DomPrep Journal

Information Sharing

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Information Sharing – A Powerful Life-Saving Tool
By Catherine L. Feinman
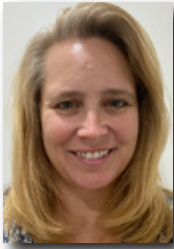
Information sharing is a valuable tool used for various purposes. However, this tool's power in preparing for and responding to emergencies should not be underestimated. Unfortunately, critical information and data can sometimes be misused, not effectively leveraged, not shared, or simply ignored. In these scenarios, it is more difficult to accurately predict and mitigate threats and hazards, adequately prepare for emergencies and disasters, and efficiently respond to future incidents when lives and property are at risk

Many tools and resources are available for sharing data and helping leaders make better, more informed decisions. For example, some tools help law enforcement agencies reach across jurisdictions and geographical boundaries to locate and apprehend violent criminals, hopefully before anyone else gets hurt. In addition, numerous resources and lessons learned help first responders develop plans for high-frequency events and complex evolving threats. Even after plans are established, the information flow must maintain these plans. Data sources can help track trends to predict changes in environmental hazards, which can be difficult to notice without access to longer-term trend analyses.

Plans and guidance help ensure that the shared information is received and understood. For example, federal agencies must keep state, local, tribal, and territorial governments updated about changes in national planning strategies that could affect their plans. To build resilient communities, local agencies must gain public buy-in for their emergency preparedness and public safety objectives through public outreach and other media campaigns. Beyond physical training and supplying resources, frontline workers must prepare for disasters by also receiving guidance to understand the mental challenges they are likely to face. As new professionals enter the field, seasoned professionals must pass on their knowledge to the next generation, but there is also much information that youths have to offer.

The authors in this March edition of the *Domestic Preparedness Journal* describe various ways information sharing reaches across potential barriers to help emergency preparedness professionals before, during, and after disasters. Information can be shared with and retrieved from many sources. Whether sharing information within data applications, across jurisdictions, from generation to generation, or even across species, saving lives and protecting property are the shared goals. Reach out and share critical information, accept information from others, and collaborate to solve problems and respond to incidents as rapidly and effectively as possible.

Catherine L. Feinman, M.A., joined Domestic Preparedness in January 2010. She has more than 30 years of publishing experience and currently serves as Editor of the Domestic Preparedness Journal, www. DomesticPreparedness.com, and the DPJ Weekly Brief, and works with writers and other contributors to build and create new content that is relevant to the emergency preparedness, response, and recovery communities. She received a bachelor's degree in international business from University of Maryland, College Park, and a master's degree in emergency and disaster management from American Military University.

Data Sharing – A Necessary Public Safety Tool

By Michael Breslin

Cooperative data sharing is essential for today's law enforcement demands. Each day, law enforcement officials tackle their jurisdictions' unique needs and challenges. What each department faces will vary from city to city and state to state. But there is one element all departments and agencies have in common: the critical need for visibility into what is going on in law enforcement around the country. Simply put, the need to share data and information across agencies has never been more important than it is today.

When it comes to keeping citizens safe and mitigating risk, data sharing is what makes everything run more efficiently and smoothly. Without it, data silos get in the way of effective law enforcement efforts and prevents data sharing that enables officers to effectively protect citizens and mitigate risks. Data sharing across multiple agencies can improve coordination and collaboration in addressing crimes and issues that span different jurisdictions.

The transparency provided by data sharing among agencies and with the communities they protect also fosters trust. Improved societal trust with law enforcement not only makes policing easier but also builds relationships that inspire the next generation of law enforcement professionals.

Understanding That Crime Is Borderless

With modern technological advancements, law enforcement agencies have access to many data sources ranging from dashboard camera footage to digital forensic files and electronic records, which generate massive amounts of data daily. This data often contains critical information that could be valuable beyond the agency that collected it. Therefore, it is essential to prioritize interoperability and coordination among divisions, agencies, and municipalities for seamless data sharing. The investigative and prosecutorial processes of criminal activities are typically lengthy and complex, but data plays a crucial role in enhancing their effectiveness. Agencies embracing a collaborative approach to data sharing and analysis are better positioned to address crimes and mitigate risks.

Criminal activities have transcended geographical borders. They are highly mobile and tend to operate transiently, perpetrating crimes in various regions. For example, a criminal act committed in one jurisdiction has significant implications for other jurisdictions, especially in areas that attract high levels of tourism. For instance, when an arrest is made in Fort Lauderdale, Florida, it becomes pertinent to obtain actionable information from other locations where the perpetrator may have lived or currently resides. In this context, the timely sharing of relevant data becomes a crucial tool for equipping law enforcement officers with necessary details that can expedite and enhance the effectiveness of their operations.

Recognizing That Shared Data Is the Most Valuable Data

The value of data sharing has come into play in countless high-profile crimes in recent years. For instance, data shared from one agency with another agency hundreds of miles away means local law enforcement officials can immediately gather and access information on factors like criminal history, weapons possession, and other records that give them a profile of the person's potential for violent crime. There is a pressing need to augment criminal intelligence capabilities, facilitate seamless data sharing among law enforcement agencies, and leverage advanced data analytics techniques to mount an effective response to crime. These tasks should be done in a manner that carefully balances the public's interests with the data-sharing benefits. This balance involves recognizing the importance of protecting individual rights and privacy while ensuring that law enforcement officials have the tools and information to carry out their duties effectively.

Achieving this balance requires a comprehensive approach that incorporates sound policies and procedures to govern data collection, storage, and usage, as well as robust oversight mechanisms to ensure that these policies are implemented fairly and transparently. Legal and ethical duties require personnel, participating entities, and authorized users to safeguard constitutional civil liberties, rights, and privacy during information sharing. The sharing of this data must always adhere to all applicable federal regulations and policies governing privacy and consumer rights.

> *Criminal activities are not limited to jurisdictional boundaries, and accurate and real-time data availability is crucial for collaborative law enforcement.*

A common approach for implementing information sharing is the application of distributed sharing techniques that enable every entity to retain its data while, at the same time, making the data available to other entities via private networks. Since such data can be maintained in various formats by every entity, the Law Enforcement Information Sharing Program Exchange Specification (NIEM) was instituted to transform shared data into a standard format to allow entities to receive and utilize information from several sources.

The Regional Information Sharing Systems (RISS) supports countrywide information sharing among law enforcement agencies to fight illicit trafficking of drugs and humans, violent crimes, identity theft, and terrorist activities and advance law enforcers' safety. RISS was created in 1974 as a reaction to escalating crime and the need for collaboration and secure data sharing. RISS operates a secure cloud and depends on RISS.net infrastructure to simplify and accelerate communications and data sharing among law enforcement agencies.

Additionally, the National Data Exchange (N-Dex) supports data sharing across tribal, federal, local, state, and regional investigative task forces by placing investigative data on a single platform from various criminal justice agencies in the United States, including

incarceration data, incidents and cases, parole or probation, and booking information. Similarly, the Department of Homeland Security established the Law Enforcement Information Sharing Service (LEIS Service), which includes 489 agencies to cover all the United States' critical geographical areas.

This valuable data, shared across jurisdictions, can help officials develop strategies to apprehend serial criminals who commit crimes in multiple places. Crime data and public records assist law enforcement in getting the big picture of offenders' lives – their family, friends, gang connections, and other relevant information – to provide a complete view of their records and possibly gain some insight into their behaviors.

Overcoming Challenges That Hinder Data Sharing

The inclination toward nationwide data sharing among professionals in the law enforcement industry is evident. The need for improved information technology, development of standards, and increased information-sharing capabilities among law enforcement agencies has long been established. Data sharing, especially among smaller law enforcement agencies, can be complex and encompass various challenges, including costs, regulations, and IT systems infrastructure.

The case for data-sharing requirements that will enhance the effectiveness of criminal investigations, the challenges and progress made in this area is described in the 2015 Department of Justice Report by John S. Hollywood and Zev Winkleman, "Improving Information-Sharing Across Law Enforcement: Why Can't We Know?"

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In its second annual [Law Enforcement Technology Insight Survey](), LexisNexis Risk Solutions discovered the motivation among law enforcement officers to share data with other agencies across the country. The survey highlighted that 72 percent of law enforcement professionals preferred nationwide data sharing over regional sharing, an increase from 66 percent [in 2019](). This increase indicates that there is a growing recognition among law enforcement officials about the benefits of sharing data at a national level, potentially leading to more comprehensive and coordinated law enforcement efforts.

Data-sharing barriers often impede a law enforcement agency's ability to foster robust collaboration. The LexisNexis Risk Solutions [survey respondents]() also identified several factors that hinder data sharing, with 16 percent citing privacy concerns as a significant challenge. Other factors contributing to these barriers include budget constraints (5 percent), limited IT resources (6 percent), and a lack of cooperation among local agencies (10 percent). For law enforcement agencies to move forward collaboratively, distrust and data silos must be addressed and overcome.

With the rising threat of domestic and international terrorism, achieving national reach is particularly critical. Recent incidents involving radicalized or disturbed individuals targeting police officers highlight the need for effective data-sharing strategies that can help keep such perpetrators at bay. Cross-jurisdictional collaboration can help solve routine crimes and increase chances of identifying and solving bigger crime patterns. Partnership, access to data, and information sharing can help deploy law enforcement resources more effectively.

## Equipping Agencies With the Tools They Need

It is only through truly collaborative data sharing that agencies can recognize crime patterns to anticipate events and deploy resources most efficiently. The importance of data sharing in law enforcement cannot be overstated. Criminal activities are not limited to jurisdictional boundaries, and accurate and real-time data availability is crucial for collaborative law enforcement. By establishing a comprehensive national data resource, law enforcement agencies can increase their effectiveness and work toward creating a safer future for citizens.

By breaking down silos and addressing issues of distrust, agencies can collaborate to tackle crime and enhance public safety through the power of data. The future of law enforcement depends on the seamless sharing of information. Working toward this goal to achieve the ultimate objective of creating a safer and more just society must be a priority.

Michael Breslin is the Strategic Client Relations Director for Federal Law Enforcement at LexisNexis Risk Solutions. Michael has more than two decades of experience in federal law enforcement and transnational financial and cybercrime investigations. Prior to joining LexisNexis Risk Solutions, Michael served as Deputy Assistant Director for the Office of Investigations for the Secret Service. He currently serves on the Cyber Investigations Advisory Board of the U.S. Secret Service, the Preparedness Leadership Council, and the Domestic Preparedness Editorial Advisory Board. He is also a Board Member for the National Center for Missing and Exploited Children.

An Integrated Public Safety Approach for Evolving Threats

By Eva Jernegan
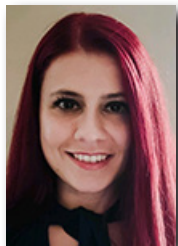
Violence prevention, hardening potential targets, eliminating threats, and reducing victim count are shared goals among all public safety stakeholders during mass casualty and other high-threat incidents. However, priorities and strategies among first responders and regional policymakers vary, and bad actors are often a step ahead of those committed to saving lives. Timely development and implementation of best practices, flexible processes, and an enhanced capacity to collaborate when it matters the most avoid multiple points of failure – detrimental to the overall capacity of a community to prevent or respond to attacks and its ability to recover.

The threat of violence is constantly evolving and creates new challenges for first responders, particularly during complex coordinated attacks – the type of attacks that include various modalities of weapons and tactics utilized by bad actors and require a significant mobilization of resources. One example of a complex coordinated attack (or a high-threat attack) is an incident where an armed subject uses fire to divert and complicate rescue efforts. Fire-as-a-weapon incidents differ from arson in their complexity and specific characteristics that require special considerations during an integrated response. The use of smoke or a fire alarm pulled for nefarious purposes are not fire attributes that fit the traditional arson classification within national fire reporting systems. Fire, emergency medical systems (EMS), and police are expected to respond to a fire-as-a-weapon scene, but it becomes difficult to decide who is in charge and how best to mitigate the threat while bullets are flying and fire is blazing. Complex coordinated attacks require that incident commanders reconsider their agencies' respective roles and implement innovative tactics that involve collaboration and mutual understanding of priorities.

The Rescue Task Force Concept

One way to mitigate these limitations is to set up a unified incident command post, where fire and police personnel in charge work together, sharing intelligence and making informed decisions in real-time. Both officers and EMS would go in as a unit to maximize time and effort in saving lives. The Rescue Task Force is a concept developed by Arlington County (Virginia) Fire Department in 2013 and actively socialized and implemented by the Arlington County High Threat Response Program (HTRP). The Rescue Task Force is a first responder tactic that deploys a minimum of two police and one EMS personnel, who then establish hot, warm, and cold zones where the unit can operate to a different extent in treating and extracting victims while staying vigilant of the threat. Standardized terminology, improved communication, and reasonable operational predictability in an otherwise unpredictable situation are essential to the success of an integrated response.

The HTRP engaged 21 agencies and more than 100 subject matter experts across Northern Virginia to improve regional and multiagency collaboration and first responder interoperability. The subject matter experts formed working groups that looked at personal protective equipment and how to operate in hazardous conditions, improved regional information and intelligence sharing, and enhanced mutual aid and resource deployment practices during low- and high-probability attacks. The project utilized subject matter experts to strengthen existing capabilities and create new integrated tactics and strategies to respond to complex coordinated attacks by looking at, for example, active violence, chemical/biological/radiological/nuclear (CBRN) threats, explosives, and civil disturbance. The HTRP team conducted numerous tabletop exercises for incident commanders, brainstorming discussions engaging emergency communication centers, hospitals, federal partners, and other experts, as well as training for SWAT officers and EMS personnel. Hands-on exercises included cross-training, simulating complex coordinated attacks response, and practicing Rescue Task Force and other innovative tactics. Training that engages all stakeholders in emergency response can improve the efficiency of the response and reduce the risk of first responder injuries when operating in complex hostile environments. For example, the HTRP implemented regional SWAT practices that allow officers to operate a hose from inside an armored personnel carrier in a scenario where a bad actor is shooting from a building set on fire (see photo).


SWAT officers operate a fire hose inside an armored personnel carrier (*Source:* Eva Jernegan, 2019).

One of the program's deliverables is a large repository of vetted resources compiled during the five-year term of the project, including vetted policies and procedures, after-action reports, training resources, and reference articles. Two databases provide an innovative look at high-threat incidents – the High Threat Incident Database and the Fire as a Weapon Incidents Database – and track domestic and international incidents. The databases evaluate incident components that may provide lessons learned and improve the overall awareness around common tactics and targets, as well as emerging threats involving technology or hybrid methods. First responders can view these resources by requesting access to the High Threat Response Repository hosted on the Northern Virginia Response System's (NVERS) website. Even though the HTRP does not exist at its full capacity due to the expiration of the federal grant funding, a small number of dedicated personnel still socialize the deliverables and update the repository. The HTRP is currently leading an effort to address new regional gaps and challenges. Multiagency representatives comprise the Critical Infrastructure working group, responsible for the identification, preplanning, and mapping of sites, buildings, and systems, as well as the Cyber working group, developing backup plans and operations to put in place in the aftermath of an incident. Many public safety agencies do not possess the bandwidth to conduct research and lack access to funding to run trial programs. As such, larger and better-equipped agencies in the region have the responsibility to establish mutual aid agreements.

The Cynefin Framework

To further explore complex and chaotic environments, leaders tasked with improving domestic preparedness can consider the Cynefin Framework, which aims to make sense of disorder and improve functionality and decision-making within a system. First responders are trained to operate temporarily in *complex* and *chaotic* environments where risks (injury or death) and rewards (saving lives) are high, and adaptability is paramount. Those involved in planning and operational support often work in the *complicated* domain and bring a different perspective to the conversation. In the context of emergency response, lingering in the *clear* (simple) domain where solutions seem obvious, without considering the inevitable evolution of violence, may lead to complacency and diminish efforts to get ahead of bad actors. Leaders who invest in better ways to understand the threat and build new and improved capacities that engage the entirety of the public safety community may avoid a collapse into the chaotic domain, where recovery is long and challenging, and the cost is high (in every sense of the word).
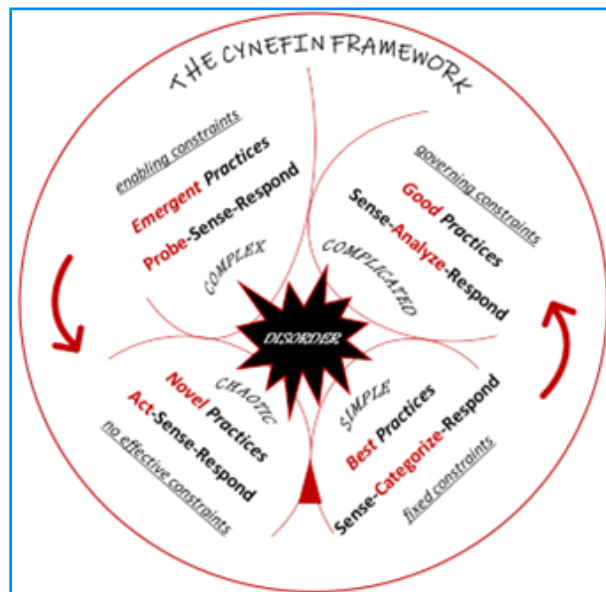
Source: Jernegan (2023, adapted from Snowden & Boone, 2007).

To further illustrate the relevance of the model and expand on its utility in *making sense* of how to prepare for and respond to incidents, it can be further extrapolated that mass casualty incidents and other high-threat incidents throw a system into immediate and inevitable chaos. In those instances, the impact extends beyond the emergency response itself and takes over the whole community affected by the loss. In moments of peace, this dynamic system can be viewed as an opportunity for a controlled transition across different domains while maintaining constant awareness. Making sense of chaos and disorder by analyzing prior successes and failures benefits the overall local, regional, and national preparedness strategy. Engaging multidisciplinary teams of subject matter experts used to operating in any of the Cynefin Framework domains and strategically placing quickly and efficiently deployable human and other resources may be what the public safety community needs to prevent another failure of imagination, as highlighted in the 9/11 Commission Report.

Fire-as-a-weapon incidents differ from arson in their complexity and specific characteristics that require special considerations during an integrated response.

Coordinated Multiagency Actions

Complex coordinated attacks require (1) fire and police departments to respond and (2) a timely implementation of a multiagency, multidisciplinary network of subject matter experts who work together to analyze lessons learned from prior incidents. Additional steps leaders can take toward improving domestic preparedness include:

- Training intelligence liaison officers,

- Revisiting the utility and structure of fusion centers and how effectively intelligence is shared, and

- Engaging academia and counterterrorism experts in gaps and needs assessments and think tanks.

Bitter memories of the inability to recognize the importance of relationship building, cross-training, and operational synchronization *before* an incident occurs have triggered the urgent need for a whole-of-community approach. Until Help Arrives is an Arlington County-led initiative that teaches citizens how to help their communities save lives until professional responders arrive, including recognizing threats, navigating potentially lethal environments, and providing basic casualty care. Mental health is another critical factor for building resilience – first responders and those from vulnerable populations need access to the appropriate resources and services. Every community, particularly schools, needs robust multidisciplinary threat assessment teams (an evidence-based best practice) that address early concerns of individuals on the pathway to violence. Such teams can develop successful threat management strategies for de-escalation tailored to the specific context of a person and situation and provide access to services.

To facilitate violence prevention and increase the chance for survival even during complex incidents, communities should:

- Help first responders navigate high-threat environments as safely as possible,

- Educate leaders on the importance of understanding the practical implications of informed decision-making, and

- Empower the community at large to be an active contributor to public safety.

An integrated public safety approach and multidisciplinary think tanks are vital to improving domestic preparedness in a constantly evolving threat environment. Leaders from all levels of government and stakeholders from all public safety agencies must learn from past failures and successes equally and develop policies, procedures, and training that enable first responders to work together and save lives.

Eva Jernegan holds a master's in Forensic Psychology from George Washington University and works with the intelligence, violence prevention, and national security communities. Eva was the lead researcher for the Arlington County High Threat Response Program, with investigative and threat assessment training and practical experience in various settings. She has been involved in multiple initiatives to build capacities for the public safety community and identify and mitigate local, state, and national threats. Currently, Eva supports the federal government in efforts to counter Weapons of Mass Destruction (WMD) terrorism on the international level and serves on the Board for the D.C. Mid-Atlantic Chapter of the Association of Threat Assessment Professionals (ATAP).

Tornadoes – Adapting Plans for a Changing Environment

By Cameron Gonteski

Weather is constantly changing due to an evolving climate. Meteorological trends throughout the 21st century have pointed toward more variability in severe weather, specifically for tornadoes. For example, there has not been a year without a 32-tornado day since 2001. Thus, the frequency of *big* tornado days (a day where at least eight events occurred) has been increasing. In addition, a 2018 study published by *npj Climate and Atmospheric Sciences* explicitly provides data supporting this shift in frequency from Tornado Alley to Dixie Alley. That statistical analysis determined a significant downward trend in occurrences across the central and southern Great Plains and an upward trend in portions of the Southeast, Midwest, and Northeast.

Decades of Tornado Patterns

In a 2016 study published in the *Journal of Geophysical Research: Atmospheres* examined the U.S. tornado frequency and location variability for EF1+ events on a continental and regional scale using 1950-2013 data from the Storm Prediction Center (SPC). On a continental level, statistics show a slightly increasing trend in the frequency of tornado occurrences since the 1950s. On a regional level, about one-third of the continental United States demonstrated an increasing trend in the frequency of tornado occurrences. The other two-thirds showed a decreasing or flat trend. Regionally, most southeastern states displayed a consistent increase in event frequency. States in the West, Great Plains, and Midwest mainly exhibited no trends or decreasing trends, while states in the Northeast represented a fluctuating pattern.

In a similar study published in *Climate Dynamics* in 2014, the authors used SPC data to analyze the annual number of tornadoes occurring in the United States and the number of days at least one tornado occurred between 1950 and 2013 for EF1 and stronger events. Comparing trends in the number of tornado days sheds light on variability from a different perspective. The results depicted a downward trend in the number of tornado days (defined by at least four events) but an upward trend in the tornado days for those represented by at least 8, 16, and 32 events.

Often called "Tornado Alley," the Great Plains is the U.S. region that has been widely known for having the most tornado occurrences. This assumption has been held for a long time, but scientific evidence like the ones mentioned above plus more recent

studies suggests a new region is taking the lead. An area in the southeastern United States called "Dixie Alley" shows increasing occurrences of strong tornadoes. The data points to an increasing trend in the frequency of tornadoes and an eastward shift in the location where a higher number of events are occurring. However, more mapping like the one depicted in Figure 4 of the 2018 study is needed to see the ongoing migration of this threat.

Adapting to Climatological Changes

Understanding these climatological changes is critical for emergency planners when preparing for future threats. Communities may not be ready for the impact of tornadoes if their localities have not commonly experienced them before. Consider that all 10 of the top 10 costliest U.S. disasters involving tornadoes impacted at least one state outside Tornado Alley, and 7 of those involved a state outside Dixie Alley as well. The 34 states on this top-10 list highlight the importance of emergency planners preparing for these catastrophic events even if their communities are not within traditional high-risk areas. Risks and hazards can shift with or without warning.

> *The data points to an increasing trend in the frequency of tornadoes and an eastward shift in the location where a higher number of events are occurring.*

Much evidence points to the shifting frequency of occurrences from Tornado Alley to Dixie Alley. As such, the states in and around the Dixie Alley region should reassess their state and local hazard mitigation plans to ensure that occurrence rates and probabilities for tornado risk and impacts are accurately addressed. Threat and Hazard Identification Risk Assessments (THIRA) would benefit by providing more specific thresholds of threat based on meteorological datasets. For example, if a state or locality had <1 tornado per month then it is low risk, 2-10 tornadoes per month is medium risk, and >10 tornadoes per month is high risk. This means a planner would need to physically access the data to determine their risk levels and coordinate with meteorologists to make this data more accessible.

Additionally, the evidence presented above implied that larger tornado outbreaks could occur in a single day. Emergency planners and responders may need to prepare for more extensive responses and recovery operations. Although there are no publicly available databases that specifically track shifts in tornado tracks, since tornado databases themselves are not widely available, the following resources can provide valuable tornado data to emergency planners:

- National Oceanic and Atmospheric Administration's (NOAA) Annual Tornado Report

A house that was heavily damaged by the EF2 tornado near Blum, Texas (*Source:* NWS Fort Worth, May 4, 2021).

- National Weather Service (NWS), NOAA, and Mississippi State's Tornado Database

- Federal Emergency Management Agency's Resilience Analysis and Planning Tool (RAPT)

The importance for emergency planners located in and around the Dixie Alley region to evaluate their current hazard mitigation plans and accommodate the changing tornado climate is just one example of where change is needed. In any jurisdiction, environmental changes can lead to increased natural hazards (e.g., floods, fires) that may not have been included or updated on hazard mitigation plans. Overall, emergency planners must take the time to speak extensively with meteorologists and review the data for severe weather changes and patterns. It is time to keep pushing forward with change, which is necessary for saving lives in an evolving climate.

Cameron Gonteski is a meteorological operations specialist at The Weather Company, an IBM Business. She graduated from Millersville University of Pennsylvania in 2022 with a B.S. in Meteorology and a minor in Environmental Hazards & Emergency Management. Being very active in the emergency management field, she recently won the 2021-2022 Student Chapter of the Year Award under the International Association of Emergency Managers as student chapter president. As a meteorologist, she strives to connect the emergency management and meteorology fields to promote greater community resilience.

A National Plan to Link Response and Recovery
By Robert J. (Bob) Roller

F ederal government-wide disaster planning dates to the Cold War-era Federal Response Plan (FRP) and similar documents that described how the United States would respond to nuclear war and severe disasters. This singular plan was maintained and updated after the Cold War ended. However, following the attacks of September 11, 2001, it was deemed insufficient to meet the perceived requirement to ensure federal coordination for incidents too large for individual agencies or existing coordination structures to manage. Homeland Security Presidential Directive 5: Management of Domestic Incidents (HSPD-5) assisted with these preparations by requiring the establishment of the National Incident Management System and updating the FRP to be the National Response Plan (NRP), a document that was later revised and retitled as the National Response Framework (NRF) in 2008 and exists today.

However, these documents lacked considerations unique to specific hazards, and the failure to address them was evident in the response to Hurricane Katrina. The Post-Katrina Emergency Management Reform Act of 2006 sought to address this shortcoming by recommending the establishment of basic all-hazard plans and function or incident plans nested within them. This recommendation became a requirement with the promulgation of Annex 1 to Homeland Security Presidential Directive 8: National Preparedness (HSPD-8), which tasked the development of National Planning Scenarios and a hierarchy of federal plans to address them.

The planning system required under HSPD-8 was superseded with the promulgation of Presidential Policy Directive 8: National Preparedness (PPD-8) in 2011. PPD-8 enshrined the five mission areas (Prevention, Protection, Mitigation, Response, Recovery) into national doctrine and established an architecture of guidance documents cascading down from the National Preparedness Goal to frameworks and Federal Interagency Operational Plans (FIOPs) for each mission area, to hazard and threat incident annexes, and to both federal agency and other plans. As part of the many other changes PPD-8 brought to the emergency management community, these frameworks, FIOPs, incident annexes, etc., have been updated multiple times since 2011. Subsequent interagency planning led by the Federal Emergency Management Agency (FEMA) includes Nuclear/Radiological, Oil/Chemical, Biological, Food/Agriculture, Space Weather, etc., which all nest under the architecture of guidance documents established by PPD-8 but are informed only by the Response FIOP and include no clear linkages to the other mission areas, stakeholders, or operations.

Plan Development & Content Overview

The major changes tasked to the interagency planning team, co-led by FEMA's Recovery and Response Directorates with participation from nearly 30 other federal departments and agencies, include:

- Merging the separate Response FIOP and Recovery FIOP, both updated in 2016, into a single document; and

- Ensuring that this combined response and recovery plan reflect the importance of climate change, equity, and significant changes in law, policy, and capabilities since 2016.

The planning team took this challenge head-on and spent nearly three years working through the operational planning steps outlined in Comprehensive Preparedness Guide 101 and the FEMA Operational Planning Manual. The goal was to build a doctrinally sound and operationally useful foundation using best practices for plan development.

Cover photo of the Response and Recovery Federal Interagency Operational Plan, First Edition (*Source:* FEMA, March 2023).

The combined Response and Recovery FIOP is the first attempt to merge the NRF and National Disaster Recovery Framework guidance into an operational direction that spans both the response and recovery stakeholder communities. Highlights include the following:

- Recognizing the importance of climate change as an increasing hazard and the importance of ensuring equity in the delivery of response and recovery services;

- Recognizing that response and recovery are concurrent and mutually reinforcing activities, and including recovery stakeholders and considerations into initial response actions;

> *The new national plan's goal was to build a doctrinally sound and operationally useful foundation using best practices for plan development.*

- Updating the existing terminology and narrative to ensure consistency with current doctrine and policies (e.g., community lifelines and outcome-driven recovery);

- Explaining the link between Emergency Support Functions and Recovery Support Functions, combining their execution during operations;

- Providing functional annexes built by interagency subject matter experts from across the federal government with knowledge in operations, logistics, communications, public information, intelligence, and situational awareness; and

- Employing a concise narrative to make the plan operationally relevant by cutting nearly 470 pages of redundant text from the previous separate FIOPs.

Next Steps

FEMA, in partnership with stakeholders across the emergency management community, will use the FIOP to inform further planning at the lower echelons of the PPD-8 architecture. This effort includes an updated Biological Incident Annex with Toxins Addendum and Nuclear/Radiological Incident Annex (both to be published in 2023), as well as further planning. Additional implementation steps may include exercises and real-world implementation for disasters and other challenges in the future.

Robert J. (Bob) Roller serves as the Federal Emergency Management Agency's (FEMA) National Planning Branch Chief and co-led the development of the Response and Recovery Federal Interagency Operational Plans (FIOP). He also has years of experience as a firefighter and emergency medical services (EMS) provider in both wilderness and urban environments. He is a frequent contributor to Domestic Preparedness and recently published a memoir regarding his early experiences as a wildland firefighter. The views expressed here do not necessarily represent the views of FEMA or the United States government.

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Fostering Public Buy-In to Support Public Safety

By Taylor Bonsall-Winn

After a disaster strikes, emergency managers answer the call for help when the public needs them the most. However, the public sometimes has misconceptions about who emergency managers are and what they do. *After* something happens is not when meetings with the public should occur for the first time. First responders – such as fire, law enforcement, and emergency medical services – have a distinguishable daily impact on their communities. Although emergency management's impact is less palpable to the community, it is no less critical. Emergency management agencies must find ways to emphasize the worth and result of their efforts within the community to ensure the sustainment of efforts and progress that will be vital in the years to come. Emergency managers can rebuild previous and foster new relationships to serve their communities better by being present during *blue-sky* and *gray-sky* days.

The Anne Arundel County Office of Emergency Management (OEM) in Maryland has worked diligently to shake up its traditional public outreach approach. Spurred by COVID-19 challenges and the lack of in-person connections normally afforded, the agency leadership's mindset about public outreach began to change. Re-launching in-person events has involved adjusting methods to connect with diverse groups within the community and sharing information on preparing for emergencies. Even small changes proved to have significant impacts. For example, rather than inviting community members to an emergency preparedness event or simply setting up an outreach booth at a major event to pass out preparedness tips, the agency sought out local events and made emergency preparedness part of their events. Attending an area's community fair, a cultural festival, or the local pride parade provide opportunities for deeper conversations with specific groups of people that may have unique needs.

Engaging Underserved Communities & Families

When this type of integration happens, it is a mutually beneficial learning experience. One such instance was a connection that began in 2021 with the local LGBTQ+ group, Annapolis Pride. By the time the OEM outreach staff attended the local pride parade in 2022, they were met with joy and excitement that they were there to support their community. Like any outreach event, the OEM gave away many helpful handouts on how to stay prepared at home and gained emergency alert subscribers and social media followers. However, the newly discovered benefit was in the follow-up conversations and asking how the *OEM* could help *them*. This additional level of interaction provided OEM leadership with an awareness of previously unmet needs and a new perspective on how to serve the community.

In that example, an adjustment of internal plans ensured that the OEM would accommodate nonbinary and transgender individuals and provide special assistance and safety-related resources to LGBTQ+ children after a disaster. Later discussions with Annapolis Pride to share these county emergency plans and procedural changes further enhanced the relationship as they saw the mutually beneficial results of their partnership

with the OEM. If the emergency plans do not explicitly address these topics, there is no guarantee that the extra support required will be available to them when needed most.

The Anne Arundel County Office of Emergency Management (OEM) in Maryland has worked diligently to shake up its traditional public outreach approach.

Emergency managers grow in their field and can safeguard the whole community through these types of personal connections. Anne Arundel County has had similar positive results when attending events like the Hispanic Heritage Festival, Korean CultureFest, and Juneteenth celebrations. OEM specifically targets the areas that need additional support and builds trust and communication with the community's underserved populations.

In 2022, the OEM continued to expand its whole-community public outreach efforts by building awareness about what emergency managers do, how the OEM can help, and how community members can better prepare for future emergencies and disasters. These efforts included:

- *"It's a Snow Day"* – To build student awareness of how the OEM responds to winter storms and other natural disasters;
- *Shadow day contest* – To encourage high schoolers to write about preparedness, with winners shadowing the OEM director;
- *Youth Internship Program* – To introduce youths to potential careers in emergency management;
- *Pepper the Preparedness Pup* – To engage young children through animated videos and adventure workbooks;
- *Hispanic Outreach* – To build stronger relationships with the Hispanic community through presentations and programs with a native Spanish speaker;
- *Food Insecurity and Resilience* – To create agricultural partnerships within the county;
- *Houses of Worship Seminar* – To build awareness of best practices and facilitated discussion through an interdenominational webinar series; and
- *Emergency Preparedness Expo* – To provide a free and fun event for the entire family to increase individual and community preparedness

Reaching Out to the Whole Community

Along with the dividends these relationship-building efforts paid, the OEM has also sought to address the significant issue of proving its worth to the community and elected officials. For that reason, the OEM pulled together some of the highlights of 2022 and developed its first Annual Report: A Year in Review with an accompanying short video. As a field, emergency managers sometimes have a tough time letting the community know their accomplishments and how they impact public safety. In times of dwindling budgets and competing interests, without unequivocally proving the benefits an agency brings, emergency management could become a *justified* place to cut funding, especially when a disaster is not recent in an official's memory. Therefore, developing this annual report has been beneficial and one of the agency's most accessed resources.

Anne Arundel Office of Emergency Management booth at the Pride Parade (*Source*: Anne Arundel OEM, 2022).

There also are internal benefits, such as building morale by highlighting the group's work and helping recognize each section within the office and its milestones. With a simple mindset change, there is a noticeable change in the community's response to the agency. When attending regular outreach events, other participants now say things like, "We've seen you guys before," which is a significant step in the right direction. People often share feedback about how their families have built up their emergency kits using the OEM's handouts and tips or how they recognize OEM staff from a previous event. As a result, the increased visibility is helping the *whole* community prepare for a disaster while mutually assisting the agency in better meeting the community's needs. For agencies in any jurisdiction, expanding this reach can begin with some of the following actions:

- *Meet the community where they are* – Community groups meet on a regular basis, and contact information is not difficult to find. Offer programming content for their meetings or, even better, find a concern or topic that the group already has and relate it to preparedness or OEM efforts (Parent-Teacher Association groups look for family preparedness information and resources, school systems look for career professionals for Career Days and mentoring, senior centers look for content such as bingo and quiz games, etc.). Work with libraries and community centers to create events. These locations are often the heart of many communities and appreciate new content to provide to their patrons. Being flexible with how the message of preparedness is delivered allows agencies to integrate that message more easily into the group's needs.

Outreach presentation to Girl Scout Troop 2091 in Anne Arundel County (*Source:* Anne Arundel OEM, 2022).

- *Get help* – Outreach and community engagement should be a function of every emergency manager, from planners to directors. Everyone in the office should be engaged in some type of outreach activity to improve public speaking skills and to verbalize the importance of the work. Also, look to outside local or state agencies to tag along. Agencies like police and fire may have resources to dedicate to community outreach and are willing to share the spotlight to support public safety. They also may be acquainted with other populations where they can provide vital introductions.

- *Track progress* – To improve something, it first needs to be measured. Identify specific metrics to show public safety efforts and consider putting these metrics on the office website for all to see, or in an annual report.

Significant partnerships are continuing to form two years into this new outreach mindset. However, growing evidence shows that these efforts will enhance future disaster responses. With many partnerships throughout the community, there is a good chance that residents will recognize their local emergency managers and trust their guidance the next time a crisis occurs.

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Guidance for Preparing Professionals Mentally for the Worst

By James L. Greenstone & Weldon Walles

P rofessional groups have debated and researched the best practices relating to the standards and quality of care sufficient to maintain minimum standards during a disaster. Due to the fluid nature of a disaster, it is difficult to abide by a standard that will fit every situation. For example, the onset of the COVID-19 pandemic created an environment where an intense debate was necessary to examine best practices and standards in real time. Health care professionals and first responders often embrace the protocols associated with the standard of care that their professions demand. Shortcuts and inferior care are not generally acceptable.

Unlike health care professionals and first responders, the public does not seem to embrace the difference between normal circumstances and disasters, at least where resources are concerned. The public demands a high standard of care even when resources are exhausted. They may not be aware of how legal restrictions, politics, and logistics affect the level of care in disaster conditions. Expecting a high standard of care under adverse or impossible conditions places pressure and stress on health care workers and first responders, affecting their mission. When they cannot achieve the impossible, the fear of litigation and liability exposure may distract them to the point that it affects their decision-making abilities to the detriment of their patients.

Emergency response agencies train personnel on how to perform tasks and how to use tools and resources. However, they may not always prepare for the psychological challenges they could face. With the isolation and sensory deprivation that astronauts face when deployed into space, the National Aeronautics and Space Administration (NASA) has assessed psychological risks through many experiments over the years to prepare its astronauts. For example, in 1967, it used isolation chambers for up to 10 days to observe changes in participants' cognitive and other functional abilities. A participant from a 2013 NASA experiment, where six people were isolated in a geodesic dome for four months to simulate life on Mars, compared lessons learned from that experience to the skills needed during the COVID-19 isolation period. Although a bit extreme, these NASA experiments show that shorter sensory deprivation periods can simulate the long-term deprivation astronauts will encounter later.

Introducing a New Training Concept

Mass casualty, disaster incidents, and similar events that occur without warning can create situations that cause health care professionals to deviate from known and practical protocols, thus leaving them to invent or utilize alternate responses. When health care workers and resources are overwhelmed by the sheer number of victims, lack of supplies, or inaccessibility of terrain, responders must allocate resources to those who will benefit most.

Also, the responder's decision-making process must be sufficient to use the available resources on the greatest number of survivors who can benefit the most from those resources. Perhaps the most significant pressure on the responder is the realization that it is not possible to help every victim. Health care workers and first responders are dedicated individuals who risk their lives responding to and transiting disaster scenes. However, having to gauge the survival potential of each victim and make decisions that enhance the survivability of one person over another increases their mental strain when the reality of dwindling resources becomes apparent.

To address modern response concerns, the Greenstone-Walles Sufficiency Testing and Training offers a simple guide to help mentally prepare disaster responders for the worst. Using a simple task unrelated to a specific disaster scenario, participants complete an examination of their approaches to limited resource availability. This examination, coupled with understanding the expectations they can derive through simple tasks, helps them acknowledge that they can do only so much with their resources. Understanding expectations may enhance their overall performance and let them know that the agency they are working for will give their full support. Items to consider before beginning a new training include:

- It is detrimental to convey to the planning team or participants that no training can replicate the actual situation, no matter how sophisticated. For example, many lessons learned from COVID-19 show that health care workers would have benefited from more crisis standards of care training before responding to the pandemic.

- Disaster scenarios are less than ideal circumstances. However, these may be the norm in certain circumstances.

- Responders must understand their limitations and realize that, with time as a determining factor, some dire situations have no practical solutions. In bad scenarios, guilt can lead to hesitation and derail triage decisions (e.g., deviations from protocols, falsely believing that the responder is expected to do the impossible). Guilt triggers a self-preservation mechanism, where the person coping with the guilt blames another for asking them to do something impossible.

- When comparing one's mind to a mechanical device, guilt is like a foreign object dropped into a gearbox. It can bounce around at first and not cause too much of a problem, depending on how well-engineered the machine/mind is. But if that foreign object/guilt settles in one place, it can cause a range of problems up to and including catastrophic failure.

There will be times when responders are in a no-win scenario. The best action is to follow established protocols as closely as possible, which is especially important for two reasons when attempting to help someone fails:

- Following established protocols limit liability.
- Following the steps in the protocol provides an outline when filling out after-action reports.

For this topic, failure simply means a lack of a successful outcome, which is subjective. Failure is often stigmatized as bad, but it usually means an expected result was not achieved. Many failures may lead to learning what can be done to thwart future failure.

Exploring the Training Process

NASA recognized that it is critical to mentally prepare astronauts for the unfamiliar conditions they would face when traveling into space. Similarly, those who respond to disasters must be equally prepared – physically and mentally – for their jobs under adverse circumstances. As such, this article proposes a new type of training where a *failure* scenario prepares responders mentally for more significant situations.

Target participants for the Greenstone-Walles Sufficiency Testing and Training are persons who are likely to be deployed. Instructors ask them to complete simple tasks without providing them with the necessary items to complete the task. The goal of this experimental exercise is for participants to realize that they should not blame themselves for not completing any small or large task under adverse conditions. Instead, they must accept that they can only do so much given the details of a specific situation.

Making decisions that enhance the survivability of one person over another increases the mental strain on responders, especially when resources are dwindling.

If this or a series of similar exercises were used at the beginning of a training, it would instill in the participants that some tasks are impossible and that the responder is not to blame if they did all they could with what they had available at the time. The emphasis must be on rendering the best services possible under the existing conditions to the most who can benefit from those services under the current circumstances.

Training and discussions could also occur virtually (e.g., via Zoom). Assign each person to a breakout room. Give them their individual instructions and time limit. The moderator/trainer then goes to each breakout room and does the discussion questions. These breakouts could be accomplished with multiple people, one or two leaders, a 30-minute time limit, and individual discussions and evaluations. Each participant would need to bring a sheet of white paper only. Leave all else and writing instruments out of breakout rooms.

Sample Exercise

Provide each participant with a piece of paper and ask them to draw a black-and-white landscape scene. The only item each has to complete the task is a piece of paper. They have no pencils, pens, or other drawing instruments, have 30 minutes to complete the task in isolation, and cannot ask questions. The moderator or anyone else does not communicate with them once the door to their isolation area is closed.

The moderator/trainer returns 30 minutes later to see what happened, what the participants did or did not do, and how frustrated they are with the assigned task. Then the moderator/trainer gives them a questionnaire with the following questions (no permanent record should be kept of their responses to the moderator/trainer's questions or discussion content):

1. Were you able to complete the task? Unless the participant cheated and used a pencil they had hidden or some object they were not given to complete the task, the answer will be "no." In other words, they did something to deviate from the accepted protocol.

   - This part of the simulation attaches liability when there is a deviation from accepted protocols, no matter how good the intentions or the desire to succeed

   - If not, why not?

2. What could you have changed about yourself to do better?

3. What items would you have needed to complete the task?

4. Who do you think, if anyone, is to blame for your failure?I

5. f you were deployed during a disaster and the necessary equipment was unavailable to save someone, would you blame yourself if you could not save them or provide the proper equipment or services?

6. What lesson did you learn from this exercise?

Encourage the participants to explore their feelings and perspectives on these issues deeply. After completing the questionnaire, additional post-testing questions for further discussion could include:

1. What did you initially think about the task you were asked to do during this exercise?

2. Did you believe this was an impossible task?

3. Did you continue to think of ways to complete the task?

4. Did you think others may figure out a way to complete the task, and you may not?

5. How did this exercise affect your anxiety?

6. What emotional response did you feel about your failure to complete the task?

7. Did you place blame on anyone other than yourself for not completing your task?

At the end of the session, provide each trainee with a copy of the paper Crisis Standards of Care – A Disaster Mental Health Perspective.

Final Thoughts and Conclusion

In many cases, relatively simple exercises in a non-disaster setting could help responders deal with disaster-experienced feelings, especially when they must depart from their usual and required standards of patient care. The more severe NASA experiments show that preparation in a controlled environment can reap big rewards in the actual environment. Training can help prepare those who eventually find themselves in the real or anticipated scenario. The proposed Greenstone-Walles Sufficiency Testing and Training is simple, whereas NASA's is complicated. However, both prepare responders for alternate standards of care thinking without the guilt and trepidation cited earlier.

No matter the situation, the needs often outnumber the resources available at disaster scenes. It comes down to simple math. The resources must be prioritized to reach the neediest first, with a significant likelihood of survivability. Good intentions and best efforts only go so far. The reality is that some victims will suffer due to a lack of critical resources. The health care worker and first responders must make decisions based on their training and experience and resist the guilt associated with making decisions that can adversely affect lives.

Experienced health care workers and first responders who have been on-scene in disasters and situations under normal conditions can compare the two experiences and understand their differences. Knowing these differences helps them adjust to

Disaster management cycle (*Source:* adapted from Kyle Schwartz, 2018).

their roles more quickly in a particular scenario. The way to acquire this knowledge is through experience. This training includes practical exercises designed to teach practitioners that the limitations of their ability to help are directly proportional to the number of resources at their disposal. These simple exercises presented here are designed to approach that spectrum.

Additional Help and Resources – In the Field or Out
- SAMHSA Disaster Distress Helpline – Substance Abuse and Mental Health Services Administration (SAMHSA) offers 24/7 crisis counseling for those experiencing emotional distress related to natural or human-caused disasters; call or text 1-800-985-5990; text "TalkWithUs" to 66746; en español.

- SAMHSA Behavioral Health Disaster Response Mobile App – SAMHSA offers multiple resources in its Disaster Mobile App, including a directory of behavioral health service providers in areas affected by disasters.

- 988 Suicide & Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) – This 24/7 national network of crisis centers provides free and confidential crisis support to help prevent suicides; text 988; call 1-800-273-8255; for TTY, dial 711, then 988; for deaf/hard of hearing/American Sign Language users, call or text 1-800-985-5990; Veterans, text 838255; en español, 1-888-628-9454.

Additional Readings for Psychological Risk Preparedness
- How to Prepare for the Worst Without Being a Pessimist

- Mind Over Disaster: Mentally Preparing for the Worst

- National Guidelines for Behavioral Health Crisis Care

Disclaimer: The material and the exercises presented or suggested herein are experimental and for general informational purposes only. This material does not attempt to provide counseling services or other therapeutic services or medical advice. Please consult with a qualified and licensed medical or mental health professional for specific concerns, personal or otherwise.

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Challenging the Next Generation to Communicate Preparedness

By Chris Sheach

Communicating preparedness messaging is simple. According to sociology professor [Benigno Aguirre](#), messages should be clear, understandable, accurate, credible, and specific. Messages should also be universal, timely, self-validating, and available everywhere. If the entire population received all information the same way, this would indeed be simple. However, public information officers know that there is no single communication solution for every situation. It is essential to use multiple forms of messaging to ensure people receive the message, whether they are at work, at home, at school, etc. It is a constant challenge to identify vulnerable populations within the community and then determine how and where they will receive messaging, use language they find clear, understandable, and believable, know from whom or what source they draw credibility and validation, and what triggers will prompt them to be decisive and take appropriate action in a timely manner.

The following factors all play a role in how people react and respond to messaging:

- Gender
- Political persuasion
- Marital status
- Housing status
- Age
- Race
- Economic status
- Language and culture
- Citizenship status
- Religion

Fig. 1. Yellow snow meme using #winteriscoming.

These demographics can also influence which sources of information people trust and the chosen medium [affects the reception and validity](#) of the message. In general, one of the biggest disruptions to communication has been the rise of social media. What seemed to some like a passing fad 20 years ago has enabled instant global communication

all at once. But, trust levels vary widely – while 50% of young adults trust information from their social media feeds, only 20% of senior citizens do. Not only age, but gender, race, language, and politics affect social trust. Issues with misinformation are increasing, eroding trust on many platforms.

Complicating matters, the platform of choice is constantly evolving. Facebook was used by 71% of teens in 2015 but decreased to 32% by 2022, with senior citizens increasing their use on the platform to 50%. Meanwhile, 95% of teens are now on Youtube and 67% are on Tiktok, which only launched in 2018 and

The most significant outcome of this exercise was that quality messaging could be conveyed effectively on social media in a fun and potentially viral way.

is already facing usage bans around the world. It seems that, just when a communication campaign has adapted to current trends, it is already out of date. This presents a challenge for risk communication teams: how to stay connected to the population they serve in an ever-changing environment. It also presents a challenge for instructors trying to teach these principles to emergency management students. This article highlights findings and recommendations from a recent exercise by undergraduate students in collaboration with a state emergency management team.

Social Media Outreach Assignment

At Paul Smith's College, students in the Disaster Management and Response program are introduced to these principles with an assignment to work as a team and develop a disaster preparedness communications campaign with all the characteristics of effectiveness detailed in the Aguirre article mentioned above. In Fall 2022, new criteria were introduced, specifying that the assignment:

- Be designed for social media, with short soundbite-style messages;

- Include the development of relevant hashtags;

- Specifically target winter weather preparedness in upstate New York; and

- Target some of the messaging to residents and some to tourists.

These additional requirements forced complexity on the students. They would have to address populations that have different vulnerabilities to the same hazard, trust different sources of information, and have access to different resources for preparedness. They also would have to identify which platforms are used by which populations and what messaging is most effective on each platform. The class was divided into three teams,

each of which would develop their own campaign. New York State Office of Emergency Management (NYSOEM) personnel were asked to "guest judge" the submissions. This increased the significance of the assignment for the students, provided some levity for the NYSOEM team, and produced some surprising results.

Same Goal, Different Approaches

The most significant outcome of this exercise was that quality messaging could be conveyed effectively on social media in a fun and potentially viral way. Student messaging was accurate, relevant, and specific, even though the approaches chosen by the three teams were quite different. Topics included cleaning the chimney, how to

Fig. 2. Buff dog vs. cheems meme.

prepare for a storm or winter travel, snowplow safety, and pet safety in winter. These topics were intermixed with fun and even silly posts, such as an admonition to avoid yellow snow, use of the popular "Buff Dog vs. Cheems" meme, and even a play on the I♥NY logo. One group chose a campaign entirely focused on preparedness for snow days using the hashtag *#itsasnowday*. In upstate NY, a snow day does not happen often and usually means extreme sub-zero temperatures or blizzard conditions. They focused on having fun and keeping safe by dressing appropriately, not overexerting when shoveling, taking breaks inside, practicing fire safety, and hydrating with hot chocolate!

The student campaigns alternated between Twitter and Instagram as the medium of choice, and their images ranged from memes to personal photos and video clips to colorful poster-style content. This reflects how they typically use these platforms and the type of content they would instinctively share but with more intentionality about the messaging. Daily review of their favorite influencers and topics is a steady source of trusted information for the current young adult generation. However, the content they created is easily transferable to Facebook, where a different generation absorbs content.

Students identified relevant hazards, such as chimney fires and known vulnerabilities such as tourists unprepared for driving conditions or attempting selfies in hazardous conditions. They also highlighted common dangerous behaviors by residents, such as being underdressed for short trips and, as previously mentioned, designed a specific

campaign for parents facing an unplanned snow day. However, one area of shortcoming was a failure to identify potential messaging to minority or non-English speaking populations, whose small numbers in the target region increase their vulnerability.

The use of hashtags allows users to search and then follow content using the same tag. A clever hashtag can start a viral trend, with an increasing number of users seeing the post. Hashtags the students used also ranged from the banal to the ridiculous: *#DontLetYourToesBeAsBigAsTheRedApple* is probably not going to catch on, but *#impalecicle* might remind people to watch out for falling ice! The hashtag *#dresstosurvive* could start a trend of people posting selfies bundled up for the cold, effectively delivering the preparedness message beyond the reach of the original post. Another strategy the students used was to hijack already successful hashtags, such as *#winteriscoming*, made popular by Game of Thrones. This approach reaches anyone following the hashtag, not just those following the original poster, and seeks to attract a new audience who are introduced to content through the hashtag but start to digest other posts as well.

Fig. 3. An example of great risk communication.

Considerations & Caveats for Similar Campaigns

This exercise generated some interesting ideas for NYSOEM. One is the value of partnerships with higher education as part of a whole community approach to preparedness:

- Students can apply their knowledge of good risk communication to relevant social media content; and

- The content generated by the students was outside the typical government social media presence and more in line with current social media trends.

Collaboration with members of a target demographic to develop relevant messaging can be an effective component of community preparedness.

Something not really anticipated was the potential of memes for increasing the audience. For example, the use of the popular POV skeleton meme is good for a laugh, which then gets reposted or shared. The messaging is a simple reminder targeted to a
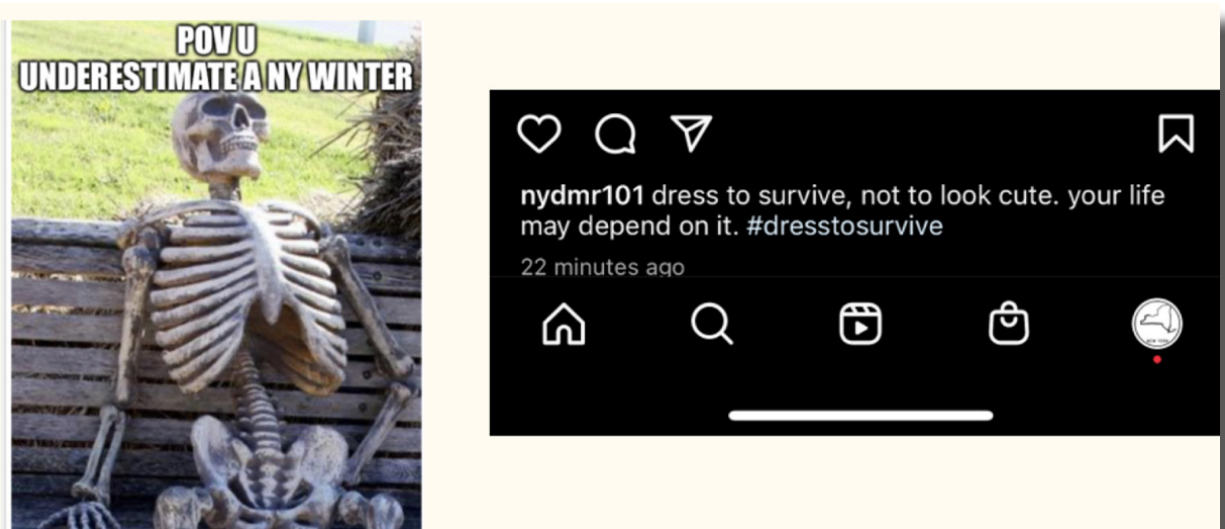
Fig. 4. The popular POV skeleton meme, with a clever hashtag.

younger demographic. Also, people tend to follow creators of the content they enjoy, increasing viewers of other informative posts. Similarly, the use of trending hashtags reaches external audiences. One idea is to leverage successful tourism campaigns, such as I♥NY or *Virginia is for Lovers*. This gets the risk preparedness messaging into the feeds of past and future tourists.

Of course, social media has its pitfalls. Even the best campaigns can fall prey to being misappropriated. The very nature of social media content is the ability for it to be modified and iterated. Yet, younger generations are verifying their ability to filter content and differentiate between fact and fiction. Having a social media presence that mixes lighthearted content with relevant, specific, and accurate information builds credibility and becomes another tool to communicate preparedness to vulnerable populations.

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Leader of the Pack – Canine Detection
By Barb Clark

Technology such as drones, robots, listening and visual devices, etc., have successfully been used for search and rescue operations in numerous disaster responses. Yet, in many ways, a tool used for centuries continues to be as valuable, if not more effective, in finding and rescuing lost and trapped persons, recovering the dead, and other disaster response tasks. This invaluable tool is the specially trained search and rescue canine.

Canines in Service Over Centuries

Canines have been used in search and rescue operations for centuries. It is well documented that the monks used dogs at St. Bernard Hospice in Switzerland to search for lost travelers in the 1700s. During the World Wars, dogs were trained to find wounded soldiers. The military and civilians have utilized canines over the decades to assist with various types of "nose" work, including locating the enemy on the battlefield, finding bombs, cadavers, and evidence of arson and illicit drugs. The Federal Emergency Management Agency (FEMA) has been using canines to search for humans, alive or dead, during disasters since 1989, when they first established the National Urban Search and Rescue Response System.

Numerous case studies demonstrate the value of a canine search team (canine and handler). Examples include:

- *The 9/11 operations at the Twin Towers site in New York City* – On September 12, 2001 (27 hours after the towers collapsed), Genelle Guzman-McMillan was the last survivor removed from the rubble thanks to a police search dog named Trakr.

- *June 23, 2021, Champlain Tower Collapse in Surfside, Florida* – Canines were instrumental in locating the remains of victims to help bring closure to families.

- *After the 7.8-magnitude earthquake on February 6, 2023, in Turkey and Syria* – Over 100 specially trained canine teams from all over the world descended upon the area to help locate survivors.

Many catastrophic collapse events employ canine teams and technology to aid in searching for survivors, as they both offer benefits. However, a canine can provide something technology cannot; they can show love, affection, and compassion. Dogs can offer psychological first aid to rescuers, survivors, bystanders, and anyone impacted by the event. Studies have shown that simply petting a dog has numerous health benefits, including lowering blood pressure, regulating cortisol levels, and relieving stress by releasing *feel-good* hormones like serotonin and dopamine.

For decades, scientists have tried to create mechanical devices that can duplicate and outperform a canine's sense of smell. In 1997, Defense Advanced Research Projects Agency (DARPA) distributed $25 million in grants to agencies to develop a "Dog's Nose." That project aimed to find buried landmines left over from wars worldwide. By 2010, the Joint Improvised Explosive Detection Defeat Organization commander admitted that the technology developed to identify improvised explosive devices (IEDs) was only 50% successful. In contrast, canines successfully identified the devices 80% of the time. According to Roderick Kunz, from the Massachusetts Institute of Technology, "Our feeling is that such a tool is better directed at improving the already best detectors in the world – canines."

Canine Anatomy and Physiology – Pros and Cons

Heightened senses make canines uniquely qualified for various disaster response tasks. For example, canines have a highly developed sense of smell thanks to their complex nasal design and large olfactory bulb in the brain. In addition, canines' eyes have more rods, which allows them to see better than humans in low light. And canines' hearing is more sophisticated than that of humans, as they detect much higher frequencies and softer sounds.

Canines possess incredible speed, agility, flexibility, and durability and do not require batteries or electricity. They are portable, with handlers able to transport them easily and rapidly by plane, train, boat, or aircraft. Canines also can determine the results of a search in real-time while sometimes going where humans or technological devices cannot.
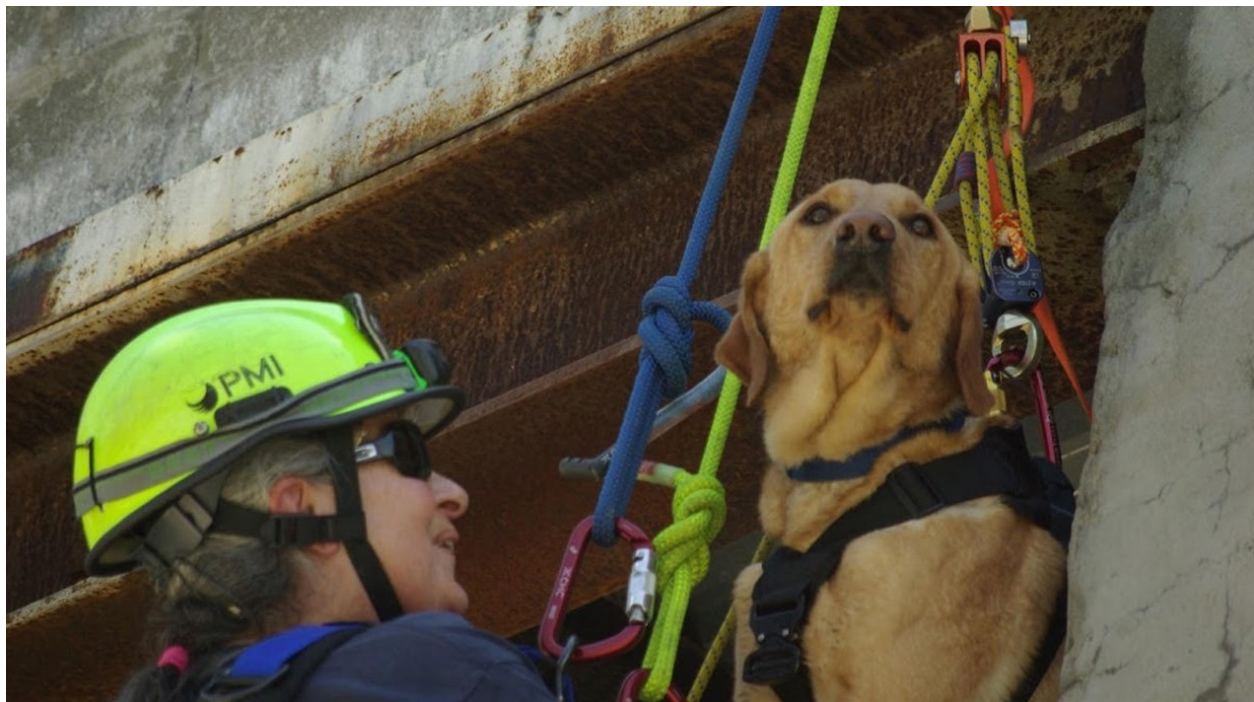
Phaelan on ropes during training (*Source:* Clark, 2019).

Unfortunately, there are a few caveats. Canines have, on average, a shelf life of 9-10 years of active search work. Because they are living, breathing animals, they need food, water, rest, conditioning, training, and medical care to perform at their best. In addition, weather conditions, terrain, chemical exposure, and explosive devices must be considered when deploying a canine into a disaster zone.

Considerations for Canine Detection Assets

On the national level, there are 28 FEMA search and rescue teams scattered throughout the United States. Within those teams, approximately 280 canine teams specialize in locating survivors, and 90 focus on locating human remains. Each canine/handler team must pass two certification exams every three years. The first exam is the Fundamental Skills Evaluation (FSA), during which the team demonstrates capability in all aspects of search – including obedience, direction control, victim loyalty, agility, lack of aggression with other canines, and the search. After completing the FSA, the team completes a Certification Exam (CE). The canine and handler are deemed a FEMA team when both tests are successfully concluded. It is then up to their FEMA Urban Search and Rescue (USAR) team to determine whether they are deployable based on additional team requirements.

> *Canines have been used in search and rescue for centuries. Their heightened senses make them uniquely qualified for various disaster response tasks.*

Phaelan searching collapse of a wood pile during training (*Source:* Clark, 2019).

Public service agencies considering integrating canine teams into local search and rescue operations should consider what would be involved in starting such a program. Talking to experienced handlers who have deployed to previous disasters is a good starting point. Key points of discussion and consideration include but are not limited to:

- *Funding for K9 programs* – Consider grants and other funding resources.

- *K9 and handler training* – The types of training vary, with some handlers learning outside formal programs from each other in a peer-to-peer type system. The National Disaster Search Dog Foundation (SDF) and Penn Vet Working Dog Center train canines. SDF also pairs first responders with the dogs they train. Many teams have open training to help develop and enforce skills. Some wilderness teams have seminars to help as well. FEMA's canine search specialists must take a Canine Search Specialist training course.

- *Canine care* – Detection canines are trained as athletes to build strength, flexibility, endurance, etc. They are part of the family but should not be treated as pets.

- *Emotional and psychological aspects* – The dogs and their handlers are partners, and their bonds are tremendous. Grief is the same for both if one or the other is killed in action.

- *On-scene interactions* – Many search team managers and taskforce leaders are uncertain of the many ways to utilize K9s on the scene. Therefore, they must attend trainings to understand the value K9 teams offer.

A late 2022 survey of search team members and canine handlers across the United States found that most handlers and search team members believe canines are superior to technology in many areas. Canines' legacy, anatomy, and physiology make them a proven tool for emergency response. However, by leveraging the benefits of canines *and* technology, responders will find the combination of both to be vital for the successful outcome of the search.

Barb Clark has been an active search and rescue (SAR) handler for 14 years and a Federal Emergency Management Agency Urban Search and Rescue (FEMA USAR) handler for 13. For the past nine years, she was the training and exercise manager of the Intermountain Center for Disaster Preparedness (ICDP), where she conducted, created, and facilitated courses in all aspects of emergency management for the whole community. Recently, she moved into a business continuity role with Intermountain Health. Over her career, she has worked in Emergency Services in Utah and Idaho as a fire captain, training officer, safety officer, and paramedic. While with Boise Fire Department, she specialized in fire ground medical rehab and triage for mass causality events. She has an undergraduate degree from the University of Utah and numerous certifications in Emergency Medical Services and emergency management, including HazMed technician, state and federal instructor, and Master Exercise Practitioner. She received her master's in Emergency Response and Risk Management from the University of Applied Research and Development in 2022. Currently, she serves as a canine handler with the FEMA USAR team, Utah Task Force1.

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