Summary of Findings

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Summary

The Strategic Foresight Initiative (SFI) is a collaborative effort of the emergency management community facilitated by the Federal Emergency Management Agency (FEMA). SFI was launched so the emergency management community can seek to understand how the world is changing, and how those changes may affect the future of emergency management. Participants in SFI have identified nine drivers that are likely to affect the field of emergency management significantly over the next 15 years: the changing role of individual in society, climate change, critical infrastructure, the evolving terrorist threat, global interdependencies, government budgets, technological innovation and dependence, universal access to and use of information, and U.S. demographic shifts. These drivers should be considered as the emergency management community makes long-term plans and decisions.

Methodology

FEMA's approach to SFI is based on engagement with the emergency management community in discussion and analysis of the future environment. We have defined "emergency management community" broadly, to include, Federal, state, local, and tribal first responders and emergency management professionals, as well as individuals from the private sector and academia. Over 500 members of the emergency management community have been engaged in the Initiative through a variety of forums, including workshops, conference calls, webinars, and an online discussion website hosted through the Office of Management and Budget's MAX Federal Community.

The Initiative has been staged in several phases. First, FEMA worked with nearly 100 key stakeholders, subject matter experts, and emergency management practitioners to identify the most critical drivers of the future emergency management environment. The second stage, which is currently underway, is focused on studying the drivers more closely, including how they might interact with one another, and the effects those drivers could have on emergency management. The third phase, to be initiated this year, will focus on identifying the emergency management community's long-term challenges, opportunities, and strategic needs.

Summary of Findings

The following initial findings are based on the contributions from members of the SFI community and reviews of existing research and writing. Please note that all discussions and literature reviewed for this paper were UNCLASSIFIED. SFI's engagement and analytic efforts have been centered on further defining the drivers through identification of the underlying trends and building an understanding of how the drivers and trends could impact the future of emergency management.

Changing role of the individual

The role of the individual in society is constantly evolving. How roles evolve could create a more complex emergency management environment. The community has identified three themes of particular interest to emergency management.

The first theme is increased empowerment of the individual. Advances in technology have broadened individuals' access to information as well as their forum for spreading their views. In addition, handheld devices, cell phones, and other touch technologies bring the information right to the individual wherever he or she may be. This has helped create what *New York Times* columnist Thomas Friedman refers to as "super-empowered individuals."

The second theme, which builds on the technological transformation theme, centers on new communications challenges. First and foremost, government officials are not viewed as a trusted source of information, even in the area of crisis management. Research has shown that individuals usually seek confirmation of information received from emergency officials from non-official sources before taking action. Additionally, there are concerns about the chasm between "connected" and "disconnected" individuals. This chasm requires the emergency management community to employ an expansive outreach program to reach all individuals. Interestingly, those "disconnected" individuals are typically more resilient because they regularly manage disruptions independently.

The third theme is the changing definition of community. Historically, communities were geographically-based. However, personal communications technology allows many individuals to join "virtual" communities of likeminded individuals, dispersed across the globe. This type of decentralized organization among individuals will create new challenges and new methods of decision making. Some experts interviewed believe that individuals will become more loyal to their virtual communities than their national or geographic communities.

Climate change

There is a significant amount of existing research on trends and impacts in the area of climate change. The SFI community feels the implications of climate change should be considered by emergency managers, regardless of the cause.

The U.S. Global Change Research Program (USGCRP) has conducted significant research on the implications of climate change in the United States. The impacts include:

- Coastal areas will be at risk due to rising sea levels and more intense storms, which will include more areas being affected by storm surges
- Crop and livestock production will be increasingly challenged
- Water resources will be stressed domestically and globally
- There will be new threats to human health
- Climate change will interact with many other social and environmental stresses
- The wildland fire threat will increase and shift to previously unaffected areas

These impacts could all clearly affect emergency management. Climate change becomes particularly challenging when considered in combination with other drivers such as increased urban populations and aging critical infrastructure. While the USGCRP findings are focused domestically, there are also international impacts that could affect the United States. These include mass migration due to climate issues, increased conflict, and shifting disease patterns.

A significant discussion within the SFI community has been the role of emergency management in the policy debate over climate change. Traditionally, climate change has been considered an environmental issue. Many emergency managers now believe they can and should play a leadership role, particularly as it relates to climate change adaptation.

Critical infrastructure

Currently, infrastructure in the United States is nearing the end of its life-cycle and will require significant investment to prevent a crisis. In particular, transportation, communication, energy, and health care infrastructure are aging and in danger of failing. Aged infrastructure can hamper disaster response and recovery efforts by delaying first responders' ability to reach an affected area or the delivery of supplies. In addition, the failure of infrastructure due to age—like the collapse of a bridge or a dam bursting—can in itself pose a threat.

The American Society of Civil Engineers estimates that the United States must invest $2.1 trillion into infrastructure over the next five years, but anticipates less than half of that amount will actually be spent. If this funding shortfall persists, the Nation's infrastructure will be inadequate to meet society's demands and could harm the country's long-term economic competitiveness. Despite this need, many signs point to continued funding shortfalls. These include the country's ongoing economic challenges, constrained government budgets, and a lack of political will to resource projects with primarily long-term benefits. In addition, since the private sector owns the majority of the Nation's critical infrastructure, investment priorities are often profit-driven rather than security-driven.

However, it is possible that spending on infrastructure could increase in the short- to medium-term future. For example, the Obama Administration proposed establishing a $50 billion National Infrastructure Bank in October 2010. In this case, the emergency management community would have the opportunity to advocate for more resilient infrastructure. While there has been much talk about increased investment, particularly with respect to energy independence and "smart grid" technology, limited progress has been made. Well designed infrastructure could be a real benefit to the emergency management community. However, it is also unknown what dependencies and hazards may come from the new systems.

Evolving terrorist threat

How the terrorist threat evolves, and how the entire security environment evolves, will be a major driver of the future environment. The community has identified several terrorism trends that are important to emergency management. First, the dispersion of technological and scientific knowledge will increase terrorists' access to high consequence weapons. Specific concerns with biotechnology, nanotechnology, and nuclear weapons have been emphasized.

Second, terrorist organizations are adaptive organizations that are constantly learning and improving their tactics and techniques. Third, there is an increase in self-radicalization of individuals and small groups. Fourth, communications technology continues to support recruitment and terrorist messaging.

While much discussion has focused on a growth in terrorism and terrorist capabilities, particularly transnational terrorism, many in the community believe that it is important to consider countertrends. For example, most experts consider al-Qaeda and al-Qaeda affiliated and inspired groups to be the greatest threat to U.S. security. However, many experts believe there is diminishing support for Al Qaeda and their followers. Others discussed the cyclical nature of terrorism and believe the cycle of religious terrorism may be waning (these comments appear to be based on Rapoport's "waves of terrorism" model).

In addition to the discussion about the future of Islamic based-terrorism, there has been discussion about other terrorist threats, including domestic terrorism. Many also see the growing threat of transnational criminal organizations as a significant related trend.

Global Interdependencies/Globalization

The SFI community has discussed globalization and global interdependencies in a variety of contexts. First, they looked through a global political lens and discussed the implications of a rising China and Russia in relation to the United States, questioning the impact of reduced American global influence. Second, they contemplated a shift in economic power from the West to East as a potential challenge to fiscal stability in domestic government budgets and resource availability. Third, a potential for disruptions in global supply chains could have significant consequences domestically. For example, Malaysia manufactures more than 60% of the world's latex gloves. A major disruption in the supply chain from this part of the world could impact medical workers and first responders in the United States. Fourth, an international disaster could have significant domestic implications. Two examples, the Icelandic volcano and the Haitian earthquake, focused attention on the broader impacts of disasters outside the United States borders. The volcanic eruption significantly disrupted international air traffic and the earthquake in Haiti had the potential to trigger mass migrations.

The emergency management community believes that increasing global interdependencies will lead to the United States having a greater role in emergency management internationally. A more global role for American emergency managers could have major resource and capability implications.

Government Budgets

The current economic crisis has brought the tenuous state of government budgets, particularly with respect to emergency management funding, into focus as a major driver of the future environment. Although it is plausible, even likely, that the United States economy will improve over the next decade, current state, local, and Federal budget forecasts are grim in the shorter term and could lead to emergency management funding sustainability problems.

Federalism and the role of state, local, and Federal governments in emergency management has been a key point of discussion. If resources continue to be constrained, there is a widespread belief that the Federal government will be expected to play a more significant role. Conversely, many have raised the possibility of an increase in partnerships with the private sector, perhaps including privatizing some emergency management activities.

Technological innovation and dependency

Rapid technological innovation is expected to continue over the next 15-20 years, which could dramatically change how Americans live, work, and play. The increasing adoption of mobile technology, medical breakthroughs, improvements in how we model and warn about disasters, and the implications of biotechnology and nanotechnology on the security environment are examples of important technological innovations that could dramatically influence emergency management.

This rapid innovation has lead to increased dependency on technology by the United States, including the emergency management community. Our communications, energy, and transportation infrastructure are all heavily dependent on technology. This dependency creates a significant vulnerability to cyber attack, particularly if our reliance creates single points of failure within our systems.

Although all technology experts we spoke with believed technology would continue to improve rapidly, many in the emergency management community think it appropriate to challenge that assumption by asking if a major technological mishap could trigger a broad public anti-technology sentiment. Additionally, some experts have suggested that technological advancement may slow as miniaturization is hindered by physical limitations. .

Universal access to and use of information

The explosion of social media and personal communications technology will continue to increase real-time access and delivery of information. We already see a significant amount of "spontaneous reporting" where individuals at or near the scene of an incident instantly post video, images, text messages, etc. from their personal communications device. This, combined with the 24/7 news cycle and the growth non-traditional sources of news such as social media, has created an environment of constant information flow that presents both with great opportunities (e.g., crisis mapping of the Haiti Earthquake) and challenges (information overload). The new patterns of information flow have changed the role of the mainstream/traditional media while making it increasingly difficult for emergency management to break through the cluttered information market. It is expected that information flows will continue to change with the prevalence of real-time "spontaneous reporting," as technology continues to transform how we communicate.

A few common themes have emerged in discussions on this driver. First, the information environment allows everyone to be both a producer and consumer of information. Second, the public has become much more information savvy, which is leading to more public

accountability. Third, information's legitimacy and accuracy must constantly be questioned and verified.

U.S. Demographic Shifts

Over the next 15-20 years, the U.S. Census Bureau expects significant demographic changes in the United States population. First, the overall population is expected to grow by 18%, with some states projected to grow by more than 30% by 2030. Second, the population will be more culturally and ethnically diverse, with dramatic increases projected in both the Hispanic and Asian populations. Third, the percentage of the population over the age of 65 is expected to increase from 12.4 percent in 2000 to 18.2 percent in 2025. Each of these changes individually could create challenges for emergency management operations; their combination exacerbates the challenges for future emergency managers.

Along with the shear population numbers, other demographic changes could impact emergency management. For example, where the larger population settles could affect what and how many resources emergency managers will need. Additionally, the implications of internal migration due to major disasters, such as what happened in New Orleans and Houston in the aftermath of Hurricane Katrina, could significantly impact the future emergency management environment.

In addition, many Americans continue to move to relatively densely populated areas. Currently, 83 percent of Americans live within a metropolitan area—which is defined as an area that has at least one urban area of at least 50,000 people but can include suburban and rural areas. The percentage of Americans living in these areas continues to climb. The growth in metropolitan America has a number of implications for emergency management, including buildings possibly be putting in more vulnerable areas (e.g. the coast), evacuations becoming more difficult (which could be compounded by aging infrastructure), access to medical resources could become strained, the consequences of microclimate changes could be magnified, infrastructure could become more vulnerable, and community structure and culture changes may occur as population increases.

Although demographic predictions are typically very accurate, some countertrends could impact these numbers. Medical breakthroughs could significantly extend life expectancy, immigration policy changes could severely restrict access to the United States, and/or a major disease outbreak could cause widespread population decline. The emergency management community will need to consider all aspects of demographics as it looks toward the future.