How we roll: A fire engine to every call? Fire department resource allocation and firefighter support in the United States

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Received 29 December 2019
Revised 26 March 2020
7 May 2020
10 June 2020
Accepted 15 July 2020

Abstract

Purpose – Emergency service departments face changing mission requirements, budget constraints and a demanding work environment. This study examined the perceptions of fire chiefs, officers and firefighters who attended the National Professional Development Symposium on the use of a tiered approach when responding to calls, the continued increase in medical calls and mental health services available to fire service personnel.

Design/methodology/approach – This study examined the perceptions of fire chiefs, officers and firefighters who attended the National Professional Development Symposium on the use of a tiered approach when responding to calls, the continued increase in medical calls and mental health services available to fire service personnel.

Findings – Survey respondents indicated that they either are currently or would consider using a tiered approach to sending a fire engine and crew or a lighter vehicle to medical or other calls based requirements identified using a tiered approach.

Research limitations/implications – This idea has future implications regarding the vehicle mix of fire stations as administrators seek to meet the needs of the public most effectively. Survey responses also noted the need for mental health services arguing that care seeking firefighters should have the option of getting mental health services within the station or at an external location. Calls involving babies or young children were overwhelming cited as the most difficult. Additionally, 95% of respondents indicated a belief that most firefighters suffer from PTSD.

Practical implications – Recommendations include: A larger scale survey and analysis of first responder perceptions based on this study. Identifying "best practices" of the most effective "tiered response" approaches to deploying emergency services resources to calls. Studying Mental Health services combating PTSD to identify best practices. Lastly, emergency services administrators should consider changes to the "vehicle mix" when equipping or reequipping stations.

Social implications – Social implications include use of a "tiered response" approach to emergency calls and focusing how best to support the mental health needs of firefighters.

Originality/value – Fire Departments are only beginning to explore the idea of using a tiered response to respond to emergencies. This study identifies both short and long term implications of using a tired approach. A secondary emphasis of this study explores difficult calls and PTSD issues faced by firefighters.

Keywords Tiered response, Emergency services, Firefighters, PTSD

Paper type Research paper

The authors report no conflicts of interest.

The authors would like to thank the Embry-Riddle Aeronautical University College of Arts and Sciences for funding support needed to collect survey responses. The authors would also like to thank the survey participants for sharing their time and perspectives. The authors would also like to express great appreciation for all emergency services personnel who risk their lives so that others may live.

International Journal of Emergency Services
Vol. 9 No. 3, 2020
pp. 409-419

2047-0894
DOI 10.1108/IJES-12-2019-0066

Introduction

Running into burning buildings is clearly recognized as an inherently stressful and risky activity that comprises a core function of a firefighter's job. However, the traditional role of the US firefighter is evolving and expanding, particularly with respect to the increased incidence of medical related calls. These unique and changing responsibilities, along with an overall significant increase in calls, result in repeated exposure to various types of stress, each of which have impact on the individual firefighter's mental health and well-being.

Literature review

The changing role of the firefighter – Myth and reality

The public perception of firefighters is that of a person in turn-out gear coming out of a burning building with a victim in their arms. In the words of Deputy Chief Sal Scarpa of the Shawnee (Kansas) Fire Department, our image is that of a "hero firefighter". He argues for promoting a more realistic view of the roles and the responsibilities in the modern service.

> If you watch a movie like *Backdraft*, you have an image of what a fire officer is. If as a kid you watched fire trucks and thought that was really cool, you have a particular image of what a firefighter is. We need to define that a bit more rather than let Hollywood or social media or the news define it. We need to be sure we're not giving false images to people coming up the ranks who think it's all about fighting fire (Hailey, 2014).

In reality, while modern firefighters may still be branded "heroes" for the brave and self-sacrificing work they do, the job itself is much less glamorous, and much less about fighting fires, than typically portrayed. In addition, both the unexpected demands of the job and the pressure to fulfill an unrealistic role, can leave the firefighter with an increased risk of various forms of mental illness and adjustment disorders, not previously considered.

Changes in the types of emergency calls – In 1980, approximately 27.6% of calls fire departments responded to were for actual fires. By 2018, while the total number of calls had increased over 330%, the number of fires decreased to 3.6%. Medical calls constituted 46.6% of all calls in 1980, and increased to 64.1% in 2018 (National Fire Protection Agency [NFPA], 2019; See the full data set in Appendix).

This constitutes a significant change in the roles and typical duties of firefighters – roles for which they may, or may not, be adequately trained for or adequately provided with support services for both the victims and for themselves. While many firefighters are cross trained as EMTs or paramedics, this common practice calls into question whether it is the best use of the firefighter's time and the firehouse's resources, and, more importantly, the best care for the patient.

Fire crews dispatched to medical emergencies – The best use of talent and resources? The practice of sending fire trucks out to all calls can have many reasons, including availability, proximity, volume of calls and the changing role of a first responder. In addition, the clarity, comprehensiveness, specificity and accuracy of the information provided by the dispatcher can be a deciding factor in the choice of response personnel and equipment. While the incorporation of technology has greatly reduced the processing time of a dispatch, gaps remain in the quality and usefulness of the information conveyed, particularly with respect to decision making regarding the type of service needed (Keisling, 2015; Jenkins, 2012).

Mismatch between resources and need – While specific policies and procedures can vary from city to city, the basic challenge of getting the right services to the right place in a timely manner remains constant. Politics and precedent play critical roles in the allocation of resources and duties. Chicago, where the fire department manages firefighters and the dispatch of firetrucks, as well as paramedics and the dispatch of ambulances, represents one example of a common organization. Dispatchers decide who to send to each call, but are limited by the available resources – namely 158 fire vehicles and only 75 ambulances, despite

the fact that, like the national averages quoted above, fire calls make up only 3.7% of Chicago Fire Department calls, while medical calls made up 73.3% (Eng, 2017a, b).

Changing roles and stressors – The mental health of first responders

As the roles of firefighters change, so do the stressors and potential for negative stress reactions. Given the unique aspects of their jobs, firefighters and other first responders are particularly vulnerable to various types of stress. Occupational stress theory explains how the physical and psychological stress reactions relate to aspects of the workplace. It further states that "when the requirements of the job do not match the capabilities, resources or needs of the worker, harmful physical and emotional consequences can result (Regehr and Bober, 2005, p. 6). Additionally, crisis theory and trauma theory, which refer to "the psychological disequilibrium and the set of physical, cognitive and psychological responses to a particular horrifying event," (p. 7) explain the development of dysfunctional stress reactions, such as post-traumatic stress disorder (PTSD), based on prolonged and repeated exposure of firefighters to such events. Finally, secondary or vicarious trauma (also known as repeated exposure trauma – RET) refers to the cumulative effect of "the overwhelming distressful emotions and thoughts experienced by people who are exposed to traumatic situations and empathically join with others who are suffering" (p. 7). This occurs regularly in the work of firefighters as they repeatedly assist others in dealing with pain, loss and suffering.

Lt. Sean Ploof of the Burlington, Vermont Fire Department notes, "We are essentially social workers with badges and helmets. Society does not know what to do with the drug epidemic. They do not know what to do with the suffering. However, everyone still knows if you call 911, we are going to come and we are going to do something." He argues that the job is more stressful and less fulfilling because of the changes in expectations and emotional situations outside the realm of their training. In speaking about breaking the news about a son's overdose death, he says, "I do not know how to do that, who would know how to do that? But the expectation is that's what you signed up for, I did not sign up for that. That's insane to think anyone would sign up for that. That used to be done in a controlled medical environment, not in somebody's living room and that's how it is now" (Cyrus, 2019)

Mental health challenges in the fire service - The International Association of Fire Fighters (IAFF) conducted a survey of over 7,000 firefighters across North America on the effects of job-related traumatic experiences on their mental health. Respondents reported the following:

(1) 19% have had thoughts of suicide

(2) 27% have struggled with substance abuse

(3) 59% have experienced family and relationship problems

(4) 65% are haunted by memories of bad calls (NBC10, 2018)

Regarding the availability and effectiveness of treatment,

(1) 81% said they feared "being seen as weak or unfit for duty if they asked for help"

(2) 71% indicated they had not used an available employee assistance program (EAP) for mental health issues

(3) Of those who did use an EAP, 63% reported that it was not helpful (NBC10, 2018)

While these results indicate a critical unmet need for increased quality intervention programs devoid of stigma or negative consequences for participation, one area of inquiry did indicate positive progress. Of the firefighters who entered service approximately 30 years ago, only 16% received training in the area of mental health, while of those entering service in the last 5 years, over half indicated such training (NBC10, 2018)

The effects of post-traumatic stress disorder (PTSD)

With respect to PTSD, the formal diagnosis was first introduced by the American Psychiatric Association in their 1980 edition of the *Diagnostic and Statistical Manual of Mental Disorders - III* (DSM-III) and remains relatively unchanged in definition in the current revision (5th edition, 2013). The disorder's defining symptoms consist of re-experiencing a traumatic event through intrusive memories, nightmares and flashbacks, emotional distress, avoidance of stimuli related to the event, reactivity and hyperarousal and depersonalization and/or derealization (American Psychiatric Association, 1980; 2013). Studies concerning the prevalence of PTSD in firefighters have varied significantly in their results – ranging from 6.5% (Haslam and Mallon, 2003) to 37% (Bryant and Harvey, 1995). These discrepancies can most likely be attributed to differing measurement instruments and variations in the samples.

Various studies have also indicated general characteristics that represent risk factors for the development of PTSD, including:

(1) Person with high level of hostility or easily agitated

(2) Low level of self-efficacy (belief in one's ability to complete tasks/reach goals) predicted PTSD levels

(3) High level of reported work strain

(4) Engaging in negative self-appraisals (how we view/judge ourselves)

(Anschuetz, 1999; FEAP, 2019; U.S. Department of Health and Human Service, National Institute of Mental Health, 2019).

More specifically, stressors leading to PTSD that are unique to firefighters have also been identified, including:

(1) Uncertainty – performance, peer acceptance, employment/shifts, injury/illness, risk

(2) Physical response to alarm – natural stress response and heightened alert/physical triggers

(3) Interpersonal tension – relationship with management, peers, family, spouse, shift-work

(4) Exposure to human tragedy – car crash call can have equal stress to large disaster

(5) Fear - heightened alert state – risk to health and physical safety

(6) Increased involvement in medical emergency calls (non-fire) in addition to fire calls

(7) Health issues related to prolonged/cumulative stress or injury from job

(8) Alcohol use/misuse that may be part of the culture or peer group "norm"

(9) Sleep deprivation and fatigue from workload and or shift-work

(10) Work second job or family business – accumulating work stress rather than stress-relief activities

(Anschuetz, 1999; FEAP, 2019; U.S. Department of Health and Human Service, National Institute of Mental Health, 2019).

Purpose

The US fire service has undergone a significant amount of change in the past 20 years to the point where most calls are now for medical (rather than fire) emergencies. This study was designed to determine fire fighter perceptions regarding a measured or tiered roll out of

equipment and personnel to emergency calls and the issues brought about by the changing scope of the fire service such as more medical calls and PTSD.

Methodology

A cross sectional survey design research model was used to ascertain perceptions from the 2018 Fire and Emergency Services Professional Development Symposium attendees made up of Fire and Emergency Services Higher Education (FESHE) members and officers from across the United States. Attendees were mostly at the fire chief or fire officer ranks. This group was chosen because of their high levels of experience in the US fire service. The respondents volunteered to complete the survey comprised of 7 fire chiefs, 11 fire officers and 2 fire fighters and represented about 25% of symposium attendees.

Treatment of the data

Data were examined using NVivo v.11 software to determine trends or themes in open area responses. The researcher allowed themes to emerge from the comments made by survey takers. Additionally Chi Square analysis was used to evaluate the hypotheses ($\alpha = 0.05$) that more respondents would agree than disagree with survey statements on the use of a tiered response approach. A Bonferroni corrected alpha ($\alpha = 0.0125$) was used to evaluate the four mental health services and PTSD questions which were related (Gay *et al.*, 2006; Gould and Ryan, 2013).

Results

Data in Table 1 show results from the survey from 20 respondents. In this survey, significantly more fire fighters agreed than disagreed that (1) a measured or tiered response was effective, (2) fire fighters have access to and, (3) benefit from mental health services and (4) fire fighters suffer from PTSD. All results were statistically significant at $\alpha = 0.05$ (question 1) or $\alpha = 0.0125$ (questions 2 through 4).

Discussion on chi square results

A total of 20 fire fighter personnel were surveyed to determine their perceptions regarding deploying assists to emergency calls, mental health services, PTSD and the most difficult calls they respond to. Results from Table 1 indicate:

75% of those surveyed stated a measured or tiered approach should be used when responding to emergency calls.

	Agree	Disagree	Chi square
Use a measured or "tiered" response based on nature of the call (e.g. ambulance) instead of always sending a fire truck to emergency calls	15	5	0.025*
Do fire fighters benefit from mental health services	20	0	<0.001*
Mental health services available?	20	0	<0.001*
Mental health services adequate?	9	8	0.808
Do fire fighters suffer from PTSD	19	1	<0.001*

Note(s): Not all survey takers answered the question on if mental health services were adequate. An asterisk* designates statistically significant findings ($\alpha = 0.05$ for first question, $\alpha = 0.0125$ Bonferroni corrected alpha for last four questions which are somewhat dependent on each other). Data calculated using Stat Disk v.13 software

Table 1.
Survey results: Tiered Response, Mental Health Services and PTSD

100% indicated fire fighters would benefit from mental health services but 45% indicated these services were adequate. 40% of the respondents indicated that mental health services were not adequate and 15% indicated they did not know or did not answer the question.

95% held the perception that fire fighters suffered from PTSD.

NVivo analyzed responses

Survey takers were asked open ended questions on the topics of tiered response, mental health and answering medical calls. The frequency counts in the NVivo analysis represent the number of times respondents mentioned a topic which is why they differ from the numbers in Table 1.

Responses to measured or tiered response to emergency calls. Table 2 shows the frequency of specific topics mentioned in the open areas of the survey relating to a measured or tiered response.

As shown in Table 2, responses were mostly favorable for a tiered approach on selecting assets to respond to emergency calls. Fire chief comments included: "Engine/Ambulance (Fire Rescue) Response is typical. Some Departments in my area started Basic Life Support (BLS) "Alpha" (lead) trucks with ambulance or without based on call type. Keeping Engine in House". "(Tiered approach) identifies the call to determine level of response". "Yes. 90% of our calls are Emergency Medical Services (EMS) (Area served by 21 Fire Departments over 1 million citizens). Advance Life Support (ALS) calls equal manpower reorganizing to apparatuses. Really like Alpha concept. Hated sending "ladders" (Fire Engines) on house calls". ". . .we scale response. Saves wear and tear".

Two fire officer responses did not agree with a tiered approach: "Send Engine to every call". "Better to have people and not need them than not have them and need them".

Table 2 also shows that fire officer comments were mostly in favor of a measured tiered response to emergency calls (19 comments from officers and two from firefighters). Reponses included: "Measured or tiered responses are effective". "It does not put necessary safety risk on firefighters responding when not needed. It also prevents wear and tear on fire trucks". "Yes I do agree (to identify between fire and emergency calls). We have saved fuel and maintenance cost since doing so". "The Los Angeles Fire Department uses a tiered dispatch system so a fire engine does not go out on every EMS call". "Somewhat – Basic Life Support Vs Advanced Life Support." Eight officer and two firefighter comments supported the idea of not sending an engine out on every call. Five officer comments stated that they had tried procedures for measured or tiered response.

Perceptions on mental health resources, where they should be provided and PTSD. Table 3 shows the frequency respondents mentioned specific topics regarding mental health services. The largest number of comments centered around the themes of "firefighters benefit from mental health assistance", "fire fighters suffer from PTSD", "Mental health services are available" and "Mental health services are adequate".

	Fire chiefs	Fire officers	Fire fighters	Total
Measured or "tiered" response is effective	3	19	2	24
Do not send engine out on every call	3	8	2	13
Tried procedures for measured or tiered response	4	5		9
Send resources based on type of call	4			4
Measured response is not effective		2		2
Fire truck goes out on all calls		2		2

Table 2.
Measured or "Tiered" response

Note(s): Breakdown of responses using NVivo v.11 software to identify significant trends in free responses. Respondents sometimes made multiple comments on the same theme

	Fire chiefs	Fire officers	Fire fighters	Total
Fire fighters benefit from mental health assistance	8	12	1	21
Fire fighters suffer from PTSD	5	11	2	18
Mental health services are available	6	9	2	17
Mental health services are adequate	5	5		10
Mental health services should be provided internally and externally	1	6	1	8
Mental health services should be provided externally	2	5		7
Mental health services should be provided internally		3		3

Note(s): Breakdown of responses using NVivo v.11 software to identify significant trends in free responses. Respondents sometimes made multiple comments on the same theme. Free responses were not made by all survey takers

Table 3. Mental health services

Overarching views presented in respondent comments naturally reflected the ideas that fire fighters benefit from mental health services, suffer from PTSD and that mental health services were available. There was some disagreement as to if mental health services should be provided in the fire station or externally (to avoid stigma).

Eight comments indicated that mental health services should be offered both internally and externally. Three responses indicated mental health services should be provided strictly in the fire station.

Calls involving pediatric patients or young patients were cited as the most difficult emergency calls. This was cited by 75% of survey takers. Also cited was responding to calls where the victims were known to the rescuers or were coworkers.

Open ended comments included: "I believe our fire fighters and EMS do have to deal with issues that lead to PTSD. Don't believe we are doing enough to provide them coping skills, yet we do a lot to show the results and that it is there". "Absolutely I am a PTSD survivor and have used mental health services". "People should be able to access services where they would feel most comfortable". "Mental health services should be provided externally – Get out of the environment. Remove the cloak of invincibility".

Are medical calls part of the job?. Table 4 shows the frequency respondents mentioned specific topics regarding medical calls. It is interesting to note that five fire chief comments indicated medical calls were part of the job but fire officer and fire fighter responses were split as about half indicated they did not like medical calls.

Table 4 clearly showed differences in opinion of if medical calls are part of the job. As presented earlier in this article and shown in the Appendix, medical calls have been a growing percentage of emergency calls.

Survey respondents indicated that medical calls are a major part of fire fighter's duties. Comments included: "With the age of the population, there is no way a "sole" EMS responder could handle the call volume: I did not think that most fire fighters today have an issue answering medical calls". "I think newer firefighters do not know the difference so they are OK with it". "Becoming more of a medical service than fire service – 85% of the calls". A few

	Fire chiefs	Fire officers	Fire fighters	Total
Medical calls are part of the job	5	8	1	14
Do not like medical calls	2	9	1	12

Note(s): Breakdown of responses using NVivo v.11 software to identify significant trends in free responses. Respondents sometimes made multiple comments on the same theme

Table 4. Fire Fighters answering more medical calls

respondents expressed the view that younger fire fighters were more accepting of answering medical calls than older firefighters.

One respondent commented: "Older firefighters may find issues with this especially if they are in a high fire area. This change in culture is something we battle every day. The LAFD has instituted a performance management model to address response times. Response time for EMS calls tend to be longer than those for fire calls".

Not shown in Table 4 but an important aspect of responding to more medical calls, most respondents indicated that calls involving young children were typically the hardest. These comments included: "Peds (pediatrics) and young children are the hardest calls". "Any medical involving a child tends to be more stressful for firefighters".

Legal concerns with tiered approach in response to emergency calls. Table 5 shows the frequency respondents mentioned specific topics regarding legal concerns with a measured or tiered response. Legality is always an issue when dealing with healthcare. Fire chiefs and officers were almost evenly split regarding their comments on concerns with a tiered response. Two firefighter comments expressed no concerns with the tiered approach.

The United States is a litigious society with regard to healthcare. Untoward outcomes are often times met with lawsuits leading to changes in protocols. Comments of the respondents on concerns with tiered response to emergencies indicate mixed views on this issue.

Conclusions

This study used a cross-sectional survey design methodology targeting Fire Chiefs, Officers and firefighters who attended the 2018 Fire and Emergency Services Higher Education Professional Development Symposium (FESHE).

In this study, most of those who were surveyed were open to use a tiered approach in responding to "emergency calls". Several expressed concern about use of resources and wear and tear on equipment. One fire chief speculated that the vehicle mix for new fire departments may need revision based on the types of expected calls lending to the idea of fewer engines and a larger number of smaller vehicles that could respond to medical emergencies. Fire chiefs and officers were almost evenly split on legal concerns associated with tiered responses.

Mental health services were seen as adequate by 9 of 17 respondents. Eighteen comments focused on how firefighters should access such services. Survey respondents indicated that the most difficult calls were those involving babies and young children. Also cited were victims known to the rescuing firefighters as well as co-workers. Ninety-five percent believed that firefighters suffer from PTSD supporting the idea that efforts to provide mental health services are vital.

Respondents expressed differing opinions of if medical calls were part of a firefighter's duties. Open area comments were almost evenly split on if medical calls were part of the job or if the respondent did not like medical calls.

Limitations

The results discussed in this study apply to only those who responded to the survey. Researchers cannot extrapolate results onto the larger population of US firefighters.

Table 5.
Legal concerns about measured or tiered response

	Fire chiefs	Fire officers	Fire fighters	Total
No legal concerns with tiered response	1	6	2	9
Legal Concerns with tiered response	1	5		6

Note(s): Breakdown of responses using NVivo v.11 software to identify significant trends in free responses. Free responses were not made by all survey takers

However, this study does provide the framework for a larger study on what appear to be key issues to emergency services personnel. As with any survey research, respondents self-selected themselves into the study. This study did not break down responses based on gender or volunteer versus career status of firefighters. Responses were also not examined based on different types of emergency services departments represented by survey respondents including wildland, air rescue firefighting units, rural or urban fire departments.

There may be differences in perceptions between "general" firefighters and firefighters who attended the FESHE Professional Development symposium and participated in the survey. Research results in this study do not reflect those possible differences.

Recommendations

Results of this research offer opportunities for further research possibly leading to process improvement in the areas of the possible use of tiered responses to emergencies, possible legal ramifications from using a tiered response system, as well as PTSD and other mental health concerns resulting from mission changes in the US fire service. Future researchers should explore the following opportunities to expand upon the results in this study:

(1) This study can be viewed as a pilot test for a larger scale analysis of fire chief, fire officers and firefighter perceptions

(2) "Best practice" case studies could identify the most effective tiered response approaches to deploying emergency services resources to calls including the use of decision trees or protocols used by dispatchers to include those used in other countries

(3) Emergency Services administrators should consider changes to the "vehicle mix" when equipping new fire stations or reequipping older stations based on the types of calls received.

(4) Mental Health services combating PTSD should be studied to identify best practices.

(5) Future researchers should specifically examine PTSD issues within the fire service

(6) Future researchers should further examine the tiered approach to emergency responses

(7) The connection between changing mission requirements (including tiered response) and PTSD should be studied by future researchers to determine if a link exists.

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Appendix

Year	Total	Fires	Medical aid	False alarms	Mutual aid	Hazardous materials	Other hazardous conditions	Other
1980	10,819,000	2,988,000	5,045,000	896,500	274,000			1,615,500*
1981	10,594,500	2,893,500	5,019,000	788,000	349,500			1,544,500*
1982	10,548,000	2,538,000	5,258,000	853,500	346,500			1,552,000*
1983	10,933,000	2,326,500	5,660,000	979,500	353,000			1,614,000*
1984	11,070,000	2,343,000	5,735,000	972,000	413,500			1,606,000*
1985	11,888,000	2,371,000	6,467,000	936,500	389,500			1,724,000*
1986	11,890,000	2,271,500	6,437,500	992,500	441,000	171,500	318,000	1,258,000
1987	12,237,500	2,330,000	6,405,000	1,238,500	428,000	193,000	315,000	1,328,000
1988	13,308,000	2,436,500	7,169,500	1,404,500	490,500	204,000	333,000	1,270,000
1989	13,409,500	2,115,000	7,337,000	1,467,000	500,000	207,000	381,500	1,402,000
1990	13,707,500	2,019,000	7,650,000	1,476,000	486,500	210,000	423,000	1,443,000
1991	14,556,500	2,041,500	8,176,000	1,578,500	494,000	221,000	428,500	1,617,000
1992	14,684,500	1,964,500	8,263,000	1,598,000	514,000	220,500	400,000	1,724,500
1993	15,318,500	1,952,500	8,743,500	1,646,500	542,000	245,000	432,500	1,756,500
1994	16,127,000	2,054,500	9,189,000	1,666,000	586,500	250,000	432,500	1,948,500
1995	16,391,500	1,965,500	9,381,000	1,672,500	615,500	254,500	469,500	2,033,000
1996	17,503,000	1,975,000	9,841,500	1,816,500	688,000	285,000	536,500	2,360,500
1997	17,957,500	1,795,000	10,483,000	1,814,500	705,500	271,500	498,500	2,389,500
1998	18,753,000	1,755,500	10,936,000	1,956,000	707,500	301,000	559,000	2,538,000
1999	19,667,000	1,823,000	11,484,000	2,039,000	824,000	297,500	560,000	2,639,500
2000	20,520,000	1,708,000	12,251,000	2,126,500	864,000	319,000	543,500	2,708,000
2001	20,965,500	1,734,500	12,331,000	2,157,500	838,500	381,500	605,000	2,917,500
2002	21,303,500	1,687,500	12,903,000	2,116,000	888,500	361,000	603,500	2,744,000
2003	22,406,000	1,584,500	13,631,500	2,189,500	987,000	349,500	660,500	3,003,500
2004	22,616,500	1,550,500	14,100,000	2,106,000	984,000	354,000	671,000	2,851,000
2005	23,251,500	1,602,000	14,375,000	2,134,000	1,091,000	375,000	667,000	3,009,000
2006	24,470,000	1,642,500	15,062,500	2,119,500	1,159,500	388,500	659,000	3,438,500
2007	25,334,500	1,557,500	15,784,000	2,208,500	1,109,500	395,500	686,500	3,593,000
2008	25,252,500	1,451,500	15,767,500	2,241,500	1,214,500	394,500	697,500	3,485,500
2009	26,534,500	1,348,500	17,104,000	2,177,000	1,296,000	397,000	625,500	3,586,500
2010	28,205,000	1,331,500	18,522,000	2,187,000	1,189,500	402,000	660,000	3,913,000
2011	30,098,000	1,389,500	19,803,000	2,383,000	1,252,000	379,000	720,000	4,171,500
2012	31,854,000	1,375,000	21,705,500	2,238,000	1,326,500	360,000	694,000	4,155,000
2013	31,644,500	1,240,000	21,372,000	2,343,000	1,298,000	366,500	678,000	4,347,000
2014	31,644,500	1,298,000	20,178,000	2,488,000	1,446,500	405,000	615,000	5,214,000
2015	33,635,500	1,345,500	21,500,000	2,566,500	1,492,500	442,000	643,000	5,646,000
2016	35,320,000	1,342,000	22,750,500	2,622,000	1,515,000	425,000	684,500	5,981,000
2017	34,683,500	1,319,500	22,341,000	2,547,000	1,353,000	423,500	693,000	6,006,000
2018	36,746,500	1,318,500	23,551,500	2,889,000	1,512,500	426,000	706,500	6,342,500

Note(s): *Includes hazardous material, other hazardous condition and other
Source(s): NFPA Fire Experience Survey. Updated 11/19. available at: https://www.nfpa.org/News-and-Research/Data-research-and-tools/Emergency-Responders/Fire-department-calls

Table A1.
US Fire Department Calls 1980 through 2018

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