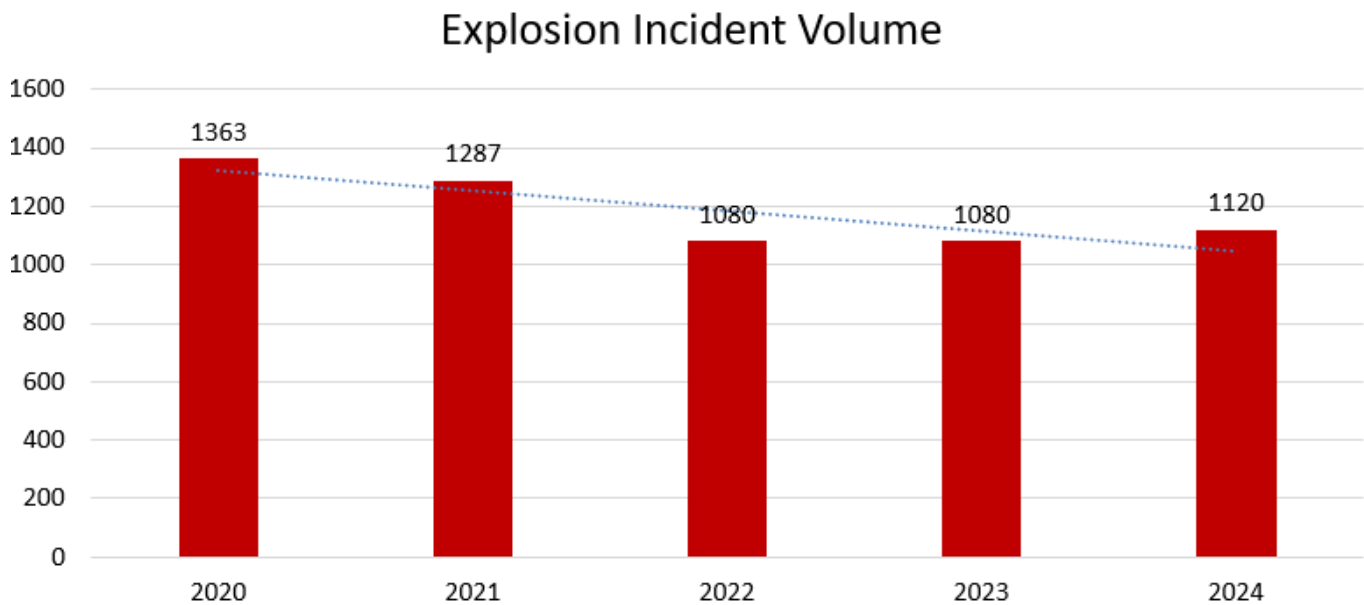
The volunteer department arson burden is the most analytically significant dimension of the cross-tabulation for fire service operational safety and prevention capacity planning. Volunteer departments collectively handle 2,718 arson incidents across the statewide dataset, representing 23.0 percent of all regional arson activity, but the distribution of that burden is highly uneven and concentrated in the regions where volunteer arson exposure carries the greatest operational risk relative to available resources. The South region presents the most acute volunteer arson challenge, with volunteer departments handling 726 arson events or 34.0 percent of the region's 2,134 total arson incidents, a proportion that is substantially higher than the volunteer share of total South region incidents and that places volunteer firefighters in the most hazardous investigative fire environment, vacant and disinvested structures with unknown interior conditions, at rates that exceed those of any other regional volunteer cohort in the dataset. The East Central region's volunteer arson share of 528 events or 53.3 percent of regional arson total is the highest volunteer arson proportion in the dataset and occurs in a region where volunteer departments also handle 56.1 percent of all fire incidents, confirming that East Central Illinois volunteer departments are managing an arson exposure that is fully proportional to their incident share but is occurring without the investigation resources, specialized training, and institutional support that career-staffed arson investigation units in metropolitan regions can bring to bear. The West Central region's volunteer arson total of 193 events from a total regional arson count of 345 represents 55.9 percent of regional arson handled by volunteer departments, the second highest volunteer arson proportion and one occurring in the region with zero mostly career department activity and the highest overall volunteer dependency in the statewide profile.

The mostly volunteer category distribution adds a further operational layer to the arson staffing picture that is particularly significant in the South and SW Suburbs regions. The South region's mostly volunteer departments handle 583 arson incidents, the highest mostly volunteer arson total in the dataset and a figure that exceeds the mostly volunteer arson totals of the NW Suburbs at 559 despite the NW Suburbs region's total arson count

being 62.8 percent higher. This disproportionality confirms that mostly volunteer organizations in the South region are encountering arson events at rates well above their counterparts in more career-dense regions, and that the combination of mostly volunteer and volunteer arson handling in the South region reaches 1,309 events or 61.3 percent of all South region arson, a figure that establishes the fundamental character of southern Illinois arson response as a volunteer fire service challenge rather than a career fire service challenge. The SW Suburbs region's mostly volunteer arson share of 240 events representing 21.1 percent of regional arson reflects the transition-zone character of that region's combination departments, which are handling arson events in a suburban environment with higher building density and greater property value exposure than the rural mostly volunteer departments of the South and East Central regions, creating a distinct operational risk profile that requires targeted training and investigation support resources calibrated to the suburban combination department context.

For statewide CRR program design and fire investigation infrastructure investment, the arson by region and department type cross-tabulation establishes the most specific and actionable targeting framework in the regional analysis series. The finding that volunteer and mostly volunteer departments collectively handle 4,489 of 11,806 confirmed arson events, or 38.0 percent of the statewide total, from organizations that by definition lack the dedicated arson investigation capacity, specialized suppression training for incendiary fire environments, and interagency prosecution coordination infrastructure of career departments, represents a systemic gap in the Illinois fire investigation and arson prevention framework that cannot be addressed through departmental-level solutions alone and requires a statewide regional investigation capacity investment. The development of regional arson investigation task forces covering the South, South Central, East Central, and West Central regions, modeled on the interagency investigation partnerships that exist in the metropolitan areas, would directly address the investigation backlog documented in the preceding analysis while building the prosecutorial deterrence infrastructure that is essential for any sustained reduction in intentionally set fire frequency. The prevention dimension of the arson challenge in volunteer-dependent regions requires equal investment, as the community disinvestment, building vacancy, and population distress conditions driving the South and South Central arson concentrations are not conditions that fire service organizations alone can remediate, and the multi-agency, community development approach that the Illinois CRR framework is specifically designed to facilitate must be directed with urgency toward the geographies where the intersection of high arson rates, volunteer-dependent response, and high investigation backlog creates the most acute and the most structurally embedded arson risk environment in the statewide profile.

Explosion Incident Detail (200 Series)



Explosion Incident Volume

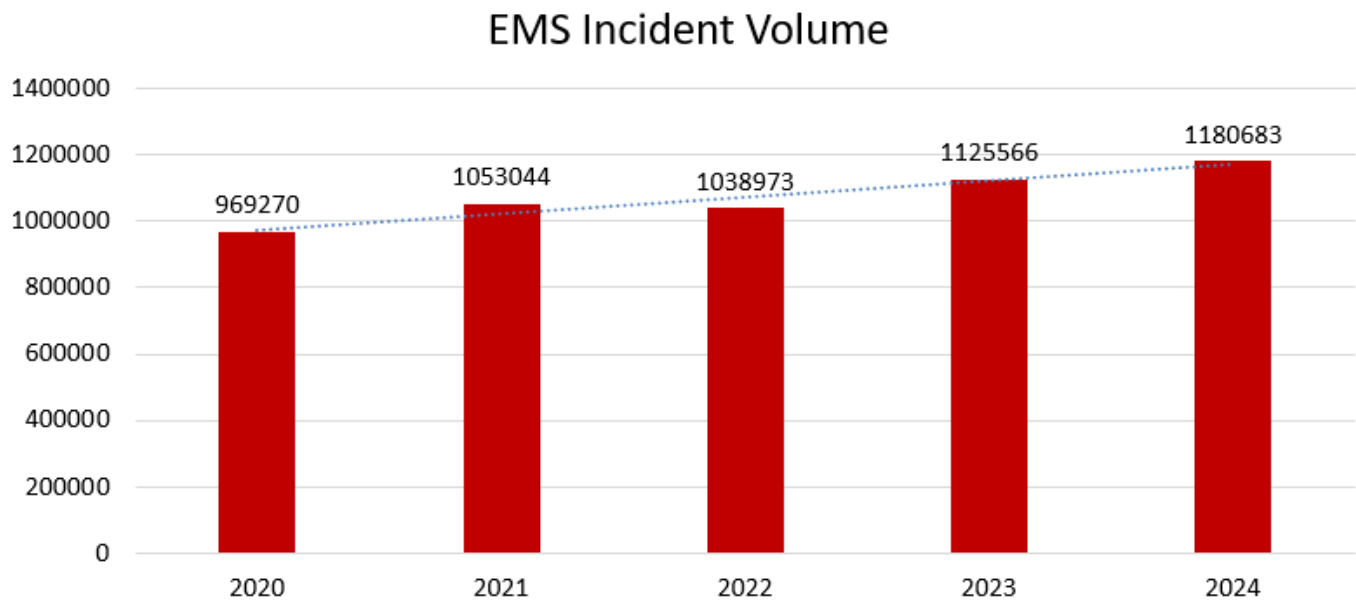
Explosion incidents recorded under NFIRS Category 2 represent the smallest share of total incident volume among all nine categories, accounting for fewer than 1,400 incidents in the highest year of the study period and declining to a five-year low of 1,080 incidents in both 2022 and 2023 before a modest recovery to 1,120 in 2024. The overall trajectory across the period is decisively downward, with volume falling from 1,363 incidents in 2020 to the 2022 plateau, a decline of 20.8 percent over three years. The 5.6 percent contraction between 2020 and 2021 accelerated to a 16.1 percent single-year drop between 2021 and 2022, after which volume stabilized completely before the slight uptick of 3.7 percent recorded in 2024. The net five-year decline of 17.8 percent, from 1,363 to 1,120, places Category 2 among the few incident categories that contracted meaningfully across the study period rather than following the broadly upward statewide trend.

The downward trend in explosion incidents likely reflects a combination of factors including improvements in natural gas infrastructure integrity, more widespread adoption of residential and commercial overpressure safety equipment, and the general decline in industrial activity in sectors historically associated with explosion risk. The 2020 baseline may also carry some pandemic-era influence, as reduced commercial and industrial operations in that year could have produced an atypically elevated proportion of certain explosion subtypes relative to the years that followed. The complete stabilization of volume between 2022 and 2023, with identical counts in both years, is a statistical anomaly worth noting and may reflect a reporting artifact or a genuine equilibrium in the underlying risk environment rather than a meaningful trend signal.

Despite their relatively low volume, explosion incidents carry disproportionate potential for mass casualty outcomes, structural collapse, and secondary fire ignition, making their continued monitoring and prevention an important component of statewide hazard analysis even when the aggregate numbers are small. The geographic and occupancy distribution of explosion incidents within the category-level data provides the more operationally useful picture for departments assessing localized risk, particularly in communities with aging natural gas distribution infrastructure, significant industrial or agricultural chemical storage, or high concentrations of older multi-family residential buildings where appliance-related explosion risk is elevated.

For CRR program design, the declining trend in explosion incidents suggests that existing prevention mechanisms, including utility safety programs, building code enforcement, and public education around gas leak response, are producing measurable results at the population level. The priority for statewide CRR investment in this category is sustaining and reinforcing those mechanisms rather than responding to an escalating risk profile, with particular attention directed toward jurisdictions and occupancy types where the explosion risk profile deviates from the statewide downward trend. Coordination with natural gas utilities, industrial facility operators, and local building inspection programs represents the most productive pathway for maintaining the progress this data reflects.

EMS Incident Detail (300 Series)



EMS Incident Volume

Emergency Medical Services incidents recorded under NFIRS Category 3 represent the dominant force shaping Illinois fire department workload across the entire five-year study period, accounting for approximately 67 percent of all incidents statewide in each year from 2020 through 2024. Volume grew from 969,270 incidents in 2020 to a five-year high of 1,180,683 in 2024, a net increase of 211,413 incidents representing cumulative growth of 21.8 percent across the period. The year-over-year trajectory reflects a pattern of strong initial growth, modest contraction, and then sustained acceleration. EMS volume increased 8.6 percent between 2020 and 2021, reaching 1,053,044, before contracting by 1.3 percent to 1,038,973 in 2022, the only year in which EMS volume declined. Growth resumed decisively in 2023 with an 8.3 percent single-year increase to 1,125,566, followed by a further 4.9 percent increase to the 2024 peak. The trendline across the full period is unmistakably upward, and the acceleration visible in the final two years of the study period suggests that EMS demand has not reached an equilibrium point but is instead continuing to build on an already substantial base.

The scale of EMS demand relative to all other incident categories places it in a category of its own when assessing the operational reality of Illinois fire departments. The more than 1.1 million EMS incidents recorded annually in recent years mean that Illinois fire departments collectively respond to an average of more than 3,000 EMS calls per day across the state, a volume that shapes staffing decisions, apparatus deployment, mutual aid utilization, and personnel health outcomes in ways that no other single incident category approaches. The drivers of this demand are structural and demographic rather than

episodic, rooted in the continued aging of the Illinois population, the expansion of fire-based EMS into communities that previously lacked adequate emergency medical coverage, the increasing complexity of chronic disease management among older adults, the persistent role of the fire service as a safety net provider in communities with limited access to primary care, and the behavioral health and substance use crises that have added a significant and growing dimension to EMS call volume in both urban and rural jurisdictions statewide.

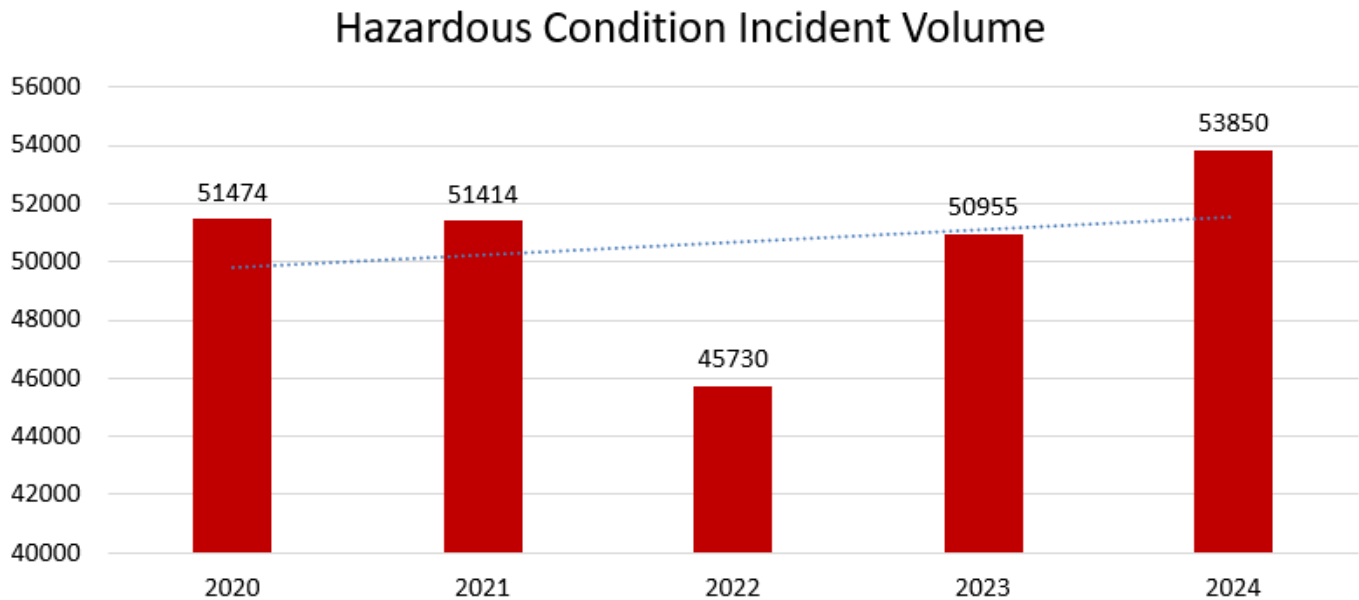
The modest 2022 contraction visible in the data is consistent with patterns observed nationally as the direct healthcare disruptions of the pandemic period normalized and certain categories of EMS demand, particularly those associated with COVID-19 complications, receded from their peak. The subsequent resumption of strong growth in 2023 and 2024 confirms that the underlying structural drivers of EMS demand remained fully intact and that the 2022 dip represented a temporary moderation rather than any meaningful change in trajectory. Looking forward, the demographic composition of Illinois strongly suggests that EMS volume will continue to grow as the proportion of residents aged 65 and older increases, a cohort that utilizes emergency medical services at substantially higher rates than younger age groups and that is projected to represent a growing share of the state's population through at least 2040.

It is important to acknowledge that while NFIRS provides a valuable and consistent framework for tracking EMS incident volume at the categorical level across all reporting jurisdictions, the depth of clinical and operational detail available through NFIRS alone is limited. The National Emergency Medical Services Information System, known as NEMSIS, captures a significantly richer set of data elements for each EMS response, including patient demographics, chief complaint, clinical intervention, disposition, transport destination, and response time, that would materially enhance the analytical picture presented here. Integration of NEMSIS data into future iterations of this assessment would allow for a far more granular examination of EMS demand patterns, including the identification of the specific medical conditions and patient populations driving the highest call volumes, the geographic distribution of response time performance relative to acuity, and the degree to which repeat utilization by a relatively small number of high-frequency users is contributing to aggregate volume growth. The Illinois Department of Public Health maintains NEMSIS-compliant data through the Illinois Emergency Medical Services Reporting System, and future collaboration between the fire service and EMS regulatory communities to align NFIRS and NEMSIS analytical frameworks would represent a meaningful advancement in the state's capacity to understand and strategically address EMS demand.

For CRR program design, the sustained growth in EMS volume and the structural forces driving it together establish emergency medical services demand management as the highest-priority area for prevention investment in Illinois. Community paramedicine programs that provide proactive outreach, care coordination, and chronic disease management support to high-frequency EMS users have demonstrated measurable reductions in repeat utilization in jurisdictions across the country and represent a high-return investment for Illinois communities where fire departments have the capacity to develop or participate in such programs. Fall prevention initiatives targeting older adults represent another critical intervention given that fall-related EMS calls are among the most frequent and fastest-growing subtypes within the category. Mobile integrated health partnerships with hospitals, federally qualified health centers, and behavioral health providers offer a pathway for addressing the social determinants of health that drive a significant share of preventable EMS utilization. Taken together, these strategies reflect the recognition that the most impactful response to the EMS demand curve this data describes is one that pairs a strong and well-resourced response capability with an equally committed investment in the community health infrastructure that shapes how often that capability is needed.

Note: Emergency Medical Services incident data was not available from the state data warehouse in time for inclusion in this edition of the assessment. This section will be updated in a subsequent revision to provide the comprehensive EMS analysis that the statewide risk profile requires, in partnership with the Illinois Department of Public Health.

Hazardous Condition Incident Detail (400 Series)



Hazardous Condition Incident Volume

Hazardous condition incidents recorded under NFIRS Category 4 present a distinctive V-shaped trend across the five-year study period, opening with relative stability before a pronounced mid-period contraction and a strong recovery that carried volume to a five-year high by 2024. Illinois fire departments responded to 51,474 hazardous condition incidents in 2020, a figure that held nearly flat through 2021 at 51,414, representing a negligible decline of just 0.1 percent. Volume then dropped sharply in 2022 to 45,730, a single-year contraction of 11.1 percent that represents the most significant year-over-year decline of any category across the full study period in proportional terms. Recovery began in 2023 with a return to 50,955 incidents, an 11.4 percent rebound that nearly erased the prior year's losses, before volume climbed further to 53,850 in 2024, a 5.7 percent increase that established a new five-year peak and left the category with a net gain of 4.6 percent above its 2020 baseline. The overall trendline, despite the dramatic 2022 interruption, is modestly upward across the full period.

The sharp 2022 contraction warrants careful interpretation. Hazardous condition incidents encompass a broad range of response types including fuel spills, natural gas leaks, chemical releases, electrical hazards, and carbon monoxide events, and a single-year decline of this magnitude is unlikely to reflect a genuine reduction in underlying risk across all of those subtypes simultaneously. More probable explanations include reporting anomalies, changes in how certain incident types were coded by departments transitioning

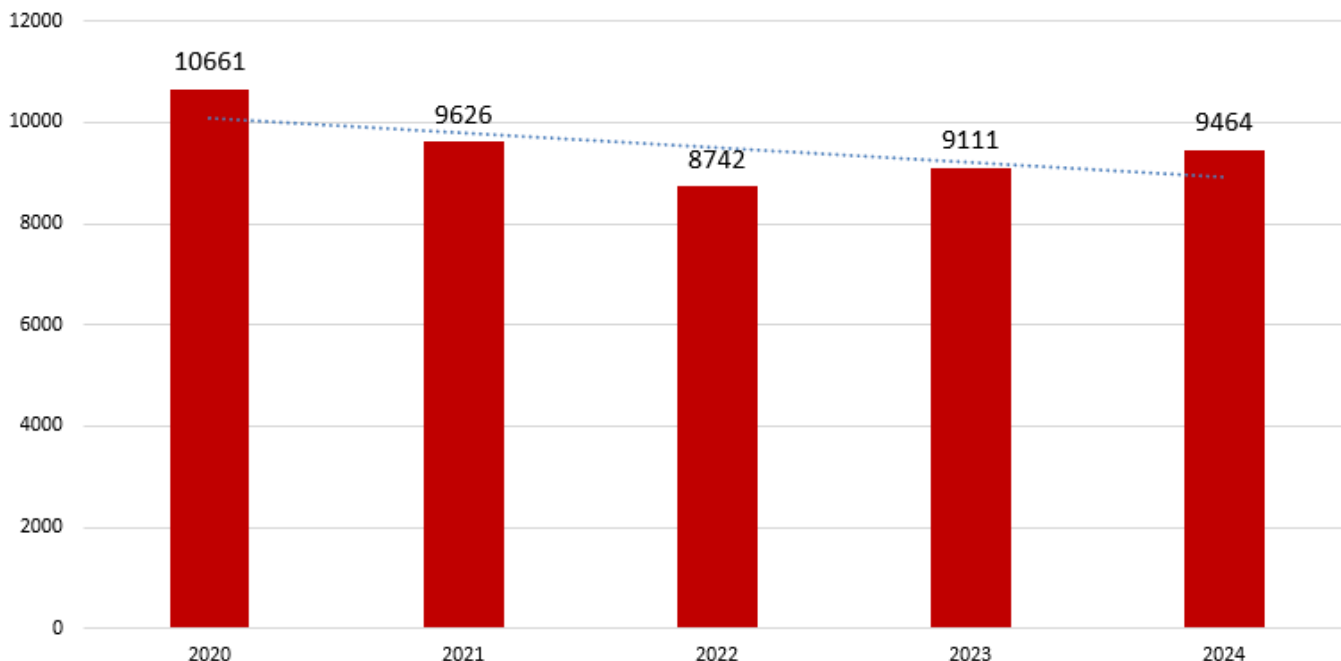
between records management systems, or the temporary suppression of certain commercial and industrial activity patterns that generate hazardous condition calls. The fact that volume rebounded with nearly identical magnitude in 2023 as it declined in 2022 is consistent with a reporting or classification disruption rather than a true risk environment shift, and the 2024 peak further reinforces the interpretation that the 2022 figure represents an outlier rather than a trend inflection.

Hazardous condition incidents, while representing a relatively modest share of total statewide volume, carry a risk profile that is disproportionate to their frequency. Fuel spills and chemical releases carry environmental contamination consequences that extend well beyond the immediate incident, gas leaks in residential and commercial structures present potential for catastrophic escalation if not detected and mitigated promptly, and electrical hazards represent a significant ignition pathway for structure fires that may be reported initially as hazardous conditions before transitioning to fire incidents. The growing complexity of the built environment, including the increasing prevalence of solar energy systems, electric vehicle charging infrastructure, and lithium-ion battery storage, is introducing new hazardous condition subtypes that many departments are encountering with increasing frequency and for which existing response protocols and training curricula may not yet be fully adapted.

For CRR program design, the net upward trend in hazardous condition incidents and the emerging complexity of new hazard types together support investment in several targeted prevention strategies. Public education initiatives addressing residential natural gas and carbon monoxide safety, proper fuel storage practices, and the recognition and reporting of chemical hazard indicators represent accessible, high-impact interventions for reducing the most common subtypes within this category. Engagement with the transportation, utility, and industrial sectors on spill prevention, infrastructure maintenance, and hazard reporting protocols can address the commercial drivers of hazardous condition demand.

Departments experiencing growth in electric vehicle and alternative energy-related incidents should be supported with both training resources and community education materials that reflect the evolving hazard landscape, ensuring that prevention programming keeps pace with the technological changes reshaping the risk environment in Illinois communities.

Carbon Monoxide Incident Volume



Carbon Monoxide Incident Volume

Carbon monoxide incidents reported under NFIRS code 424 represent one of the most consequential subcategories within the broader hazardous conditions classification, carrying a life safety risk profile that is uniquely severe given the colorless, odorless nature of the hazard and the speed with which exposure can produce incapacitation or death. Statewide CO incident volume followed a generally downward trajectory across the five-year study period, declining from a high of 10,661 incidents in 2020 to a low of 8,742 in 2022, a cumulative two-year drop of 18.0 percent. A modest recovery began in 2023, when volume increased 4.2 percent to 9,111, and continued into 2024 with a further 3.9 percent increase to 9,464. Despite this partial rebound, the 2024 figure remains 11.2 percent below the 2020 baseline, and the overall trendline across the period is clearly downward, suggesting that the net direction of CO incident demand is moving in a favorable direction even as the most recent years show a stabilizing plateau rather than continued decline.

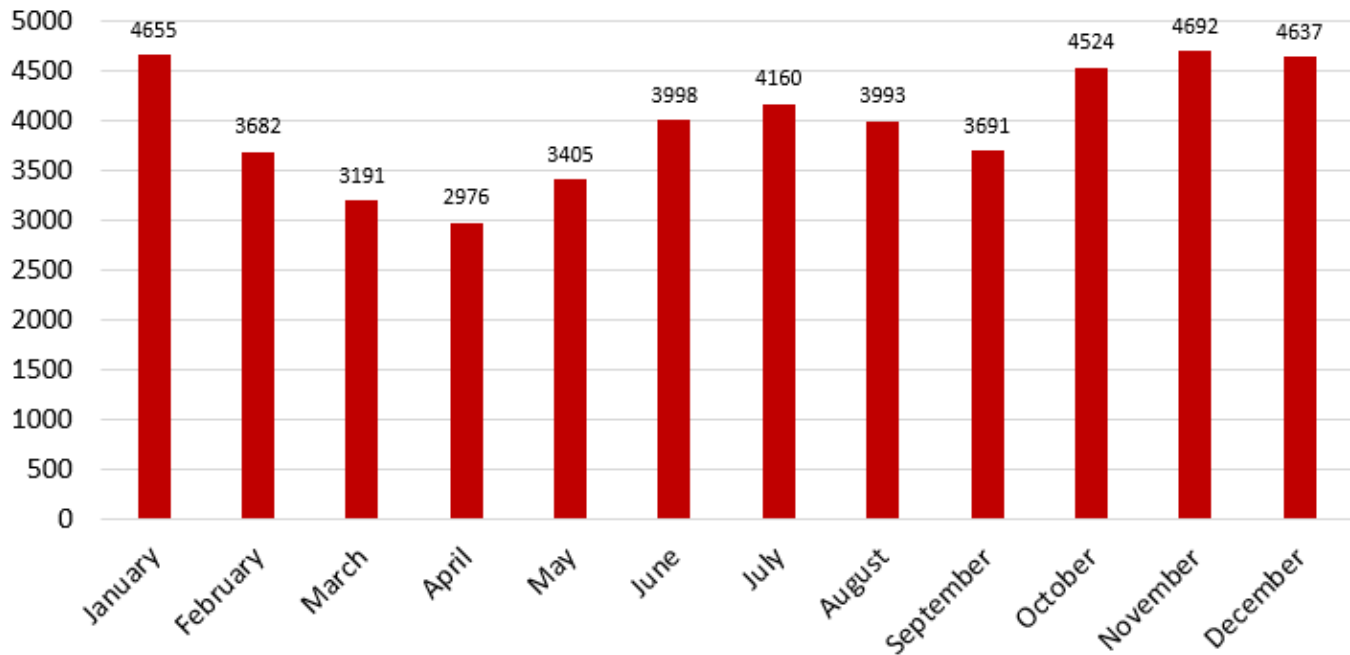
The elevated 2020 baseline warrants contextual consideration. The pandemic period produced significant changes in residential occupancy patterns, with a much larger share of the population spending extended time at home due to remote work arrangements, school closures, and general movement restrictions. Increased residential occupancy amplifies exposure to CO sources including furnaces, water heaters, gas appliances, and portable generators, and the 2020 peak is consistent with the hypothesis that elevated at-home presence contributed to higher detection and alarm activation rates in that year. The subsequent decline as occupancy patterns normalized through 2021 and 2022 supports this

interpretation, though the concurrent improvement in detector technology adoption and public awareness of CO risks likely also contributed to the downward trend by enabling earlier detection at lower exposure thresholds, which paradoxically can increase incident counts even as serious exposure outcomes decrease.

The partial recovery visible in 2023 and 2024 deserves monitoring rather than alarm. Carbon monoxide incidents are highly sensitive to seasonal heating patterns, the age and maintenance status of combustion appliances, and the condition of residential ventilation systems, all of which are subject to year-over-year variation independent of any underlying trend in risk. The stabilization of volume in the 9,000 to 9,500 range across the two most recent years may reflect a new equilibrium in the risk environment as the pandemic-era occupancy effects have fully dissipated. However, the aging housing stock in many Illinois communities, combined with the financial barriers that prevent lower-income households from replacing or properly maintaining aging combustion appliances, ensures that CO risk will remain a persistent and geographically concentrated challenge regardless of the aggregate statewide trend.

For CRR program design, the declining but stabilizing CO incident trend supports a prevention strategy focused on sustaining the progress achieved while targeting the specific populations and geographies where risk remains disproportionately concentrated. CO detector distribution programs directed at older housing stock neighborhoods, low-income households, and rental properties where landlord compliance with detector requirements is inconsistent represent the highest-return prevention investments within this category. Coordination with utility companies and home weatherization programs to incorporate combustion appliance safety checks into routine service visits offers a cost-effective pathway for identifying and addressing the deteriorating equipment conditions that generate the majority of CO incidents. Public education campaigns emphasizing seasonal furnace maintenance, the dangers of portable generator use indoors during power outages, and the proper installation and testing of CO detectors should be sustained as year-round messaging rather than reserved for the heating season alone, given that the monthly distribution of CO incidents across the study period reflects year-round risk rather than a purely cold-weather phenomenon.

Carbon Monoxide Incidents By Month



Carbon Monoxide Incidents by Month

The monthly distribution of carbon monoxide incidents aggregated across the five-year study period reveals a bimodal seasonal pattern that carries important implications for prevention program timing and resource deployment. January records the highest single-month total at 4,655 incidents, followed closely by November at 4,692, December at 4,637, and October at 4,524, confirming that the heating season from October through January represents the period of greatest CO incident concentration statewide. April records the lowest monthly total at 2,976 incidents, with March at 3,191 representing the second quietest month, reflecting the transition out of the heating season as the primary driver of residential combustion appliance activity. The range between the highest month, November at 4,692, and the lowest, April at 2,976, represents a difference of 1,716 incidents, or 57.7 percent above the April baseline, underscoring the substantial seasonal amplitude in CO incident demand.

What makes this distribution analytically distinctive, however, is the presence of a clear secondary peak during the summer months that disrupts what might otherwise be expected as a simple cold-weather concentration pattern. June records 3,998 incidents, July 4,160, and August 3,993, figures that are substantially higher than the spring months on either side of the summer window and that approach the lower end of the heating season range. This summer elevation is consistent with patterns observed nationally and is attributable to a combination of factors including increased use of portable generators during summer storm-related power outages, charcoal and gas grill use in enclosed or semi-enclosed

spaces, and the operation of gasoline-powered equipment in residential settings during warm-weather months. The July figure of 4,160 is particularly notable, exceeding October's 4,524 by a smaller margin than the calendar distance between those months would suggest and indicating that summer CO risk in Illinois is a genuine and sustained hazard rather than an occasional spike.

The bimodal distribution has direct implications for how prevention resources should be sequenced and deployed across the calendar year. A prevention strategy that concentrates CO safety messaging and detector distribution efforts exclusively in the fall and early winter heating season preparation window, while common in many jurisdictions, would miss a meaningful portion of the annual incident load generated during summer months. The September figure of 3,691 incidents, occurring in a transitional month between the summer peak and the onset of the heating season, suggests that CO risk is present at elevated levels for the majority of the calendar year with only the March through May window offering a genuine low-demand period.

For CRR program design, the monthly distribution supports a year-round prevention calendar rather than a seasonally bounded one. Heating season outreach should be anchored in October and maintained through January, targeting furnace maintenance, combustion appliance inspection, and detector testing as households activate heating systems for the first time following the warmer months. A parallel summer safety campaign should address generator safety, outdoor cooking equipment use, and the hazards of operating fuel-powered equipment in garages or near open windows, with messaging concentrated in the May through August period when the secondary peak is building. Detector distribution and home safety visit programs should prioritize the ZIP codes identified in the geographic analysis as carrying the highest CO incident concentrations, ensuring that the households at greatest statistical risk are reached with prevention resources before both seasonal peaks rather than after them.

Top 25 Zip Codes for CO Incidents

Rank	Zip Code	Total CO Incidents (2020-2024)
1	60628	844
2	60617	831
3	60619	824
4	60620	775
5	60644	774
6	60649	637
7	60657	590

8	60643	580
9	60637	562
10	60614	538
11	60629	519
12	60647	503
13	60411	495
14	60651	475
15	60622	450
16	60653	430
17	60618	423
18	60612	390
19	60409	384
20	60640	371
21	60402	295
22	60623	258
23	60615	230
24	60624	210
25	60419	196

Carbon Monoxide Incidents by ZIP Code: Top 25 Statewide

The geographic concentration of carbon monoxide incidents across the five-year study period is striking in its consistency, with the top 25 ZIP codes accounting for a substantial share of all statewide CO demand and revealing a pattern of risk that is anchored almost exclusively in the Chicago metropolitan area. ZIP code 60628, encompassing the Roseland and Pullman neighborhoods on Chicago's far south side, leads the statewide ranking with 844 total incidents across the period, followed closely by 60617 in the South Chicago and Calumet Heights area at 831 and 60619 in the Chatham and Avalon Park neighborhoods at 824. The top three ZIP codes are separated by fewer than 21 incidents over five years, indicating an essentially equivalent and persistently elevated risk environment across a contiguous cluster of south and southwest side Chicago communities. The top ten ZIP codes alone account for a combined total of 6,730 incidents across the period, and all ten are located within the City of Chicago or its immediately adjacent suburbs.

The geographic pattern embedded in this ranking reflects the intersection of housing age, income, and infrastructure maintenance that defines CO risk at the community level. The ZIP codes dominating the top of this list share several structural characteristics, including high concentrations of pre-1960 housing stock with aging combustion heating systems, elevated rates of renter-occupied units where landlord responsibility for appliance maintenance and detector compliance is inconsistently enforced, and household income

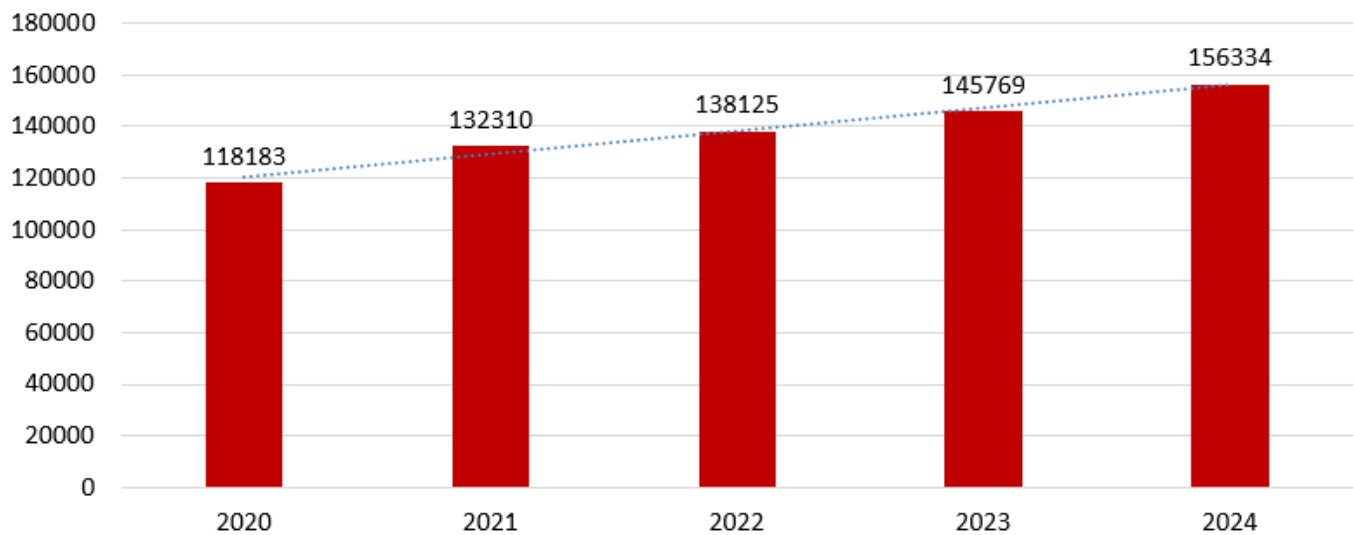
levels that limit the capacity of residents to replace deteriorating furnaces, water heaters, and gas appliances on a proactive maintenance schedule. The south and southwest side Chicago communities that cluster at the top of this ranking have been documented in multiple public health analyses as carrying disproportionate environmental and housing quality burdens, and the CO incident data presented here is consistent with and reinforces those findings. The presence of suburban ZIP codes including 60411 in Chicago Heights and 60409 in Calumet City in the top fifteen reflects the extension of similar housing stock and demographic conditions into the south suburban corridor immediately adjacent to the city.

The stability of the geographic pattern across all five years of the study period is as analytically significant as the ranking itself. ZIP codes that appear at the top of the 2020 annual ranking are largely the same ones appearing at the top of the 2024 ranking, indicating that the conditions producing elevated CO incident volume in these communities are structural and persistent rather than episodic or randomly distributed. This stability has a direct implication for prevention program design, confirming that CO risk in Illinois is not a diffuse statewide problem requiring a uniform broad-based response but rather a geographically concentrated challenge that can be addressed with targeted, place-based interventions directed at a defined set of high-risk communities. The concentration of risk in a relatively small number of ZIP codes also means that prevention resources deployed in those communities will produce a disproportionate return on investment relative to resources distributed uniformly across the state.

For CRR program design, the ZIP code ranking provides the targeting framework for a focused CO prevention initiative that could measurably reduce statewide incident volume within a relatively short timeframe. The top 25 ZIP codes identified here should be designated as priority intervention geographies for CO detector distribution programs, with particular emphasis on rental housing stock where tenant turnover limits the persistence of any individual household's detector coverage. Partnership with the Chicago Fire Department and the south suburban departments serving the highest-volume ZIP codes should form the operational backbone of a coordinated prevention effort, supplemented by engagement with community development organizations, public housing authorities, and weatherization assistance programs already active in these neighborhoods. Home safety visit programs that combine detector installation with combustion appliance assessment and referral to utility assistance programs for households with deteriorating heating equipment represent the most comprehensive and durable intervention model the data supports, addressing both the detection gap and the underlying equipment conditions that generate the incidents this ranking reflects.

Service Call Incident Detail (500 Series)

Service Call Incident Volume



Service Call Incident Volume

Service call incidents recorded under NFIRS Category 5 present the most consistently upward trajectory of any category in the five-year study period, with volume increasing in every single year without interruption from 118,183 incidents in 2020 to 156,334 in 2024, a cumulative net increase of 38,151 incidents representing growth of 32.3 percent across the period. The steepest single-year increase occurred between 2020 and 2021, when volume rose 11.9 percent to 132,310, a jump that likely reflects both the normalization of pandemic-suppressed activity and the acceleration of underlying demand drivers that had been building prior to 2020. Growth moderated to 4.4 percent between 2021 and 2022 before reaccelerating to 5.5 percent in 2023 and 7.2 percent in 2024, a pattern suggesting that the rate of growth is itself increasing rather than plateauing, with the final year of the study period recording the second largest absolute single-year increase of the entire period at 10,565 additional incidents.

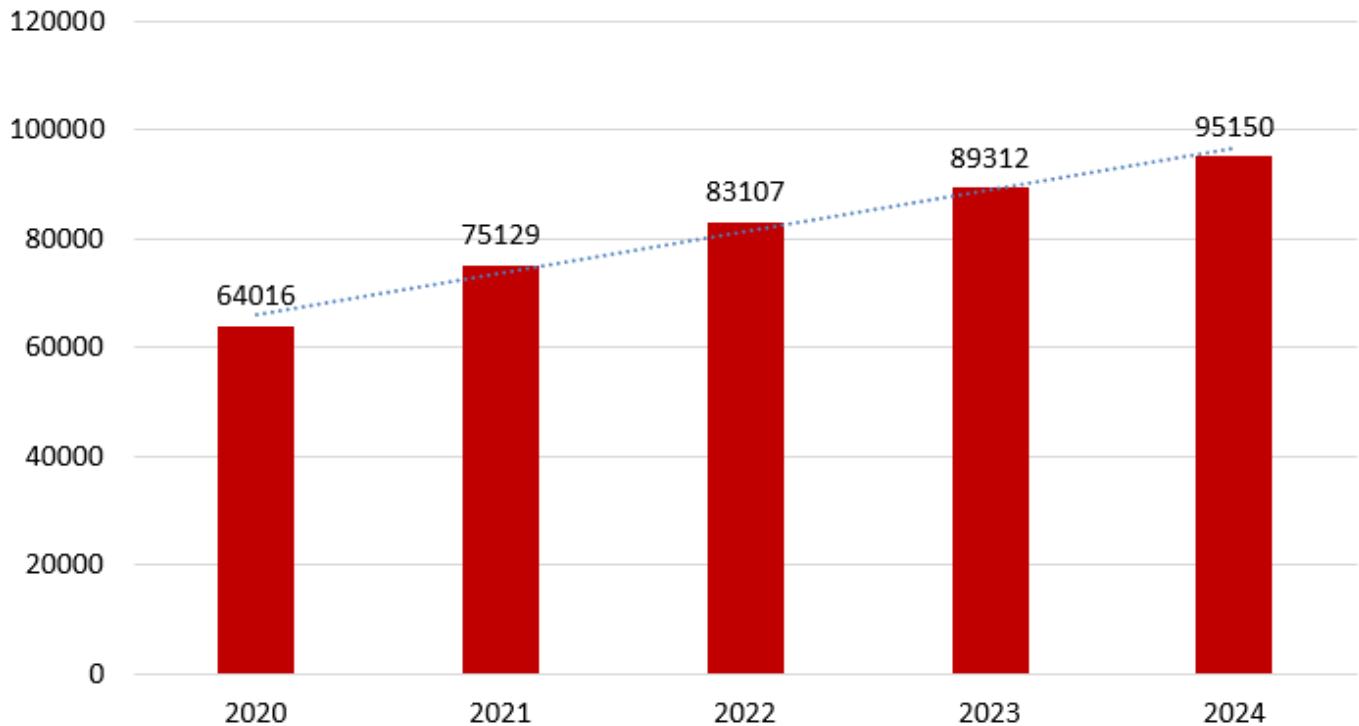
Service calls encompass a broad range of non-emergency assistance responses including water removal, smoke or odor investigations with no fire found, lock-ins and lock-outs, assist to other agencies, and public assistance calls that do not fit neatly into other NFIRS categories. The sustained and accelerating growth in this category reflects a fundamental shift in how communities are utilizing their fire departments, with residents and other agencies increasingly turning to the fire service as a general-purpose community resource capable of addressing a wide range of problems that fall outside the traditional emergency response mission. This expansion of the fire department's functional role is driven by a combination of factors including the 24-hour availability and geographic distribution of

fire stations, growing public familiarity with calling 911 for non-emergency needs, and the erosion of alternative community support infrastructure in many jurisdictions that has left the fire department as the most accessible point of contact for households experiencing a wide range of non-medical, non-fire difficulties.

The unbroken upward trajectory of service call volume across all five years, combined with the acceleration visible in 2024, raises important questions about resource allocation and mission definition within Illinois fire departments. Unlike EMS incidents, which carry a clear life safety imperative, or fire incidents, which represent the department's core suppression mission, service calls occupy an ambiguous space where the appropriate level of fire department involvement is genuinely debatable and where the opportunity cost of response in terms of unit availability for higher-acuity emergencies is real and growing. Departments in communities experiencing the fastest growth in service call demand may benefit from a structured analysis of the specific call types driving their local volume, as the composition of service calls varies considerably between urban, suburban, and rural jurisdictions and the most effective response strategies differ accordingly.

For CRR program design, the sustained growth in service call volume suggests several intervention opportunities that can address demand at its source rather than at the point of response. Community navigation programs that connect residents with appropriate non-emergency resources, including social services, home repair assistance, utility programs, and community health workers, can reduce the proportion of service calls that reach fire department dispatch by addressing the underlying needs that generate them. Targeted outreach in the ZIP codes generating the highest service call concentrations, particularly around the most common specific call types, can help communities develop the local resource awareness necessary to route non-emergency needs appropriately. For departments where water removal and flooding-related service calls represent a significant share of local volume, partnerships with municipal stormwater management programs and home weatherization initiatives offer a structural prevention pathway that addresses the infrastructure conditions producing repeat demand rather than simply responding to each incident as it occurs.

Lift Assist Call Volume



Lift Assist Call Volume

Lift assist incidents reported under NFIRS code 554, encompassing responses to assist individuals who have fallen or are otherwise unable to rise from the floor without assistance, represent one of the fastest-growing and most resource-intensive subcategories within the broader service call classification. Statewide volume grew without interruption across all five years of the study period, rising from 64,016 incidents in 2020 to 95,150 in 2024, a cumulative increase of 31,134 incidents representing growth of 48.6 percent, a rate that substantially exceeds the overall statewide incident growth rate of 21.5 percent and places lift assist among the most rapidly accelerating demand categories in the Illinois fire service. Single-year increases were consistent and substantial throughout the period, with volume rising 17.4 percent between 2020 and 2021, 10.6 percent between 2021 and 2022, 7.5 percent between 2022 and 2023, and 6.5 percent between 2023 and 2024. While the annual growth rate has moderated slightly in the most recent years, the absolute volume added each year remains large and the trendline shows no indication of approaching a plateau.

The operational demands that lift assist incidents place on fire departments are substantially greater than their classification as service calls might suggest. A typical lift assist response requires a minimum of two to four personnel to safely execute the physical lift, and depending on the patient's size, mobility limitations, and the environment in which

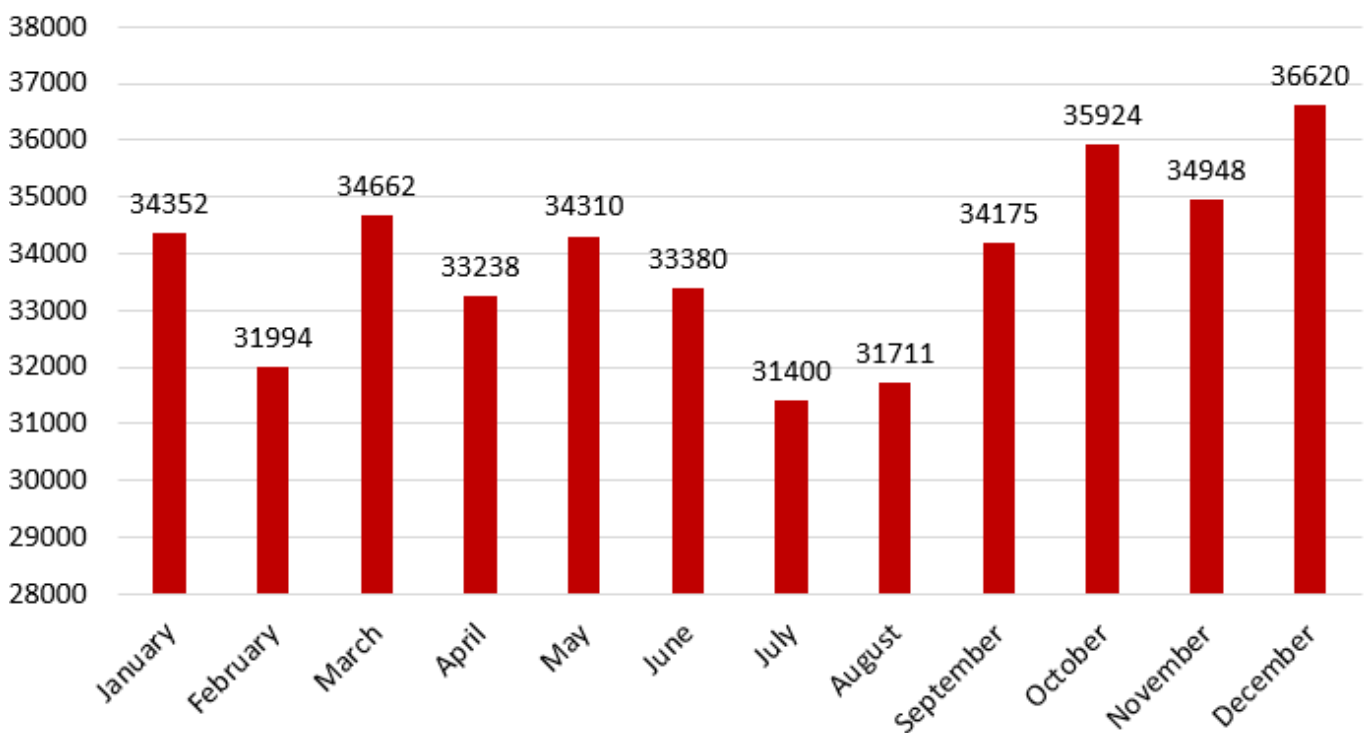
the incident occurs, the response may require specialized lifting equipment, extended scene time, and coordination with EMS units if the patient has sustained injury or requires medical evaluation following the fall. The physical demands of lift assist responses are among the most biomechanically hazardous activities firefighters perform on a routine basis, involving awkward body positioning, sustained exertion in confined spaces, and the management of patients whose weight and limited mobility create significant musculoskeletal strain for responding personnel. Firefighter injuries resulting from lift assist responses, including back injuries, shoulder strains, and soft tissue damage, are well documented in occupational health literature and represent a meaningful contributor to the cumulative physical toll of a fire service career. As lift assist volume approaches and exceeds 95,000 annual incidents statewide, the aggregate injury exposure this category creates for Illinois firefighters is a genuine workforce health and safety concern that deserves explicit recognition in both operational planning and prevention strategy.

The demographic driver behind the growth in lift assist volume is unambiguous. Illinois, in common with virtually every other state, is experiencing rapid growth in its population of adults aged 65 and older, a cohort for which fall risk increases substantially with age and for which the consequences of a fall, including fractures, head injuries, prolonged immobility, and the psychological impact of loss of independence, are significantly more severe than for younger adults. The acceleration of lift assist volume across the study period closely mirrors national demographic projections for older adult population growth, and the trajectory of demand in this category will almost certainly continue upward as the baby boom generation moves deeper into the age ranges associated with the highest fall risk. Many of the incidents captured in this data also reflect repeat utilization patterns, where the same individuals are generating multiple lift assist calls within a given year, indicating that the underlying fall risk factors for those individuals have not been addressed between incidents and that the fire department is functioning as a repeat responder to a chronic and preventable condition rather than as an emergency responder to an acute event.

For CRR program design, lift assist call volume represents one of the clearest and most compelling cases for prevention investment in the entire statewide incident profile. The evidence base for fall prevention programming targeting older adults is among the strongest in the public health literature, with structured exercise programs, home hazard assessment and modification, medication review, and vision correction interventions each demonstrating measurable reductions in fall incidence in randomized controlled trial settings. Fire departments participating in community paramedicine or mobile integrated health programs are particularly well positioned to identify high-frequency lift assist patients and connect them with fall prevention services, home modification assistance, and

primary care follow-up that addresses the underlying conditions driving repeat incidents. Partnerships with Area Agencies on Aging, senior centers, physical therapy providers, and home health agencies can extend the reach of fire department-initiated prevention referrals into the community service infrastructure best equipped to deliver sustained fall risk reduction. Given both the 48.6 percent growth in lift assist volume across the study period and the direct firefighter injury risk this category creates, fall prevention programming should be among the highest-priority CRR investments for Illinois fire departments serving communities with significant older adult populations.

Lift Assist Calls By Month



Lift Assist Calls by Month

The monthly distribution of lift assist incidents aggregated across the five-year study period reveals a pattern that is notably more uniform than the pronounced seasonal concentration observed in carbon monoxide incidents, yet still reflects meaningful variation across the calendar year with a discernible late-year elevation and a mid-summer trough. December records the highest single-month total at 36,620 incidents, followed by October at 35,924 and November at 34,948, establishing the final quarter of the calendar year as the period of greatest lift assist demand statewide. July records the lowest monthly total at 31,400 incidents, with August close behind at 31,711 and February at 31,994, forming a summer and early-winter low period that contrasts with the October through

December peak. The range between the highest month, December at 36,620, and the lowest, July at 31,400, represents a difference of 5,220 incidents, or 16.6 percent above the July baseline, a seasonal amplitude that is meaningful in operational terms but far less dramatic than the swings observed in heating and weather-dependent incident categories.

The relatively even monthly distribution of lift assist calls is consistent with the nature of the underlying risk. Falls among older adults are not primarily a weather-driven phenomenon in the way that carbon monoxide incidents or heating-related emergencies are, and the baseline demand across every month of the year reflects the chronic and persistent character of fall risk as a function of age, mobility limitation, and environmental hazard rather than seasonal conditions alone. The modest late-year elevation observed in October through December is likely attributable to a combination of factors including increased indoor activity as temperatures drop, reduced daylight hours that affect both outdoor mobility and indoor lighting adequacy, and the physical deconditioning that can accompany the transition from warmer to cooler months among older adults with limited outdoor activity. The slight summer suppression in July and August may reflect increased family presence and informal caregiving during vacation periods, which can reduce the frequency with which isolated older adults require fire department assistance, though this interpretation is speculative and would require patient-level data to confirm.

What the monthly distribution most clearly communicates is that lift assist demand is a year-round operational reality for Illinois fire departments rather than a seasonal surge requiring periodic surge capacity. With monthly volumes ranging from a low of approximately 31,400 to a high of 36,620, every month of the year generates more than 31,000 lift assist responses statewide, averaging more than 1,000 incidents per day across the system every day of the year. This sustained baseline of demand means that the biomechanical and physical toll this category places on firefighters, as discussed in the annual volume analysis, is not a seasonal burden but a constant feature of the daily workload that accumulates injury risk across the full calendar year without relief.

For CRR program design, the year-round distribution of lift assist demand reinforces the case for prevention programming that is sustained continuously rather than activated in response to seasonal peaks. Fall prevention outreach, home hazard assessment programs, and referral pathways to community-based fall risk reduction services should operate on a twelve-month basis, with particular attention to maintaining program continuity and participant engagement through the summer months when organizational momentum for seasonal prevention campaigns tends to diminish. The October through December elevation provides a useful annual benchmark for assessing whether prevention investments implemented earlier in the year are producing measurable suppression of the

late-year peak, offering fire departments and program administrators a built-in evaluation window for gauging program effectiveness against a predictable seasonal pattern.

Top 25 Zip Codes for Lift Assist Calls

Rank	Zip Code	Total Lift Assist Calls (2020-2024)
1	60620	11,559
2	60619	10,195
3	60628	9,502
4	60649	8,505
5	60617	8,286
6	60624	7,673
7	60643	7,146
8	60402	6,194
9	60621	6,158
10	60644	5,931
11	60623	5,728
12	60637	5,552
13	60629	4,969
14	60653	4,389
15	60615	4,051
16	60453	3,864
17	60651	3,637
18	60636	3,571
19	60609	3,484
20	60462	2,803
21	60804	2,734
22	60639	2,170
23	60062	2,028
24	60634	1,688
25	60540	1,425

Lift Assist Incidents by ZIP Code: Top 25 Statewide

The geographic distribution of lift assist incidents across the five-year study period reveals a pattern of concentration that is even more pronounced than that observed for carbon monoxide incidents, with the top 25 ZIP codes collectively accounting for a substantial share of statewide demand and the highest-volume jurisdictions generating incident totals that dwarf those at the lower end of the ranking. ZIP code 60620, encompassing the

Auburn Gresham and Ashburn neighborhoods on Chicago's south side, leads the statewide ranking with 11,559 total lift assist incidents across the five-year period, a figure that translates to an average of more than 2,300 incidents per year or approximately 6.3 responses per day from that ZIP code alone. ZIP code 60619 in the Chatham and Avalon Park neighborhoods follows at 10,195 incidents, and 60628 in the Roseland and Pullman area ranks third at 9,502. The top five ZIP codes, all located on Chicago's south and southwest sides, together account for 48,047 incidents across the period, representing a concentration of lift assist demand in a geographically compact area that has significant implications for the fire companies serving those neighborhoods.

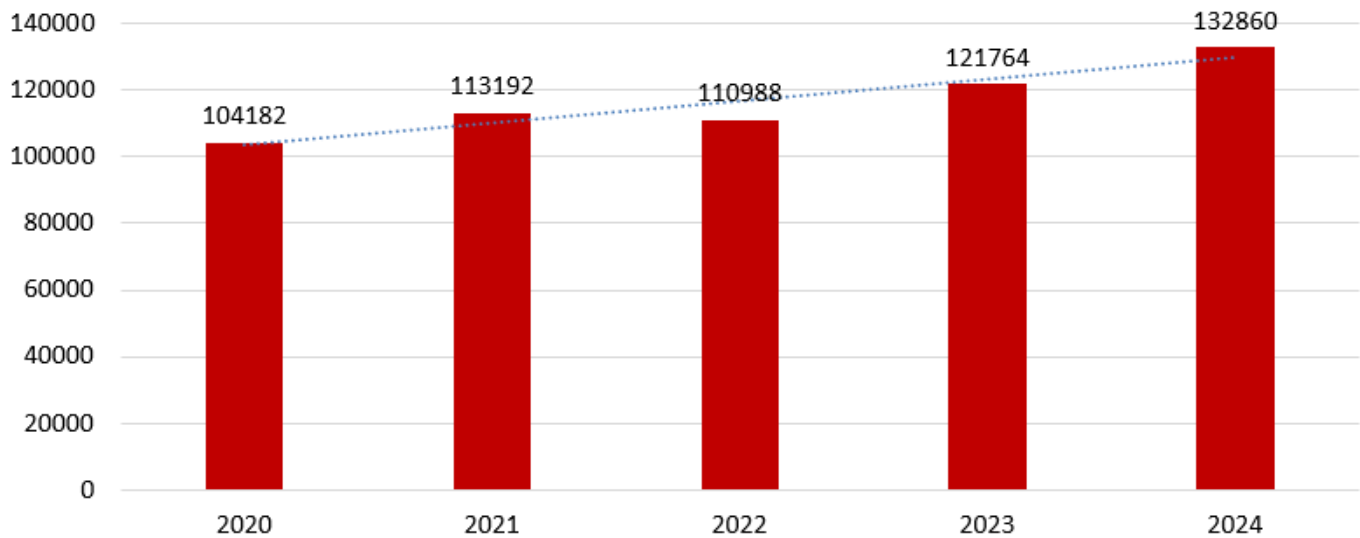
The demographic and socioeconomic profile of the communities dominating this ranking is consistent with the known risk factors for fall-related incidents among older adults. The south and southwest side Chicago neighborhoods that occupy the top tier of this list share high concentrations of older adult residents, significant proportions of older single-family and multi-unit housing stock with physical characteristics that elevate fall risk including uneven flooring, inadequate lighting, and the absence of grab bars and other adaptive equipment, and household income levels that limit access to both preventive home modification and the medical and rehabilitative services that reduce fall recurrence. Many of the ZIP codes in this ranking also have high rates of single-person households among older adults, a living arrangement that is independently associated with elevated fall risk and delayed recognition of injury given the absence of another household member who might observe and respond to a fall before the individual loses the ability to call for help. The presence of south suburban ZIP codes including 60402 in Berwyn and Cicero, 60453 in Oak Lawn, and 60462 in Palos Heights reflects the extension of similar demographic conditions into the suburban communities immediately adjacent to the city's south and southwest boundaries.

The concentration of repeat utilization within the highest-ranking ZIP codes is a critical analytical dimension that the aggregate five-year totals only partially capture. National research on lift assist demand patterns consistently finds that a significant proportion of total incident volume is generated by a relatively small number of individuals who experience multiple lift assist responses within a given year, often without any intervening connection to fall prevention services or medical evaluation. In communities where a single ZIP code is generating more than 2,000 lift assist responses annually, the probability that a substantial share of those responses involve repeat patients is high, and the operational and human cost of that pattern, both to the fire companies responding and to the individuals experiencing repeated falls without effective intervention, argues strongly for a systematic approach to identifying and engaging high-frequency users before the next incident occurs rather than after it.

For CRR program design, the ZIP code ranking provides a precise geographic targeting framework for a lift assist prevention initiative that could produce measurable reductions in both incident volume and firefighter injury exposure within a defined set of high-priority communities. The top ten ZIP codes identified here should be designated as primary intervention geographies for fall prevention home visit programs, with fire department personnel or community health workers conducting proactive assessments of fall hazards, installing grab bars and other adaptive equipment, and connecting residents with Area Agency on Aging services, physical therapy referrals, and medication review programs that address the pharmacological contributors to fall risk. Coordination with the Chicago Fire Department and the suburban departments serving the highest-volume ZIP codes outside the city limits is essential for developing a regionally coherent prevention response that matches the geographic scope of the problem this data documents. For departments with community paramedicine capacity, the lift assist ZIP code ranking should serve as the primary driver of proactive outreach prioritization, directing mobile integrated health resources toward the specific neighborhoods where the combination of incident volume, demographic vulnerability, and social isolation creates the greatest concentration of preventable harm.

Good Intent Incident Detail (600 Series)

Good Intent Call Incident Volume



Good Intent Call Incident Volume

Good intent call incidents recorded under NFIRS Category 6 followed a broadly upward trajectory across the five-year study period, growing from 104,182 incidents in 2020 to 132,860 in 2024, a net increase of 28,678 incidents representing cumulative growth of 27.5 percent. The year-over-year pattern mirrors the broader statewide trend in several respects, with an initial increase of 8.6 percent between 2020 and 2021 to 113,192, followed by a modest contraction of 1.9 percent to 110,988 in 2022, the same year that saw slight declines across several other categories. Growth then resumed with notable acceleration, posting a 9.7 percent single-year increase to 121,764 in 2023 and a further 9.1 percent increase to the five-year high of 132,860 in 2024. The back-to-back single-year increases of nearly 10 percent in 2023 and 2024 are particularly significant, representing the two largest absolute annual additions of the entire period and suggesting that the rate of growth in this category is accelerating rather than moderating as the study period closes.

Good intent calls encompass responses where fire departments are dispatched based on a reported emergency that upon investigation is found to involve no actual hazard or incident, including cancelled calls, dispatches based on steam or other non-smoke vapors mistaken for smoke, authorized controlled burns, and a range of other situations where a reasonable public concern triggered a response that turned out to be unwarranted. The sustained growth in this category reflects several converging dynamics in how Illinois communities generate emergency calls. Increased residential and commercial smoke detection sensitivity, including the proliferation of interconnected smart detector systems that can generate alarm activations from cooking fumes, steam, and dust, contributes to the

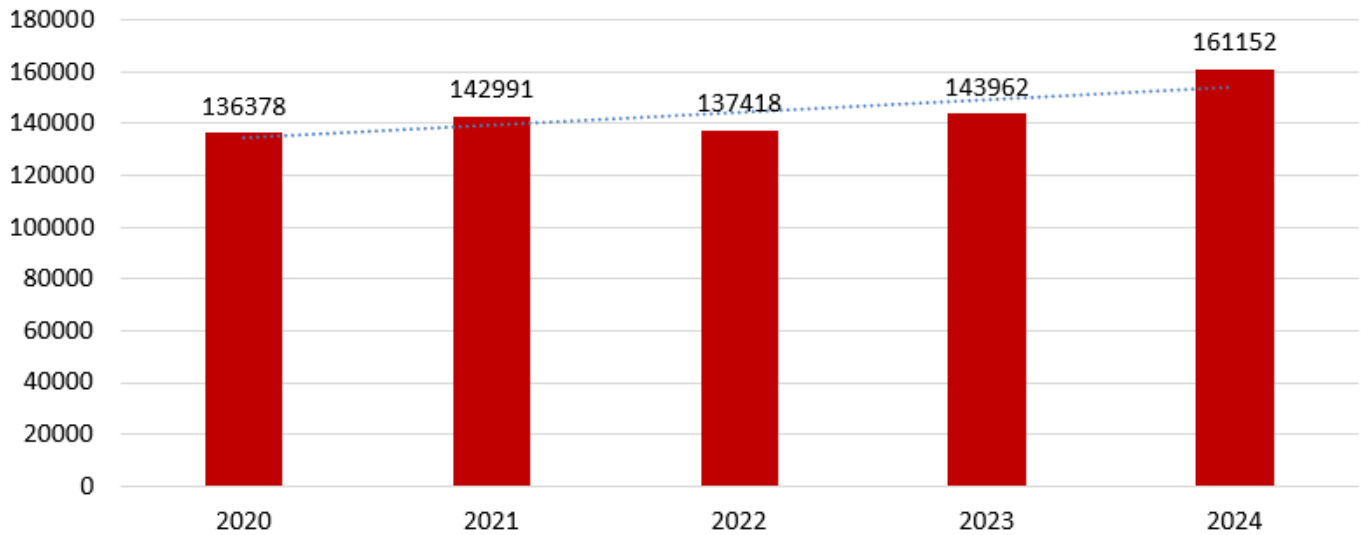
pool of responses that are ultimately coded as good intent. Growing public awareness of and willingness to call 911 for perceived hazards, combined with the expansion of automatic alarm systems in commercial and residential occupancies, also plays a role. The acceleration visible in 2023 and 2024 may additionally reflect the continued buildout of connected alarm and monitoring systems in newer construction and retrofitted older buildings, a trend that shows no sign of reversing.

The operational significance of good intent calls lies not in their individual severity, which by definition is low, but in their aggregate impact on unit availability and the cumulative opportunity cost of dispatching fire companies to incidents that require no intervention. A category generating more than 130,000 annual responses statewide means that Illinois fire companies are collectively making more than 360 good intent responses per day, each of which temporarily removes responding units from availability for genuine emergencies. In communities where unit density is limited and response coverage areas are large, the availability impact of good intent calls on response time performance for concurrent genuine emergencies is a real operational consideration. The growth trajectory of this category, if it continues at the rates observed in 2023 and 2024, will add thousands of additional responses annually to a system already absorbing substantial overall volume growth across nearly every incident category.

For CRR program design, the sustained growth in good intent call volume reinforces the importance of fire departments developing and maintaining clear standard operating procedures and guidelines that define appropriate response configurations for low-acuity incident types. Responding non-emergency to categories of calls where the probability of an active life safety threat is statistically low, including many good intent call subtypes, reduces unnecessary emergency vehicle exposure on public roadways, lowers the risk of apparatus-involved collisions during response, and preserves the physical readiness of personnel by reducing the frequency of high-stress emergency activations for incidents that require no emergency intervention upon arrival. Establishing tiered response protocols that match the level of response to the assessed acuity of the call, informed by dispatch information and historical incident data for specific call types and locations, is a best practice that serves both firefighter safety and community risk management simultaneously. Departments that embed these protocols within a broader safe operations culture, one that values deliberate and proportionate response as much as speed, are better positioned to sustain the health and effectiveness of their personnel across the full arc of a career in an environment where overall call volume continues to grow.

False Alarm/Call Incident Detail (700 Series)

False Alarm/False Call Incident Volume



False Alarm/False Call Incident Volume

False alarm and false call incidents recorded under NFIRS Category 7 followed a pattern of modest fluctuation across the first four years of the study period before surging to a five-year high in 2024, producing a cumulative net increase of 24,774 incidents or 18.2 percent above the 2020 baseline. Volume opened at 136,378 in 2020 and rose 4.8 percent to 142,991 in 2021 before contracting 3.9 percent to 137,418 in 2022, a dip consistent with the modest declines observed across several other categories in that year. Growth resumed in 2023 with a 4.8 percent increase to 143,962, reestablishing a level comparable to the 2021 figure, before the category recorded its most significant single-year movement of the entire period in 2024, jumping 11.9 percent to 161,152. That final-year acceleration, adding more than 17,000 incidents in a single year, is the largest absolute single-year increase recorded in this category across the study period and elevates false alarm and false call volume to a level that places it firmly among the highest-volume non-EMS categories statewide.

False alarm and false call incidents encompass a broad spectrum of response types including unintentional alarm activations from detection systems in residential and commercial occupancies, malicious false alarms, bomb scares, and dispatches based on reported emergencies that are determined upon investigation to involve no actual fire or hazard condition distinct from good intent calls. The sustained volume in this category, consistently above 136,000 incidents annually across the full study period, reflects the scale of the automatic alarm infrastructure deployed across Illinois buildings and the gap that persists between alarm activation rates and actual fire or hazard conditions. The sharp

acceleration in 2024 warrants particular attention and may reflect the continued expansion of connected alarm monitoring systems, changes in dispatch protocols that affect how certain alarm types are classified, or a genuine increase in the frequency of nuisance activations associated with aging detection equipment in the large inventory of commercial and residential buildings whose alarm systems were installed during earlier construction waves and are now approaching or exceeding their designed service life.

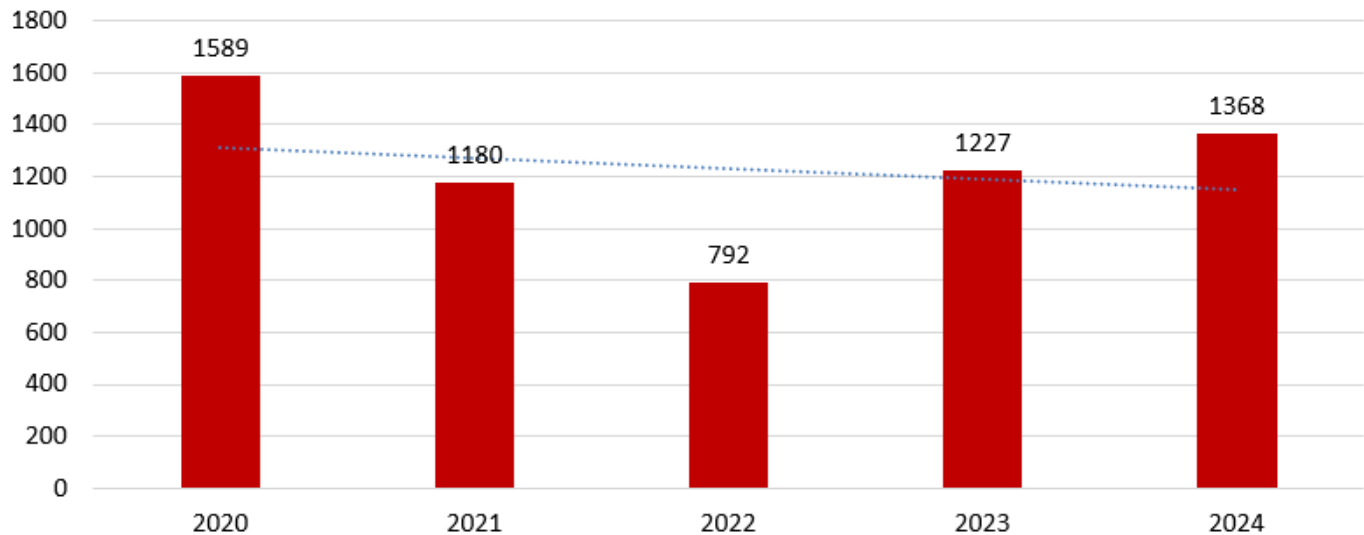
The operational burden that false alarm and false call incidents place on fire departments is substantial and can be more deceptive than that of higher-acuity categories, precisely because the individual incidents are individually low-consequence while their aggregate impact on unit availability, personnel fatigue, and apparatus wear is significant and continuous. Illinois fire companies are collectively making more than 440 false alarm responses per day at 2024 volume levels, each requiring emergency vehicle deployment, personnel activation, and scene investigation before the incident can be cleared. The risk to firefighters and the public during emergency response to incidents that turn out to require no intervention is real and measurable, as lights-and-siren vehicle operation on public roadways carries statistically elevated collision risk regardless of whether the underlying incident proves genuine. The 11.9 percent single-year increase in 2024 alone added the equivalent of more than 46 additional false alarm responses per day to the statewide system, a volume increment that is operationally meaningful for departments managing concurrent call demands across limited unit inventories.

For CRR program design, false alarm reduction represents one of the highest-return prevention investments available to fire departments given the direct relationship between alarm volume reduction and measurable improvements in unit availability, personnel safety, and operational readiness. Coordination with alarm monitoring companies and building management operators on alarm verification protocols before dispatch, where permitted under local policy, is among the most effective system-level interventions for reducing unnecessary emergency response without compromising genuine emergency detection capability. Fire department inspection programs that proactively identify commercial and institutional occupancies generating disproportionate shares of local false alarm volume, and that engage building owners in detector maintenance, system testing, and staff training on alarm response procedures, can address the equipment and behavioral conditions driving chronic nuisance activation patterns. Consistent and code-compliant inspection, testing, and maintenance of fire alarm systems under NFPA 72 and water-based suppression systems under NFPA 25 is a foundational false alarm reduction strategy that also ensures these systems perform as designed when a genuine emergency occurs, making proper system maintenance a life safety investment as much as an operational one. As with good intent calls, departments should also examine their response configuration standards

for alarm activations, ensuring that standard operating procedures align response mode and apparatus complement with the assessed probability of an active emergency, reducing unnecessary emergency vehicle exposure on public roadways while maintaining the capability to escalate immediately when conditions on arrival warrant it.

Weather/Natural Hazard Incident Detail (800 Series)

Severe Weather Incident Volume



Severe Weather Incident Volume

Severe weather incidents recorded under NFIRS Category 8 present the most volatile year-over-year pattern of any category in the five-year study period, with volume fluctuating sharply in response to the episodic and inherently unpredictable nature of significant weather events rather than following the structural demographic and behavioral drivers that shape demand in other categories. Illinois fire departments responded to 1,589 severe weather incidents in 2020, the highest total of the study period, before volume declined 25.7 percent to 1,180 in 2021 and dropped further to a five-year low of 792 in 2022, a cumulative two-year contraction of 50.2 percent from the 2020 peak. Recovery began in 2023 with a 54.9 percent rebound to 1,227, followed by a further 11.5 percent increase to 1,368 in 2024. Despite the partial recovery in the final two years, the 2024 figure remains 13.9 percent below the 2020 baseline, and the overall trendline across the period is modestly downward, though the volatility of this category makes any trendline interpretation less analytically reliable than it would be for categories driven by more consistent underlying demand.

The dramatic year-over-year swings in this category are a direct reflection of the variable frequency and geographic footprint of significant weather events in Illinois across any given year rather than changes in fire department response capacity or community preparedness. Category 8 incidents include wind storm assessments, tornado and hurricane assessments, flood assessments, lightning strike responses with no fire, and severe weather standby deployments, all of which are driven by actual meteorological conditions that differ substantially from year to year. The 2020 peak is consistent with documented above-

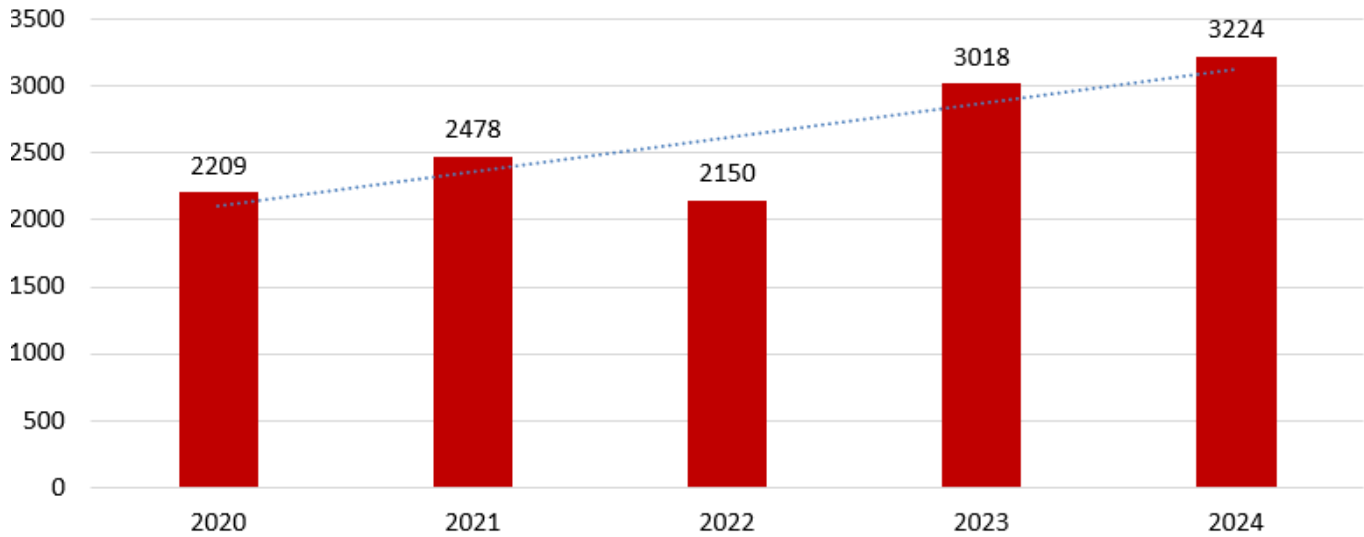
average severe weather activity in Illinois during that year, including multiple significant wind and storm events, while the sharp 2022 low reflects a comparatively quieter severe weather season rather than any structural change in risk or response capacity. The 54.9 percent single-year rebound in 2023 similarly reflects a return to more active weather conditions rather than a programmatic change in how departments classify or report these incidents.

While Category 8 represents the smallest or second smallest share of total statewide incident volume in every year of the study period, severe weather incidents carry an outsized operational and community impact relative to their frequency. Wind storms and tornadoes can generate simultaneous multi-incident demand across wide geographic areas, overwhelming local response capacity and triggering mutual aid activations that stress regional resources. Flood events create access challenges that compromise response time performance for all incident types across affected jurisdictions. The increasing frequency and intensity of extreme weather events associated with broader climate trends suggests that while the five-year average in this category may appear modest, the tail risk represented by a single major weather event warrants serious attention in both operational planning and community preparedness programming.

For CRR program design, severe weather incidents call for a preparedness and resilience-focused prevention strategy rather than the demand reduction approaches appropriate for behaviorally driven categories. Community education initiatives that help residents and businesses develop severe weather action plans, maintain emergency supply inventories, and understand shelter-in-place and evacuation protocols reduce the probability that weather events generate secondary emergencies requiring fire department response. Coordination with municipal emergency management agencies, the Illinois Emergency Management Agency, and the National Weather Service on public warning systems, community shelter planning, and post-event damage assessment protocols ensures that fire departments are integrated into a broader severe weather response architecture rather than operating in isolation. Departments serving communities with documented flood risk, tornado exposure, or aging infrastructure vulnerable to wind damage should incorporate those specific hazard profiles into their community risk reduction planning, using historical weather incident data alongside the NFIRS record to build a complete picture of local severe weather vulnerability.

Special Incident Type Detail (900 Series)

Special Incident Type Volume



Special Incident Type Volume

Special incident type incidents recorded under NFIRS Category 9 represent the second smallest category by volume in the five-year study period, growing from 2,209 incidents in 2020 to 3,224 in 2024, a cumulative increase of 1,015 incidents representing the largest percentage growth of any category at 45.9 percent. The year-over-year pattern includes an initial increase of 12.2 percent to 2,478 in 2021, a contraction of 13.2 percent to 2,150 in 2022, and then a sharp acceleration of 40.4 percent to 3,018 in 2023 followed by a further 6.8 percent increase to 3,224 in 2024. While the percentage growth figures are notable, the absolute volumes involved are small enough that single-year fluctuations of a few hundred incidents can produce outsized percentage movements that may not reflect meaningful changes in underlying demand.

The analytical value of Category 9 data at the statewide level is limited by an important structural consideration in how this category is utilized across Illinois fire departments. NFIRS Category 9 is designed to capture special incident types that do not fit within the defined parameters of Categories 1 through 8, and while it encompasses legitimate incident classifications including citizen complaints and special incident types, some departments have adopted this category as a practical recording mechanism for departmentally implemented special programs, community outreach activities, and non-emergency community engagement responses that their records management systems route through NFIRS. When this practice is present, the resulting incident counts reflect departmental program activity rather than emergency demand, and the aggregation of those records into the statewide total produces a figure that blends genuinely distinct

incident types with program reporting artifacts in a way that limits meaningful cross-jurisdictional comparison.

The inconsistency in how Category 9 is applied across departments is itself a data quality finding worth noting in the context of this assessment. Variation in recording practice between departments using this category for its intended purpose and those using it as a programmatic catch-all creates a statewide aggregate that cannot be interpreted with the same confidence applied to categories where definitional consistency is more uniformly maintained. This is not a criticism of the departments employing alternative recording approaches, as the underlying programs and community engagement activities being captured often represent exactly the kind of proactive community risk reduction work this assessment is designed to encourage, but rather a recognition that the current NFIRS framework does not provide a dedicated recording mechanism for CRR program activity that would allow those efforts to be tracked, measured, and reported distinctly from emergency incident data.

For statewide program planning purposes, Category 9 volume should be interpreted with appropriate caution and contextualized against department-level reporting practices before drawing conclusions about demand trends or community risk profiles. The more productive analytical application of this data is at the individual department level, where administrators can review their own Category 9 records to distinguish genuine special incident responses from program activity entries and ensure that their recording practices align with NFIRS definitional standards. At the statewide level, the growth trend visible in this category may be as much a reflection of expanding community program activity among Illinois fire departments as it is of genuine increases in special incident demand, a finding that, if confirmed through more granular analysis, would represent a positive indicator of growing CRR program engagement across the state

Weather and Natural Hazards Profile

Overview and Regional Framework

Illinois presents one of the most meteorologically complex risk environments of any Midwestern state. Spanning 390 miles from north to south, the state encompasses five distinct climate classifications, two major seismic zones, three major river systems subject to catastrophic flooding, and a tornado frequency that rivals portions of the Great Plains. No single hazard profile can meaningfully represent the full 102-county expanse; the fire service in Waukegan, the Chicago lakefront, rural Sangamon County, and Cairo in the extreme south each operate within fundamentally different weather, climate, and natural hazard environments.

For the purposes of this Statewide Risk Assessment, Illinois is organized into four analytical regions that align with the National Weather Service (NWS) forecast office structures, established climatological divisions recognized by the Illinois State Climatologist Office at the Illinois State Water Survey, and the regional designations used in the 2023 Illinois Natural Hazard Mitigation Plan administered by the Illinois Emergency Management Agency:

- Region 1: Northeastern Illinois — Cook County and the six collar counties (DuPage, Kane, Lake, McHenry, Will, Kendall), corresponding primarily to the NWS Chicago forecast area and characterized by Lake Michigan influence, dense urbanization, and the urban heat island effect.
- Region 2: Northwestern Illinois — The Rock River corridor, Quad Cities area, and driftless zone counties, served by NWS Quad Cities, characterized by more continental climate conditions and significant agricultural land use.
- Region 3: Central Illinois — The Grand Prairie counties stretching from the Iowa border east to Indiana, served primarily by NWS Lincoln (ILX), representing the heart of Illinois's agricultural and tornado-vulnerable landscape.
- Region 4: Southern Illinois — The Shawnee Hills, American Bottoms floodplain, and Gulf Coastal Plain counties from roughly Interstate 64 south to the Ohio and Mississippi River confluences, served by NWS Paducah and NWS St. Louis, and home to the state's highest seismic risk.

Illinois Regional Climate & Natural Hazard Overview

Region	Avg Annual Temp	Annual Precip	Annual Snowfall	Tornado Risk	Flood Risk	Seismic Risk	Extreme Heat Risk
Northeastern Illinois	49°F	36-38"	38-40"	Low-Mod	Moderate	Low	High
Northwestern Illinois	47°F	32-36"	28-36"	Moderate	Moderate	Low	Low
Central Illinois	52°F	36-40"	14-24"	High	Moderate-High	Low-Mod	Moderate
Southern Illinois	57°F	44-50"	4-10"	High	High	High	Moderate

Sources: Illinois State Climatologist Office (ISWS), NOAA NCICS State Climate Summaries 2022, Illinois Emergency Management Agency (IEMA), NWS Climate Normals 1991-2020

Statewide Climate Context

Illinois's location in the interior of North America, unobstructed by mountain barriers to the north or south, exposes the entire state to incursions of bitterly cold Arctic air masses in winter and warm, humid Gulf of Mexico air masses in summer. This positioning produces a humid continental climate across the majority of the state, transitioning toward a humid subtropical classification in the southernmost counties, where growing seasons exceed 190 days. [5]

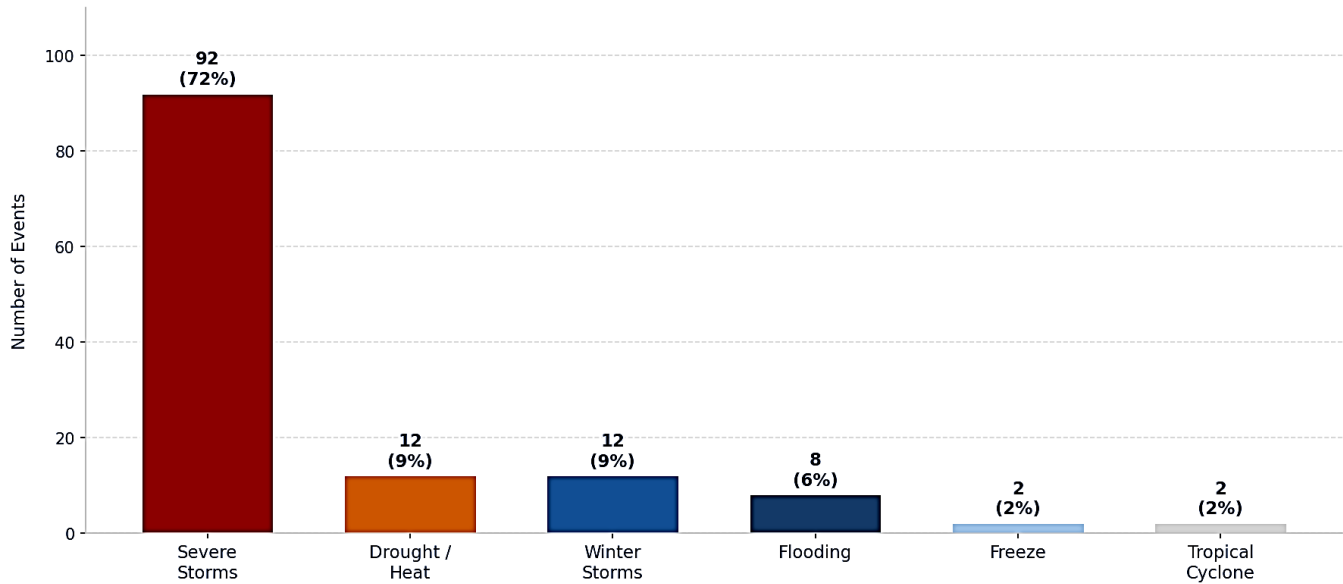
Annual average temperatures range from 48°F in the north to 58°F in the south — a 10°F differential that carries profound consequences for hazard exposure, agricultural timing, infrastructure performance under extreme cold and heat, and public health vulnerability. Statewide annual precipitation has averaged 38.1 inches since 1895 (range: 25.5 to 51.2 inches), but the north-to-south gradient is striking: southern Illinois routinely receives more than 48 inches annually, while far northern counties may receive fewer than 32 inches. Snowfall distribution inverts this pattern, with northeastern Illinois averaging 38–40 inches annually compared to fewer than 10 inches in the extreme south. [5, 12]

Temperatures in Illinois have risen approximately 1.5°F since the beginning of the 20th century, with warming concentrated in winter and spring seasons. The 2000s recorded the highest temperatures in any historical period except the 1930s Dust Bowl era. Under higher greenhouse gas emissions pathways, the NOAA NCEI State Climate Summaries project end-of-century warming of 6.9°F to 15.4°F above historical baselines — a range that would transform nearly every hazard category discussed in this section. [12]

From 1980 through 2024, Illinois experienced 128 confirmed weather and climate disaster events with individual losses exceeding \$1 billion — an average of 2.8 events per year

over the full period, accelerating to a five-year average of 7.8 events per year from 2020 to 2024. [13]

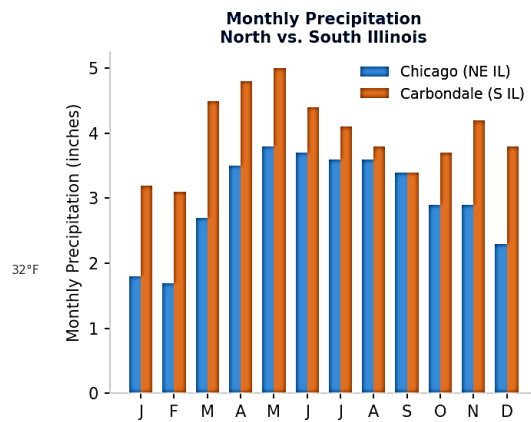
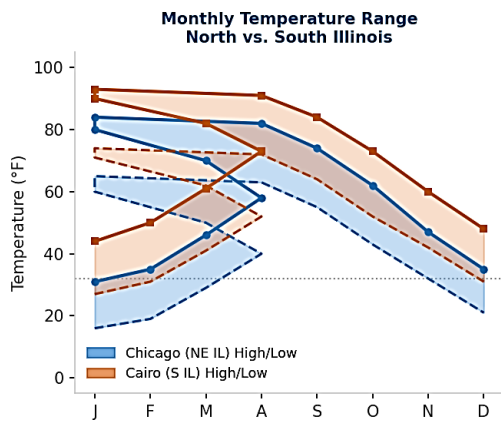
Billion-Dollar Weather/Climate Disaster Events in Illinois: 1980-2024
(Total: 128 events)



Source: NOAA National Centers for Environmental Information (NCEI), U.S. Billion-Dollar Weather and Climate Disasters, 2025 (<https://www.ncei.noaa.gov/access/billions/state-summary/IL>). Five-year annual average: 7.8 events (2020-2024), up from long-term average of 2.8 events.

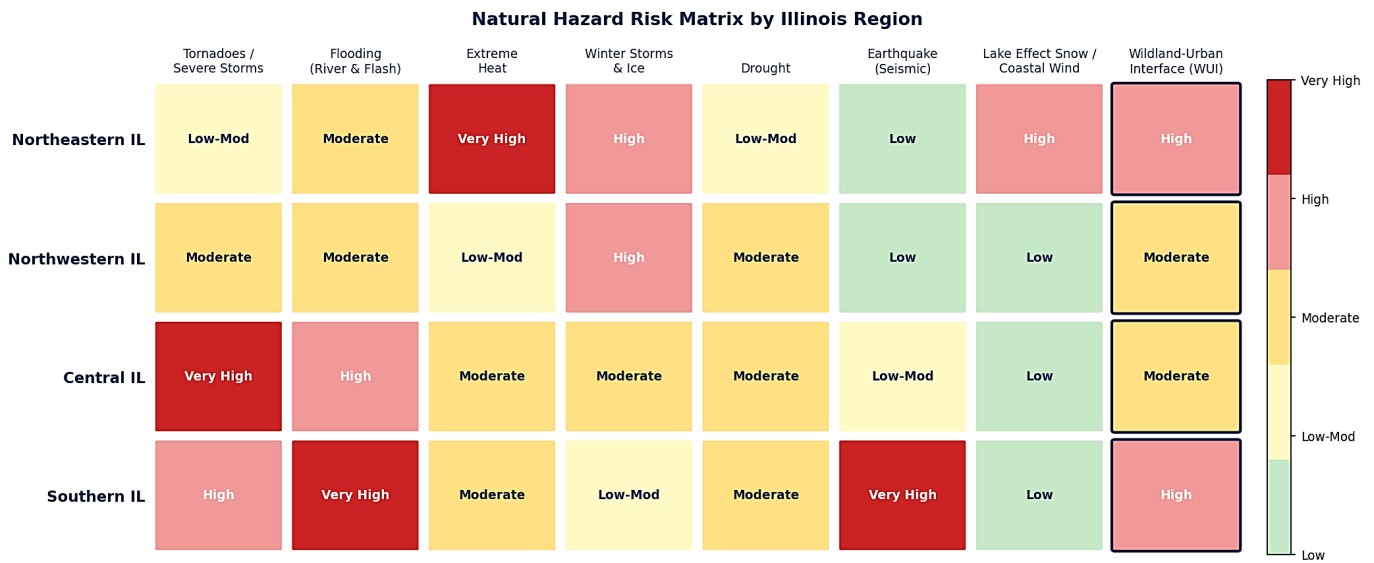
Severe storms dominate the billion-dollar disaster catalog, accounting for 92 of 128 events (71.9%), followed by drought and heat, winter storms, and flooding. Each of these categories carries direct implications for fire service operations, mutual aid activation, EMS surge capacity, and community vulnerability.

Illinois Climate: North-South Gradient



Source: NOAA Climate Normals 1991-2020 (NWS Cooperative Observer Program); Illinois State Climatologist Office / Illinois State Water Survey (ISWS). Temperature data represent station averages; shaded areas indicate High/Low range.

Regional Hazard Risk Matrix



Source: Illinois Emergency Management Agency (IEMA), 2023 Illinois Natural Hazard Mitigation Plan; NOAA NCEI Billion-Dollar Disasters; USGS National Seismic Hazard Model (2023); Illinois State Climatologist Office / ISWS; USFS Shawnee National Forest & Midewin NTP; SILVIS Lab / USFS Northern Research Station, WUI Change 1990-2020 (Radeloff et al., 2022); USFA WUI Fire Data (2024).
Ratings represent relative regional risk, not absolute probabilities. WUI ratings reflect forested, prairie, agricultural-perimeter, and river-bluff interface contexts.

Region 1: Northeastern Illinois

Cook County and Collar Counties

Climate Baseline. Northeastern Illinois is moderated significantly by the thermal mass of Lake Michigan, which produces cooler summers and milder winters relative to regions at equivalent latitude further from the lake. Annual average temperatures in Chicago range from approximately 48–50°F. Annual precipitation averages 36–38 inches, and annual snowfall averages 38–40 inches — with lake-effect enhancement adding 5–12 inches of additional snowfall above baseline in communities on or near the shoreline during northwest wind events. [5, 12]

Extreme Heat — Very High Risk. Extreme heat is the dominant life-safety hazard in Northeastern Illinois and the single deadliest weather phenomenon in state history. The July 12–16, 1995 Chicago heat wave remains the definitive sentinel event. Maximum temperatures reached 104°F on July 13, with heat index values peaking at 119°F, a record high for Chicago. Crucially, minimum overnight temperatures failed to drop below 72–80°F across the five-night event, preventing physiological recovery and driving unprecedented mortality in vulnerable populations. The event resulted in 753 deaths statewide, with the overwhelming majority occurring in Chicago. The Chicago Medical Examiner ultimately attributed 739 deaths to heat in Cook County alone. [14, 7, 18]

The heat wave's mortality was not uniform. Deaths were concentrated among elderly, poor, and socially isolated residents, particularly Black men living alone in upper-floor apartments without air conditioning in densely built, heat-island-intensified neighborhoods. Author Eric Klinenberg's sociological analysis confirmed that the geographic distribution of heat deaths mirrored the map of concentrated urban poverty. [10] Non-Hispanic Black Chicagoans died at a rate 50% higher than non-Hispanic White Chicagoans, reflecting structural inequities in housing quality, air conditioning access, and social connectivity. [21] Contributing factors included the absence of an effective heat warning system, citywide power failures, hospital overcrowding, and official underestimation of the threat in early days of the event. [5] The city and NWS subsequently developed impact-based Extreme Heat Watch/Warning criteria specific to Chicago: any day with a forecast heat index of 110°F or greater; two consecutive days at or above 105°F; or three or more consecutive days at or above 100°F. [14]

Annually, an estimated 74 deaths across Illinois are attributed to heat, far exceeding deaths from tornadoes, lightning, flooding, and winter storms combined, underscoring extreme heat as the highest-consequence weather hazard in the state. [5] The urban heat island effect, the density and age of Chicago's housing stock, the concentration of elderly and low-income populations without air conditioning access, and the state's warming climate trajectory all indicate that heat risk in Northeastern Illinois will intensify throughout the planning horizon.

Winter Storms and Polar Vortex Events — High Risk. Northeastern Illinois receives the state's heaviest annual snowfall, averaging 38–40 inches in Chicago proper with significant lake-effect enhancement in communities to the north and northwest of the city. The February 1–3, 2011 blizzard ranks among the most powerful winter storms in Illinois history: Chicago O'Hare recorded 20.2 inches of snow (the third-largest single storm accumulation in 120 years of record) with wind gusts exceeding 60 mph. The community of Antioch — which normally averages one snowfall exceeding 6 inches per year — received 27 inches. More than 9.8 million Illinois residents were in areas receiving 12 or more inches. [12]

The January 2019 Polar Vortex event drove temperatures in Chicago to -23°F, with wind chills reaching -52°F — colder than recorded temperatures in Antarctica at the time. The event resulted in 21 deaths across Illinois, generated thousands of structure fires from burst pipes and electrical faults, and severely degraded fire department operational capacity across the region. [22]

Tornadoes and Severe Storms — Low to Moderate Risk. While tornadoes do occur throughout Northeastern Illinois, the region's frequency is lower than central and southern portions of the state. The most significant recorded event was the 1990 Plainfield tornado (F5), which struck DuPage and Will Counties on August 28, 1990, killing 29 people and

injuring approximately 350 — the deadliest tornado in Illinois in decades and notable for striking during an atypical late-summer period. [23] The August 10, 2020 derecho generated 15 tornadoes across Northeastern Illinois with widespread wind damage across the Chicago metropolitan area. [12]

Flooding — Moderate Risk. Urban flooding is a chronic and expanding hazard in Northeastern Illinois. The region's highly impervious surface coverage — roads, parking lots, rooftops — prevents natural infiltration, generating rapid stormwater surges that overwhelm aging combined sewer systems. A FEMA-cited study found that more than 90% of urban flooding damage claims from 2007 to 2014 in Illinois were outside the mapped 100-year floodplain, [12] meaning standard Flood Insurance Rate Maps substantially underestimate actual flood risk in urbanized areas. The April 2013 event delivered up to 10 inches of rain to portions of Northeastern Illinois over four days. Lake Michigan water levels reached their highest point since 1886 in 2020, generating significant shoreline erosion and flooding along the 63-mile Illinois lakeshore. [12, 24]

Fire Service Implications. Extreme heat events generate surge demand across EMS, hazardous materials, and structural fire services simultaneously, while degrading personnel performance and equipment reliability. Heat waves create firefighter safety crises requiring enhanced rehabilitation protocols, shortened rotation cycles, and expanded mutual aid coordination. Winter storm events present the opposite challenge: impaired apparatus mobility, extended response times, increased structure fire ignitions from heating equipment and frozen pipes, and frozen hydrant systems that compromise water supply. Lake Michigan coastal flooding and storm surge events require swift-water and water rescue capability that inland departments may not maintain.

Region 2: Northwestern Illinois

Rock River Corridor and Quad Cities Region

Climate Baseline. Northwestern Illinois experiences a more classically continental climate without significant lake moderation. Annual average temperatures range from approximately 47–50°F. Annual precipitation averages 32–36 inches, and snowfall averages 28–36 inches. The region includes the ecologically distinctive Driftless Area in Jo Daviess and Carroll counties — where the absence of glacial till created a dramatically hilly landscape with deeply incised river valleys, unique hydrology, and localized flood risk patterns unlike the surrounding till plains. [5]

Severe Storms and Tornadoes — Moderate Risk. The Rock River corridor and adjacent counties experience moderate tornado frequency. Northwestern Illinois falls within the primary tornado track corridor where systems moving from the southwest generate rotating supercells. Spring and early summer severe weather events regularly produce

damaging straight-line winds, large hail, and occasional tornadoes. The NWS Quad Cities office documents a persistent pattern of severe storm events across this region between March and August.

Winter Storms — High Risk. Northwestern Illinois receives significant snowfall events driven by Alberta Clipper systems tracking across the Great Lakes region. Ice storms are a particular regional hazard: freezing rain events coat roadways, power lines, and tree limbs, triggering large-scale power outages, road closures, and extended emergency response delays. The hilly terrain of the Driftless Area compounds winter storm impacts by creating road conditions that are exceptionally difficult to navigate even with modern equipment.

Flooding — Moderate Risk. The Rock River, a major Mississippi River tributary, is the dominant flood risk feature of Northwestern Illinois. Communities along the Rock River from Rockford through Rock Island have experienced repeated major flood events, including the 2008 Midwest floods, during which portions of northwestern Illinois experienced 500-year flood levels. The Mississippi River's western border generates chronic flood risk in river bottom communities from the Quad Cities southward. [25, 3]

Drought — Moderate Risk. Northwestern Illinois is more susceptible to agricultural drought than the northeastern corner of the state, given lower average annual precipitation and the region's extensive corn and soybean production. The 2012 drought, the most severe since 1988, caused catastrophic crop losses across northwestern Illinois, with rainfall during May through July running several inches below normal. [12]

Fire Service Implications. The combination of agricultural land use, volunteer fire department reliance, and severe winter weather creates challenging operational conditions. Propane and fuel oil heating systems are prevalent across the rural landscape, generating a different structural fire risk profile than natural gas-dominant urban systems. Ice storms and deep snow events impair mutual aid response across a region where individual department coverage areas may exceed 100 square miles.

Region 3: Central Illinois

Grand Prairie

Climate Baseline. Central Illinois is the broadest region geographically and encompasses the Grand Prairie — the vast, flat glacial till plain that defines the state's agricultural heartland. Annual average temperatures range from approximately 50–54°F. Annual precipitation averages 36–40 inches, increasing from north to south within the region. The near-total absence of topographic relief provides no natural barriers to severe weather of any type, making this region uniquely exposed to organized convective systems crossing the state. [5]

Tornadoes and Severe Thunderstorms — High Risk. Central Illinois is the most tornado-active region of the state on an absolute basis. McLean County, located in the geographic center of the Grand Prairie, has experienced more tornado events than any other county in Illinois, accounting for approximately 3.5% of all recorded state tornado events; the top three counties (McLean, Will, and Sangamon) together account for 9% of all state tornado activity. [26]

Illinois averages 54 tornadoes per year based on the 1991–2020 climate normal — comparable in frequency to portions of the traditional Great Plains tornado alley. Approximately 64% of all Illinois tornadoes occur between April and June, with May historically the most active month (791 recorded events, or 21.5% of all Illinois tornadoes). Tornadoes occur with greatest frequency during the late afternoon and early evening hours: 50% of all events occur between 3:00 p.m. and 7:00 p.m. local time. [5, 12, 15]

The deadliest tornado events in Illinois history traversed the central portion of the state. The March 18, 1925 Tri-State Tornado, still the deadliest tornado in United States history, tracked 219 miles across Missouri, Illinois, and Indiana, killing 695 people across three states with 613 of those deaths occurring in Illinois, primarily in Franklin and Hamilton counties. Maximum winds were estimated at F5 intensity. The tornado's path through sparsely populated rural and small-town central and southern Illinois at midday on a weekday maximized its destructive exposure. [5, 15] The May 26, 1917 Mattoon tornado resulted in 101 deaths and 638 injuries, while the April 21, 1967 Oak Lawn tornado outbreak produced an F4 tornado that killed 33 and injured more than 500 in suburban Chicago, demonstrating that violent tornadoes are not confined to rural landscapes.

Critically, December and February, despite contributing only 6% of all tornado events, account for 16% of all Illinois tornado fatalities between 1950 and 2020. Nighttime tornadoes and off-season events are disproportionately deadly because public awareness and preparedness behaviors are calibrated to peak-season daylight threats. [5] This is a critical finding for fire department pre-incident planning and community education programming.

The region is also subject to derecho events, organized systems of long-lived damaging straight-line winds that can travel hundreds of miles. The August 2020 derecho tracked across northern and central Illinois with widespread wind damage, roof failures, and downed power infrastructure, generating a multi-day emergency response surge.

Flooding — Moderate to High Risk. Central Illinois is drained by the Illinois River and its major tributaries, the Sangamon, Spoon, Mackinaw, and Vermilion rivers, all of which are subject to significant flooding during periods of sustained or intense precipitation. The Illinois River floodplain, including the American Bottoms south of Peoria, has experienced repeated major flood events correlated with Mississippi River high-water periods. The

April 2013 heavy rainfall event delivered up to 10 inches across portions of central Illinois over four days, generating the second-wettest January–June period on record for the state. [12, 4]

The Illinois State Water Survey's Coordinated Hazard Assessment and Mapping Program (CHAMP) estimates that nearly 12% of the state's land area lies within the 1% annual chance (100-year) floodplain as mapped on FEMA Flood Insurance Rate Maps (FIRMs). Since the Great Flood of 1993, IEMA mitigation efforts have removed more than 4,000 of Illinois's most flood-prone structures through acquisition and buyout programs. [9, 19] Eighty-two of Illinois's 102 counties and 770 communities participate in the National Flood Insurance Program (NFIP). [19]

Winter Storms — Moderate Risk. Central Illinois receives less snowfall than northeastern counties, averaging 14–24 inches annually, but ice storms and winter precipitation events pose significant operational hazards. The February 2011 blizzard deposited heavy snow across central Illinois and generated wind gusts exceeding 50 mph across the Springfield and Peoria areas.

Drought — Moderate Risk. Central Illinois's agricultural economy is profoundly sensitive to precipitation timing and distribution. The 2012 drought, triggered by well-below-normal May through July rainfall, was the third-driest May–July period in 126 years of state record keeping. By early August 2012, much of the state was in extreme drought, with the most severe impacts concentrated in the central and southern thirds. [12]

Fire Service Implications. The flat topography and sprawling geography of the Grand Prairie create mutual aid response challenges measurable in tens of miles and multiple minutes. Tornado events generate simultaneous mass-casualty, structural collapse, utility hazard, and search-and-rescue demands that exceed individual department capacity. Grain elevators, propane distribution facilities, and chemical applicator operations are distributed throughout the landscape, creating hazardous materials exposure that requires pre-planning and specialized response capability. Extended drought periods elevate wildland-urban interface and agricultural fire risk.

Region 4: Southern Illinois

Little Egypt

Climate Baseline. Southern Illinois is climatologically distinct from the rest of the state. Average annual temperatures approach 57–60°F in the far southern counties, warm enough to approach a humid subtropical classification, with growing seasons exceeding 190 frost-free days. Annual precipitation averages 44–50 inches or more, making this the wettest region of the state. Annual snowfall averages 4–10 inches, a fraction of what northern Illinois receives. The Shawnee Hills introduce topographic complexity that locally

modifies weather patterns, creates flash flood vulnerability in incised valleys, and generates wildland fire exposure distinct from any other Illinois region. [5]

Flooding — High Risk. Southern Illinois is the most flood-prone region in the state. Three major river systems converge in the extreme south: the Mississippi River forms the western boundary, the Ohio River the southern boundary, and the Wabash River a significant portion of the eastern boundary. The confluence of the Ohio and Mississippi at Cairo, the southernmost Illinois community, is among the most flood-vulnerable geographic positions in the continental United States.

The 2008 Midwest floods delivered more than 12 inches of rainfall across portions of southern and central Illinois in early June. River crests in some locations exceeded 500-year flood levels. Navigation on the Mississippi was impaired for extended periods. Communities along the Mississippi River from Rock Island to Cape Girardeau remained in major flood stage for weeks. [16]

The low-lying floodplain between the Mississippi and Kaskaskia rivers in St. Clair, Madison, and Monroe counties represents one of the highest flood-risk concentrations in Illinois, with repeated catastrophic inundation events and a system of aging agricultural levees whose performance under major flood conditions is uncertain. Since 1993, IEMA and FEMA have removed more than 3,928 flood-prone structures statewide through the Hazard Mitigation Grant Program, with the bulk of acquisition activity concentrated in southern Illinois communities. [4, 19]

Seismic Risk — Very High (The State's Most Dangerous Potential Hazard)

Southern Illinois faces the highest seismic risk of any region in the state, arising from proximity to two major seismic zones:

The New Madrid Seismic Zone (NMSZ) is a 150-mile fault system, extending from northeast Arkansas through southeast Missouri, western Tennessee, western Kentucky, and into extreme southern Illinois at Cairo. [20, 1] The NMSZ is the most seismically active zone east of the Rocky Mountains. Since 1974, seismographs have recorded more than 4,000 earthquakes in the zone, most too small to be felt. On average, one earthquake per year is large enough to feel. [20, 27]

The 1811–1812 New Madrid earthquake sequence produced four events estimated at magnitude 7.5 to 8.0 or greater over a three-month period — among the strongest earthquakes ever recorded in North America. The events temporarily reversed the flow of the Mississippi River, generated massive liquefaction across 5,500 square miles (including portions of southern Illinois), and were felt as far away as Washington, D.C., and Canada. [20, 11] Because central U.S. geology amplifies seismic wave propagation, an eastern earthquake can be felt over an area more than ten times larger than a comparable western U.S. event. [20]

The USGS currently estimates a 25–40% probability of a magnitude 6.0 or greater earthquake in the NMSZ within any 50-year period, and a 7–10% probability of a repeat of the 1811–1812 magnitude range within 50 years. [1, 20] Communities in extreme southern Illinois, including Carbondale, Harrisburg, and Cairo, carry a 50–75% probability of experiencing at least slight damaging ground shaking within 100 years under the USGS National Seismic Hazard Model. [17]

The Wabash Valley Seismic Zone (WVSZ) occupies the boundary between southeastern Illinois and southwestern Indiana, running roughly along the Wabash River valley. The largest earthquake with an epicenter in Illinois in recent history, a magnitude 5.4 event near West Salem and Mount Carmel, occurred on the Wabash Valley Seismic Zone on April 18, 2008, injuring two people and causing property damage across multiple counties. [2, 20] The state's all-time strongest recorded earthquake, a magnitude 5.5 event on November 9, 1968, also had its epicenter in southeastern Illinois near Norris City. [27]

A 2009 FEMA scenario study [28] modeled a magnitude 7.7 New Madrid event and projected the following consequences for the seven-state impact zone: 86,000 casualties including 3,500 deaths, damage to 715,000 buildings, displacement of 7.2 million people, damage to 3,500 bridges, 425,000 pipeline breaks, and \$300 billion in direct economic losses. IEMA has formally stated that a major NMSZ earthquake "has the potential to be the most dangerous of all natural hazards that could impact the State of Illinois." [1]

Tornadoes — High Risk. The Tri-State Tornado of 1925, which killed 695 people and traversed the region on a 219-mile track, remains the deadliest tornado in U.S. history and illustrates the extreme vulnerability of this region's small, widely spaced communities to violent tornadoes. Southern Illinois's position in the convergence zone between Gulf moisture, dry continental air, and Ozark topographic influence creates conditions favorable for supercell development in spring and early summer. The absence of a dense population and the prevalence of manufactured housing in rural southern Illinois create a risk profile of high consequence per event.

Wildland and Agricultural Fire. The Shawnee National Forest, encompassing approximately 280,000 acres of forested and shrubland terrain in seven southern Illinois counties, creates a wildland-urban interface fire environment unlike any other in the state. Seasonal drought conditions, prescribed burn programs, and recreational activities create ignition potential that requires specialized wildland fire response capability and interagency coordination with the U.S. Forest Service.

Fire Service Implications. The combination of flood risk, seismic risk, wildland-urban interface, and small, geographically dispersed volunteer departments creates a demanding operational environment. Seismic events, particularly from the NMSZ, would generate simultaneous catastrophic structural failure across a broad geographic area, overwhelming local and regional mutual aid systems. The fire service's response capacity in a major

NMSZ event would be immediately compromised by infrastructure damage (broken roads, bridges, water mains), communications failures, and the simultaneous incapacitation of personnel whose own homes and families may be affected. This scenario demands pre-event planning that extends to interstate mutual aid frameworks and FEMA Urban Search and Rescue (USAR) activation protocols. Flood events require swift-water and flood rescue capability, and the elevated precipitation in this region means such events occur with greater frequency than anywhere else in Illinois.

Weather & Natural Hazard Risk and Fire Service Implications

Several hazard themes operate across all four regions and carry consistent implications for fire department planning, resource allocation, and community risk reduction program design.

Compound Events. The frequency of multi-hazard compound events, flooding following a tornado outbreak, ice storm following extreme cold, heat wave coinciding with drought and power grid stress, is increasing as climate variability intensifies. Fire departments must plan not for single-hazard scenarios but for overlapping demand surges that strain personnel, equipment, and water supply simultaneously.

Climate Trend Amplification. The NOAA State Climate Summaries document a statistically significant increase in extreme precipitation events in Illinois since 1990, a reduction in very cold nights since 1990, and a projected increase in frequency and intensity of heat waves under higher emissions pathways. [12] These trends will systematically shift the hazard burden: more flash flood events, more heat-related EMS calls, longer severe weather seasons, and changing seasonal fire risk windows.

Mortality Weighting. Statewide, heat accounts for an estimated 74 annual deaths and cold accounts for 18, together comprising the dominant weather-related mortality burden, far exceeding combined deaths from floods, tornadoes, lightning, and winter storms (approximately 20–30 per year). [5] CRR programs that deploy community resources proportional to actual mortality risk must weight heat and cold events more heavily than the dramatic but lower-frequency tornado and flood events that dominate public perception.

Infrastructure Interdependency. Aging water infrastructure, combined sewer systems, bridges, and power grids amplify the consequences of every hazard category. A tornado, flood, ice storm, or earthquake that severs water supply directly degrades fire suppression capability, a cascading failure that transforms a weather hazard into a structural fire catastrophe. Fire departments operating in communities with known water system vulnerabilities must integrate infrastructure resilience into their community risk reduction planning.

References

1. Illinois Emergency Management Agency and Office of Homeland Security (IEMA). (2025). Earthquake hazard information: New Madrid Seismic Zone. <https://iemaohs.illinois.gov/preparedness/earthquake-newmadrid.html>
2. Illinois Emergency Management Agency and Office of Homeland Security (IEMA). (2025). Earthquake hazard information: Overview. <https://iemaohs.illinois.gov/preparedness/earthquake.html>
3. Illinois Emergency Management Agency and Office of Homeland Security (IEMA). (2025). Illinois Natural Hazard Mitigation Plan (INHMP) — 2023 update. <https://iemaohs.illinois.gov/recovery/mitigation.html>
4. Illinois Emergency Management Agency and Office of Homeland Security (IEMA). (2013). IEMA commemorates 20th anniversary of 1993 flood by highlighting flood mitigation efforts. <https://ready.illinois.gov/news-releases/071913.html>
5. Illinois State Climatologist Office / Illinois State Water Survey (ISCO/ISWS). (2024). Climate of Illinois: Narrative. University of Illinois, Prairie Research Institute. <https://www.isws.illinois.edu/statecli/General/Illinois-climate-narrative.htm>
6. Illinois State Climatologist Office / Illinois State Water Survey (ISCO/ISWS). (2024). Tornadoes in Illinois. <https://stateclimatologist.web.illinois.edu/climate-of-illinois/tornadoes-in-illinois/>
7. Illinois State Climatologist Office / Illinois State Water Survey (ISCO/ISWS). (2020). 25th anniversary of the 1995 Chicago heat wave. <https://stateclimatologist.web.illinois.edu/2020/07/14/25th-anniversary-of-the-1995-chicago-heat-wave/>
8. Illinois State Climatologist Office / Illinois State Water Survey (ISCO/ISWS). (2024). Illinois climate normals: 1991–2020. <https://stateclimatologist.web.illinois.edu/data/climate-data/>
9. Illinois State Water Survey / Coordinated Hazard Assessment and Mapping Program (ISWS/CHAMP). (2023). Flood risk mapping and hazard mitigation — CHAMP overview. <https://www.isws.illinois.edu/champ>
10. Klinenberg, E. (2002). *Heat wave: A social autopsy of disaster in Chicago*. University of Chicago Press.
11. Missouri Department of Natural Resources. (2024). Facts about the New Madrid Seismic Zone. <https://dnr.mo.gov/land-geology/hazards/earthquakes/science/facts-new-madrid-seismic-zone>

12. National Oceanic and Atmospheric Administration (NOAA), National Centers for Environmental Information (NCEI). (2022). Illinois: State Climate Summaries 2022. <https://statesummaries.ncics.org/chapter/il/>
13. National Oceanic and Atmospheric Administration (NOAA), National Centers for Environmental Information (NCEI). (2025). Billion-dollar weather and climate disasters: Illinois state summary, 1980–2024. <https://www.ncei.noaa.gov/access/billions/state-summary/IL>
14. National Weather Service (NWS), Chicago (LOT). (2020). Historic July 1995 heat wave. https://www.weather.gov/lot/1995_HeatWave
15. National Weather Service (NWS), Central Illinois (ILX). (2024). Tornado climatology for central and southeast Illinois. <https://www.weather.gov/ilx/tor-climo>
16. National Weather Service (NWS) / NOAA. (2024). Flooding in Illinois. <https://www.weather.gov/safety/flood-states-il>
17. NBC Chicago. (2024, April 6). These parts of Illinois are at the highest risk of an earthquake. <https://www.nbcchicago.com/news/local/these-parts-of-illinois-are-at-the-highest-risk-of-an-earthquake/3403015/>
18. U.S. Centers for Disease Control and Prevention (CDC). (1995). Heat-related mortality — Chicago, July 1995. *Morbidity and Mortality Weekly Report*, 44(31). <https://www.cdc.gov/mmwr/preview/mmwrhtml/00038443.htm>
19. U.S. Department of Natural Resources / Office of Water Resources (IDNR/OWR). (2023). National Flood Insurance Program (NFIP) — Illinois overview. <https://dnr.illinois.gov/waterresources/nfip.html>
20. U.S. Geological Survey (USGS). (2024). The New Madrid Seismic Zone. <https://www.usgs.gov/programs/earthquake-hazards/new-madrid-seismic-zone>
21. Whitman, S., Good, G., Donoghue, E. R., Benbow, N., Shou, W., & Mou, S. (1997). Mortality in Chicago attributed to the July 1995 heat wave. *American Journal of Public Health*, 87(9), 1515–1518.
22. Illinois Emergency Management Agency and Office of Homeland Security (IEMA). (2019). January 2019 polar vortex event — situation report and after-action summary. <https://iema.illinois.gov>
23. National Weather Service (NWS), Chicago (LOT). (2024). Significant Illinois tornadoes. <https://www.weather.gov/lot/>
24. NOAA Great Lakes Environmental Research Laboratory (GLERL). (2020). Lake Michigan water level conditions — 2020 summary. <https://www.glerl.noaa.gov>

25. National Weather Service (NWS), Quad Cities (DVN). (2024). Rock River and Mississippi River flood history. <https://www.weather.gov/dvn/>
26. NOAA Storm Prediction Center (SPC) / TornadoPath.com. (2024). County tornado event statistics — Illinois. <https://www.spc.noaa.gov/>
27. New Madrid Seismic Zone. (2026). In *Wikipedia*. https://en.wikipedia.org/wiki/New_Madrid_Seismic_Zone
28. Elnashai, A. S., Cleveland, L. J., Jefferson, T., & HARRALD, J. (2010). *Impact of New Madrid Seismic Zone earthquakes on the central USA*. Mid-America Earthquake Center, University of Illinois at Urbana-Champaign. <https://www.ideals.illinois.edu/items/14315>

Critical Infrastructure

Definition and Importance

Critical infrastructure refers to the essential systems, networks, and assets that underpin the security, economic prosperity, and public health and safety of a community or nation.

These systems are so vital that their continued operation is paramount. Examples of critical infrastructure within a community include but are not limited to:

- **Utilities:** Power plants, electrical grids, natural gas pipelines, water treatment facilities, wastewater treatment plants, and communication networks.
- **Transportation:** Airports, seaports, bridges, highways, railroads, and mass transit systems.
- **Government Services:** Emergency services facilities, government buildings, and critical communication networks.
- **Public Health:** Hospitals, clinics, public health laboratories, and emergency medical services facilities.
- **Education:** Schools and universities.

Vulnerability and Risk Assessment

The disruption or destruction of critical infrastructure can have cascading effects on a community, causing widespread economic damage, public health emergencies, and security threats.

Therefore, a comprehensive community risk assessment must analyze the vulnerabilities of critical infrastructure to natural hazards, technological failures, and intentional attacks. Understanding these vulnerabilities allows for the development of mitigation strategies aimed at enhancing resilience and minimizing potential impacts on the community.

Collaboration and Coordination

Effective risk assessment and mitigation for critical infrastructure requires collaboration between various stakeholders, including:

- Public officials
- Emergency management personnel
- First responders
- Owners and operators of critical infrastructure

- Community members

Through open communication and coordinated efforts, communities can strategically prepare and respond to threats to critical infrastructure, ensuring the continuity of service and resilience.

Critical Infrastructure Assessment

Due to security considerations and the sensitive nature of critical infrastructure vulnerability information, detailed analysis of essential community systems and assets is not included within this public Community Risk Assessment document. A general critical infrastructure assessment examining utilities, transportation networks, government services, public health facilities, and educational institutions has been conducted separately and is provided as a classified addendum to authorized personnel only. This assessment identifies vulnerabilities, interdependencies, and potential cascading effects that could impact community resilience during emergency events, while maintaining operational security for these vital community assets. Access to the critical infrastructure analysis is restricted to appropriate emergency management officials, public safety leadership, and other authorized stakeholders involved in community preparedness and response planning.

Risk Scoring and Prioritization

This section brings together the risks associated with fire and EMS response, weather, unique & special hazards and critical infrastructure. The top 5 hazards for each category are then matched against the hazard matrix below to determine the probability of occurrence vs. the seriousness of impact and is assigned the appropriate risk level of 1 (highest) to 5 (lowest). Each risk is placed in the table at the end of the document and then during the next phase of Statewide Risk Reduction planning, they are assigned a priority level (1-5) based on local resources and developed mitigation strategies. While a risk assessment does not attempt to prevent or mitigate all risk in a community, this strategic process helps to match risk based on frequency and severity with local resources and programs that can effectively and measurably provide a positive impact towards the communities desired outcomes.

Hazard Matrix

		Seriousness of Impact		
		Low	Medium	High
Probability of Occurring	Low	5th	4th	4th
	Medium	4th	3rd	2nd
	High	4th	2nd	1st

State of Illinois Risk Matrix

Risk	Risk Level 1 Highest 5 Lowest	Priority Level 1 Highest 5 Lowest	Possible mitigation strategies
Fire Related			
Building Fire 1& 2 Family	1		
Building Fire Multifamily	2		
Building Fire Commercial	2		
Cooking Fire 1 & 2 Family	2		
Cooking Fire Multifamily	1		
Cooking Fire Commercial	3		
Vehicle Fire	4		
WUI Fires	2		
Trash/Rubbish Fires	3		
Non-Fire Incident Types			
Carbon Monoxide	1		
Lift Assist	2		
EMS Related			
Requires additional analysis of NEMESIS data	**		
Weather Related			
Tornado and Severe Wind Events	2		

Severe Thunderstorms and Lightning	3		
Flash Flooding and Riverine Flooding	2		
Winter Storms, Ice Storms, and Extreme Cold	2		
Extreme Heat Events	2		
Drought and Agricultural Drought	3		
Earthquake Risk (New Madrid Seismic Zone Exposure)	4		
Wildfire and Grassland Fire Risk (Emerging Threat)	2		
Critical Infrastructure			
Assessed separately from this document			

Risk Scoring Justification

Fire Related

Building Fire 1 & 2 Family — Risk Level 1 Justification: High Probability/High Impact.

Building fires in one- and two-family dwellings represent the highest consequence fire risk in the Illinois statewide profile. The 89,668 total building fire incidents recorded across the study period average nearly 18,000 annually, with one- and two-family structures accounting for a disproportionate share of the most severe outcomes including fatalities, significant injuries, and total property loss. Illinois's housing stock of approximately 5.4 million units includes a substantial proportion of pre-1950 construction concentrated in the highest-risk communities, where the absence of interconnected smoke alarms, ungrounded electrical systems, deteriorating heating equipment, and deferred maintenance combine to produce the conditions most consistently associated with fatal residential fire outcomes. The demographic risk profile compounds the structural hazard, as the communities with the oldest housing stock are simultaneously those with the highest concentrations of elderly residents, low-income households, and persons with disabilities, the three population groups carrying the greatest individual fire fatality risk. The geographic concentration of building fire incidents in the south and west side Chicago neighborhoods and the south suburban corridor, documented throughout the incident analysis, confirms that this risk is structurally embedded in specific communities rather than uniformly distributed across the state.

Building Fire Multifamily — Risk Level 2 Justification: Medium Probability/High Impact.

Multifamily building fires occur at lower frequency than single- and two-family residential fires in aggregate but carry substantially higher life safety consequences per incident due to the concentration of occupants, shared egress systems, common corridors, and the potential for fire to spread to multiple units before suppression can be achieved. Illinois's multifamily housing inventory is heavily concentrated in the Chicago metropolitan area, where older high-density residential buildings in high-vulnerability neighborhoods create an elevated risk environment that is compounded by absentee ownership patterns, deferred maintenance, and inconsistent compliance with detector and suppression system requirements. The flame spread analysis in this assessment documents that a meaningful proportion of Illinois structure fires extend beyond the room of origin, a finding with particularly acute implications in multifamily occupancies where occupants in adjacent units may have no warning before fire conditions reach their space. The concentration of multifamily cooking fires, which account for 55 percent of all residential cooking fires statewide, an anomalous finding relative to typical community-level datasets, further

elevates the multifamily fire risk profile and establishes this category as a priority target for both detection and suppression system compliance programs.

Building Fire Commercial — Risk Level 2 Justification: Medium Probability/High Impact.

Commercial building fires in Illinois occur at meaningful frequency given the state's fifth largest economy in the nation and its extensive commercial, industrial, and mixed-use building inventory spanning the Chicago metropolitan corridor, mid-sized cities, and rural agricultural commercial centers. While commercial occupancies generally benefit from higher rates of fire protection system installation and occupant egress awareness relative to residential settings, the economic consequences of commercial building fires are significant and the life safety implications during business hours, when occupant loads are at their highest, are substantial. Illinois's manufacturing sector, agricultural processing infrastructure, and transportation-related commercial facilities create a commercial fire risk profile that extends well beyond the retail and office occupancy categories that dominate most community-level assessments. The geographic distribution of commercial fire incidents across urban, suburban, and rural settings confirms that this risk is distributed broadly across the state rather than concentrated in a single region, supporting a statewide rather than locally targeted prevention approach for this category.

Cooking Fire 1 & 2 Family — Risk Level 2 Justification: High Probability/Medium Impact.

Cooking fires in one- and two-family dwellings represent the most frequent specific fire cause in the Illinois residential fire profile, with 8,864 incidents recorded across the study period in this property use category alone. Despite their high frequency, the majority of cooking fires in single family settings are confined to the container of origin, limiting immediate life safety impact in most individual events. However, the kitchen origin category accounts for the single largest area of origin for residential building fires statewide at 35 percent of all captured origin locations, and the subset of cooking fires that escape initial containment demonstrates the capacity to produce serious structural damage, injury, and fatality outcomes, particularly during nighttime hours when occupants are asleep and detection response time is delayed. The elevated risk is concentrated in communities with aging housing stock and lower smoke alarm ownership and maintenance rates, where the margin between a contained cooking event and a structure-threatening fire is narrowest. Prevention investment in this category produces among the highest returns of any residential fire intervention given the frequency of the underlying behavior and the accessibility of evidence-based cooking fire prevention education.

Cooking Fire Multifamily — Risk Level 1 Justification: High Probability/High Impact.

The Illinois statewide data produces an anomalous and critically important finding relative to virtually every community-level cooking fire dataset previously examined in the fire service research literature. Multifamily cooking fires account for 14,971 incidents across the study period, representing 55 percent of all residential cooking fires statewide, substantially outnumbering the 8,864 incidents recorded in one- and two-family dwellings. This inversion of the typical residential cooking fire distribution reflects the extraordinary density of the Chicago metropolitan multifamily housing stock and the concentration of high-frequency cooking fire incidents in older high-density residential buildings in the highest-vulnerability neighborhoods. The life safety consequence of a cooking fire in a multifamily setting is inherently more severe than in a single-family structure, as a single ignition event can threaten dozens of occupants through shared egress pathways, common corridors, vertical spread through utility chases and stairwells, and the compounding effect of simultaneous evacuation demand on occupants with varying mobility and cognitive capacity. This finding establishes multifamily cooking fire prevention as the single most impactful fire prevention investment opportunity in the Illinois statewide CRR portfolio, with particular urgency in the high-density urban neighborhoods where both the frequency and the consequence dimensions of this risk are most concentrated.

Cooking Fire Commercial — Risk Level 3 Justification: Low Probability/Medium Impact.

Commercial cooking fires in Illinois occur at substantially lower frequency than residential cooking fires, reflecting the higher rates of fire protection system installation, commercial kitchen suppression equipment, and staff training requirements that apply to commercial food service occupancies under Illinois fire code. The 2,534 non-residential cooking fire incidents recorded across the study period average approximately 507 events annually, a meaningful but comparatively modest volume relative to the residential cooking fire burden. The institutional care subcategory within this total, including nursing homes and 24-hour care facilities at 135 incidents and residential care facilities at 52, carries the highest life safety consequence per incident given the mobility limitations and cognitive vulnerabilities of the populations housed in those settings. Commercial kitchen suppression system compliance, staff training on hot work procedures and grease management, and inspection program focus on high-frequency cooking occupancies represent the most effective prevention investments in this category.

Vehicle Fire — Risk Level 4 Justification: Low Probability/Low Impact.

Vehicle fires in Illinois present a remarkably stable trend across the five-year study period, ranging from a low of 7,567 incidents in 2021 to a high of 8,213 in 2023, with an overall pattern that shows neither meaningful growth nor decline. At 39,289 total incidents across

the period, vehicle fires account for approximately 14 percent of all Illinois fire incidents but carry a generally contained consequence profile, as the majority of vehicle fires are limited to the vehicle of origin with limited spread potential to structures or adjacent vehicles under typical conditions. The road freight and transport vehicle subcategory, at 4,350 incidents representing 11 percent of total vehicle fire volume, carries a higher individual consequence profile than passenger vehicle fires given the potential for hazardous cargo involvement and the operational complexity of heavy vehicle fire suppression along Illinois's major freight corridors. The emerging risk dimension of electric vehicle and lithium-ion battery fires, while not yet producing significant volume in this dataset, warrants monitoring as the Illinois vehicle fleet transitions toward electrification, as the suppression challenges and extended incident duration associated with battery fires represent a genuine preparedness gap for many departments.

WUI Fires — Risk Level 2 Justification: Medium Probability/High Impact.

Wildland-urban interface fires represent one of the fastest-evolving risk categories in the Illinois statewide fire profile, with 36,239 total incidents recorded across the study period and a peak of 8,570 incidents in 2023 that established a new high-water mark for annual WUI fire volume in the state. The volatility of year-over-year WUI fire volume reflects the direct sensitivity of this category to precipitation variability, drought conditions, and seasonal fuel load accumulation, all of which are becoming more pronounced as climate patterns shift. The geographic distribution of the top 25 WUI fire ZIP codes reveals a risk footprint that extends well beyond forested areas to encompass agricultural-residential interface communities, prairie restoration zones, and exurban developments across central and southern Illinois where the combination of dry vegetation, limited suppression resources, and extended response times from volunteer-dependent departments creates the conditions for rapid fire escalation. Illinois's position as the leading soybean and second largest corn producing state means that harvested field conditions create seasonal fuel environments across a substantial proportion of the state's land area, further expanding the WUI risk geography beyond what traditional wildland fire mapping frameworks capture.

Trash and Rubbish Fires — Risk Level 3 Justification: High Probability/Low Impact.

Outdoor trash and rubbish fires are among the highest-frequency fire categories in the Illinois statewide incident profile, with 37,159 total incidents across the study period representing approximately 13 percent of all fire incidents and following a broadly upward trend that mirrors the overall statewide fire volume trajectory. The individual life safety consequence of a contained outdoor trash or rubbish fire is generally low, as the majority of these incidents involve isolated combustion events with limited spread potential under normal conditions. However, two factors elevate this category above a 4 rating. First, the geographic concentration of outdoor trash and rubbish fires in the same distressed urban neighborhoods producing the highest building fire and arson incident volumes confirms

their role as both an indicator and a component of community disinvestment conditions that create structural fire risk across multiple categories simultaneously. Second, the escalation potential of trash and rubbish fires that occur in proximity to occupied structures, particularly in densely developed neighborhoods where setback distances are minimal, creates a non-trivial probability of structural fire ignition that the aggregate category statistics do not fully capture. Community blight remediation, illegal dumping enforcement, and neighborhood clean-up initiatives represent the most effective structural interventions for this category.

Non-Fire Incident Types

Carbon Monoxide — Risk Level 1 Justification: High Probability/High Impact.

Carbon monoxide incidents reported under NFIRS code 424 represent one of the most consequential life safety risks in the Illinois statewide incident profile, combining the invisibility of the hazard with the speed of incapacitation and the disproportionate vulnerability of the populations most exposed. With 47,604 total incidents recorded across the five-year study period and a statewide average of approximately 9,500 incidents annually, CO events occur at high frequency relative to their potential for fatal outcome. The bimodal seasonal distribution, with primary peaks in the October through January heating season and a secondary peak in June through August driven by generator and outdoor equipment use, confirms that CO risk is a year-round challenge rather than a purely seasonal one. The geographic concentration of CO incidents in the south and west side Chicago neighborhoods, where aging housing stock, deteriorating combustion appliances, and financial barriers to equipment replacement intersect with high residential occupancy density, produces a risk environment in which the probability of a serious exposure outcome is substantially higher than the statewide average suggests. Illinois's history of CO-related fatalities and mass casualty events in residential settings, combined with the demonstrated relationship between housing age, income, and detector compliance rates, establishes CO as a Tier 1 statewide prevention priority.

Lift Assist — Risk Level 2 Justification: High Probability/Medium Impact.

Lift assist incidents reported under NFIRS code 554 represent the fastest-growing high-volume incident category in the Illinois fire service, increasing 48.6 percent from 64,016 incidents in 2020 to 95,150 in 2024, a growth rate nearly double the overall statewide incident growth rate of 21.5 percent across the same period. The individual life safety consequence of a lift assist incident, while rarely immediately fatal, carries meaningful medium-term health implications for the patients involved, as repeat falls among older adults are strongly associated with accelerating functional decline, hospitalization, loss of independent living, and mortality within 12 months of a significant fall event. The

operational consequence for fire departments is substantial, as lift assist responses require minimum two to four personnel for safe execution, involve significant biomechanical injury risk to responding firefighters, and generate more than 1,000 statewide responses per day at 2024 volume levels. The geographic concentration of lift assist incidents in the south and southwest Chicago neighborhoods, where ZIP code 60620 alone generated 11,559 incidents across the period, confirms that this risk is structurally embedded in specific communities with high concentrations of elderly residents living alone in older housing stock with limited access to preventive health services. The demographic trajectory of Illinois's population strongly suggests continued acceleration of lift assist demand through at least 2040.

EMS Related

EMS — Risk Level Pending NEMSIS Analysis

The EMS incident category, recorded under NFIRS Category 3, accounts for approximately 67 percent of all Illinois fire department incident volume and represents the dominant operational force shaping fire service workload, staffing, and resource deployment across the state. With volume growing from 969,270 incidents in 2020 to 1,180,683 in 2024, a net increase of 21.8 percent, EMS demand is both the largest and one of the fastest-growing categories in the statewide incident profile. While NFIRS data establishes the volume and trend dimensions of EMS demand with clarity, the clinical and demographic specificity necessary for meaningful risk matrix scoring requires integration of National Emergency Medical Services Information System data, which captures patient demographics, chief complaint, clinical intervention, disposition, and transport destination at the individual incident level. Meaningful risk level assignment for specific EMS categories including cardiac emergencies, respiratory emergencies, fall-related injuries, overdose events, and traffic-related trauma requires that NEMSIS-level analysis, and risk matrix scoring for this section will be completed as a subsequent phase of the Illinois Statewide Risk Assessment upon completion of the NEMSIS data integration.

Weather Related

Tornado and Severe Wind Events — Risk Level 2 Justification: Medium Probability/High Impact.

Illinois is one of the most tornado-exposed states in the continental United States, situated within the central portion of Tornado Alley where the collision of Gulf moisture, dry continental air masses, and upper-level wind shear creates atmospheric conditions capable of producing significant tornado activity in any season. The Illinois Emergency Management Agency and NOAA storm event records document consistent annual tornado activity across the state, with the highest frequency concentrated in the central and

southern regions where topographic features provide no barrier to storm system development and propagation. The impact dimension of this risk is unambiguously high, as significant tornado events produce mass casualty potential, widespread structural destruction, simultaneous multi-incident demand that overwhelms local response capacity, and long-duration recovery operations that tax fire service resources well beyond the initial event. Illinois's manufactured housing inventory, concentrated in rural and exurban communities across central and southern Illinois, represents a particularly acute vulnerability given the disproportionate fatality rates associated with tornado impacts on mobile and manufactured structures. The combination of consistent annual probability and catastrophic impact potential places tornado and severe wind events firmly in the second-highest risk tier.

Severe Thunderstorms and Lightning — Risk Level 3 Justification: High Probability/Low to Medium Impact.

Severe thunderstorm events are the most frequently occurring significant weather hazard in Illinois, with NOAA storm event data documenting dozens of billion-dollar severe storm events affecting the state since 1980 and annual thunderstorm activity generating lightning strike responses, wind damage assessments, and flood-related service calls documented in the NFIRS Category 8 data across the study period. The high probability of occurrence is partially offset by the generally localized and manageable impact profile of individual thunderstorm events relative to the catastrophic potential of tornado events, placing this category in the third risk tier rather than the second. However, the cumulative operational impact of sustained thunderstorm seasons on fire department response demand, infrastructure integrity, and mutual aid utilization is meaningful and warrants sustained attention in both operational planning and community preparedness programming. Lightning strike incidents, while individually low consequence in most cases, carry ignition potential for structure and vegetation fires that create secondary incident demand following storm events.

Flash Flooding and Riverine Flooding — Risk Level 2 Justification: Medium Probability/High Impact.

Illinois's geographic position at the confluence of the Mississippi, Ohio, Illinois, and Wabash River systems, combined with the drainage characteristics of its largely flat central terrain and the urban stormwater management challenges of the Chicago metropolitan area, creates a flood risk environment that is among the most consequential weather-related hazards in the state. Flash flooding events produce immediate life safety risk through vehicle entrapment in flooded roadways, a leading cause of flood-related fatalities nationally, as well as structural flooding of residential and commercial occupancies that generates both immediate rescue demand and prolonged service call volume as departments assist with water removal and damage assessment. Riverine flooding events

along the major river corridors can displace thousands of residents, compromise access routes for emergency response across wide geographic areas and generate multi-day or multi-week operational demands that stress mutual aid frameworks significantly. The Illinois Emergency Management Agency's hazard mitigation plan identifies flooding as among the costliest and frequently occurring natural hazards in the state, with documented flood events affecting communities in virtually every region of Illinois across the study period.

Winter Storms, Ice Storms, and Extreme Cold — Risk Level 2 Justification: High Probability/Medium to High Impact.

Winter weather hazards represent a consistent and high-frequency risk across the Illinois annual cycle, with the state's continental interior climate producing significant snowstorm, ice storm, and extreme cold events in most years across the study period. The impact profile of winter weather events operates across multiple dimensions simultaneously. Extreme cold drives direct mortality risk among unsheltered populations and vulnerable individuals in inadequately heated housing, generating EMS demand and service call volume in the highest-risk communities. Ice storms produce driving condition deterioration that elevates traffic accident frequency and severity, generating vehicle accident with injuries incidents within the EMS category. Heavy snow accumulation creates roof load risk in older and agricultural structures, access challenges that compromise response time performance across affected jurisdictions, and apparatus operational difficulties for departments whose equipment and facilities are not fully winterized. The carbon monoxide incident data analyzed in this assessment directly reflects the winter weather risk dimension, as the heating season CO peak from October through January is driven by the same cold weather conditions that activate residential combustion appliance use across the state.

Extreme Heat Events — Risk Level 2 Justification: Medium Probability/High Impact.

Extreme heat represents one of the deadliest weather hazards in Illinois history, with the July 1995 Chicago heat wave producing an estimated 739 excess deaths over a five-day period in what remains one of the deadliest weather disasters in American urban history. The documented mortality and morbidity impact of extreme heat events on Illinois's most vulnerable populations, including elderly residents living alone, individuals with chronic medical conditions, low-income households without access to air conditioning, and outdoor workers, establishes the impact dimension of this risk as unambiguously high. Climate projections for Illinois indicate a significant increase in the frequency, duration, and intensity of extreme heat events through mid-century, with some models projecting a tripling of days exceeding 95 degrees Fahrenheit in central and southern Illinois by 2050. The fire service implications of extreme heat extend beyond direct medical response to

include operational challenges for personnel working in full protective gear, elevated wildfire and grassland fire risk during heat-drought combinations, and increased EMS demand as heat-related illness calls strain system capacity during peak events. The concentration of extreme heat vulnerability in the same south and west side Chicago communities documented as the highest-risk jurisdictions across multiple fire and EMS incident categories compounds the urgency of this risk designation.

Drought and Agricultural Drought — Risk Level 3 Justification: Medium Probability/Medium Impact.

Drought conditions in Illinois carry fire service implications that are substantially greater than the hazard's individual risk level might suggest when considered in isolation, primarily through the pathway of elevated wildland and grassland fire risk across the state's 75 to 76 percent agricultural land area. Extended drought periods reduce fuel moisture content in Illinois's extensive grassland, harvested cropland, and prairie restoration areas, significantly lowering the ignition threshold and increasing the rate of spread for WUI and vegetation fire events. The 2023 WUI fire peak of 8,570 incidents documented in this assessment occurred in a year of below-normal precipitation across portions of Illinois, consistent with the observed relationship between drought severity and WUI fire volume. Agricultural drought also generates indirect fire service implications through its economic impact on rural communities, where farm financial stress correlates with deferred maintenance of agricultural equipment and structures, increasing the probability of equipment-related fire ignition during field operations. Illinois's position as the leading soybean and second largest corn producing state means that drought impacts on the agricultural sector ripple through the rural fire service communities most dependent on volunteer staffing sustained by agricultural economy employment.

Earthquake Risk (New Madrid Seismic Zone Exposure) — Risk Level 4 Justification: Low Probability/High Impact.

Illinois's exposure to seismic risk through the New Madrid Seismic Zone, which lies along the state's southern border with Missouri and Kentucky, represents a low-frequency but catastrophic-consequence hazard that warrants inclusion in the statewide risk matrix despite its limited representation in the historical incident record. The New Madrid Seismic Zone has produced some of the largest earthquakes in North American recorded history, including the 1811 to 1812 sequence estimated at magnitude 7.0 to 8.0, and USGS modeling indicates a meaningful probability of a significant seismic event occurring within the zone within the next 50 years. The University of Illinois Mid-America Earthquake Center has documented that a repeat of a major New Madrid event would produce catastrophic infrastructure damage across southern Illinois, including bridge failures on the Mississippi River crossings, utility system disruption across multiple states, and mass casualty events in communities whose older unreinforced masonry building

stock carries high collapse vulnerability under seismic loading. The fire service consequence of a major seismic event includes simultaneous ignitions from ruptured gas lines, loss of water supply for fire suppression due to main breaks, access route compromise from road and bridge failures, and an overwhelming demand for search and rescue operations that would require massive interstate mutual aid activation. The low annual probability of occurrence places this risk at level 4, but its catastrophic impact potential makes it a priority for preparedness planning that is disproportionate to its frequency ranking.

Wildfire and Grassland Fire Risk (Emerging Threat) — Risk Level 2 Justification: Medium Probability/High Impact.

Wildfire and grassland fire risk in Illinois has transitioned from a marginal concern to a substantive and growing statewide hazard over the five-year study period, driven by the intersection of climate-related changes in precipitation patterns, expanding wildland-urban interface development, and the fuel load characteristics of Illinois's dominant agricultural and prairie landscape. The 36,239 WUI fire incidents recorded across the study period, including a 2023 peak of 8,570 events, establish that wildland and grassland fire is already occurring at meaningful frequency across the state rather than representing a purely theoretical future threat. Illinois's 75 to 76 percent agricultural land area creates a fuel environment that, under drought and wind conditions, can produce rapidly spreading fire events capable of threatening structures, transportation infrastructure, and human life across wide geographic areas with limited suppression resources. The concentration of wildland fire risk in areas served by volunteer-dependent departments with extended response times and limited specialized wildland firefighting equipment compounds the impact dimension of this risk. Climate projections consistently indicate that the conditions producing high wildland fire risk, including drought frequency, extreme heat events, and altered precipitation seasonality, will intensify across Illinois through mid-century, supporting the emerging threat designation while justifying a current risk level of 2 based on the already-documented frequency and consequence profile in the historical incident data.

Summary

Illinois Statewide Risk Assessment

The Illinois Statewide Risk Assessment represents an empirical examination of fire and community risk for the Illinois fire service and the state agencies, grant administrators, and planning bodies that support it. Spanning five years of National Fire Incident Reporting System data from 2020 through 2024, encompassing more than 7.8 million incident records submitted by Illinois fire departments, and integrating demographic analysis, housing data, social vulnerability mapping, casualty records, property loss data, and a statewide risk matrix across fire, non-fire, weather, and infrastructure hazard categories, this assessment was designed from its inception to serve a dual purpose. It provides the empirical foundation upon which a comprehensive statewide Community Risk Reduction program can be designed, funded, and evaluated, and it makes the case, with the force of the data itself, that prevention investment in Illinois is not a peripheral or aspirational addition to the fire service mission but a structural necessity for protecting both the communities Illinois firefighters serve and the firefighters who serve them.

The Illinois fire service is one of the most organizationally complex in the nation, encompassing 1,107 registered fire departments ranging from the Chicago Fire Department with 4,881 career firefighters to single-station volunteer companies protecting isolated rural communities with populations in the hundreds. This breadth is the defining structural feature of the Illinois fire service and the central challenge for any statewide risk reduction strategy, because the communities carrying the highest per-capita fire risk, those with the oldest housing stock, the highest poverty rates, the most rapidly aging populations, and the greatest social vulnerability, are precisely the communities served by the departments with the least prevention capacity, the smallest budgets, and the most constrained personnel resources. The Mutual Aid Box Alarm System provides a world-class response coordination framework that partially compensates for this resource disparity in the emergency response dimension, but MABAS has no equivalent mechanism for prevention program delivery and filling that gap is the primary structural challenge that the Illinois statewide CRR framework must address.

The five-year incident analysis documents a fire service operating under conditions of sustained and accelerating demand growth. Total incident volume grew from 1,435,889 in 2020 to 1,744,324 in 2024, a net increase of 308,435 incidents or 21.5 percent over the period, with Emergency Medical Services accounting for approximately 67 percent of all volume and growing at 21.8 percent across the period. Fire incidents, while representing a smaller share of total volume, reached a five-year peak of 59,891 in 2023 before moderating to 57,761 in 2024, a level that remains the second highest in the study period and confirms that the fire problem in Illinois is not resolving itself through ambient social or behavioral change. Response time performance degraded consistently across the period,

with statewide average response times for fire incidents increasing from 6.49 minutes in 2020 to 6.86 minutes in 2024, and the performance gap between career and volunteer departments, nearly five minutes at the average level and nearly nine minutes at the 90th percentile, reflects the structural staffing and geographic conditions of Illinois's fire service geography that cannot be bridged through response optimization alone and must be addressed through prevention investment that reduces the frequency of events requiring rapid intervention.

The fire incident analysis identifies a risk hierarchy defined by both frequency and consequence. Structure fires account for 52 percent of all fire incidents at 145,214 events across the period, with building fires representing 62 percent of all structure fires and generating the overwhelming majority of property loss, civilian injuries, and civilian fatalities. Cooking fires at 28,971 confined-to-container incidents are the second most frequent specific fire type, and the Illinois data produces an anomalous finding relative to national fire profiles in the distribution of cooking fires across residential occupancy types. Multifamily cooking fires account for 55 percent of all residential cooking fires at 14,971 incidents, substantially outnumbering single- and two-family cooking fires at 8,864 incidents, a distribution that inverts the typical national pattern and reflects the extraordinary density of Chicago's multifamily residential inventory concentrated in the highest-vulnerability neighborhoods. This single finding has more direct implications for CRR program targeting than any other in the incident analysis, as it establishes multifamily cooking fire prevention as the highest-return residential fire prevention investment in the Illinois portfolio. WUI fires at 36,239 incidents across the period, peaking at 8,570 in 2023, and arson and intentionally set fires trending upward through a 21.9 percent single-year surge in 2023, complete the fire incident risk hierarchy and establish the full scope of the structural fire challenge confronting Illinois communities.

The civilian casualty analysis documents 659 civilian fire fatalities and 2,365 civilian fire injuries across the five-year study period, figures that together establish the irreducible human cost of the Illinois fire problem and the ultimate measure against which all prevention investment must be evaluated. The fatality trend is volatile, ranging from a low of 116 in 2024 to a peak of 152 in 2023, with an overall downward trendline that is encouraging but fragile, as confirmed by the single-year reversal of 2023 that erased the preceding year's progress entirely. The area of origin analysis for both injuries and fatalities identifies the bedroom and the kitchen as the two most consequential residential fire environments, with the bedroom surpassing the kitchen as the leading confirmed origin for fatal fires, a finding that establishes working interconnected smoke alarm coverage in sleeping areas as the most critical single life safety hardware intervention in the statewide CRR portfolio. Multiple fatality fires, 72 events producing 175 victims across 53 Illinois communities, reveal that catastrophic fire events are a statewide phenomenon extending from Chicago's densest urban neighborhoods to the smallest rural

townships, and that the combination of occupant vulnerability, detection failure, and extended response times in volunteer-dependent communities creates the conditions most consistently associated with events producing two or more fatalities in a single incident.

The fire service casualty analysis delivers findings that are among the most urgent in the assessment. Fire service injuries held within a stable band of 446 to 491 annually from 2020 through 2023 before surging to 820 in 2024, a 68.7 percent single-year increase that has no precedent in the study period and demands immediate investigation by the OSFM, Illinois fire service leadership, and occupational health stakeholders. The divergence between the civilian injury trend, which declined 28 percent over the period, and the fire service injury trend, which increased 71.2 percent when the 2024 spike is incorporated, is the most operationally significant contrast in the entire dataset. A fire service achieving measurable progress in reducing civilian harm while simultaneously experiencing a surge in personnel injuries has not yet achieved the full mission of the CRR framework, because firefighter health, safety, and wellness is not a parallel or secondary concern but a core dimension of the statewide risk reduction agenda. Five fire service fatalities were captured in the NFIRS dataset across the period, a figure that significantly understates the actual line-of-duty death burden given NFIRS reporting scope limitations, and integration of NIOSH investigation reports, USFA fatality records, and OSFM investigation findings into future assessment cycles is a data infrastructure priority with direct operational safety implications.

The demographic and social vulnerability analysis establishes the geographic architecture of fire risk in Illinois with a precision that aggregate incident statistics alone cannot provide. Illinois's 5.4 million housing units include approximately 2 million structures built before 1960, concentrated in the communities with the highest poverty rates, the largest elderly populations, and the lowest smoke alarm ownership and maintenance rates. The Social Vulnerability Index analysis identifies 10 southern Illinois counties with SVI scores at or above 0.75, all of which are simultaneously the highest-need and lowest-capacity jurisdictions in the state, served by volunteer departments with no paid prevention staff, aging facilities, and constrained local tax bases. Cook County's SVI score of 0.67 reflects the concentrated urban poverty of Chicago's south and west sides, where the top 25 ZIP code rankings for carbon monoxide incidents, lift assist calls, outside fires, arson, and civilian injuries overlap with near-perfect geographic consistency, confirming that these communities carry a compounding, multi-hazard risk burden that requires sustained, coordinated, and culturally differentiated CRR investment at a scale proportionate to the magnitude of the risk.

The statewide risk matrix, completing this assessment's analytical framework, identifies three fire-related risks at the highest risk level of 1, Building Fires in one- and two-family dwellings, Cooking Fires in multifamily occupancies, and Carbon Monoxide incidents, each combining high probability of occurrence with high potential for serious life safety

consequence. Six additional risks are scored at level 2, including multifamily building fires, commercial building fires, single family cooking fires, WUI fires, lift assist incidents, and five weather-related hazards including tornadoes, flash flooding, winter storms, extreme heat events, and wildfire and grassland fire risk, each representing medium-to-high probability and high impact combinations that demand sustained statewide attention. The risk matrix is designed as a living instrument rather than a static snapshot, and it should be revisited and updated on a biennial cycle as new NFIRS data, NEMSIS analysis, and demographic updates become available.

The Illinois Statewide Risk Assessment concludes with a finding that is both sobering in its current implications and genuinely encouraging in its directional possibilities. Illinois has the data infrastructure, the organizational framework through the Illinois CRR Stakeholder Task Force and the Vision 20/20 Project, the institutional partnerships between IFCA, IFSI, and OSFM, and the demonstrated commitment of fire service leaders across the state to build a statewide CRR program of genuine consequence. What the data in this assessment makes unambiguously clear is that the scale of the investment must match the scale of the risk. With 659 civilian fire fatalities, 2,365 civilian injuries, 2,722 fire service injuries, and approximately \$3.18 billion in property and contents loss across five years, the Illinois fire problem is not a problem that awareness campaigns and episodic grant cycles can resolve. It requires a sustained, evidence-based, geographically targeted, and adequately funded prevention infrastructure that reaches the households, communities, and populations where the data in this assessment has identified the risk to be greatest, delivers the interventions that the research literature has documented as most effective, and measures its outcomes against the specific casualty and loss benchmarks that this assessment has established. The communities of Illinois, and the firefighters who serve them, deserve nothing less.