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Advancing Mental Health Support for Wildland Firefighters

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Executive Summary

The Texas A&M Forest Service (TFS) faces increasingly intense wildfire seasons, necessitating a focus on the health and well-being of its personnel. The report emphasizes the importance of implementing health and wellness programs to support TFS employees, who are critical in managing and extinguishing wildfires. These programs aim to address physical and mental stress, burnout, and exhaustion among the workforce (Texas A&M Forest Service, n.d.).

Firefighting is a demanding profession with significant stressors, leading to high risks of burnout, trauma, and mental health issues such as PTSD. Nearly 50% of U.S. firefighters experience burnout, and the prevalence of PTSD ranges from 6.5% to 37% (Johnson, 2021; Corrigan, 2009). Stress and overexertion accounted for 57.5% of firefighter fatalities in 2023 (Texas A&M Capstone Team, unpublished dataset, 2025). The report highlights the need for comprehensive mental health support systems to mitigate these risks.

Accessing health and wellness support programs faces challenges such as cultural stigma, structural barriers, underutilization of services, and operational constraints. The firefighting culture values strength and self-reliance, often perceiving mental health struggles as weakness. Additionally, the demanding nature of the profession and lack of standardized mental wellness protocols hinder effective implementation (Substance Abuse and Mental Health Services Administration, 2021; National Fire Protection Association, 2022).

In this report, we propose recommendations based on a two-pronged approach: a macro strategy to improve TFS's organizational culture and work environment to make it more mental health-friendly, and a micro strategy to promote individual mental health through specific programs. Following this approach strategy, this report outlines six solutions along with recommendations. First, reinstituting the New Hire Academy will provide structured training in resilience, leadership, communication, and stress management to improve job performance, retention, and reduce burnout (Texas A&M Engineering Extension Service, n.d.). Second, establishing an annual resilience training program will help firefighters manage stress and maintain mental health (Denkova et al., 2020; Kaplan et al., 2017). Third, implementing community engagement activities, outreach efforts, and dedicated wellness days will enhance physical and mental health outcomes (Pace et al., 2022). Fourth, introducing mandatory stress assessments will monitor employees' mental health and connect them to appropriate support programs (West Jordan Fire Department, Utah, n.d.). Fifth, enhancing awareness and utilization of Employee Assistance Program (EAP) services will provide counseling, work-life balance support, and crisis intervention (ComPsych, n.d.). Then finally, improving the Critical Incident Stress Management (CISM) program by promoting peer support, enhancing communication channels, creating a centralized resource platform, and partnering with external support networks will better support employees facing crises (Richards, 2001; Donovan, 2022).

The report outlines a phased 18-month implementation timeline to improve critical incident stress management, starting with preparation and resource mapping and followed by targeted pilot launches, statewide rollout, and optimization. It includes cost estimates and funding options and emphasizes the importance of cultural assessment to ensure the effectiveness of professional support (Texas A&M Capstone Team, unpublished dataset, 2025).

In conclusion, the report points out the need for a robust health and wellness framework to support TFS employees. By implementing the recommended strategies, TFS can create a healthier, more resilient workforce capable of enduring the demanding conditions of wildfire management (Texas A&M Forest Service, n.d.).

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Note: This report is primarily for internal use by the Texas A&M Forest Service. Authors used Generative AI to initiate, refine, and/or summarize drafts of the report.

1. Introduction

Due to rising temperatures, prolonged drought conditions, and increasingly frequent extreme weather patterns, the duration and intensity of wildfires in Texas have escalated dramatically with an alarming increase in the frequency. In 2024 alone, Texas reported 5,187 wildfires, scorching more than 1.3 million acres of land (Texas A&M Forest Service, 2024). The persistence of these fires, often burning for weeks or even months, places tremendous physical and mental strain on the personnel tasked with managing and extinguishing them. The Smokehouse Creek Fire, which broke out in February 2024, became the largest and most destructive wildfire in Texas history. It scorched approximately 1,058,482 acres of land and claimed two lives, lasting 20 days before being contained. Reflecting on the response efforts to the Smokehouse Creek Fire, a firefighter from Lubbock, Burnet, recalled: "*The first three days, I believe, we worked 20-, 22-hour days, and then we'd get two or three hours of sleep and go back to work, until more resources were able to come in to help with that. But it was a couple of long days*" (Rosiles, 2024).

The Texas A&M Forest Service (TFS) workforce, consisting of roughly 500 employees (Texas A&M Forest Service, 2024), is critical in responding to these emergencies, managing resources, and protecting communities across the state. However, the growing demand for wildfire response efforts combined with the agency's limited staffing capacity has strained its resources. Many of these employees work extended hours during peak fire seasons, often without adequate breaks, which significantly increases the risk of burnout. Long hours, physical exhaustion, and the emotional toll of witnessing the devastation of wildfires are common stressors faced by TFS staff. Without appropriate support systems, such as health and wellness programs, these stressors can result in reduced job performance, increasing safety concerns, and a reduced ability to handle future crises effectively.

The implementation of comprehensive health and wellness initiatives can directly address these challenges by offering TFS employees the tools and support needed to manage stress, improve physical fitness, and enhance mental health. These programs are essential not only for the well-being of the workforce but also for maintaining the agency's ability to respond effectively to the growing threat of wildfires. By prioritizing wellness, TFS can create a healthier, more resilient workforce capable of enduring the demanding conditions that come with wildfire management.

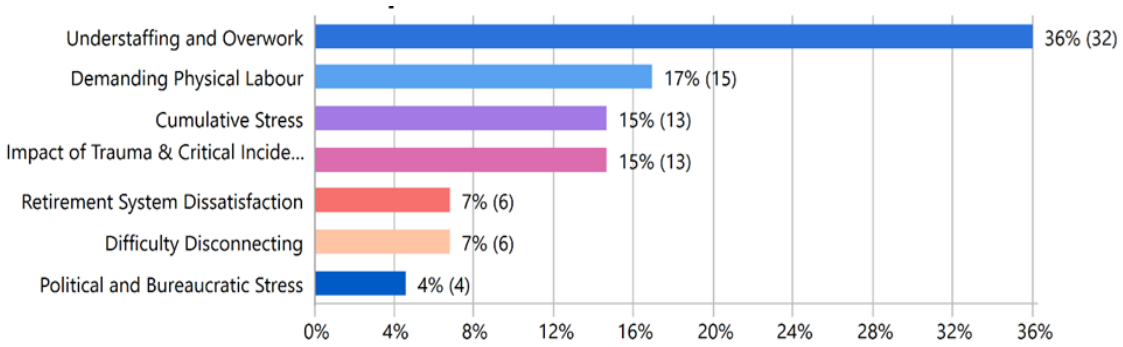
The goal of our report is to offer programmatic pathways that TFS can pursue to implement across the entire agency in hopes of bolstering the health and wellness support offered by the TFS. Our report will do this through problem identification, a methodological overview of both qualitative and quantitative findings that lead to our identified barriers. We will create a solution framework followed by our six solutions that we recommend for implementation by TFS.

2. Problem

Wildland firefighting in Texas constitutes a high-intensity occupation that exposes individuals to substantial stressors, increasing the risk of psychological trauma, burnout, and physiological harm. During peak wildfire seasons, personnel are often required to perform physically demanding suppression operations for extended periods. According to our interviews, (See Section 2), wildland firefighters reported working up to 130 hours per week, with individual shifts sometimes lasting between 18 and 24 hours. Irregular and insufficient sleep, coupled with unpredictable work environments and sustained operational pressure, has been reported to exacerbate psychological distress (Smith et al., 2021). In Figure 2.1, Understaffing and overwork ranked highest, accounting for 36% of occupational stressors, while strenuous physical labor accounted for 17%.

Figure 2.1

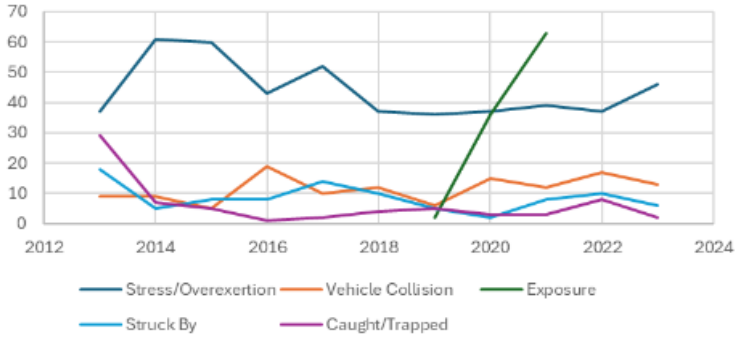
Occupational Stressors and Trauma



Long-term exposure to these occupational stressors can lead to cumulative trauma, diminished job performance, and, in extreme cases, death. Our analysis of 11 years of FEMA fatality reports indicates that **Stress/Overexertion** was the leading cause of firefighter fatalities, accounting for 48% of all on-duty deaths—a figure that rose to 57.5% in 2023 (Figure 2.1).

Figure 2.2

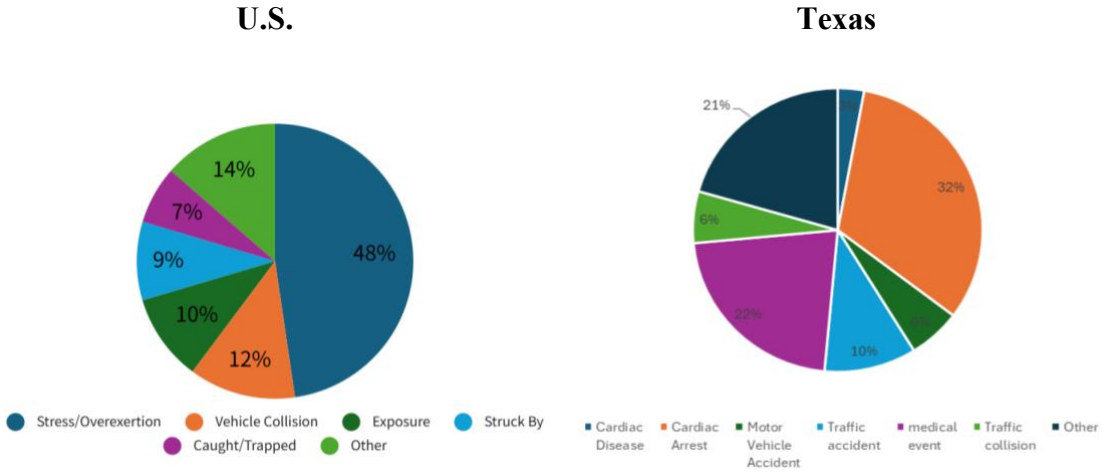
Top 5 Leading Causes of Death in the Last 10 Years (Number of Deaths)



In contrast, our analysis of 11 years of fatality reports from the Texas Department of Insurance (TDI) revealed no fatalities explicitly classified under "stress/overexertion." However, FEMA consistently categorizes fatalities caused by cardiac arrest or cardiac-related illnesses under this label (Figure 2.2). Similarly, TDI reports show that 35% of firefighter deaths in Texas were attributed to cardiac arrest or cardiac disease (Figure 2.2).

Figure 2.2

Top 5 Leading Causes of Death in the Last 11 Years



Prior research has established a strong relationship between overexertion, acute physical strain, and cardiac events in firefighting. For example, Kales et al. (2007) reported that the risk of sudden cardiac death during strenuous fire suppression activities was between 12 and 136 times higher than during non-emergency duties.

Despite this, the TDI fatality records do not explicitly connect cardiac deaths to overexertion or stress. Nevertheless, the classification used by FEMA and corroborated by extensive literature suggests that stress and overexertion are firmly recognized as key contributing factors to firefighter mortality in the public sector.

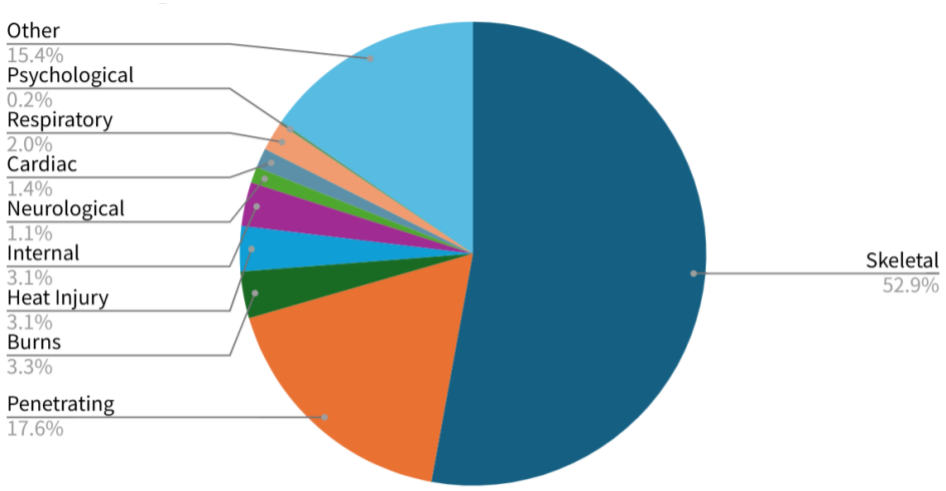
The cumulative effects of repeated overexertion are not immediately visible but manifest through symptoms of trauma and burnout over time. Garcia (2022), found that firefighters suffering from comorbid conditions such as sleep disorders, depression, anxiety, or PTSD are especially vulnerable to burnout. According to Johnson (2021), the prevalence of post-traumatic stress disorder (PTSD) among U.S. firefighters can reach as high as 37%. Furthermore, over 50% of American firefighters are reported to experience burnout in at least one of the three core dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment.

Despite these findings, psychological injuries remain significantly underreported. As discussed in the barriers section, cultural stigma and administrative limitations likely contribute to this trend. Our review of Texas Commission on Fire Protection (TCFP) injury data supports this concern: over a 10-year period, only 0.18% of reported injuries were classified as psychological

in nature (Figure 2.43). While this interpretation remains preliminary, further investigation is warranted and will be addressed in detail in the Barrier section.

Figure 2.3

Top 5 Leading Causes of Injury in the Last 10 Years



In conclusion, our team's analysis demonstrates that both U.S. and Texas-based firefighters are significantly affected by stress and overexertion, which are linked to heightened risks of trauma, burnout, and cardiovascular mortality. These findings underscore the need for systematic recognition and mitigation of stress-related risks in fire service organizations at both federal and state levels.

3. Methodology

With the aim of understanding and enhancing well-being and resilience support for Texas A&M Forest Service (TFS) wildland firefighters, we employ a mixed-methods approach, utilizing both secondary and primary data. Our first goal is to identify the key occupational stressors, their origins, and their effects, alongside barriers to accessing support systems and coping mechanisms. We address these by analyzing themes (the primary unit of analysis) that emerge from informal conversations with firefighters, quantifying their occurrence to establish relative ranking (Stewart, 2025). Our second research goal is to contextualize these stressors within existing knowledge. We achieve this by comparing these lived experiences and narratives with findings from our literature review, using direct quotes to illustrate alignment or divergence. Finally, our third goal is to understand the effects of occupational stressors on health and quality of life and explore actionable strategies for improvement. Understanding this helps us integrate insights from these conversations, where firefighters describe the impact on their mental and physical health, with patterns and corroborations identified in literature and quantitative datasets from state and federal levels. This triangulation of primary accounts and secondary data provides a comprehensive understanding of the challenges faced by TFS wildland firefighters.

3.1. Quantitative Data

Data Collection

We collected secondary data from 33 government reports and used it to construct 2 datasets. The first dataset compiles fatality and injury data from 2013 to 2023, extracted from federal and state-level reports published by the Federal Emergency Management Agency (FEMA), the National Fire Protection Association (NFPA), the Texas Department of Insurance (TDI), and the Texas Commission on Fire Protection (TCFP). Due to the unavailability of FEMA's *2023 Annual Report on Firefighter Fatalities in the United States*, we used corresponding 2023 data from NFPA's firefighter fatality report to ensure coverage for that year.

FEMA's annual reports provide comprehensive information on the causes of death for firefighters across the United States, making them the primary national reference for fatality trends. TCFP's *Annual Injury Reports* focus specifically on injury data among Texas firefighters, while TDI's *Firefighter Fatality Investigations* offer detailed descriptions of individual firefighter deaths in Texas, including incident circumstances and medical causes.

To create a consistent dataset, fatality causes from TDI were manually aligned with FEMA's standardized cause-of-death categories, allowing for comparative analysis. In particular, the FEMA reports emphasize a high proportion of firefighter deaths due to *stress/overexertion*, with many of these cases classified under *sudden cardiac deaths*. In contrast, TDI's narrative descriptions of firefighter fatalities in Texas rarely mention *stress/overexertion* explicitly. Based on FEMA's 2013 report (p.4, lower right corner), which explains that the majority of *stress/overexertion* cases result in sudden cardiac deaths, we infer that Texas fatalities involving cardiac events may not have been categorized as *stress/overexertion* in TDI records, even when the underlying causes were comparable.

All data were manually collected from annual PDFs and online dashboards and converted into structured Excel spreadsheets. To ensure cross-agency consistency, cause-of-death and injury categories were standardized. For example, terms such as "Stress/Overexertion" were uniformly applied across years and agencies when appropriate. In this dataset, rows with raw numeric values were used for analysis, while rows with percentages were retained only when relevant for comparative trends. Empty or missing data cells were left blank.

Data Analysis

This analysis focuses on identifying patterns of cause-specific fatalities, contextualizing the risks faced by firefighters relative to other occupations, and evaluating how mental health-related incidents are captured in existing reporting systems. We calculated the top five causes of firefighter fatalities using annual data from FEMA and, for 2023, NFPA due to FEMA's report unavailability that year. The proportion of each cause was computed as a percentage of the total number of annual fatalities, and ten-year averages were used to determine long-term trends. A notable finding was the sharp increase in deaths attributed to "Exposure" between 2019 and 2021, which coincides with the COVID-19 pandemic. This pattern likely reflects a surge in virus-related deaths that were recorded under the exposure category.

The most prevalent cause of death—Stress/Overexertion—was used as a benchmark to compare fatality rates in the firefighting profession against other occupational groups. A ten-year average fatality rate was computed for each group, allowing visual comparison through a chart. This comparative analysis highlights the disproportionate health risks faced by firefighters, particularly from exertion-induced fatalities.

A separate chart was developed to assess the visibility of mental health-related incidents across datasets. This includes cases explicitly coded as suicide in FEMA fatality reports and psychological injury in TCFP's annual injury reports. The percentage was calculated by dividing the number of mental health-related entries by the total number of reported cases each year, then averaged over the ten-year period. The results suggest that while such issues are increasingly recognized, they remain underreported or inconsistently categorized, especially in state-level records.

It is important to note that in TDI's Texas-specific fatality investigation reports, Stress/Overexertion is rarely mentioned as a cause of death despite frequent references to cardiac-related events. Based on FEMA's 2013 report (p.4, lower-right), which attributes most stress/exertion-related deaths to sudden cardiac arrest, it is inferred that many Texas cases categorized under cardiac causes would likely align with FEMA's stress/exertion classification. This discrepancy may reflect differing reporting practices or interpretations by supervisors and managers at the time of incident documentation.

All percentage values displayed in the charts were calculated as the share of each cause relative to the total fatalities or injuries reported for that year. These proportions were then averaged across the ten-year period to generate trend-based summaries.

Together, these findings provide a contextualized view of the occupational health risks facing firefighters and expose gaps in how mental health-related data are reported and classified

across institutions. These insights are used to inform our qualitative exploration of institutional barriers and programmatic responses.

3.2. Qualitative Data

Data Collection

To gain insights at an organizational level, we engaged in informal conversations from August 20, 2024, to March 6, 2025. These discussions served as a source of primary qualitative data. Informal conversations were chosen to allow for authentic responses through rapport building, which enabled us to capture insights in a flexible and adaptable manner. These conversations were held through virtual platforms and in-person site visits. The conversations focused on gathering insights into the professional lived experiences of personnel of TFS, with particular interest in Wildland Firefighters (Davis & Brown, 2024; Swain, Jon & King, 2022; Swain, Jon Michael & Spire, 2020). The participant cohort comprised 32 personnel who held diverse roles: young and seasoned frontline wildland firefighters (job experience ranged from less than six months on the job, to over 30 years), volunteer wildland firefighters, frontline wildland firefighters who have transitioned into managerial positions, mid-level managers, and some senior leadership. Conversations in both personal and virtually sessions that lasted between 20 to 60 minutes each, during which notes were meticulously taken or were recorded. The resulting data were subsequently cleaned and organized for analysis.

Data Analysis

MAXQDA Analytics Pro 24 was used in the analysis. For flexibility, data were analyzed using an iterative coding process, which involved a line-by-line review of conversation scripts. Each line was carefully read and assigned codes, ensuring thorough and comprehensive data coverage. Coding was approached iteratively, that is, codes were revisited multiple times to refine their accuracy and identify emerging patterns.

Descriptive coding was employed to organize responses into thematic categories, providing a broad structure for analysis. This method grouped data into overarching themes that captured the general trends and relationships within the conversations. In vivo coding was used to preserve participants' voices by integrating some of their captured quotes directly into the analysis. This allowed for the inclusion of participants' perspectives and expressions, enhancing the authenticity of the findings.

To ensure the emergence of meaningful patterns, coding was repeated in cycles, and codes were continually revised as themes developed. This iterative approach facilitated flexibility in capturing insights that unfolded throughout the process. Once codes were finalized, thematic analysis was conducted, here we identify key themes and sub-themes, focusing on areas of

significant relevance and connection. This step provided a structured framework for interpreting the data and deriving conclusions from the conversations. All these were done according to established qualitative practices (Adu, 2019; Miles & Huberman, 2020; Morgan & Nica, 2020; Skjott Linneberg & Korsgaard, 2019). To preserve confidentiality, the themes that emerged from the 32 scripts that resulted from the conversations were synthesized into 8 composite narratives. A composite narrative is a method of summarizing data where insights from multiple individual accounts are combined to form a representative story or description. This approach focuses on recurring themes and shared experiences across participants, ensuring that the final narratives reflect collective patterns rather than specific identities. To further safeguard anonymity, pseudonyms were assigned to participants within these narratives. For instance, pseudonyms such as “WFF-1”, “WFF-2”, “WFF-3” up to “WFF-8” were used, where 'WFF' stands for Wildland Firefighter, the assigned numbers distinguish participant voices but in no particular order. This method provided an additional layer of protection for participants’ identities while allowing for a coherent and systematic presentation of the data (McElhinney & Kennedy, 2021; Willis, 2019).

Our interviews were open ended and mimic informal conversations and are not semi-structured or structured. As much as the informal conversations approach granted us the flexibility to explore widely, the possibility of unstructured responses affecting data consistency cannot be ruled out, as (1) conversations varied in length, and (2) some were conducted in groups (one-on-one, two-on-two and eight-on-one). We guided discussions through follow-ups and probing questions but did not influence responses, creating space for open conversations. Additionally, the reliance on self-reported experiences introduces the possibility of subjective or inaccurate responses, further complicating the interpretation of findings. We made no distinction between full-time wildland firefighters and volunteers, resulting in overlapping concerns, with some volunteer-specific issues being conflated or shared across groups, thereby reducing the clarity of the insights. Finally, the number of participants limits the generalizability of findings to broader populations of wildland firefighters.

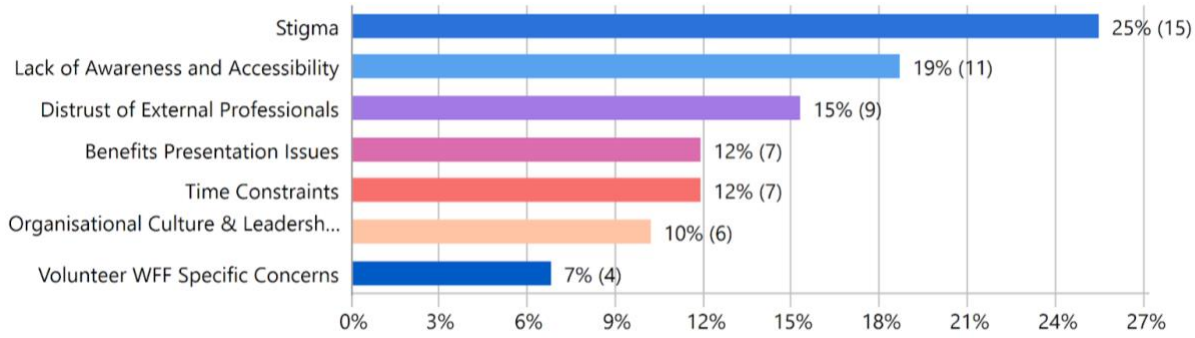
In communicating our findings, visual charts were created to summarize the frequency of key themes that were uncovered. We utilize resulting findings throughout this project and the write-up to guide discussions, lay the groundwork for programs and also in the justification of recommendations.

4. Barriers

Wildland firefighting is one of the most physically and psychologically demanding professions, requiring personnel to operate in high-risk, high-stress environments for extended periods. While the need for health and wellness programs—particularly those focused on mental health, stress resistance, and resilience—is increasingly acknowledged, implementing these programs effectively remains a significant challenge. Cultural stigma, structural barriers, underutilization of services, and operational constraints all contribute to the difficulty of establishing meaningful mental wellness initiatives for wildland firefighters. Both existing literature and our qualitative findings highlight significant barriers hindering access to and utilization of mental health support within the wildland fire service. Illustrated in Figure 3.1, you can see the relative prevalence of individual barriers as identified in our analysis.

Figure 4.1

Barriers to Well-being



Stigma: A Dominant Cultural Obstacle

One of the most formidable obstacles is the persistent stigma surrounding mental health. In the wildland fire community, strength, toughness, and self-reliance are deeply embedded cultural values. The Substance Abuse and Mental Health Services Administration (SAMHSA) notes the deeply ingrained cultural values of strength, toughness, and self-reliance within the firefighting community as a primary barrier, where admitting to mental health struggles is often perceived as weakness (SAMHSA, 2021). Admitting to stress, trauma, or emotional struggles is often perceived as weakness and mistrust (Henderson et al. 2016). As a result, many firefighters choose not to seek mental health support even when they need it. According to the Substance Abuse and Mental Health Services Administration (SAMHSA, 2021), stigma remains one of the primary reasons emergency service workers avoid mental health care, leading to long-term psychological issues such as anxiety, depression, and burnout.

Our findings corroborate this, with "Stigma" emerging as the most prominent barrier which accounted for 25% of coded themes. WFF-2 observed, *"It's like, we're supposed to be tough men. Don't say anything to your friends that you're hurting."* This culture of machismo prevents many from acknowledging their struggles or seeking help, as doing so is perceived as a weakness. Even when mental health support is available, the stigma creates resistance to engaging with these resources. WFF-2 highlighted this dynamic, noting, *"Firefighters are tough dudes, so they'll keep*

going and keep going until their mind or body says, 'Uh uh, no, you're done,' and forces them to take a break." This tendency to push through adversity without addressing underlying issues leads to burnout and, in severe cases, mental health crises. Accessibility to programs such as counseling or Employee Assistance Programs (EAP) is further hindered by these cultural attitudes. As WFF-5 reflected, *"I can't let stigmas keep me from taking care of me because I have to take care of people."* However, this sentiment is not universal, and many firefighters remain reluctant to take proactive steps. A member of the wildland firefighter, who has served with the organization for 24 years, reflected on the evolving discussions around mental health in the fire service. He noted, "Mental health issues are talked about more often than in the past, and there is less stigma around it." Heat recounted an instance when his team was required to participate in CISM. Although he and his teammates were initially resistant, the experience ultimately yielded positive outcomes, highlighting the potential of structured employee well-being programs.

Lack of Awareness and Accessibility: Systemic Shortcomings

A 2020 survey conducted by the International Association of Fire Fighters (IAFF) revealed that while 81% of firefighters had experienced mental health challenges, only 19% had sought help (IAFF, 2020). This gap highlights systemic issues in awareness, accessibility, and trust. Our findings align with this, with "Lack of Awareness and Accessibility" being the second most prevalent barrier making up 19% of coded themes on barriers. WFF-3 talked about vague recollections of resources mentioned during onboarding, highlighting a lack of sustained communication: *"I think I heard about it during my new hire orientation eight years ago, but the details are vague."* WFF-1 likened it to "*drinking through a fire hose if you try to understand it. The packet is just overwhelming and doesn't help clarify much."* Further, the process of accessing support, such as navigating email applications for CISM, was described as a deterrent. Time constraints due to demanding schedules also significantly impede firefighters from exploring available resources. WFF-1 explained further, this was in regards to insurance benefits: *"Open enrollment emails are sent out regularly, but they are often ignored or overlooked due to time constraints... The packet is just overwhelming and doesn't help clarify much."* In regards to therapy, WFF-3 added to this by explaining that, " *many employees are aware that they had access to therapy through insurance providers like Blue Cross/Blue Shield, yet they often lacked clarity on how to access these services.*

Distrust of External Professionals: The Importance of Cultural Competence

The Wildland Firefighter Foundation notes confidentiality in mental health services as a must building trust (Wildland Firefighter Foundation, 2024). A critical barrier identified in our interactions was firefighters' distrust of external mental health professionals who lack an understanding of the unique culture and experiences of wildland firefighting, this represented 15% of coded themes under barriers to accessing wellbeing support services. WFF-6's experience with a counselor after a mass casualty event illustrates this: *"The counselor didn't know much about firefighting or the horrific scene, so it was hard for her to empathize with us."* Cultural competence, has been cited as been important for utilization of mental health resources amongst firefighting communities (Henderson et al., 2016; Johnson et al. (2020). Firefighters often prefer turning to trusted leaders or team members for support over external professionals. WFF-4 emphasized, *"Team leaders are more critical to getting firefighters to talk openly than professionals."* The

strong sense of high expectations from leadership, and preference for internal systems for support was profound.

Benefits Presentation Issues: A Missed Opportunity

Our data revealed that the way information about benefits, including mental health programs and the retirement system, is presented is a barrier that accounted for 12% of coded themes. A member of the wildland firefighter team described the information as superficial and overwhelming: *"The presentation only shares surface-level details. At the end, a packet is distributed…… this process needs to change.*"

Time Constraints: Operational Realities

Operational constraints also pose a significant challenge. Wildland firefighters are often deployed for weeks at a time in remote, austere environments with minimal access to structured services. During the peak fire season, the priority is on firefighting operations, leaving little time or space for wellness interventions. Long hours, extreme conditions, and temporary base camps limit opportunities for reflection, training, or support. Programs that require consistent attendance or in-person delivery may be viewed as unrealistic or burdensome, making program design and delivery format a crucial consideration (DeMoulin, 2022). Our findings corroborate this, as "Time Constraints" emerged as a barrier in 12% of the analyzed themes. The demanding schedules and focus on firefighting operations leave little time for exploring or engaging with wellness resources, as highlighted by Wolf.

Organizational Culture and Leadership: The Need for Buy-in

Beyond time constraints, the culture of the firefighting profession itself presents a major barrier. The emphasis on endurance and mission-first thinking can make wellness initiatives seem secondary or even irrelevant. Traditional leadership models within wildland fire agencies may also hinder open conversations about emotional well-being. Without leaders who model and advocate for mental health support, such programs may fail to gain legitimacy or traction among the broader workforce. Furthermore, hierarchical dynamics can discourage lower-ranking personnel from speaking up about their mental health needs or accessing the resources that are available to them (Harrington, 2019). In our analysis, while "Organizational Culture and Leadership" reflected 10% of all themes on barriers, the frustrations were very concerning. A sense of frustration regarding leadership decisions that appeared to lack practical understanding of the complexities of the job exists. WFF-5 criticized the presence of leaders with no field experience in wildland firefighting, stating, *"It's a mistake to have people in positions of power who don't know what it's like out there.", then again*, the way and manner of presentation of benefits has fallen short in achieving its goal. Information about retirement systems and mental health programs is often presented superficially, leaving future beneficiaries unaware of how important it will be in their chosen path. WFF-6 retorted, *"The presentation only shares surface-level details. At the end, a packet is distributed, this process needs to change."* The disconnect between leadership intentions and employee needs is glaring. Further, the lack of proactive wellness remains a critical issue. Most programs are reactive, focusing on crisis intervention rather than prevention. WFF-1 expressed a deep concern, stating, *"We only find out about issues when it's too late—when someone has*

already ended up in the hospital or needed time off." This reactive approach fails to address underlying stressors before they escalate.

Volunteer Wildland Firefighters and Their Concerns: Disparities in Support

Our analysis revealed concerns for and unique challenges faced by volunteer firefighters, making up 7% of coded themes. Unlike their paid counterparts, these volunteers often lack access to essential resources such as workers' compensation and Employee Assistance Programs (EAP). This disparity creates a two-tiered system where volunteers are left to rely on community support or personal resources. WFF-4 stressed on existing disparities, saying, *"We're a paid agency, but in our neighboring jurisdictions with volunteer firefighters, they don't have workers' comp or EAP. There's a huge lack of resources for them."* For those with insurance, concerns about confidentiality and stigma remain prevalent. WFF-4 further explained, *"Even if you have insurance, there's fear about the stigma. People worry that using employee assistance will label them."* These fears prevent many from seeking help, leaving volunteers particularly vulnerable to burnout and mental health challenges. The scarcity of mental health resources for volunteers is particularly problematic during the intermediate and long-term stages following critical incidents. WFF-8 recalled, he had noticed, *" a huge lack of resources for people as we moved past the crisis intervention and into intermediate and long-term psychological effects."* This gap leaves volunteer firefighters without adequate support when they need it most, compounding the already high levels of stress and trauma they face in their roles. The lack of formal support has led to frustration among both volunteers and those advocating for them. WFF-7 recounted past efforts to close these gaps, *"I did try to really crusade for some of the volunteer groups, but I was sorely let down time and time again on the lack of assistance, especially for volunteers."* These challenges directly impact safety and well-being, as volunteers facing burnout or mental health struggles often lack structured support, leading to feelings of neglect and isolation. WFF-7 echoed this sentiment, stating, *"It's like, sure, we can help. What's your insurance? Well, they're volunteer firefighters—they don't have insurance like that. They don't have health care. There is nothing for them."*

The barriers to well-being identified in our qualitative study closely mirror and expand upon those highlighted in the existing literature. The deeply ingrained stigma, coupled with systemic issues related to awareness, accessibility, and trust, creates impediments to wildland firefighters seeking and receiving the mental health support they need. The distrust of external professionals points to the importance of culturally competent care, while organizational culture and leadership play a crucial role in either facilitating or hindering the normalization of mental wellness. Addressing these barriers requires tailored approaches, as suggested in the literature, focusing on cultural change, leadership engagement, service relevance, and program accessibility to foster a more resilient and healthy workforce.

5. Framework

There is a strong need for a systematic mental health protocol as a comprehensive support mechanism within TFS. We find that firefighters experience cumulative stress due to the physically demanding nature of their work and potentially traumatic field situations, but TFS has been limited in addressing these issues due to concerns about stigma, lack of awareness among employees, and a lack of preference for outside professionals (See Sections 1 and 3). Currently, TFS's approach to dealing with employee stress and mental health issues relies on peer support, with very limited access to CISM or EAP services that could provide more proactive help. Addressing this requires a more comprehensive approach, from organizational culture and practices to individual support, rather than individual and partial solutions.

5.1. Comprehensive mental health protocol

A comprehensive approach to preventing and managing mental health issues in the workplace typically consists of a three-step protocol (Substance Abuse and Mental Health Services Administration, 2024). The first phase aims to proactively prevent mental health problems from occurring in the first place, often involving modifications to the workplace environment or job design to reduce stress. The second phase focuses on identifying stress or conditions in employees who have not yet developed symptoms and improving their ability to cope or tolerate them. These steps are aimed at preventing identified stress from developing into a mental health issue. The third step is reactive, and aims to limit the severity or chronicity of any mental health problems that emerge from any cause through early detection and treatment. This framework for addressing mental health issues in the workplace is similar to the sequence of interventions in the preventive medicine typology: universal, selective, and directed disease prevention. Many studies (Joyce et al., 2016; Lamontagne et al., 2007) related to workplace stress prevention and control simplify this framework even further: they combine primary prevention to reduce job stress with support for workers' ability to resist, and they integrate identification and treatment of their problems.

What these frameworks emphasize is that an integrated approach of primary, secondary, and tertiary approaches, rather than any one approach, is more effective in managing stress and mitigating mental health problems (LaMontagne et al., 2014). This is due to the mutually reinforcing nature of the three threads: a mental health-friendly organizational culture helps to improve employees' organizational commitment and their ability to manage stress, which in turn enables them to respond quickly and effectively when problems arise. Furthermore, when the work environment, programs, and employees' coping abilities are in balance, organizations' limited resources can be mobilized efficiently and effectively.

Ultimately, the protocol that TFS should establish for the mental health of wildland firefighters should consist of the three phases outlined in the table below. However, this report's recommendations need to be developed in consideration of TFS's current resources, gaps, and barriers. In this regard, we propose a simpler and more intuitive approach, as described below.

Table 5.1

Comprehensive Workplace Mental Health Care Protocol

	First Phase	Second Phase	Third Phase
Features	Preventive Work-directed	Ameliorative Worker-directed	Reactive Worker-directed
Purpose	Prevent the incidence of work-related mental health problems Reduce the impact of related risk factors	Improve employees' ability to cope with or withstand stressors Reduce the progression to a disease state	Reduce the burden of mental disorders through early treatment Limit severity or chronicity
Contents	Modifying the job or the work environment. - Increased employee control - Physical activity - Workplace health promotion	Identify early symptoms and risk factors among workers - Stress management programs - Screening - Counselling - Post-trauma debriefing	Provide therapy and rehabilitation - Cognitive behavioral therapy - Exposure therapy - Medication

Note. Source: adapted from Joyce et al., 2016; Lamontagne et al., 2007

5.2. Strategies for promoting mental health at TFS

According to qualitative data gathered through interviews, the issues surrounding TFS were largely related to organizational culture and work environment, such as stigma and lack of awareness. On the other hand, programs such as EAP and CISM were already in place to support individuals, but there was a lack of programs that served as a bridge to connect individuals with these programs. Based on these two findings, we organized TFS's mental health support mechanisms into two dimensions: macro and micro strategies. This is a simplification of the three-step protocol mentioned above, which is generally used in the workplace to support employees' mental health. This is because our approach and recommendations are intended to fill the gaps in TFS's mental health support, which we recognize as lacking in terms of the overall organizational culture, work environment, and programs for individuals.

To improve mental health at TFS, a more appropriate approach is to focus on the macro-level, which relates to the organizational culture and perceptions of employees, and the micro-level, which focuses on improving the mental health of individuals.

The macro-level strategy consists of preventative and educational solutions targeting the entire staff. The strategy focuses on improving TFS's work environment and organizational culture, as well as strengthening awareness of mental health and ability to cope with stress and mental health issues. We generate overarching and structural solutions to mental health issues. The micro-level strategy consists of prescriptive and personalized solutions targeting individual

employees. This strategy focuses on solutions that provide direct support that can help employees when they have high-stress levels or signs of mental health issues.

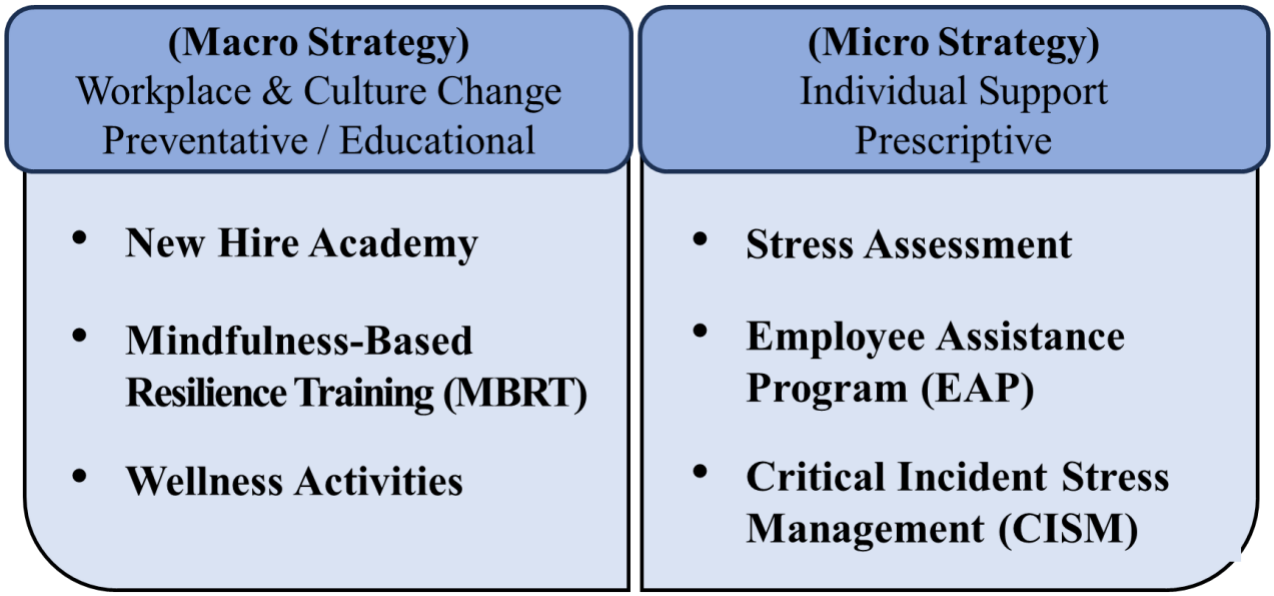
These two strategies and their respective solutions can be used as a protocol to help TFS members mitigate, prevent, diagnose, and heal from stress. As they are utilized, they will contribute to a mental health-friendly culture within the organization. There are considerations to remember that TFS has different work characteristics and unique culture from the typical workplace, and specific recommendations for each solution reflecting feedback from TFS members will be discussed in the next chapter.

Table 5.2

Solution Framework For TFS

	Macro Strategy	**Micro Strategy**
Features	Preventive Work-directed	Prescriptive Worker-directed
Purpose	Creating a mental health-friendly culture Improve employees' ability to cope with or withstand stressors	Early detection of mental health issues and reduced progression to disease Deliver tailored treatment and therapy
Solutions	- New Hire Academy - Mindfulness-Based Resilience Training (MBRT) - Wellness Activities	- Stress Assessment - Employee Assistance Program (EAP) - Critical Incident Stress Management (CISM)

Figure 5.1: *Solution Model*

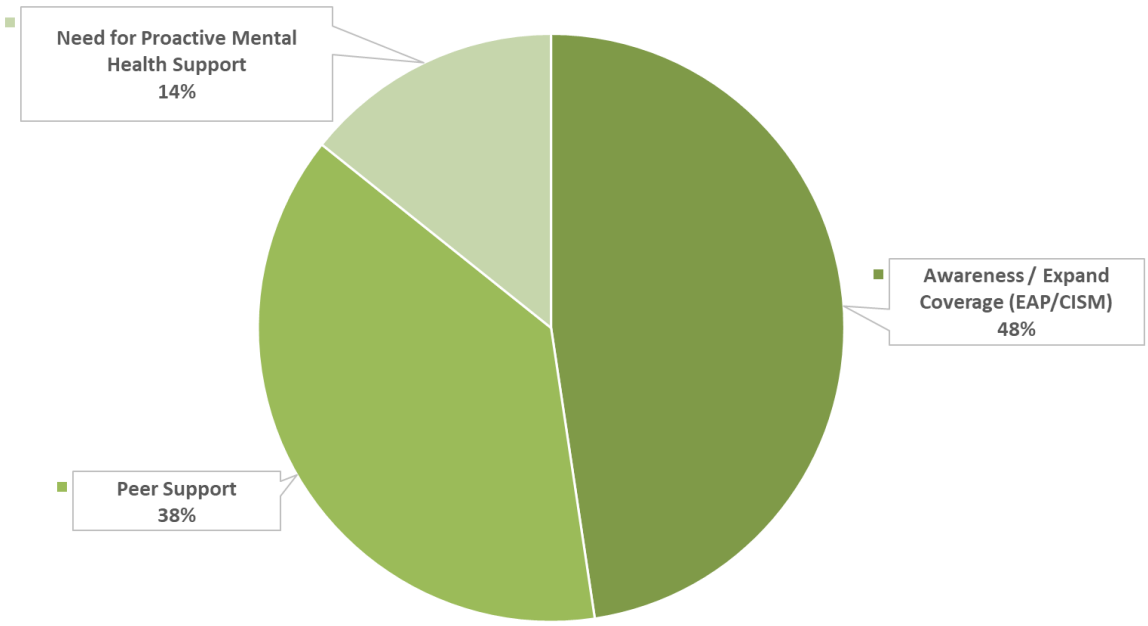


6. Solutions

In this section, we present six solutions that interact to strengthen the mental health support offered by TFS. The necessity of each proposed solution is grounded in the experience, challenges, and needs of TFS personnel. Figure 6.1 illustrates the overall assessment of mental health needs of wildland firefighters derived from our analysis of the conversations with TFS personnel inclusive of wildland firefighters (See Section 2).

Figure 6.1

Enhancing Mental Health Support - The Way Forward



The first solution is reintroducing the New Hire Academy with training modules that prepare recruits for the inherent physical and emotional demands of the job. This ensures that foundational coping skills and resource awareness are established early in a wildland firefighter's career. This addresses the identified need for *proactive mental health support* (Figure 6.1).

The second proposed solution is Mindfulness-Based Resilience Training (MBRT). MBRT involves providing personnel with practical, accessible mindfulness techniques to manage stress. The significance of mindfulness programs are illustrated with a comprehensive mindfulness literature review and case study. There is also a preliminary finding that supports the use of virtual reality to support personalized and accessible *mindfulness training* (Figure A7 in appendix).

The third solution involves instituting wellness activities to support overall well-being and recovery. While specific "wellness activities" were not detailed as a coping mechanism in our findings, the lack of sufficient recovery opportunities and the *difficulty disconnecting from work*

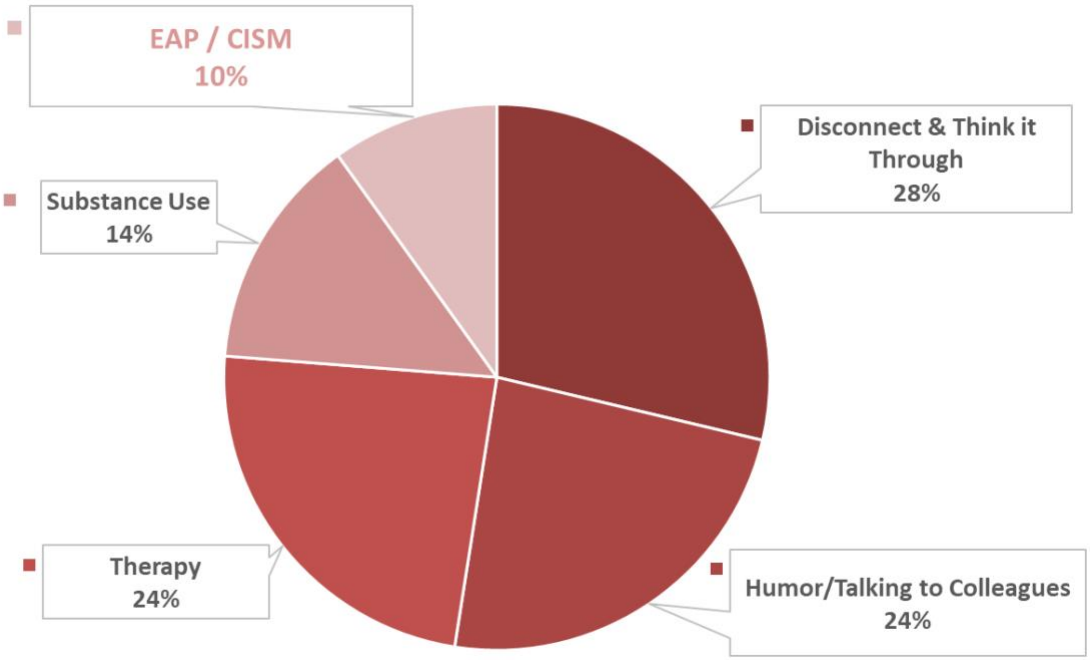
(Figure 2.5 on Occupational Stressors) imply the need for dedicated time for non-work-related activities with a focus on improving the wellbeing of personnel.

The fourth solution involves implementing a systematic, mandatory process for all employees to regularly check their stress levels. It was evident in our findings that CISM is reactive by design, again pointing to *the need for proactive support systems* (Figure 6.1). Also, to normalize discussions on mental health, generalizing stress assessments offers a way to navigate *the barrier of stigma; 25% of all barriers identified* (Figure 4.1).

The fifth solution focuses on enhancing communication, awareness, and access to the existing Employment Assistance Program *(Figure 6.3)*. This ensures all personnel, including volunteers, understand how to access and make good use of these formal outlets in doing so the second identified *barrier of awareness is addressed (Figure 4.1).*

Figure 6.3

Coping and Support Systems



The sixth solution involves enhancing the existing CISM framework by improving peer support development, communication, centralized access to resources, and strengthening partnerships with external professional support networks. This reflects an emerging insight where *support from peers is preferred and valued* (Figure 6.1).

These solutions draw directly from insights shared by TFS personnel through our conversations (see Section 2). The components of each proposed solution are detailed out in the next section.

6.1. New Hire Academy

Wildland firefighting is physically and emotionally demanding, requiring new hires to develop mental resilience, effective communication, and stress resistance to maintain operational efficiency and personal well-being. The New Hire Academy will integrate specialized training modules addressing these critical areas to ensure firefighters are prepared for the high-stakes nature of their roles. This training is essential not only for improving job performance but also for increasing retention and reducing burnout.

6.1.1. Need and Historical Context

Within the Texas A&M Forest Service (TFS), turnover remains exceptionally high, underscoring the need for comprehensive onboarding to ensure success in the field. With wildland firefighter numbers in decline and approximately 45% of permanent wildland firefighters having quit or retired over the past three years (Frost, 2024), a robust onboarding program is critical. While required training for new hires varies by agency, only a few courses—such as NWCG-certified wildfire basics—are universally mandated. Historically, TFS offered a "New Hire Academy" that provided community and resources to incoming firefighters. Interviews with former participants revealed that the program significantly improved preparation for leadership roles. However, following the departure of the individual leading the academy, it was discontinued. A firefighter with only two years of experience is often considered a seasoned professional. **Reinstituting the academy** will offer essential support and structured training in resilience, leadership, communication, and stress management.

6.1.2. Curriculum Transition

The difference between the previous training and our "New Hire Academy" will be a transition within the curriculum that builds a foundation of knowledge about the profession but replaces the replicated sessions with education on leadership, resilience, and communication along with in depth lessons on their benefits and programs that can be taken advantage of. Interviews outlined that the previous program was helpful, but would be repetitive and most information would not fully prepare the new employee for the day to day activities.

Table 6.1

New Hire Academy Course For TFS

Week	Focus Area / Duration	Key Activities	Skills Emphasize
1	**Intro & Orientation** Day 1-2: Welcome and Orientation Day 3-5: Physical and mental assessment, Benchmarking	Academy Overview, Physical / Mental Evaluation	Orientation, Goal Setting, and Baseline development

2	**Firefighting Basics** Day 1-3: NWCG-Certified Wildfire Basics Day 4-5: Hands-On Training	Fire Behavior, Safety, Equipment	Fire Basics, Safety
3	**Leadership Development** Day 1-2: Leadership Style and situational leadership strategies Day 3-5: Harvard's Resilient Leadership Modules	Style Assessments, Resilient Modules	Leadership, Self-Awareness
4	**Resilience Training** 1-3: Cognitive-Behavioral Techniques, high stress exercises Day 4-5: Penn Resilience Program (PRP)	Bounce Back Better, PRP	Cognitive Resilience
5	**Communication** Day 1-2: Conflict resolution training and high stakes decision making Day 3-5: Nonviolent communication workshop (NVC)	Crucial Conversations, NVC	Communication, Conflict
6	**Stress Resistance** Day 1-2: Meditation Techniques Day 3-5:Emotional Regulation and Tools for Calm business	MBSR, HeartMath	Mindfulness, Regulation
7	**Advanced Techniques** Day 1-3: Advanced Fire Behavior and Safety, equipment use Day 4-5: Real-Time Firefighting Drills	Complex Scenarios, Drills	Advanced Firefighting
8	**Leadership in Action** Day 1-2: Decision-Making Under Pressure, Leadership Role-Playing Day 3-5: Mentorship Programs, Leadership Challenges	Pressure Scenarios, Mentorship	Decision-Making, Mentorship
9	**Resilience Reinforcement** Day 1-3: Emotional Regulation in Crisis, Long-Term Resilience Strategies Day 4-5: Building a Supportive Community	Advanced Resilience, Peer Support	Emotional Resilience
10	**Communication Mastery** Day 1-2: Effective Messaging Strategies and Communication Under Pressure Day 3-5: Real-Time Communication Exercises, Feedback and Improvements	Messaging, Simulations	Effective Communication
11	**Well-Being** Day 1-2: Daily Stress Management, Post-Shift Decompression Day 3-5: Mindfulness Programs, Long-Term Well-Being Strategies	Stress Management, Retention	Well-Being Strategies
12	**Final Assessment**	Final Evaluation,	Career Development

	Day 1-3: Comprehensive Evaluation, Physical and Mental Evaluation Day 4-5: Ceremony and Recognition, Next Steps and Career Development	Graduation	

6.1.3. Onboarding Process and Best Practices

Implementing this academy as a standard part of the onboarding process will help new hires adopt best practices, build a sense of community, and develop both functional and interpersonal skills. Studies show that strong onboarding can increase new hire retention by 82% and boost productivity by 70% (TFS, n.d.) The proposed structure mirrors TFS's "Fire Training Academy" where it is a 12-week program that learns about the firefighting profession and specific professional development traits that will help them excel in the workforce (Texas A&M Engineering Extension Service, n.d.). However, instead of spending 12-weeks to assess hands-on training we look to assess multiple different aspects of professional development during the same duration.

6.1.4. Financial Efficiency

This way we can efficiently provide attendees hands-on training; but also leadership development, resilience, communication, and stress reduction and management training as well. This would effectively subsidize the financial cost with the training being included within the 12-week course. During this time we can introduce more development opportunities within this timeframe that is mandated to help prepare young hires to take leadership roles earlier and plausibly increase retention rates. This substitution can afford essential pillars and tenets to help foster a healthier learning environment to progress the TFS's hiring process (U.S. Forest Services, 2023).

6.1.5. Trainings and Purpose

Leadership training will be introduced early in the academy. Organizations that invest in leadership development see a 29% increase in employee retention (Keevee, 2024). Training may include leadership style assessments to promote self-awareness and situational leadership strategies to prepare individuals for high-pressure decision-making. Many programs, such as Harvard's Resilient Leadership modules, are freely available and can be customized to meet the unique needs of TFS employees. This accessibility allows for flexibility in training delivery, whether taught by peers or external facilitators, and opens the door for financial incentives or compensation for program leads.

Resilience training aims to build mental toughness, adaptability, and emotional regulation within the employee's first few weeks in hopes to retain the individuals for a longer time period. Structured programs like Bounce Back Better® and the Penn Resilience Program (PRP) will be

utilized, offering cognitive-behavioral techniques and practical exercises tailored for high-stress environments. Scenario-based drills will simulate high-pressure wildfire conditions to build real-time coping strategies, while peer mentorship systems will foster ongoing emotional support. Research shows that resilience training can reduce mental distress by 30%, and targeted burnout interventions can decrease turnover by 25% (Shortlister, 2024; Growett, 2024).

Communication training will assist in both top-down and bottom-up messaging, as well as effective communication for firefighters to relay information and collaborate seamlessly under pressure. The academy will incorporate Crucial Conversations® Training, which focuses on conflict resolution and high-stakes decision-making, alongside Nonviolent Communication (NVC) workshops to strengthen interpersonal clarity. Daily debriefs and radio simulation drills will reinforce communication consistency. Studies report that organizations with strong communication practices are 50% more likely to reduce turnover, and enhanced internal communication can improve productivity by 30% (Sci-Tech Today, 2024). Additionally, open feedback systems are associated with a 20% increase in retention (Keevee, 2024).

The academy will offer comprehensive stress resistance and mental health training to support long-term well-being. This includes Mindfulness-Based Stress Reduction (MBSR) and HeartMath Resilience Advantage Training, which use meditation and biofeedback techniques to regulate emotional responses. Tools like Calm for Business will support daily stress management, while post-shift decompression sessions will provide space for guided reflection. These initiatives have shown measurable outcomes, with mindfulness-based programs reducing stress levels by up to 60% (Lorman, 2024) and leadership development contributing to a 29% boost in retention (Keevee, 2024).

Among resilience, leadership, communication, and stress management trainings, all courses are available online for free. The true cost lies in the time spent assessing these courses to build a curriculum for each area. The program already has funding allocated; the only necessary change is updating the active material to support individual professional development rather than individual function. In this context, the teacher would need to modify some aspects of the program or utilize online modules to assist in education. Implementing these changes can foster community building, reassess our ability to create leaders, and enhance program attendance.

6.1.6. Conclusion

By integrating evidence-based practices into the onboarding process, the New Hire Academy will prepare wildland firefighters to meet the emotional and physical demands of the job. This holistic approach—combining resilience, communication, leadership, and stress management training—will improve job satisfaction, reduce burnout, and significantly increase long-term retention. In turn, it will help build a stronger, more sustainable firefighting workforce for the future.

6.2. Mindfulness-Based Resilience Training (MBRT)

6.2.1. Overview

Resilience related to mental health refers to the ability to adapt to stressful situations through mental and behavioral flexibility (American Psychological Association, n.d.). For wildland firefighters, this means being able to maintain focus and composure during intense firefighting operations, recover quickly from setbacks, and continue performing at a high level despite the physical and mental demands of their job. Mindfulness-based resilience training (MBRT) equips firefighters with the tools and techniques they need to manage stress, regulate their emotions, and maintain their mental health. Integrating it early into their training will improve the outcomes for those unfortunate enough to be involved in traumatic incidents. MBRT is a tool that will better prepare the wildland firefighters for high stress situations and reduce the likelihood of damage being done to their mental health. MBRT is a preventative solution that will reduce burnout and better secure the mental health of the employees of TFS. Even employees who are not in the field can benefit from better stress management and coping skills.

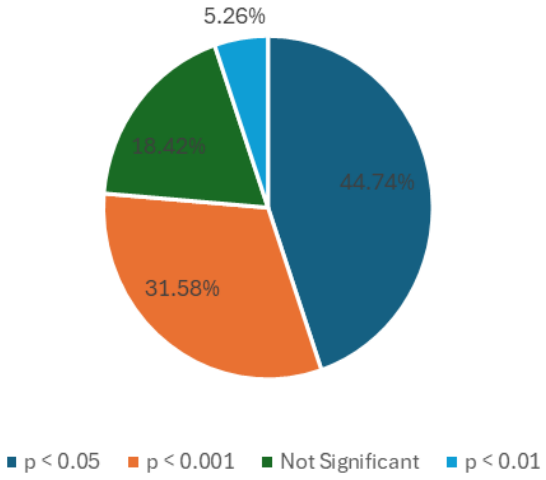
MBRT is a type of programming designed to support mental health and is based on the Mindfulness-Based Stress Reduction framework (Kabat-Zinn, 1991). We use mindfulness techniques to raise awareness and build resilience. Some of the techniques that can be used are mindful breathing, sitting and walking meditation, or mindful movement (Kaplan et al, 2017). All of these techniques can be taught and practiced throughout the course of a comprehensive virtual or in person program. We recommend the development of an eight week program to be administered virtually to allow for everyone who works for TFS an opportunity to participate. To better illustrate the benefits of MBRT we have included the current status of mindfulness as a mental health support tool and a case study.

6.2.2. Current Status of Mindfulness as a Mental Health Support Tool

We used academic databases including PubMed, ScienceDirect, and Google Scholar to collect academic literature on mindfulness. Inclusion criteria are keywords related to (1) professional firefighters or first responders as participants, (2) mental health-related outcomes such as stress, burnout, or emotional resilience, and (3) implementation of a mindfulness or resilience-building component. Following the keyword searches, a total of 56 peer-reviewed studies were retained. Each study was coded across 38 variables, such as publication year, country of origin, sample size, firefighter type, program duration, intervention type, statistical significance, outcome types, and author-classified program effectiveness. To analyze participant characteristics within the reviewed studies, we classified entries by both professional role and gender.

Figure 6.4

Final Statistical Significance Distribution (%)



In Figure 6.4, 44.74% of studies reported statistically significant effects at the $p < 0.05$ level, and an additional 31.58% at the more stringent $p < 0.001$ level. Only 18.42% of studies indicated that their findings were not statistically significant. Taken together, more than three-quarters (81.05%) of the studies with reportable statistical results found evidence of effectiveness.

These findings support the conclusion that mindfulness-based interventions are both prevalent in current firefighter mental health research and frequently associated with statistically significant improvements. Given the consistency of positive outcomes across diverse program types and settings, mindfulness training appears to be a viable and empirically supported approach to enhancing psychological well-being among firefighter populations.

6.2.3. Case Study

The case study by (Kaplan et al, 2017) examines the effectiveness of Mindfulness-Based Resilience Training (MBRT) in enhancing resilience among law enforcement officers and firefighters. It underscores the important role of resilience in protecting against stress and improving overall wellbeing and performance at work. This case study was chosen as it clearly depicts the benefits of a targeted MBRT program. They used standardized assessments so their data is usable and reliable. We only chose to include a single case study as the others reflect similar findings. This one is the most effective at portraying the benefits of incorporating MBRT into first responder operations.

The MBRT program is designed to help first responders stay present, manage stress, and enhance cognitive functions through mindfulness practices. The training includes sessions on focused attention, body awareness, open monitoring, and connection practices. These sessions aim

to increase psychological resilience, improve attention and working memory, and alleviate symptoms of stress and anxiety (*Figure 6.3, 6.4*)

Figure 6.3 is a visual representation of the improvements that the firefighters experienced after participating in the program. All of the scores were assessed using the Five Facet Mindfulness Questionnaire - Short Form (FFMQ-SF) which is a standard test used to measure the components that go into mindfulness (Kaplan et al, 2017). The Brief Resilience Scale (BRS) was used to measure mental resilience separate from the FFMQ-SF and is also a standard test used in this field (Kaplan et al, 2017). Figure 6.4 shows the reduction in burnout that came with the completion of the program. Burnout was measured using the Oldenburg Burnout Inventory (OLBI) assessment, a standard tool used to measure burnout used in research (Kaplan et al., 2017). The case study highlights how effective a short eight week long program can be on the targeted population.

Figure 6.3

Mindfulness-Based Resilience Training Study Results

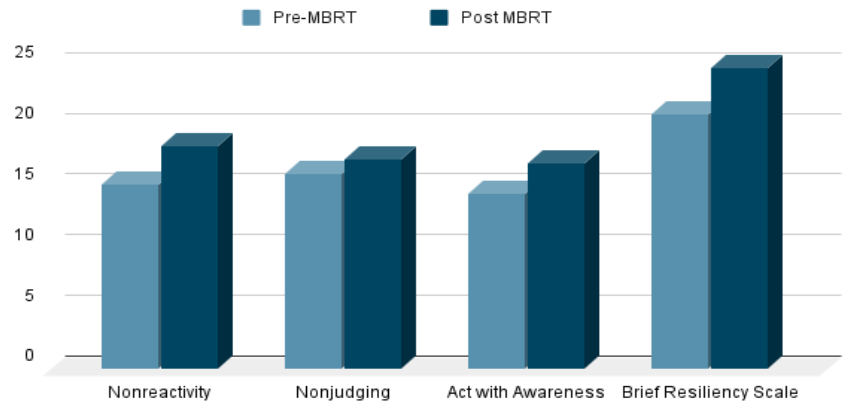
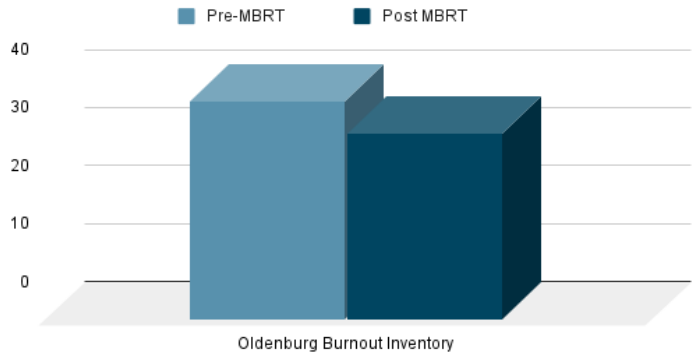


Figure 6.4

Burnout Reduction



Virtual Reality Cognitive Behavioral Therapy

Interviews with 10 participants who have used the virtual reality-guided cognitive behavioral therapy show promise in providing personalized and accessible support to enhancing mental health (*Appendix, Figure A7*). Interviewees especially enjoyed mindfulness activities including grounding and breathing exercises, with 75% of wildland firefighters finding them calming and effective in managing stress (*Appendix, Figure A7*). While not a substitute for in-person therapy, VR can complement traditional methods. Cost, technical issues and the self-guided nature of some programs may present challenges to consistent use; these make up 25% of concerns in using VR (*Appendix, Figure A7)*.

6.2.4. Implementation

The overall cost of implementing MBRT is low. We have looked at two different options for implementation. The first option is to contract out with a company that has already developed software or an application to provide MBRT. This method would cost less than ~$100 per employee at TFS. Some examples in this field are the Calm application and the Headspace application. Both of them are available through either the Google Play Store or the Apple App Store. The second option is to contract out with mindfulness and resilience training providers. The cost for this method, while most likely similar in price to the apps, varies more. One promising provider that we discovered was The Center for Mindfulness in Public Service. They provide a comprehensive ten week program aimed towards first responders. Harvard Online also offers an 8 week course annually titled "Stress Management and Resiliency Training (SMART) Program" (Harvard Online, 2025). The course costs $700 per participant and is more advanced in curriculum than the other options (Harvard Online, 2025). It could be a good option for those looking to learn more after learning the basics.

Feedback from wildland firefighters about mindfulness was generally positive but there was a recurring concern that the word "mindfulness" may put off some of those that would benefit from the training from a little more than half of those we talked with during the course of our informal discussions with TFS staff. WFF-4 shared a story about how they never would have considered taking a yoga class until he accidentally signed up for one that was not branded as a yoga class. After going through the program, WFF-4 continues to incorporate what he learned in that program into his daily life. It is because of this that we recommend shifting the branding of this proposed programming to mental resilience training and suggest not including the term "mindfulness" in any promotional materials. The general interest and low cost of establishing the program makes this a highly feasible program to integrate into TFS. Due to the wide geographic coverage of the TFS, it is not feasible to host a mindfulness program in person. Instead, we recommend either doing virtual classes that people can log into from anywhere or contracting out with one of the application based services to allow employees to learn at their own pace.

6.2.5. Conclusion

Integrating MBRT into the culture of TFS for wildland firefighters is a crucial step towards enhancing their ability to cope with the intense demands of their job. The evidence strongly supports the effectiveness of such training in reducing stress-related incidents and improving overall mental health and job performance. By investing in these programs, we can ensure that our firefighters are better equipped to handle the challenges they face, ultimately leading to a safer and more resilient workforce. It is essential that TFS takes steps to implement an annual 8 week long mental resilience training program.

6.3. Wellness Activities

6.3.1 Overview

Wellness initiatives for wildland firefighters are rooted in the wellness paradigm, which has consistently proven effective in enhancing both physical and mental health outcomes. These programs—such as community engagement activities, outreach efforts, and dedicated wellness days—have demonstrated significant benefits for frontline wildland firefighters. For example, studies have shown that integrated wellness programs can reduce burnout, lower rates of PTSD, and improve overall job performance and morale (Pace et al., 2022). Departments that prioritize wellness days, community engagement and staff retreat-training models often report increased resilience and reduced absenteeism among their personnel.

The Wellness Paradigm represents a progressive approach to health, emphasizing self-responsibility, personal empowerment, and a focus on overall well-being rather than symptom management (Gochman, 1997). Unlike the Treatment Paradigm, which centers on medical intervention and the correction of dysfunction, the Wellness Paradigm acknowledges individuals as inherently whole and capable of optimizing their own health through conscious lifestyle choices and personal development.

6.3.2. Community Outreach / Community Engagement

Community engagement and community outreach have a direct impact on the wellbeing of the wildland firefighters and the organization itself (Cowman, Ferrari, & Liao-Troth, 2004). There are multiple ways to engage with community outreach activities to maximize visibility and integrate into the community. Community engagement and outreach aren't just public-facing activities—they're deeply tied to mental health, job satisfaction, and professional development. By fostering social connection, reducing stigma, and encouraging shared experiences, outreach efforts can help wildland firefighters feel seen, supported, and valued. Moreover, when wildland firefighters actively participate in the community, they help build public trust, which feeds back into a supportive workplace culture and reinforces their own sense of purpose. Ultimately, effective community engagement becomes a two-way street: it strengthens the well-being and performance of wildland firefighters while enhancing the resilience and safety of the communities they serve.

6.3.3. Best Practices

Wildland firefighters operate in high-stress, high-stakes environments where public understanding and cooperation are crucial. Best practices in community outreach, such as trust-building via hosting an open house, education via offering CPR training courses, culturally responsive communication such as attending annual community events, and therefore sustained local partnerships, are highly applicable and necessary for this field.

The current best practices include:

a) Hosting an Open House

This transparency helps demystify the wildland fire department's operations and fosters a sense of trust and familiarity among community members. For departments seeking guidance on organizing successful open houses, the International Association of Fire Chiefs provides a comprehensive resource detailing planning steps, necessary resources, and effective engagement strategies, thus utilizing the guideline by IAFC would make TFS's community engagement stronger.

b) Attending Annual Community Events

When wildland firefighters participate in annual community traditions, they're seen as an integral part of the neighborhood. Their presence signals that they're not just responders, they're community members, too. For example the Manistee Fire Department in Michigan exemplifies this approach through its dedicated community outreach initiatives. In 2024, the department responded to 1,272 incidents. Beyond emergency responses, they actively engage with the community by visiting senior centers and organizing educational programs for high school students. These efforts not only educate the public on safety but also build strong, trust-based relationships between firefighters and residents.

c) Using a Community Risk Reduction Portal like Community Connect

Community Connect is a free, secure, and easy-to-use platform that allows residents and local businesses to share critical information about their property with emergency personnel. The Round Rock Fire Department in Texas exemplifies successful implementation of CRR strategies. They have developed a comprehensive CRR program that includes: Home Safety Surveys: Conducting assessments to check smoke and CO detectors, evaluate home safety hazards, and assist in creating fire escape plans and Community Engagement, through actively involving community members through educational initiatives and partnerships to promote fire safety and prevention.

d) Offering CPR Training Courses

Providing CPR training for high school students, local business employees, and residents equips them with the skills needed to save lives in emergencies. These courses not only enhance community safety but also foster a collaborative spirit. For example, the Frisco Fire Department in Texas sets a strong example in community preparedness through its CPR/AED Awareness Program, designed specifically for residents and individuals who work within the city. These hands-on classes are held regularly from 6:30 to 9:00 p.m. on the third Wednesday of February, April, June, August, and October. By offering consistent, accessible training opportunities throughout the year, the department empowers the community with life-saving skills and reinforces its commitment to public safety education.

In conclusion, TFS currently implements and partially utilizes two of the aforementioned best practices - hosting open houses and attending annual community events. However, the use of a Community Risk Reduction Portal is absent, and the provision of CPR training for students and local residents remains limited. To enhance visibility and strengthen integration within the community, more frequent participation in annual events would significantly boost wildland

firefighter engagement and reinforce public trust. These efforts require minimal investment but, as demonstrated by leading wildland fire departments across the U.S., can yield substantial impact in building stronger, safer communities.

6.3.4. Recommendations to TFS

Green *– TFS is already implementing or has taken partial steps toward these efforts.*

Pink *– These are areas where TFS is currently not involved, so it is recommended that TFS explore opportunities to increase engagement in these areas to further strengthen community ties and public safety.*

Host an Open House This transparency helps demystify the wildland fire department's operations and fosters a sense of trust and familiarity among community members	**Offering CPR Training Courses** Providing CPR training for high school students, local business employees, and residents equips them with the skills needed to save lives in emergencies. These courses not only enhance community safety but also foster a collaborative spirit
Use a Community Risk Reduction Portal like Community Connect Community Connect is a free, secure, and easy-to-use platform that allows residents and local businesses to share critical information about their property with emergency personnel	**Annual Community Events** When wildland firefighters participate in annual community traditions, they're seen as an integral part of the neighborhood. Their presence signals that they're not just responders, they're community members, too.

6.3.5. Staff Retreat

Staff retreats are also very effective practice for promoting the well-being of wildland firefighters, offering them a chance to reflect on their experiences in a supportive, low-pressure environment among peers. These retreats create space for psychological decompression, peer connection, and structured reflection, factors shown to improve mental health outcomes and reduce burnout in high-stress professions. Research in occupational health and emergency response fields supports the use of retreat-based interventions as a means of fostering resilience, emotional recovery, and team cohesion (Jahnke et al., 2019). Given the cumulative stress and trauma often experienced by wildland firefighters, implementing well-structured retreat programs can serve as a critical component of an agency's broader wellness strategy. Thus, in the United States, there are strong examples of well-organized and effective programs that have been successfully implemented in states such as Connecticut and California.

6.3.6. Overview

According to the National Volunteer Fire Council staff retreats serve as a proactive approach to address the mental and physical well-being of wildland firefighters (2021). They provide dedicated time and space away from the daily rigors of duty, allowing wildland firefighters

to decompress, reflect, and engage in activities that promote overall wellness. Such retreats can lead to increased job satisfaction, higher morale, and better physical and mental health among personnel.

While staff retreats for wildland firefighters are not yet widely adopted practice, largely due to perceived financial constraints, there is growing evidence that such initiatives can be both feasible and highly impactful when approached creatively. Across the country, forward-thinking wildland fire departments are finding innovative ways to organize week-long retreats aimed at promoting recovery, mental wellness, and resilience among their crews. Though these programs may carry a price tag, they need not be prohibitively expensive. In fact, there are several compelling case studies that illustrate how departments have either funded or partnered strategically to make staff retreats a reality.

In the case of the Norwalk Fire Department in Connecticut, the city took a proactive approach by contracting with a dedicated wellness center provider. This collaboration allowed Norwalk to offer its wildland firefighters a structured retreat-like experience at a resort-style facility- demonstrating how municipalities can integrate wellness programming into departmental planning through external vendors. By contrast, the retreat hosted by Tassajara Zen Mountain Center in California was offered completely free of charge, born out of community gratitude and recognition for the wildland firefighters' service- particularly during their efforts protecting Tassajara during the Willow Fire. This model shows how local organizations and communities can step in to provide meaningful support without financial burden to the department.

6.3.7. Implementation

These examples reveal a crucial insight: the success of a staff retreat program doesn't depend solely on departmental budget. Rather, it can be tailored to the specific financial and logistical capacities of each wildland fire department. By forming partnerships with local wellness providers, leveraging community goodwill, or engaging in public-private collaborations, departments can significantly reduce or even eliminate the costs involved. The key lies in pitching the retreat not just as a perk, but as a strategic, preventative investment in wildland firefighter well-being and long-term organizational performance.

A staff retreat is a focused, immersive version of what Norwalk's Fire Department in Connecticut wellness initiative implements over time—both aim to reduce stress, boost resilience, and prevent long-term harm. Norwalk shows that when departments prioritize time away from duty to invest in health and wellness, whether in the form of a structured retreat or continuous program, the results can be transformative—for individual wildland firefighters and the organization as a whole.

LaKota Oaks, located in Norwalk, Connecticut, is a 66-acre retreat center that offers an ideal setting for hosting a 7-day staff retreat for wildland firefighters. The property features 121 deluxe guestrooms, 20 versatile meeting rooms equipped with state-of-the-art technology, and extensive recreational facilities, including a fitness center, walking trails, and various sports courts. These amenities provide a balanced environment conducive to both focused training sessions and relaxation

On the other hand, The Tassajara Zen Mountain Center, operated by the San Francisco Zen Center, offers an annual Wildland Firefighter Retreat designed to provide wildland firefighters with a sanctuary for rest, renewal, and healing. Designed with a focus on trauma-sensitive training, the retreat provides participants with mindfulness practices, meditation sessions, and sensory awareness techniques that can help them manage the chronic stress and emotional toll of their profession. With wildland firefighters facing depression, PTSD, and burnout at significantly higher rates than the general population, this retreat serves as a rare and meaningful opportunity to step away from high-intensity work environments and engage in holistic healing.

Planning for the retreat began in 2019, the result of conversations between Tassajara leadership, wildland firefighters, and supporters who recognized the urgent need for dedicated wellness programs tailored to the wildland fire community. The program was developed collaboratively, with the intention of being an ongoing, annual offering, grounded in both gratitude and genuine support for those on the front lines. Tassajara itself has been protected multiple times by wildland firefighting crews, most recently during the Willow Fire, and this retreat is also a way for the organization to express appreciation and give back to those who have risked their lives to protect it.

The retreat structure combines formal and informal elements. Each day includes trauma-informed sessions on meditation, mindfulness, and sensory awareness. Participants also take part in a community workday where mindfulness is woven into tasks like land stewardship and fire prevention work, bridging daily practice with real-world relevance. The experience is further enriched by access to Tassajara's natural hot springs, nourishing vegetarian meals, and quiet mountain trails, all of which foster a sense of peace and grounding. To mark the end of the retreat, attendees share a New Year's Eve bonfire ceremony, offering space for reflection and connection.

Importantly, the retreat doesn't end when participants leave Tassajara. The program includes three monthly follow-up Zoom calls, creating a bridge for continued practice and peer support. The facilitators, such as Lee Klinger Lesser, an expert in sensory awareness, and Chris Fortin, a Zen priest and licensed therapist with trauma expertise, bring decades of experience to create a safe, inclusive, and healing environment for attendees.

Overall, the Tassajara retreat is a profound response to a growing mental health crisis among wildland firefighters—one that not only provides practical tools for healing but also nurtures community, gratitude, and long-term resilience.

6.3.8. Conclusion

Implementing expanded wellness initiatives at TFS is both realistic and if needed strategically possible. The current partial efforts such as open houses and community event participation, provide a strong foundation to build upon. By adopting low-cost, high-impact strategies like CPR training and leveraging free platforms like Community Connect, TFS can enhance community trust and wildland firefighter well-being without major financial strain. Additionally, staff retreats, while often seen as resource-intensive, are proven models for improving mental health and job performance. Examples from Norwalk and Tassajara demonstrate

that such retreats can be implemented through creative partnerships and community support, making them attainable for departments like TFS. With thoughtful planning and collaboration, TFS can adopt a more holistic, preventive approach to wildland firefighter wellness that aligns with national best practices.

6.4. Stress Assessment

6.4.1. Overview

While some mental health resources exist, many respondents emphasized the need for more proactive measures. Reactive approaches like how CISM operates, were often seen as insufficient, especially in addressing long-term challenges. Referring to CISM, WFF-1 indicated that *"Proper vetting and follow-up such as 2–4 week check-ins would be necessary to ensure credibility and long-term impact."* Additionally, incentivizing mental health screenings and integrating them into routine health plans were proposed as potential strategies to encourage participation. WFF-2 remarked, *"Mental health screening needs to be easily accessible and incentivized... even helping five people would be significant."* Proactive strategies also involve addressing burnout and trauma early. WFF-1 recalled, *"Many indicated that while CISM support would be beneficial after such events, they rarely saw team members present for post-disaster debriefing."* Ensuring continuity in these services was flagged as a critical issue, with staffing shortages often disrupting support. Respondents stressed the importance of maintaining consistent and timely interventions to prevent psychological crises.

Currently, TFS does not have a program to check employees' mental health or stress levels. Counseling may be offered to employees after a fatality or major fire, depending on their circumstances, but this is at the option of the individual or at the recommendation of their team leader. It is only the physical side of things that is checked to make sure employees are fit to do their job and have no health issues. The Work Capacity Test (WCT), which is administered once a year, is a measure of your strength and endurance to ensure you are fit and healthy to do your job as a wildland firefighter. Given TFS's organizational culture and practices, which are characterized by a passive attitude toward discussing mental health due to a fear of stigma, the lack of formal, mandatory mental health check-in programs is a significant disconnect between the problems TFS faces and the programs it has in place, such as CISM.

When it comes to establishing a comprehensive mental health protocol within an organization, knowing how employees are doing is a critical part of the overall management protocol: it's an indirect way to see if there are any issues with the work environment and workload, and it can directly lead to connecting employees to various programs such as EAPs, CISM, mindfulness, and more. The effectiveness of mental health screening and counseling in the workplace has not been demonstrated. While some studies have shown lower depression scores and higher retention rates among employees (Wang et al., 2007), others have found that mental health screening of active police officers has been associated with underreporting of symptoms (Marshall et al., 2021). A meta-analysis, which systematically analyzed the results of various studies, found that screening and counseling were not effective in directly improving employees' mental health but were effective in facilitating access to other care or management (Strudwick et al., 2023). Reflecting these research findings, an increasing number of workplaces are introducing mental health checks as an integral part of their employee mental health support programs. We searched for organizations with similar characteristics to TFS that have implemented such programs and found a case study of a company that has successfully operated its program for five years.

6.4.2. Case Study

The West Jordan Fire Department in Utah implemented mandatory mental health check-ins in 2020. While not without complaints, the department has found that firefighters are very satisfied with the check-ins and are requesting more. Their mandatory check-ins reflect many of the same concerns TFS firefighters have.

First, the mandatory counseling is scheduled once a year and lasts no more than an hour, which greatly alleviates the scheduling burden. The content of the counseling is confidential and unreported, with only an invoice confirming that the counseling took place. A pre-questionnaire is filled out before the counseling session, and the counseling session is based on the pre-questionnaire, which consists of questions that are not difficult or serious to talk about. It is more focused on identifying work difficulties, personal stress, etc., that employees are experiencing rather than identifying symptoms of mental health issues. In this sense, it's more of a stress assessment than a mental health screening and can help employees feel more comfortable talking about it.

One of the things they worked hard to do in the early days of establishing the program was to find a professional that the firefighters could trust. They used a counselor who had been well-received by the firefighters in the EAP counseling they had done in the past. She already had a good understanding of their work, and her counseling had a good reputation. The counselor now visits the fire station annually to conduct counseling sessions with firefighters. This was a key part of the West Jordan Fire Department's success with the program.

Table 6.3

Mental health check-in pre-questionnaire of West Jordan Fire Department

An Introductory Mental Health Questionnaire

The West Jordan City, UT, Fire Department mandated an annual mental health visit with a counselor for its firefighters. Saving or helping even one firefighter who is struggling with PTSD, marital problems, financial issues or substance abuse was the goal. When the program was introduced to the whole department, members were asked to complete the following questionnaire.

Please answer the following questions as best you can, identifying changes from your norm. For each question, choose one of the following answers: N=Never / S=Sometimes / O=Often

1. Do you have difficulty sleeping (more than affected by shifts)? N S O
2. Have you noticed an increase in irritability or quickness to anger? N S O
3. Do you have trouble concentrating? N S O
4. Are you not feeling like yourself (loss of energy or motivation)? N S O
5. Have you had intrusive memories/repeating of a memory? N S O
6. Are you withdrawing from family or loved ones? N S O
7. Have you been struggling with substance abuse? N S O
8. Do you believe that life is pointless or hopeless? N S O
9. Are you separated, divorcing or going through a breakup? Yes No
10. Have you had a life change in the past six months: health/work/money/family/home? Yes No

(Source: The West Jordan City, UT, Fire Department)

6.4.3. Implementation

The West Jordan Fire Department's case provides valuable guidance for implementing mandatory stress assessments in TFS. It focuses on alleviating TFS members' concerns about reluctance to see an outside professional, the burden of testing on their busy schedules, and the potential for disclosure in mental health counseling.

First, to ease the burden on firefighters, this will be a once-a-year, hour-long consultation, and the professional will come into the office to talk to employees, rather than making a separate appointment. This will reduce the workload for employees who need to reach out and find a professional.

Second, regarding the counseling content, this is an opening to discuss stress and mental health, and it shouldn't be anything complicated or serious. It should be a casual conversation where they meet with a professional once a year and share their day-to-day life and situation. The conversation can be about anything they feel comfortable talking about, such as their lifestyle, sleep, work-family balance, and ways to relieve stress, and the preliminary questionnaire is structured around these questions.

Third, regarding the professional, the professional should understand the work of TFS firefighters and, if possible, have experience counseling TFS firefighters. TFS firefighters' resistance to experts stems from their distrust that they don't understand the experience and work of firefighters. Before counseling TFS firefighters, professionals must understand the key issues and workplace stressors they face. It would be very effective if the professional has previous experience counseling firefighters through CISM or other programs, and the professional should be willing to work with firefighters over a period of time, preferably for several years, rather than just a one-time consultation.

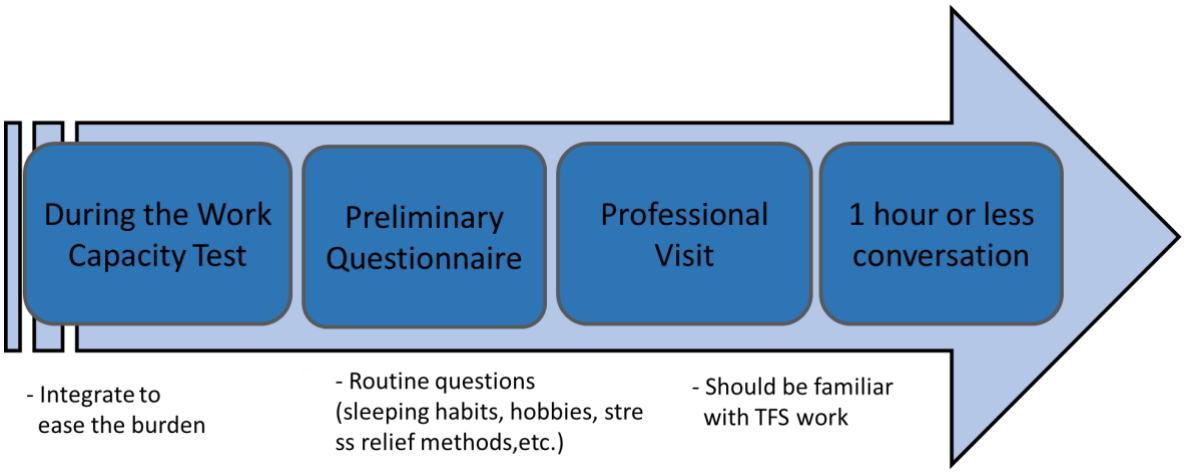
Reflecting the above guidelines, we propose the following implementation plan for TFS's stress assessment. As a first step, conduct the mandatory stress assessment in the same period as the Work Capacity Test (WCT), during which a professional will visit TFS's field offices for consultation. Since the WCT usually takes place when there is plenty of time to do so, and since it is mandatory, running the stress assessment alongside it eases the organization's implementation burden.

The second step is for employees to complete a pre-questionnaire. The pre-questionnaire focuses on light, everyday questions that are not difficult to complete and is used as a basis for the consultation with an expert. The questionnaire allows firefighters to think about their work stress, lifestyle, and what they would like to discuss with a professional.

Third, a professional will visit and conduct a one-hour consultation. This is confidential and will not be reported to other team members or the organization. No one other than the specialist and the firefighter knows the content or outcome of the counseling, and the firefighter simply submits an invoice stating that he or she has completed the mandatory one-year stress test. Depending on the counseling content, sometimes serious symptoms may be disclosed or discussed, but this is also not reported separately. The professional may recommend treatment or rest for serious situations, and it is up to the firefighter to decide what to do.

Figure 6.5

Implementation Plan of Stress Assessment



6.4.4. Conclusion

We hope to see several outcomes from the introduction of stress assessments in TFS. First, firefighters can identify their stress level and have it checked by a professional. It's a great opportunity for them to look at their situation and see what's causing them stress, rather than trying to make dramatic changes through professional counseling. Secondly, employees can access other mental health support programs within TFS. Resilience training, EAP, CISM, and other support programs will be more accessible, and employees will have more information to utilize. Finally, and most importantly, it becomes mandatory for all employees to participate, which can reduce the stigma of talking about mental health issues and improve organizational culture to be more mental health-friendly. Stress assessment isn't a process in and of itself that will reduce stress or improve employee mental health. Still, the expectation is that it can create a bridge to better opportunities and a process of improvement. And even if it only helps a few employees, it is worth making mandatory for all employees.

6.5. Employee Assistance Program (EAP)

6.5.1. Overview

TFS employees have a fairly robust benefits structure as part of the Texas A&M University System. One of the most significant benefits that is known by only 10% of the 32 TFS employees we interviewed is an Employee Assistance Program. (Davis & Brown, 2024; Swain, Jon & King, 2022; Swain, Jon Michael & Spire, 2020). An EAP is a comprehensive, workplace-based initiative designed to help employees navigate personal and professional challenges that may negatively impact their mental health, work performance, or overall well-being (World, 2024). These programs provide employees with access to a range of confidential services aimed at resolving issues that could affect their productivity and satisfaction. EAPs are typically available to employees and their families, and the services they offer are intended to address a broad spectrum of concerns, both personal and professional.

6.5.2. Current Status of EAP at Texas A&M

The Texas A&M University System provides a world class employee assistance program for its faculty and eligible staff. Texas A&M utilizes an EAP called ComPsych, a leading provider of EAPs that serve 40% of the Fortune 500 companies and has over 75,000 customers worldwide (World, 2024). Texas A&M utilizes a platform within ComPsych known as GuidanceResources which offers a multitude of services to its members such as consultations with clinicians for mental behavior challenges. This includes five face-to-face counseling sessions per individual, per issue, per year to help deal with anxiety, depression, stress, grief, loss, and life adjustment. They also provide work-life solutions. Work-life solutions can be described as anything on your "to-do list" that you may need assistance with such as finding child and elder care, hiring movers or independent contractors, pet care, and event planning. Furthermore, ComPsych provides legal guidance to its members as well. Attorneys can be made available for practical assistance with your most pressing legal and common issues such as divorce, adoption, wills, trusts, and more. Consultations for legal help is not a free service but comes with a 25% reduction in fees. The financial resources provided through ComPsych are assistance with retirement planning, taxes, budgeting, and debt (Division, 2024). This aspect of the EAP could be valuable to TFS employees as this has been a pain point identified by several employees across the agency.

Table 6.4

ComPsych EAP Resources

Resource Type	Coverage
Confidential Emotional Support	Five face-to-face counseling sessions per individual, per issue, per year to help deal with anxiety, depression, stress, grief, loss, and life adjustments

Work-Life Solutions	Locating child and elder care, hiring movers and contractors, pet care, and event planning
Legal Guidance	Divorce, adoption, wills, & trusts (25% reduction in consultation fees)
Financial Resources	Retirement planning, taxes, budgeting, & debt

Utilizing an EAP is beneficial for both employees and employers in several ways. For employees, EAPs provide essential support for navigating personal challenges, which in turn can reduce stress and improve mental health. By offering confidential counseling and resources, employees are more likely to seek help for issues that may otherwise go unaddressed, preventing them from escalating into more serious problems (Veder, 2009). As a result, employees can maintain a healthier work-life balance, which ultimately leads to better performance at work. From an employer's perspective, making TFS employees more aware of their EAP can have significant advantages. First and foremost, EAPs help employees address personal issues that may otherwise hinder their productivity. By providing early intervention and support, EAPs reduce the likelihood of serious workplace disruptions caused by unmanaged personal problems, such as mental health struggles or substance abuse. Furthermore, EAPs can help reduce healthcare costs (World, 2024). By addressing health and wellness issues early, employees are less likely to experience more severe medical conditions that would lead to higher healthcare claims for the company. Another key benefit of EAPs is that they foster employee retention and loyalty. Employees who feel that their employer cares about their well-being are more likely to stay with the company. Offering EAPs demonstrates that the employer values their workforce beyond just professional productivity, which leads to increased job satisfaction and overall morale. Moreover, the services provided by EAPs can be a major factor in attracting potential employees, as many workers today place a premium on employers who offer comprehensive support for mental health and work-life balance. EAPs also extend their support to employees' family members, which strengthens the overall support network of the employee. By offering services to family members, employers help employees manage personal stressors at home, which in turn allows them to focus better on their work-related responsibilities (Veder, 2009).

6.5.3. Case Study

a) Military OneSource

An example of the effects of successful use and implementation of an EAP can be seen in the Military OneSource case study that was conducted by the RAND Corporation in 2015. Military OneSource is an EAP provided by the Department of Defense that offers services to active-duty service members, National Guard and Reserve members, their families, and survivors. The parallelism between the type of work is not necessarily a one-to-one comparison but the effects of the nature of said work is highly applicable. The case study concluded positive results after using counseling services, especially when it came to: reducing stress and anxiety, increasing resilience at work, and improving the ways they handle problems in their personal lives. Furthermore, the case study found Military OneSource conducted 4.5 million visits with 170,000 counseling

sessions, 71% of participants reported long-term reductions in day-to day coping three months after counseling, 8/10 participants felt counselors understood military culture, 92% of respondents felt they were connected quickly and able to make appointments that fit their schedule, and finally 90% of participants agreed their problems were addressed (Military 2025). TFS could have similar results if they were to better integrate the services of ComPsych in their daily practices of supporting their employees.

b) The National Fire Protection Association (NFPA)

A successful case study about the use and implementation of EAPs can be seen with the National Fire Protection Association (NFPA) is a nonprofit organization dedicated to preventing injury, loss of life, and property damage due to fire and related hazards. NFPA has published over 300 consensus codes and standards that have been adopted by municipalities and fire departments nationwide (Espinoza, 2024). These standards help ensure the safety of life and meet legal liability requirements, which is crucial for organizations like TFS, which plays a central role in wildfire management and other fire-related activities. A particularly relevant standard for TFS is NFPA 1582, which establishes minimum requirements for comprehensive occupational medical programs for firefighters. As of 2022, NFPA 1582 has incorporated a mandate for behavioral health screenings, recognizing the increasing mental health challenges faced by firefighters and emergency responders. This includes addressing conditions like PTSD, depression, substance abuse, and other related issues that can arise due to the stressors of firefighting and emergency response work (Lankin, 2023). Fortunately, ComPsych provides these behavioral screenings as a part of their EAP services. The practicality of these screenings is supported by NFPA 1582 as a baseline mental health evaluation that all firefighting departments and agencies should comply with.

NFPA 1582 specifies several types of behavioral health screenings: including the Primary Care PTSD Screen (PC PTSD-5), which helps identify symptoms of PTSD in the form of a 5 item, yes or no, self-report screening; the DSM 5, a tool for measuring mental disorders as a 20 item questionnaire of vulnerable groups on a 1-5 likert scale; the Patient Health Questionnaire (PHQ-9), used to assess depression on a 9 item screen with a 4 point likert scale; the Columbia Suicide Severity Rating Scale (CSSRS) for evaluating suicidal thoughts and behaviors with 6 interview style questions regarding the presence of certain symptoms/actions in the last month; the CAGE substance abuse screening for identifying alcohol issues; the Alcohol Use Disorder Identification Test (AUDIT), and Drug Abuse Screening Test (DAST-10), which assess drug abuse in the form of a 10 item self-report totaling the number of items used in the previous 12 months (Gist, 2023). These screenings are essential for identifying mental health issues early and providing necessary interventions to support employees' well-being that can be offered by ComPsych.

However, implementing the behavioral health screenings outlined in NFPA 1582 at TFS presents several challenges. First, employees may experience survey or questionnaire fatigue due to the frequency of screenings, which could lead to decreased participation and effectiveness. Additionally, keeping up with updates and revisions to NFPA standards could place an administrative burden on TFS, as the organization would need to continually revise its processes to remain compliant. There is also the challenge of enforcing and ensuring accountability, as the NFPA guidelines, while strongly recommended, are not mandatory, giving TFS the flexibility to determine the level of compliance required.

The ComPsych EAP could significantly enhance the mental health support available to TFS employees, offering a critical service at no additional cost to them. However, successfully integrating this program with the behavioral health screening requirements set by NFPA 1582 would require considerations about resources and the challenges associated with implementation. By aligning the ComPsych EAP with NFPA standards, TFS could create a more supportive work environment for the mental well-being of its staff.

Table 6.5

Summarize the Type of Screening and How the Screen is Administered

Type of Screening	Explanation
Primary Care PTSD Screen (PC PTSD-5)	5 item, yes/no, self-report used to identify PTSD symptoms
Diagnostic & Statistical Manual of Mental Disorders (DSM 5)	20 item questionnaire measuring mental disorders of vulnerable groups on a 1-5 likert scale
Patient Health Questionnaire (PHQ-9)	9 item screening to measure depression on a 4 point likert scale
Columbia Suicide Severity Rating Scale (CSSRS)	6 item interview regarding the presence of certain symptoms/actions in the last month
CAGE Substance Abuse Screening tool	4 item screening measuring substance abuse
Alcohol Use Disorder Identification Test (AUDIT)	Screening for problem drinking behaviors
Drug Abuse Screening Test (DAST-10)	10 item self-report totalling the number of items used in the previous 12 months

Note. These seven screening tools would be offered by ComPsych and be compliant with NFPA 1582 standards.

6.5.4. Implementation

We are strong proponents of the idea that the feasibility of using GuidanceResources by ComPsych within TFS is the easiest of the proposed solutions. First, as previously mentioned, this resource is already available to all TFS employees. There is no additional work that would have to be done to get this solution up and running in the agency. Additionally, this solution is at no additional cost to the agency. Utilizing ComPsych is more about awareness and how receptive TFS staff would be of having this resource pushed more heavily than it historically has been. In our interviews with 32 TFS staff members ranging from frontline firefighters to middle managers, there has been resounding support in favor of making ComPsych more accessible and readily available to the entire agency. We had feedback ranging from personal experiences using

employee assistance programs in previous career fields to firefighters not knowing what an EAP was but eager to utilize the resource if they knew how to access and use it. A pattern emerged where the discussion around the use of EAPs was, "*I was given a benefits packet during my benefits presentation when I was first hired but was never taught how to use those benefits. I don't know how to access the portal or use the tools but I would if I was taught.*" (WFF-2,7). A major theme echoed by WFF-7 was that, "*TFS staff would utilize an EAP if time was taken to show them how to.*" In the line of work that TFS is in, free time is already at a premium. What little free time they do have most of the year, certainly is not being spent on self-teaching system-wide benefits such as their employee assistance program.

6.5.5. Conclusion

In conclusion, the ComPsych employee assistance program has the opportunity to be the unsung hero of mitigating many of the mental health challenges faced by the Texas A&M Forest Service. By offering confidential resources for mental health, substance abuse, financial counseling, and other personal challenges, EAPs help improve job performance and enhance overall job satisfaction in a career field that is both mentally and physically demanding. Prioritizing employee well-being is not just an employee-centric decision, but a strategic decision that positively impacts the success of the agency.

6.6. Critical Incident Stress Management (CISM)

6.6.1. Overview

Critical incident stress management (CISM) is a system of support for individuals and groups who have been exposed to trauma. It is designed to address critical incidents experienced in their workplace and help them deal with emotional damage, one incident at a time. Effective CISM programs can help mitigate the psychological impact of emergencies, potentially preventing long-term mental health issues such as PTSD (Richards, 2001). Texas A&M Forest Service (TFS)'s current CISM program, staffed by volunteers from within the TFS internal sectors trained through a one-week ICISF course, can only offer basic peer support to fellows in need.

The nature of wildland firefighting and disaster emergency services more broadly exposes the TFS personnel to high-intensity workloads, hazardous conditions, and potentially traumatic experiences. While the current peer-based CISM practice within the TFS provides a foundational level of mental support, it lacks the depth to address the escalating long-term mental pressures posed by the increasing frequency and intensity of wildfires. Among all existing coping strategies mentioned in the conversations with TFS wildland firefighters, the only formal one is EAP/CISM, which is underutilized, accounting for 10% (Figure 6.3). As such, an improved CISM system to better safeguard the mental health and well-being of employees who regularly face crises is essential. The current CISM practices within the TFS face several critical challenges, including an inadequate scale of the peer support program, a lack of regular and foundational CISM training for all staff, limited transparency regarding access to internal CISM resources and communication protocols, and restricted access to external CISM support networks.

6.6.2. Strategies to Improve CISM at TFS

Expand CISM Peer Support

The TFS currently has a peer-supported CISM system in place, but the peer support network is informal and volunteer-based. This approach, while beneficial in some respects, lacks a structured process to ensure that qualified and widely trusted employees are regularly available to provide support. To improve this, the TFS could establish a formalized system to identify and promote employees who are both willing and respected by their peers to serve as CISM peer supporters. By formalizing the peer support roles, TFS can ensure that there is a reliable network of trained individuals ready to offer psychological support during and after critical incidents across the state.

Evidence from peer support programs in high-risk professions underscores the effectiveness of expanding peer support networks. Studies have shown that peer supporters are crucial in helping individuals process traumatic events and provide essential emotional support (Mitchell & Everly, 2001). A study by Cherry et al. (2021) also found that well-structured peer support programs significantly improved mental health outcomes and reduced PTSD symptoms among first responders. Additionally, Donovan (2022) highlights that peer support fosters post-traumatic growth by providing a sense of community and shared understanding, key elements that are especially important for high-stress occupations like firefighting.

According to conversations with TFS wildland firefighters, the second priority for improving well-being is peer support programs, which account for 38% of identified preferences (Figure 6.1), reinforcing the importance of peer support. During the conversation, WFF-4 expressed that "*firefighters are more likely to accept help from peers*" due to the shared trust among colleagues. Both WFF-2 and WFF-7 mentioned that sometimes professional intervention can be almost intimidating to some folks, while peer-based approaches are more natural and approachable, creating spaces where conversations about mental health feel natural rather than mandated. These insights underscore the need to formalize and expand peer support as a culturally responsive, trust-enhancing, and accessible strategy, especially given the lingering discomfort, stigma, and privacy concerns that can contribute to misunderstandings about mental health interventions.

To implement this strategy, TFS could improve and enrich the peer support program through a series of methods:

TFS could create a formalized process to select and train peer supporters, ensuring they have strong interpersonal skills and emotional intelligence in peer support. Once selected, these individuals should undergo refresher training annually based on the newest ICISF Group Crisis Intervention and Assisting Individuals in Crisis courses to keep peer supporters up-to-date with the latest techniques and best practices.

TFS could introduce a formal nomination process by supervisors and peers to identify and nominate individuals who have demonstrated strong interpersonal skills, emotional intelligence, and a willingness to help others.

TFS could implement a reward system to formally recognize peer supporters. Recognition may include awards, public acknowledgment, stipends, or professional development opportunities. Those completing training and actively supporting colleagues could earn a "Peer Support Specialist" certification with a visual badge. Incorporating this recognition into performance evaluations could also enhance career advancement prospects and motivate broader participation.

The expected impact of this initiative will be a more trusted, robust and accessible peer support network, which will help build a more resilient workforce, improve morale, and ensure that wildland firefighters have the resources they need to cope with the psychological demands of their job. Moreover, by embedding support into routine operations and promoting it through respected peers, TFS can normalize mental health conversations, reduce stigma, and foster organic engagement.

Set Formal CISM Communication Channels & Enhance Institutional Outreach

TFS currently lacks formal communication channels for its CISM program, leading to limited awareness and access among wildland firefighters. According to conversations with TFS wildland firefighters, the top priority for improving well-being is expanding awareness and

coverage, which accounts for 48% of identified preferences (Figure 6.1). Meanwhile, it is also notable that the second major barrier to well-being is a lack of awareness and accessibility, accounting for 19% of identified barriers (Figure 4.1). While onboarding briefly introduces CISM, ongoing communication is inconsistent and often limited to annual emails or initial training. This passive approach reduces visibility and undermines engagement. Feedback from WFF-5 indicates general confusion about how to access services and a desire for clearer, more frequent reminders. WFF-6 noted, "*It would help if we had regular reminders or visible cues on the job. I believe it could significantly improve engagement.*" Addressing these communication gaps is essential to normalizing mental health support and improving program effectiveness.

Effective communication is vital to the success of CISM programs, as numerous studies on organizational crisis management underscore the importance of timely and clear information dissemination. Research by Fisher et al. (2023) indicates that increasing the visibility of mental health resources in high-stress environments, such as through regular communication or signage, can significantly improve program participation and help reduce stigma surrounding mental health. Similarly, the U.S. Fish and Wildlife Service's (2019) CISM Handbook outlines the importance of setting up formal communication channels to ensure that employees know how to access support when needed. Moreover, frequent email reminders and team briefings, alongside visible signage, are recognized as effective methods for reinforcing the availability of CISM resources and ensuring their accessibility.

To enhance the communication of CISM services within TFS, the organization could adopt a structured, multi-channel outreach strategy coordinated, including:

TFS could institutionalize semiannually CISM awareness workshops, offered both in-person at regional stations and virtually through Microsoft Teams to ensure access across remote units. These workshops would cover how to identify stress symptoms, how to access internal and external resources, and how peer support operates within TFS.

Monthly email updates could be issued from the central TFS administration, highlighting available mental health resources, upcoming workshops, anonymous testimonials from wildland firefighters who've benefited from CISM, and contact points for peer supporters. These messages should be visually distinct and written in plain language, using subject lines that emphasize support and accessibility, such as "Need to Talk? Your Peer Support Network is Here."

In all regional stations and training facilities, high-visibility visual signage, such as posters, bulletin board inserts, or locker-room flyers, could be installed in rest areas, hallways, and near exit doors. These should include QR codes linking directly to the TFS intranet CISM hub and should be rotated every quarter with updated messages and design to reduce poster fatigue.

The implementation of these communication strategies could begin immediately, with an initial focus on high-risk areas, such as wildfire zones, where wildland firefighter stress is more prevalent. These changes can be gradually scaled across the entire TFS network. The expected impact of this strategy includes improved access to CISM services, heightened awareness of mental health resources, and a reduction in barriers to seeking support. By strengthening

communication, TFS will be able to foster a more supportive environment, ensuring that employees feel informed, and able to utilize the mental health resources available to them.

Create a Centralized Intranet Hub for CISM Resources

TFS wildland firefighters voiced frustration during the conversations over the absence of a centralized, user-friendly intranet hub for CISM resources. WFF-6 remarked that while most are aware of the program, many struggle to locate essential documents, forms, or contacts, especially during high-stress situations. The lack of a clear digital platform not only hinders timely access but also undermines efforts to reduce stigma. Even minor delays can deter engagement, reinforcing the perception that mental health is not a priority within TFS operations. A well-organized online portal is essential to improve the visibility and usability of support services.

Digital tools have been increasingly recognized for their ability to bridge such gaps in organizational communication and mental health access. A qualitative evaluation by De Angelis et al. (2025) emphasized that workplace mental health platforms are more likely to be adopted when they are easy to navigate, clearly structured, and emotionally reassuring. Their study revealed that perceived intuitiveness, performance expectancy, and emotional responsiveness were the most influential factors affecting user engagement with mental health portals. Furthermore, Al-Abdulmunem et al. (2025) found that digital resources embedded in community mental health systems enhanced self-efficacy and wellness outcomes when paired with consistent staff guidance. In a public safety context, the Houston Fire Department's post-tragedy internal recommendations also highlighted the importance of information accessibility and system usability for firefighter well-being (Houston Fire Department, 2014).

To address these shortcomings, TFS could develop a dedicated intranet CISM portal that functions as a centralized access point for all internal mental health resources. This platform should be accessible via desktop and mobile devices and designed in collaboration with both IT staff and frontline personnel to ensure it meets real-world needs. Key features could include:

- A prominently placed "Need Help Now" button linking to both anonymous request forms and direct peer support contacts by region;
- A visual, clickable map of local CISM representatives;
- Brief explainer videos on how the CISM process works;
- A rotating carousel of mental wellness tips, external support referrals (e.g., Wildland Firefighter Foundation), and upcoming CISM events;
- Downloadable guides and workshop sign-up sheets;
- A dynamic FAQ section informed by firefighter questions during workshops or briefings;
- Built-in analytics to track usage patterns (e.g., most accessed resources), informing iterative improvements (Kirwan, 2025).

IT and communications staff could jointly oversee content management, while designated CISM coordinators provide regular updates and monitor anonymous feedback. The creation of a well-designed internal portal is expected to significantly reduce information asymmetry, normalize help-seeking behaviors, and enhance the operational reach of peer supporters. When mental health

resources are made easy to find and use, especially under stress, wildland firefighters are more likely to take the first step toward seeking support—transforming the CISM program from a reactive safety net into a proactive resilience system.

Collaborate with External Professional CISM Support Networks

While peer support remains a culturally appropriate and trusted entry point for mental wellness in the TFS, it cannot fully address the scope of mental health needs among wildland firefighters, since it is limited to engaging in conversations and recommending further care as needed when wildland firefighters exhibit severe symptoms or voluntarily report their mental health concerns. When expressing his expectations for expanding external resource channels, WFF-8 also noted a desire for increased confidentiality and professional assistance, particularly when facing more severe psychological distress. However, both WFF-2 and WFF-4 mentioned that there is widespread uncertainty regarding how to access external support, and some expressed skepticism about involving outside professionals due to concerns about stigma, trust, and the belief that "outsiders" cannot understand fire culture. This hesitation underscores a cultural tension: the desire for effective, clinically-informed care versus the instinct to manage trauma internally.

National research has underscored that regional partnerships between fire agencies and community-based mental health resources can be effective in bridging service gaps. Linton et al. (1993) documented how the Charleston EMS community established a CISM team in cooperation with a university hospital and surrounding rural counties, improving responder outcomes through pre- and post-incident interventions. More recently, Johnson et al. (2020) emphasized that mental health providers can be trained in firefighter-specific needs to overcome mistrust and deliver culturally competent care. Addressing this tension at TFS requires a broader, more embedded support infrastructure:

TFS could pursue formal agreements with regional non-profit mental health organizations (e.g., Warriors Research Institute, which develops and disseminates new treatments for those suffering the sequelae of toxic or traumatic work events in Texas) and existing CISM-capable public agencies (such as municipal fire departments or sheriff's offices). Agreements could clarify referral processes, confidentiality assurances, and optional access for TFS employees.

TFS could advocate at the state level for the creation of an interagency mutual-aid model for behavioral health, like mutual-aid systems used during fire deployments.

TFS could pilot a program of embedded mental health professionals—professionals who periodically work on-site at select stations while maintaining low visibility. These professionals would not replace peer support but serve as optional confidential resources, especially for those uncomfortable sharing distress with colleagues. To reduce stigma and enhance accessibility, the program could include anonymous communication tools, such as a secure online intake form and a third-party-hosted messaging system.

Notably, to respect varying levels of comfort and cultural attitudes within the organization, all professional mental health support should remain anonymous, opt-in, and externally accessed unless future feedback indicates readiness for deeper integration. Before scaling up embedded clinician programs beyond pilot sites, TFS could assess organizational receptivity to professional, embedded mental health support. This can be achieved through anonymous surveys, post-visit feedback, and small-group discussions in both pilot and non-pilot areas. Results would inform whether to expand, limit to opt-in only, or prioritize external partnerships over internal presence.

By integrating external expertise into its CISM strategy, TFS can respect firefighter cultural dynamics while also ensuring more comprehensive and flexible support options. This approach directly addresses interviewees' desire for "a personal process" and allows for tailored, private pathways to care. In the long term, stronger partnerships with local and regional providers may also help stabilize mental health support capacity amid staffing shortages or expanding wildfire demands.

6.6.3. Implementation

Table 6.6

Timeline for Improved CISM Implementation (for 94 offices)

Months 1–3: Preparation and Resource Mapping	Designate regional CISM implementation liaisons. Launch firefighter feedback collection on CISM experience and platform usability. Finalize specifications for the internal portal and peer support nomination system. Mapping regional behavioral health resources near major frontline TFS hubs. Issuing RFQs (Requests for Qualifications) for regional mental health providers interested in collaboration.
Months 4–6: Targeted Pilot Launch	Pilot peer support nomination, training, and communication strategy in 10 high-activity offices (e.g., Abilene, Lufkin). Roll out basic communication materials (email templates, poster sets). Soft launch of intranet portal and begin usability testing. Initiate embedded professional visits at two pilot offices, with built-in opt-in anonymity.
Months 7–12: Statewide Rollout	Scale peer support and communications programs to 50 additional offices. Conduct the first round of biannual CISM workshops across all regions. Launch full intranet portal with region-specific directories and anonymous help features. Establish initial formal partnerships with local nonprofits or public agencies in major regions. Continue embedded professional visits in pilot sites and begin feedback collection on receptivity, stigma concerns, and utilization.

Months 13–18: Optimization and Cultural Assessment	Expand all programs to all 94 offices. Deploy surveys and focus groups specifically evaluating resistance to or comfort with professional, embedded mental health staff. Use collected data to decide: ● Whether to institutionalize embedded support long-term; ● Whether it could remain opt-in/anonymous only; ● Whether external partners could remain off-site only. Adjust strategy based on feedback and submit a comprehensive impact and recommendations report.

Table 6.7

Cost Estimate and Funding Options for Improving CISM (for 94 offices)

Component	Estimated Annual Cost	Notes
More Peer Support Training (150–200 individuals)	$60,000 –$80,000	ICISF-based curriculum. Phased per regional cluster. Expanding the peer support network and increasing program engagement.
Communication Materials (print + digital)	$18,000	Cover signage, templates, QR links, and language customization. Increase visibility and awareness of CISM services, ensuring continuous access to mental health resources.
Workshops (statewide, biannual)	$30,000	Include facilitation, travel, and hybrid delivery. Raise awareness and provide education on identifying stress symptoms and accessing CISM resources, ensuring wildland firefighters stay informed.
Intranet CISM Portal (build + maintain)	$30,000 –$40,000	Full-featured mobile & desktop design with analytics. Consolidate CISM resources into one easily accessible digital platform. Improve access to mental health materials, especially during stressful situations.
Embedded Clinician Pilot (4–5 locations)	$60,000 –$75,000	Include contracts, scheduling, and secure feedback tools. Provide confidential, clinical care at high-risk stations. Complement the peer support system and offers professional support for employees facing severe distress.
External Partnerships (nonprofit/public)	$20,000	Small retainers, memorandums of understanding, onboarding costs. Establish partnerships with nonprofit and public agencies expands available mental health services.
Evaluation Tools (survey platform, analysis)	$10,000	Cultural assessment of stigma, usage patterns, and intervention value. Provide data to evaluate the effectiveness of new CISM practice. Continuous feedback ensures the program evolves to meet the needs of staff and improves the accessibility and effectiveness of support services.

The estimated total cost for implementing the proposed initiative in its first year ranges from $208,000 to $253,000. To support this investment, several funding avenues may be pursued. Potential sources include federal grants such as those offered by the USDA Forest Service for behavioral health initiatives, as well as state-level resources like resilience funding through Texas Health and Human Services. In addition, philanthropic contributions from organizations such as the Meadows Foundation or other regional mental health endowments could play a critical role. Federal partnerships through entities like the National Fallen Firefighters Foundation (NFFF) or the Department of Homeland Security (DHS) may also provide strategic financial support.

Table 6.8

Impact Metrics for Improving CISM Implementation Across 94 Texas Divisions

Category	**Metric**
Engagement	Number of peer supporters nominated/trained in each division Monthly active users of the intranet portal by division
Utilization	Number of CISM interactions initiated in each division
Perception & Culture	Percentage of wildland firefighters in each division reporting positive changes in accessing support
Outcomes	Reduction in stress-related absences or incidents in each division Annual feedback reports from all 94 divisions on CISM program effectiveness

Each division will be required to report its data quarterly to allow for division-specific adjustments and statewide comparison.

6.6.4. Conclusion

While the agency has taken foundational steps toward supporting mental wellness through its peer-based CISM framework, current efforts remain too limited in scope, structure, and visibility to fully meet the evolving needs of its workforce. This report identifies four key areas of improvement—peer support development, communication enhancement, centralized access to resources, and external professional partnerships—that together form a scalable, culturally informed, and actionable strategy. By implementing these changes through a phased and data-driven approach, TFS can transform CISM from a reactive support mechanism into a proactive system of resilience, ensuring that every wildland firefighter, in every office, has accessible, trusted, and meaningful mental health support.

7. Conclusion

TFS firefighters are exposed to a more challenging work environment with longer, larger fires due to climate change and other factors. Stress, trauma, and burnout, which firefighters commonly experience, are major problems that must be addressed for the well-being of firefighters in this increasingly challenging work environment.

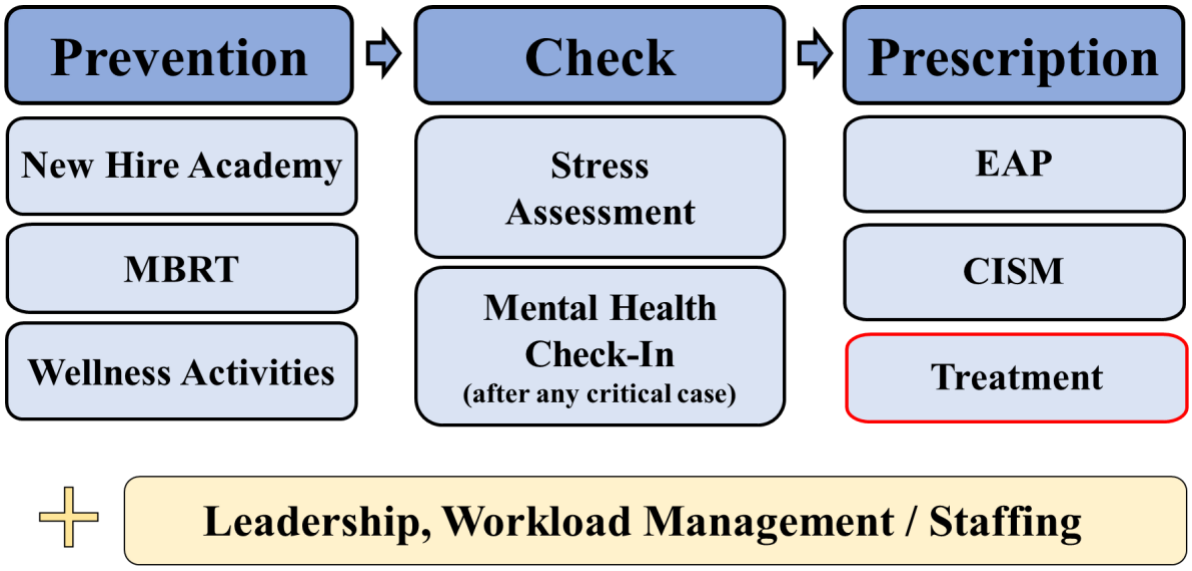
However, cultural and structural barriers in the TFS prevent these issues from being addressed effectively, and there is no systematic protocol for addressing these problems across multiple overlapping barriers. Through quantitative and qualitative analysis, we analyzed the situation at TFS, constructed a framework for practical wellness improvement at TFS, and presented each of the necessary solutions.

In order to create a wellness-friendly culture and establish a systematic protocol at TFS, we composed a macro strategy with solutions that are preventive and educational and a micro strategy with prescriptive programs, tailored to each individual's situation and problems. These two pillars will interact with each other to improve employee wellness awareness, create a more favorable workplace culture, and provide better benefits to employees.

We set out the implementation of each of these solutions - the New Hire Academy, mental resilience training, wellness activities, stress assessments, and EAP and CISM program - and how they are interconnected to form a cohesive, though rough, protocol. The basic three-step protocol of prevention ("New Hire Academy," "Mental Resilience Training," and "Wellness Activities"), check-up ("Stress Assessment"), and prescription ("EAP," "CISM") to promote the health and wellness of TFS employees can be used as a guide for TFS to implement these improvements in the future.

Figure 7.1

Wellness Protocol for TFS



However, there are additional considerations and further research that TFS needs to do when implementing practical actions. We have looked at a number of external programs and attempted to bring them into TFS, but the actual adoption and embedding of these will require leadership from managers and team leaders, coupled with more proactive awareness from employees. There needs to be a clearer understanding of the importance and seriousness of the issue, and an openness to trying different options rather than maintaining status quo. We hope that our report will serve as a catalyst to improve the overall awareness of mental health issues among TFS employees and encourage actions from the leadership in the organization.

Second, while we did not address it in this report, the staffing challenges of TFS employees are very directly related to their health and wellness. Further research can be done on job analysis, job adjustments, etc. in relation to stress and mental health among TFS employees so that wellness protocols can be more effective. Regarding the staffing issue, research will be needed to argue for the effectiveness and necessity of TFS in terms of promoting mental health, and to show that staffing can be more beneficial to the organization. Starting with this capstone report, we hope to see more research and actual change to improve the mental health of TFS members.

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Appendix

A. Mindfulness

Data Collection

The second dataset was constructed to compile empirical findings on mindfulness-based interventions involving firefighters and first responders. Academic databases including PubMed, ScienceDirect, and Google Scholar were systematically searched using targeted keywords. Eligible studies were required to (1) include professional firefighters or first responders as participants, (2) evaluate mental health-related outcomes such as stress, burnout, or emotional resilience, and (3) implement a mindfulness or resilience-building component.

Following the screening process, a total of 42 peer-reviewed studies were retained. Each study was coded across 38 variables, such as publication year, country of origin, sample size, firefighter type, program duration, intervention type, statistical significance, outcome types, and author-classified program effectiveness. For instance, the average program duration among studies reporting this information was approximately 28 days, and the average participant age was around 38 years. Over half of the included studies (approximately 51%) were conducted in the United States.

This structured data collection lays the empirical foundation for a comparative and descriptive assessment of intervention designs, population characteristics, and outcome effectiveness. The next section builds on this dataset to analyze patterns in intervention efficacy and to identify programmatic features associated with improved mental health outcome

Data Analysis

To assess the spatial distribution of the reviewed studies, each entry was classified by both country and subnational region. For Figure 8, the studies were grouped based on country of origin, determined by either the institutional affiliation of the authors or the primary location of the intervention. Frequencies were calculated and converted into percentages to illustrate the relative contribution of each country to the evidence base. For Figure 9, the same approach was applied to state and region-level information when available. Specific locations mentioned in the original studies, such as U.S. states or international provinces, were extracted and coded. This dual-layered geographic classification was designed to support subsequent comparative analysis by identifying clusters of research activity and contextualizing potential regional differences in program implementation and focus.

To analyze participant characteristics within the reviewed studies, we classified entries by both professional role and gender. As shown in Figure 10, firefighter type was categorized based on terms explicitly stated in each study, such as “regular firefighter,” “wildland firefighter,” “first responder,” or more general labels like “firefighter.” These designations were coded as discrete categories without normalization, allowing for a descriptive overview of how occupational roles were represented across the dataset. Frequencies were tabulated to assess the relative share of each participant type.

In parallel, gender composition was extracted from studies that reported numeric values for participant sex. As seen in Figure 11, where a single value was provided, it was interpreted as the male percentage. These entries were converted to numeric form and averaged to generate an overall gender distribution. This process enabled the identification of trends in the demographic makeup of study

populations. Together, these two classifications were used to inform subsequent analysis of how participant background might relate to intervention content, delivery mechanisms, and reported outcomes.

To categorize the intervention strategies applied across the studies, we reclassified all available information related to mindfulness programming. As shown in Figure 12, variables including "Type of Mindfulness Program," "Mindfulness Program Used," and associated narrative descriptors were cross-referenced and grouped into four categories: formal mindfulness programs, technology-based interventions, other mindfulness-related practices, and unclassified. Entries that referenced meditation, resilience training, or similar components without fitting a formal or technological format were grouped as "Other Mindfulness Program." Studies with no identifiable program content were labeled as "Unclassified." This reclassification enabled a more consistent analysis of program structure across heterogeneous reporting formats.

To assess the reported effectiveness of interventions, we also reviewed the statistical significance of outcome measures. Figure 13 presents a consolidated distribution derived from both the primary and secondary significance variables reported in the dataset. Entries were classified into four categories: $p < 0.001$, $p < 0.01$, $p < 0.05$, and not significant. Values not explicitly reported or unclear were excluded from the final summary. This classification allowed for a structured comparison of how often studies reported statistically reliable effects, thereby supporting subsequent evaluations of intervention credibility and empirical robustness.

Findings

The results show that 64.81% of the studies were conducted in the United States, indicating a significant concentration of research efforts within a single national context. Australia accounted for 7.41%, followed by South Korea and Italy at 5.56% each. Other countries, including China, Canada, Iran, and New Zealand, contributed smaller proportions of the literature. At the subnational level, the most frequently represented U.S. states or regions were Texas and California, each accounting for over 7% of the geographically specified studies. Several studies also referenced regional clusters such as the "Western United States" or "Southwestern Region," suggesting a degree of thematic or institutional concentration. These patterns reveal both a geographic imbalance in the existing evidence base and an opportunity for broader international and subnational engagement in future research on firefighter mental health interventions. **Figure A1:** *Geographic Distribution of Included Studies (%)*

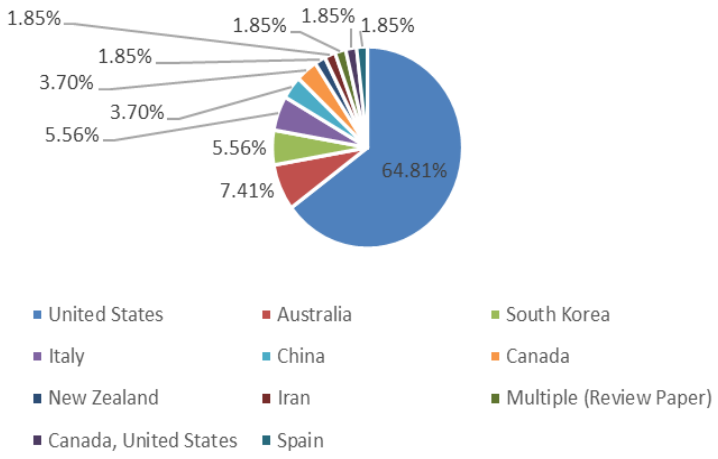
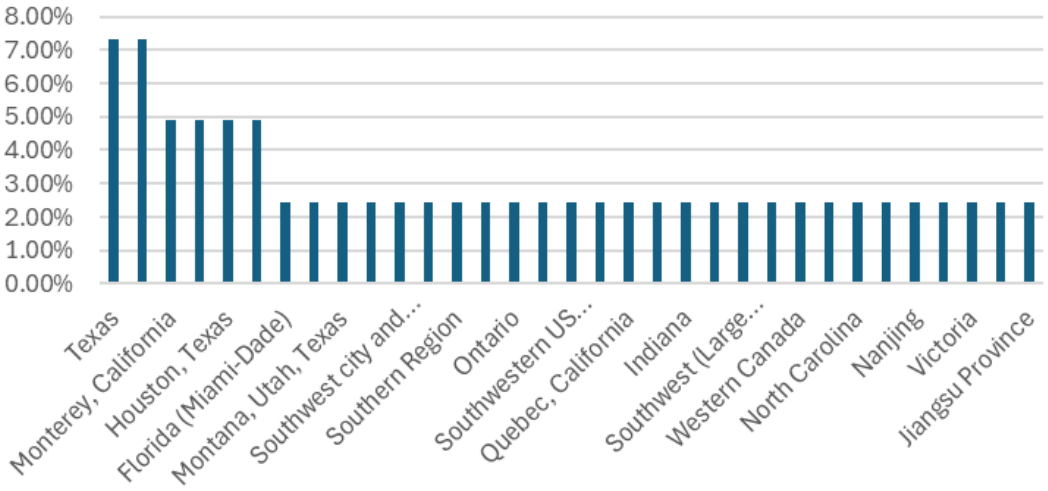


Figure A2: *State or Regional Distribution of Included Studies (%)*



The role-based classification of study participants reveals that regular firefighters were the most frequently represented group, accounting for 58.49% of all included entries (Figure 10). First responders and studies identifying "first responder" as a distinct group each made up 11.32% of the dataset, while general "firefighter" designations accounted for 7.55%. Wildland firefighters were less frequently represented, comprising 5.66% of participants. A small number of studies focused on other groups such as military personnel or did not specify a role.

Regarding gender composition, the average across all studies reporting numeric gender data indicated a strong male predominance (Figure 11). Male participants accounted for approximately 89.86% of the sample, while female participants made up 10.14%. This gender distribution aligns with the broader demographics of the firefighting profession.

In addition to role and gender, participant age was also reported in several studies. The average mean age across those reporting this variable was approximately **38.36 years**, reflecting a workforce concentrated in mid-career age groups. This age profile provides relevant context for evaluating the timing and potential receptiveness to mental health interventions among participants.

Figure A3: *Distribution of Study Participants by Firefighter Type (%)*

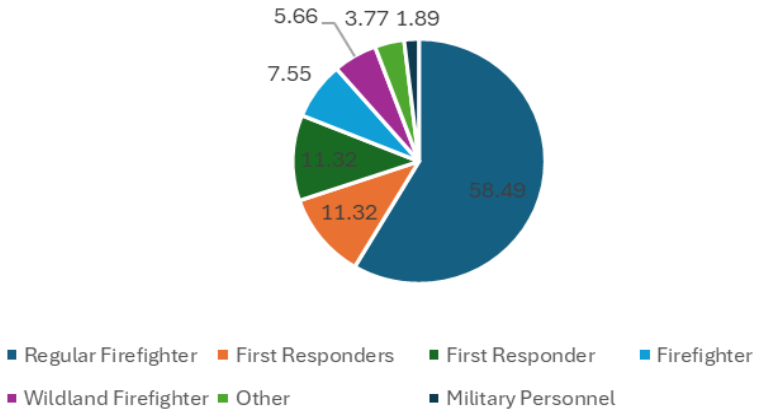
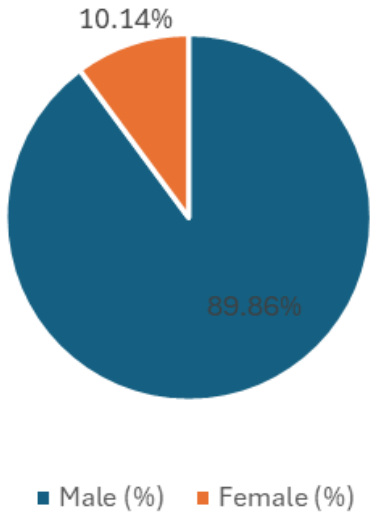


Figure A4: *Average Gender Distribution of Study Participants (%)*



The reclassification of mindfulness program types revealed that 50% of the studies implemented a formal mindfulness-based intervention, making it the most frequently applied approach (Figure 12). Technology-based programs accounted for 22.22%, followed by other mindfulness-related practices such as informal meditation or resilience training at 18.52%. Only 9.26% of the studies did not provide sufficient detail to classify the intervention type, and were therefore labeled as unclassified.

In terms of statistical outcomes, 44.74% of the studies reported results at the $p < 0.05$ level, while 31.58% achieved more robust findings at the $p < 0.001$ level (Figure 13). A smaller proportion (5.26%) reported significance at $p < 0.01$. Notably, 18.42% of the studies explicitly indicated that their findings were not statistically significant. These results suggest that while a substantial number of studies demonstrate statistically reliable outcomes, a meaningful portion of the literature also reports null or inconclusive effects.

Figure A5: *Reclassified Mindfulness Program Types (%)*

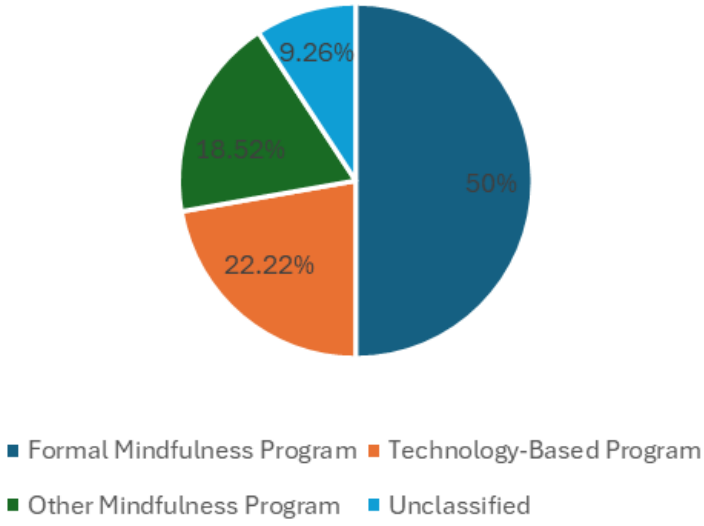
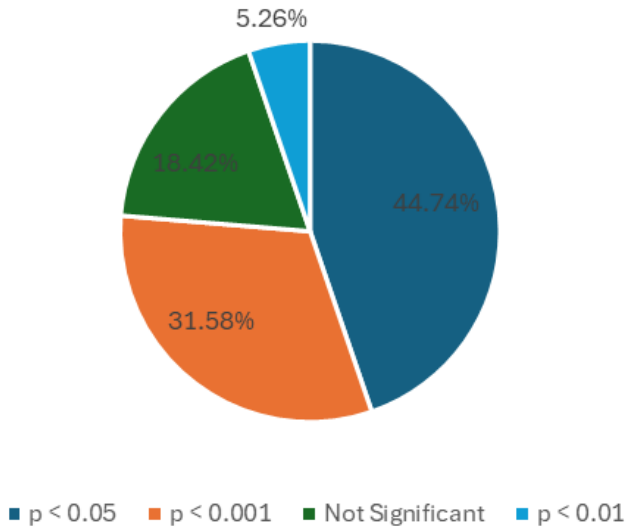


Figure A6: *Final Statistical Significance Distribution (%)*



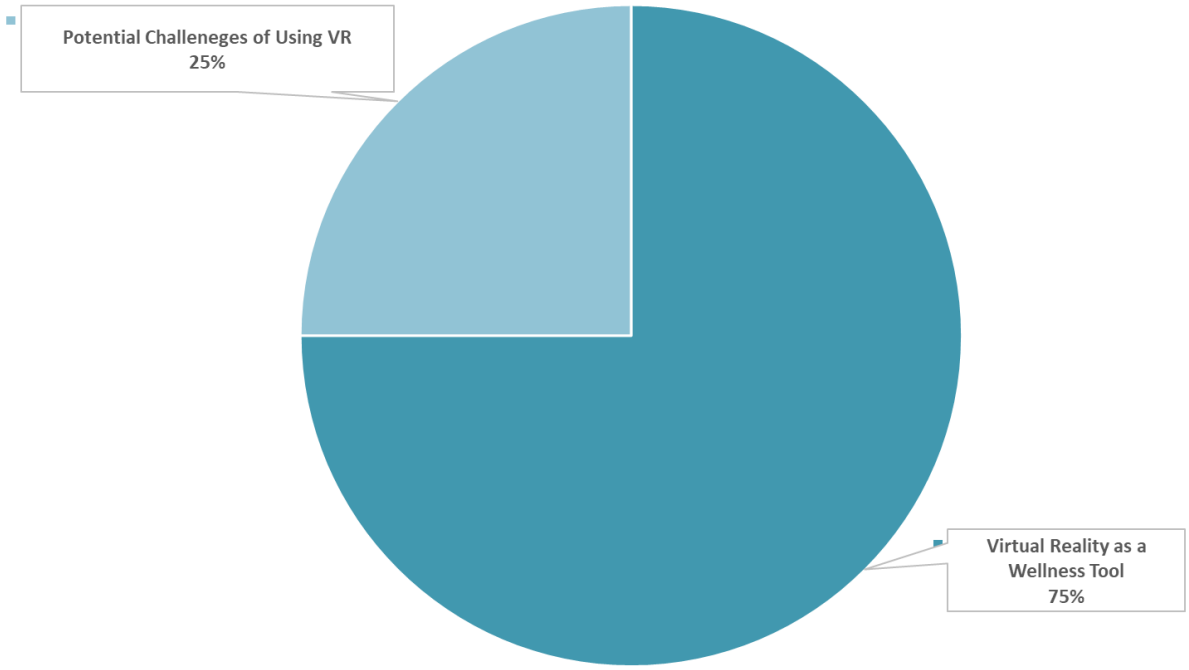
Across the reviewed studies, the participant pool was predominantly composed of regular firefighters (58.49%), followed by first responders and other operational groups. The average participant was male (89.86%) and approximately 38 years old, reflecting a workforce concentrated in mid-career, male-dominated settings. In terms of intervention design, the average program lasted 42.19 days, with durations ranging from 1 to 180 days. Reclassification of intervention types revealed that formal mindfulness-based programs were the most commonly implemented (50%), followed by technology-based programs (22.22%) and other informal mindfulness-related approaches (18.52%).

With regard to empirical outcomes, 44.74% of studies reported statistically significant effects at the $p < 0.05$ level, and an additional 31.58% at the more stringent $p < 0.001$ level. Only 18.42% of studies indicated that their findings were not statistically significant. Taken together, more than three-quarters (81.05%) of the studies with reportable statistical results found evidence of effectiveness.

These findings support the conclusion that mindfulness-based interventions are both prevalent in current firefighter mental health research and frequently associated with statistically significant improvements. Given the consistency of positive outcomes across diverse program types and settings, mindfulness training appears to be a viable and empirically supported approach to enhancing psychological well-being among firefighter populations.

Deploying Mindfulness Techniques Through Virtual Reality (VR)

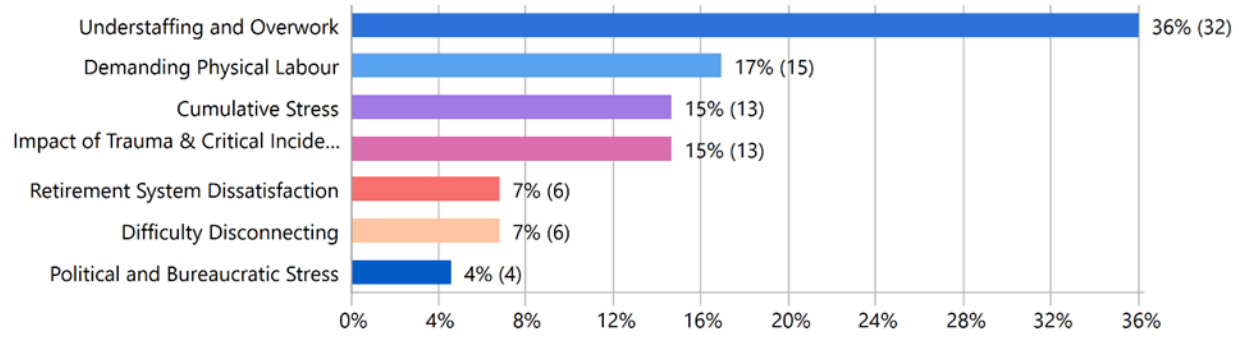
Figure A7: *Potential of Deploying Mindfulness Techniques Through Virtual Reality (VR)*



This ongoing study involved evaluating a virtual reality (VR) based wellness program as a potential tool for managing stress among wildland firefighters. Participants were provided with a VR headset containing a program that included various modules, such as mindfulness exercises, meditation, and goal setting. The aim was to explore the feasibility of integrating such a program and its potential benefits for firefighter psychological well-being. Participants reported that the mindfulness and meditation components were particularly helpful for calming, relaxing, and focusing. Some also found the goal-setting module beneficial. Challenges noted by participants included maintaining consistency in using the program due to demanding work schedules, travel, and the physical bulkiness of the VR headset. Overall, the program is seen by some as a potential support tool that could complement other forms of therapy.

B. Stress and Management

Figure B1: *Occupational Stressors and Trauma*



Understaffing and overwork accounted for 36% of identified occupational stressors among TFS employees. As Wildland Firefighter-1 explained, “When we're on a fire, it's not uncommon to work over 24 hours straight,” while Wildland Firefighter-4 recalled logging “around 140 hours in a week and a half.” These extreme workloads frequently lead to exhaustion and emotional fatigue. Wildland Firefighter-3 emphasized the strain of covering multiple counties: “We’re spread so thin that I’m often asked to break loose and go handle fires elsewhere.” Physical exertion under dangerous conditions was the second most common theme (17%), including long shifts in smoke and extreme heat. Trauma and cumulative stress (15%) included experiences such as Wildland Firefighter-6’s account: “It’s pretty draining, having to tell people to leave their homes and knowing they might not have anything to come back to,” and Wildland Firefighter-5’s reflection on suicide within the service: “It really opened my eyes to how much we bottle up.” Work-life imbalance and dissatisfaction with the retirement system each contributed 7% of responses. Wildland Firefighter-3 noted, “If we don’t pick up the phone on weekends, we feel like we’re leaving our buddy out to dry.” Wildland Firefighter-6 critiqued the Rule of 80: “It’s difficult to fathom interest and retention from 18- to 22-year-olds fighting wildfires when they realize how hard it is to meet the Rule of 80.” Although political and bureaucratic stress (4%) was less frequently mentioned, its impact was significant.