

*2021 ESO FIRE SERVICE INDEX*

# INSIGHTS AND BEST PRACTICES FOR FIRE DEPARTMENTS

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# CONTEXT AND OVERVIEW FOR THE FIRE SERVICE INDEX

There is no other way to say it – 2020 was a strange year. We all had to adapt in our everyday work lives, but we also had to make adjustments in our personal lives. As we dig into data in the 2021 ESO Fire Service Index report, we've also made some tweaks and adjustments to provide deeper insights and take a look at the impact of COVID-19.

As a quick reminder, we designed this report as a data tool and benchmarking guide to help you better understand opportunities, challenges, and victories in your own organization. High-quality data and proper analysis enable smarter planning and decision-making to improve community health and safety.

Ultimately, we are looking to help fire leaders ignite quality improvement conversations by exploring questions such as the following:



**HOW MANY OF OUR RESPONSES ARE EMS COMPARED TO FIRE?**

**WHAT ARE OUR MOST COMMON RESPONSE TYPES OVERALL? AMONG FIRE CALLS?**

**HOW QUICKLY DO WE RESPOND TO A CALL ON AVERAGE?**

**FOR FIRE CALLS, WHAT ARE THE MOST COMMON PROPERTY TYPES WE RESPOND TO?**

**HOW MUCH PROPERTY LOSS WAS REPORTED OVERALL? IN AGGREGATE BY PROPERTY TYPE? CAN WE COMPARE TO TOTAL PROPERTY VALUE?**

**FOR HOW MANY OF OUR RESPONSES WAS COVID-19 A FACTOR?**

The appropriate metrics for evaluating the success of your fire department will vary depending upon a number of factors, including the size of the population served and geographic location. In some cases, the emphasis is less about identifying “success” and more about understanding your community and its unique needs. However, we believe an objective look at aggregate data across the United States can give you a good idea how you are performing compared to your peers.

As stated earlier, the purpose of this report is to serve as a point of reference for fire departments to identify which areas are in alignment and which areas represent opportunity for improvement – or at least further assessment and evaluation. This quantitative approach to measuring performance gives fire departments a starting framework to continually refine strategies, increase efficiency, improve outcomes, and allocate resources appropriately.

The 2021 ESO Fire Service Index report uses data compiled from 537 fire departments and represents 2,096,597 records from January 1, 2020-December 31, 2020.

We hope you find this Fire Service Index report helpful, enlightening, and empowering. We're always here to answer questions, clarify any of the data, and share our expertise. Enjoy.



## 537 FIRE DEPARTMENTS 2.1M INCIDENTS

### LIMITATIONS

This Index is retrospective and looks at aggregate data from January 1, 2020-December 31, 2020. There are no universal rules designed around these trends. The purpose of the Index is to be informative and directional, but it is not intended to be a scientific study - nor is it intended to be comprehensive in nature. We hope this Report serves as a body of literature that adds to the discussion and conversation around best practices for each of the selected metrics to help improve community health and safety.

### THE KEY TRENDS IDENTIFIED ARE:



PERCENT OF EMS CALLS  
VS. FIRE CALLS



MOST COMMON  
INCIDENT TYPES



FIRST APPARATUS  
DISPATCH TIME, TURNOUT  
TIME, TRAVEL TIME, AND  
RESPONSE TIME



MOST COMMON  
PROPERTY TYPES FOR  
FIRE RESPONSES



DOCUMENTATION OF  
TOTAL PROPERTY LOSS  
AND VALUE



PERCENT OF CALLS WITH  
COVID-19 AS A FACTOR

# KEY FINDINGS

The 2021 ESO Fire Service Index report looked at 2,096,597 records from January 1, 2020 – December 31, 2020. At a macro level, the data revealed the following findings:

Fire departments, by and large, respond to more EMS calls than Fire calls.

Based on our data, we see that 300-series EMS incidents accounted for

# 69%

of all incidents while 100-series Fire responses accounted for 3 percent of all calls.



Outside of EMS calls, the most common incident types include:



First apparatus turnout time, travel time, and response time look positive.

## CLOCKING IN

### TURNOUT TIME

1:10

### TRAVEL TIME

4:03

### RESPONSE TIME

6:32

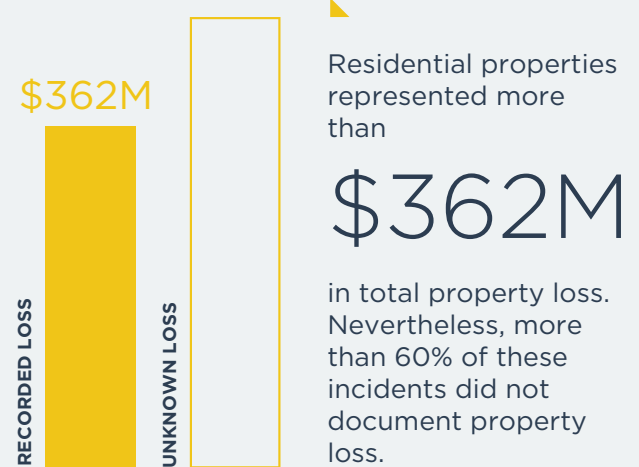
Looking at the overall median, first apparatus turnout time was clocking in at 1 minute and 10 seconds, travel time was 4 minutes and 3 seconds, and response time was 6 minutes and 32 seconds.

Family dwellings are the most common property type among Fire incidents (100-series).



Residential properties (one or two-family dwelling structures and multifamily dwelling properties) accounted for 42% of all call locations. Outside or Special Property accounted for the second most call locations at 35%.

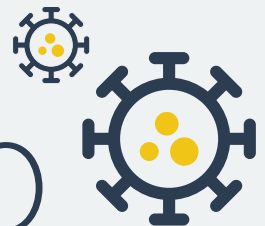
In aggregate, residential properties represented the largest financial loss in Fire incidents; however, property loss is likely under-documented:



COVID-19 had an impact.

NEARLY

# 50,000



(or 2.2%) responses listed COVID-19 as a suspected or confirmed factor. This number jumped to 3.8% or higher in November and December.

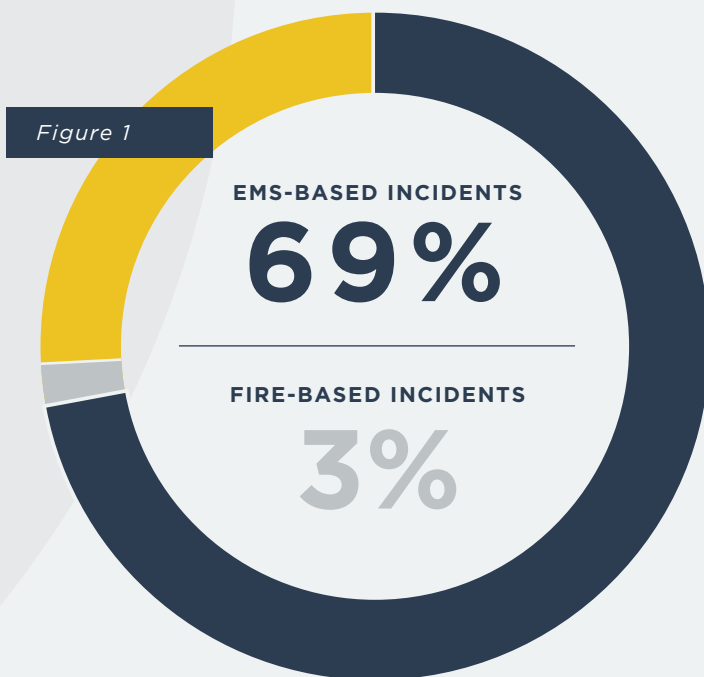
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## EMS VS. FIRE CALLS

The number of EMS incidents is a trend that has been monitored for some time. With the advent of new, more fire-resistant building materials – as well as an increase in community risk reduction programs – fire calls tend to be decreasing overall, while many departments are looking to hire EMS professionals or cross-train firefighter/EMS professionals to adjust to the changing incident volume.

In our data, we see that 69% of all incidents were EMS calls (300 series), while about 3% of incidents were fire-based incidents (100 series). When compared to last year's Fire Service Index, we see that the percent of EMS incidents has dropped slightly (by 2 percentage points) from 71% to 69%. It's likely COVID-19 had some impact on the number of EMS calls. Figure 1 shows the breakdown of incidents by incident type.



### RECOMMENDED ACTION

If your department doesn't currently offer EMS services, use the opportunity to collaborate more closely with EMS agencies in your community. The ability to share data and insights across organizations can help improve patient outcomes as well as improve firefighter safety. In particular, collaboration between EMS and fire departments around public health and safety programs – including healthcare, prevention, and fire safety – can provide much broader engagement to help improve the health and safety of a community.

If you are active in EMS service delivery, do you have risk reduction programs that could help decrease the call volume associated with EMS calls? Examples of these types of programs include slip, trip, and fall prevention; community health/wellness education; and community partnerships for mental health, medication assistance, and home food delivery for patients who have difficulty leaving their homes.

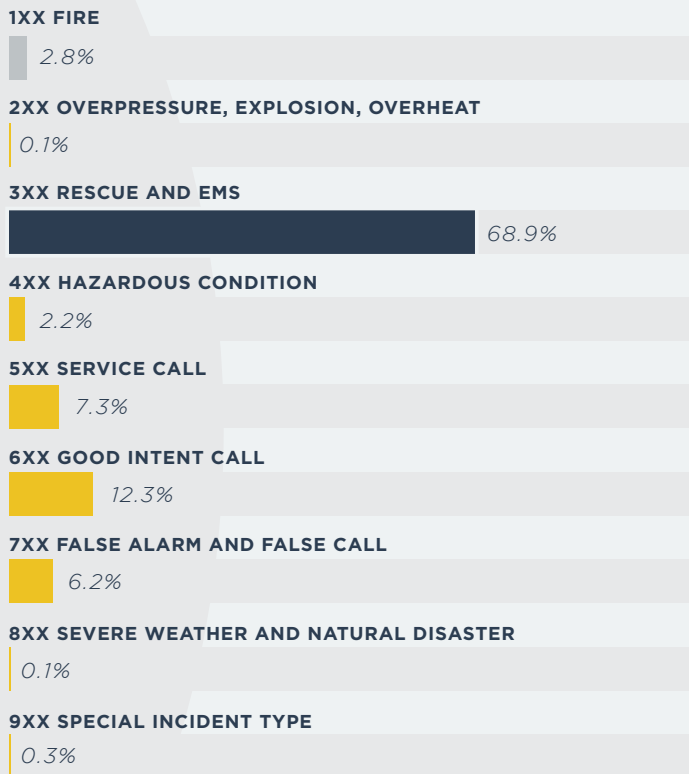
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## INCIDENT TYPES

Figure 2 displays the breakdown of all incident types.

Figure 2



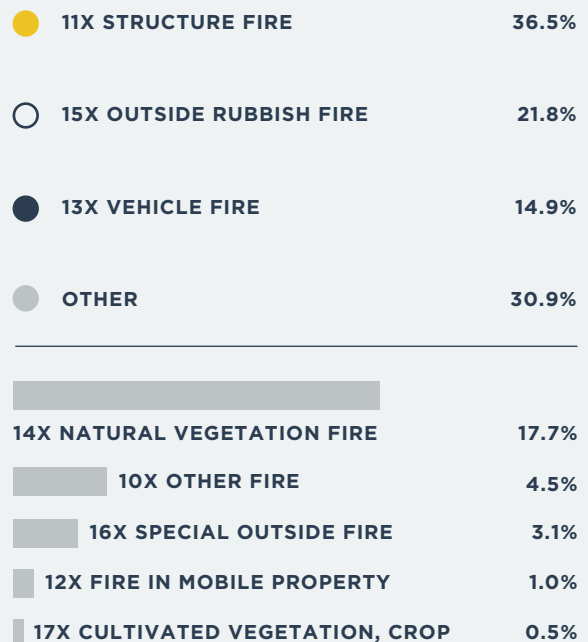
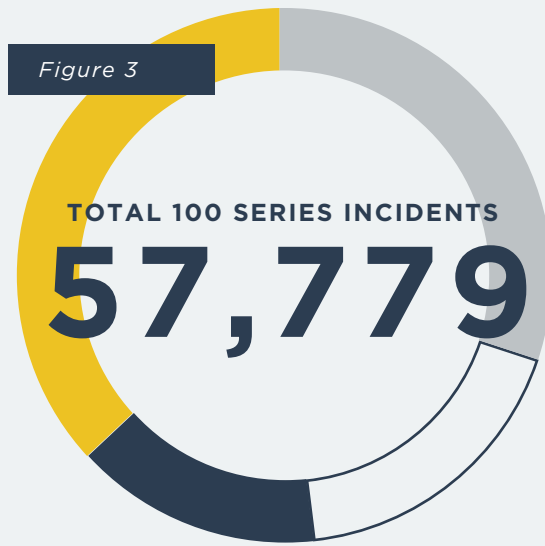
### RECOMMENDED ACTION

The most common fire calls also present some of the biggest dangers for firefighters. Make sure you have current and best practice guidelines and procedures for your agency relating to SCBA, PPE, and exposure decontamination during these call types.

Nearly 5% of fire response types were listed as “other fire.” Being specific about fire type helps improve data and insights for quality and performance improvement.

When limited to fire incidents only (100 series), the data show the three most common fire response types are: structure fire (11X - 36.5%), outside rubbish, trash, or waste fires (15X - 21.8%), and vehicle fires (13X - 14.9%). Figure 3 shows the breakdown of categories of fire-specific incident types (100 series).

Figure 3



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## DISPATCH AND RETURN TIME

In Figure 4, we break response time into three phases: 1) dispatch time (from alarm to dispatch), 2) turnout time (from dispatch to leaving the station), and 3) travel time (from leaving the station to arriving on scene). Our data indicate departments take the NFPA standards to heart, with a median turnout time of 1 minute, 10 seconds; travel time of 4 minutes, 3 seconds; and response time of 6 minutes, 32 seconds.

For Fire responses, the standard is a 4-minute or less travel time. Over half of all 100-series responses (54%) met this goal. For EMS responses, the travel time standard is also 4 minutes for the first AED-capable apparatus; 50% of all 300-series responses met this goal.

### RECOMMENDED ACTION

Your crews want to do the right thing; however, they may not always know exactly how long they are taking for turnout. The ability to add timers with a notification system showing turnout time as they are headed to the truck, as well as the monthly sharing of turnout times with each crew, provide important, actionable feedback related to their performance. When tracking travel time and setting goals for your department, take your unique practice setting into account. The NFPA 1710 standard was designed primarily for communities with career or paid firefighters, whereas the NFPA 1720 standard was designed for communities with volunteer firefighters. Use these standards and collaborate with community leaders to establish appropriate measures and monitor those data points.



### ADD TIMERS WITH NOTIFICATIONS

Identify areas that take longer to reach to ensure an automated external defibrillator (AED) is accessible to law enforcement and the general public prior to your arrival. This will help strengthen the overall system of care in a community.

Figure 4

● MEDIAN ○ 90TH PERCENTILE



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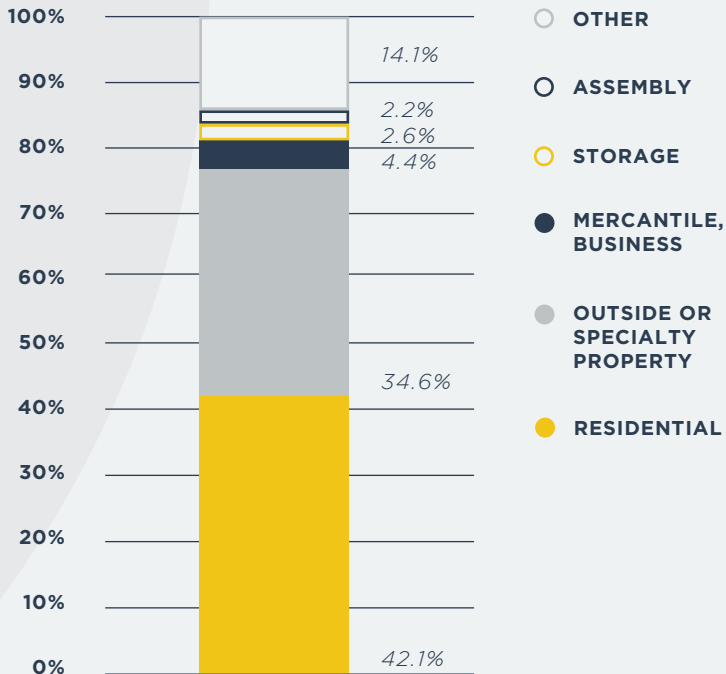


## PROPERTY TYPES

In 2019, there were approximately 140M housing units in the United States according to the United States Census Bureau, so it's no surprise the most common property types that fire departments respond to for fire calls are residential properties – whether one or two-family units or multifamily units.

Residential properties (one or two-family units and multifamily units) accounted for 42.1% of all fire calls (100series), outside or special property accounted for 34.6% of fire calls. Figure 5 shows the five most common property types responded to by fire departments for 100-series calls.

Figure 5



## RECOMMENDED ACTION

When talking about single-family homes, the ability to positively impact the largest number of fires are target prevention programs, such as smoke detector programs, home evacuation programs, and ensuring residents are able to adequately mark their address so the homes are easy to find at night or in sight-hindering conditions.



## MAKE A PREPLAN

For multifamily structures, make sure your responding companies have the ability to get to the right building, access to the riser room, and key access to building mechanical rooms. A good preplan based on data in properties and inspection actions can make all the difference. This type of information can easily be turned into two-page quick references that can be available for first-responding units to get information safely and quickly.



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## PROPERTY LOSS

In a fire, property loss is often times inevitable. The first priority is the saving of lives, followed by containment to ensure the fire doesn't spread and cause more damage.

The total property loss reported among 100-series calls during 2020 was more than 909 million dollars. While residential properties (4XX) represented the most common calls in terms of property type, in aggregate, they represented the second greatest total property loss at \$362,752,179 with an average loss per incident of \$36,861. Outside or special properties represented the largest aggregate total at 443,790,340, with an average of \$76,529 per incident.

Figure 6 displays the total reported property losses by property type among fire responses (100 series).

Figure 6

CODE	DESCRIPTIONS	TOTAL EST. PROPERTY LOSS
1XX	ASSEMBLY	\$17,342,752
2XX	EDUCATIONAL	\$2,228,841
3XX	HEALTH CARE, DETENTION AND CORRECTION	\$1,951,343
4XX	RESIDENTIAL	\$362,752,179
5XX	MERCANTILE, BUSINESS	\$21,141,546
6XX	INDUSTRIAL, UTILITY, DEFENSE, AGRICULTURE, MINING	\$19,773,401
7XX	MANUFACTURING, PROCESSING	\$12,157,878
8XX	STORAGE	\$22,742,220
9XX	OUTSIDE OR SPECIAL PROPERTY	\$443,790,340
OXX	OTHER	\$1,073,393
NNN/ UUU	NONE OR UNDEFINED	\$4,063,903

However, one important piece of information to note - 61% of the fire incidents had no entry for property loss and another 6% had \$0 entered, which likely suggests substantial underreporting of true property loss.

Figure 7 looks at total reported loss by property type and the proportion of 100-series incidents with missing values or zero property loss recorded.

Figure 7

TOTAL PROPERTIES WITH UNKNOWN LOSS

35,255

PERCENT OF INCIDENTS

61%

TOTAL PROPERTIES WITH RECORDED LOSS

18,885

PERCENT OF INCIDENTS

33%

TOTAL PROPERTIES WITH \$0 LOSS

3,639

PERCENT OF INCIDENTS

6%

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## PROPERTY VALUE

Tracking loss is important for reporting; however, the ability to show loss compared to total value of a property creates an opportunity to highlight the impact of the fire department's efforts in the community. Our analysis found that property value is not routinely recorded. Of the 18,885 100-series incidents with a non-zero property loss documented, the property value field was only entered 39% of the time (See Figure 8).

Figure 8



### INSIGHT

Make sure best estimates of property loss are being documented. Remember, property values can be calculated using NFPA recommended calculation steps, or via local tax assessor web sites. This is a great number to measure your department's added benefits and value to the community you serve.



**DOCUMENT.  
DOCUMENT.  
DOCUMENT.**

USFA recommends the use of the International Code Council's (ICC) Building Valuation Data (BVD) formula to help fire departments determine dollar loss on fires. The BVD provides the "average" construction costs per square foot. Additionally, make sure to document property value.

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## COVID-19

It would be an understatement to say COVID-19 had an impact on first responders and frontline workers in 2020. In Figure 9 below, we look at the percent of responses where COVID-19 was either a suspected or confirmed factor. Throughout the year, suspected or confirmed COVID-19 was documented as a factor in 2.2% of all calls - with peaks in April, November, and December.

### INSIGHT

Monitor the data for your agency to support your teams. The exposure information provides local health authorities and Emergency Management the supporting data they need to deliver PPE and assistance.



**MONITOR  
YOUR  
DATA**

Figure 9

2.2%

PERCENT  
OF ALL  
CALLS

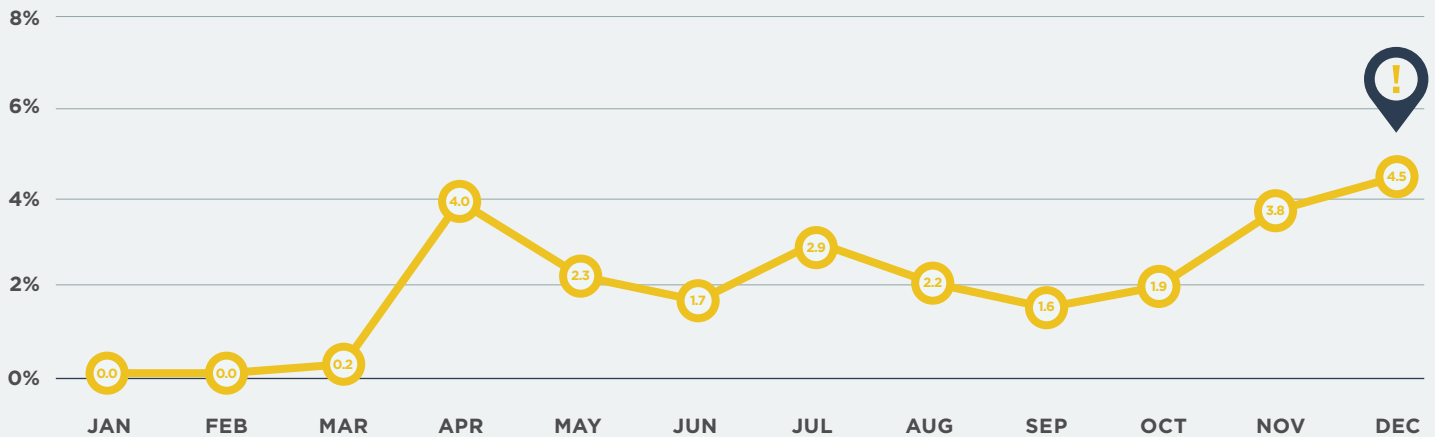
47,278

TOTAL # OF INCIDENTS

DECEMBER  
10,138

HIGHEST #  
COVID/ILI CALLS

% COVID-19/ILI



# METHODOLOGY

The dataset for the 2021 ESO Fire Service Index report is real-world data, compiled and aggregated from 537 departments across the United States that use ESO's products and services. These data are based on 2,096,597 anonymized calls between January 1, 2020 and December 31, 2020.



**THERE IS A 95%  
CONFIDENCE  
LEVEL IN THE  
NUMBERS USED  
IN THIS REPORT  
WITHIN A  
1% +/- RANGE.**

## OK, NOW WHAT?

Organizations should use this information to understand why metrics are important and which metrics and drivers can have the biggest impact on your department and the communities you serve.

With this Index as a foundation, you can perform your own analysis to serve as the basis for other performance measures and outcomes. The metrics shown in this study are by no means exhaustive. Every department is unique and has its own strengths, structure, and goals. Because of these attributes, results achieved by one organization may not be attainable by another for a variety of reasons. However, these metrics should provide a foundation to compare your measurements and outcomes to what we are seeing nationally.

**IF YOU HAVE FURTHER QUESTIONS, DON'T HESITATE TO REACH OUT TO ESO ABOUT HOW TO BEST USE AND INTERPRET THIS DATA FOR YOUR ORGANIZATION AT**

**[WWW.ESO.COM/FIRE](http://WWW.ESO.COM/FIRE)**

# ABOUT ESO

ESO (ESO Solutions, Inc.) is dedicated to improving community health and safety through the power of data. Since its founding in 2004, the company continues to pioneer innovative, user-friendly software to meet the changing needs of today's EMS agencies, fire departments, hospitals, and state EMS offices. ESO currently serves thousands of customers throughout North America with a broad software portfolio, including the industry-leading [ESO Electronic Health Record \(EHR\)](#), the next generation ePCR; [ESO Health Data Exchange \(HDE\)](#), the first-of-its-kind healthcare interoperability platform; [ESO Fire RMS](#), the modern fire Record Management System; [ESO Patient Registry](#) (trauma, burn and stroke registry software); and [ESO State Repository](#). ESO is headquartered in Austin, Texas. For more information, visit [www.eso.com](http://www.eso.com).

## ABOUT ESO FIRE RMS

ESO Fire RMS enables departments to manage NFIRS, preplans, inspections, and EMS documentation within an easy-to-use, integrated software solution. Backed by extensive usability research and decades of fire and EMS experience, ESO Fire RMS is designed for quick yet comprehensive data collection and actionable reporting. To learn more, visit [eso.com/fire](http://eso.com/fire).