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Assessing Sheriff's Office Emergency and Disaster Website Communications

Abstract

Sheriff's offices are an integral component of the public health emergency preparedness and response system in the United States. During a public health emergency or disaster, sheriff's offices need to communicate with people affected by the event. Sheriff's office websites are logical sources for information about disaster preparedness and response efforts. No prior research evaluates emergency preparedness and response resources available through sheriff's office websites. The current research is a national study of sheriff's office websites to assess the availability of information relating to emergency preparedness and response. A content analysis of 2,590 sheriff's office website homepages was conducted to determine the presence or absence of nine communications elements important to people seeking information during an emergency or disaster. We found that 71.9% of sheriff's office website homepages include links to agency services and programs, but only 6.5% provide links to emergency preparedness information. The findings of the study are useful to assess emergency preparedness and the amount of response information available as well as to identify opportunities to improve sheriff's office website homepages.

Keywords: emergency preparedness and response, public health emergency preparedness and response, sheriff's offices

Assessing Sheriff's Office Emergency and Disaster Website Communications

Responses to emergencies and disasters require the dissemination of specific and reliable information to the public, including communication on what to do, where to go, and what help is available. The Internet has increasingly become the prime vehicle to inform individuals and society as well as victims about preparing and coping during and after emergencies and disasters (Hobbs, Kittler, Fox, Middleton, & Bates, 2004). In the United States, more than three out of four households (76.7%) have a computer with access to the Internet (U.S. Census Bureau, 2012). Nearly half of all American adults (46%) own a smartphone that provides Internet connectivity and web browsing capability (Smith, 2012). Although traditional media outlets remain an important source of information, the Internet provides news and content that is more easily and quickly accessible for many citizens—so much so that websites and their content can directly affect the overall quality of emergency responses and determine how well victims and the public are served during and in the aftermath of emergencies and disasters.

Emergency communications in the form of web-based content involve a network of public and private entities that includes the office of the sheriff. The sheriff has been identified as a key player within the domains of public health emergency response (McCabe, Barnett, Taylor, & Links, 2010; McKing, 2008), emergency preparedness (Drake, 2009; Giblin, Schafer, & Burruss, 2009; Wholey, Gregg, & Moscovice, 2009), homeland security (Oliver, 2009; Pelfrey, 2009), dissemination of information to increase citizen preparedness (Burch, 2012), and the prevention of terrorism (Pelfrey, 2007). Dating from over nine hundred years of tradition that traces its roots to medieval England, sheriff's offices in the United States employ over 353,000 personnel including 182,000 sworn officers (Reaves, 2011). The importance of this popularly-elected office within the American policing institution and the realm of emergency

preparedness stems from the sheriff's unique historical and organizational character, particularly the office's broad scope of legal authority and county-level jurisdiction (Falcone & Wells, 1995; Liederbach & Frank, 2006). The sheriff has evolved into a "multi-purpose office" with a broader range of responsibilities than those performed by municipal police agencies (Falcone & Wells, 1995, p. 130). The sheriff's prime responsibility is that of *conservator of the peace* as the chief law enforcement officer in the county. This function includes the role of public safety director and the promotion of public safety at the county level (Struckhoff & Scott, 2003). Most sheriff's offices are responsible for serving civil process and providing court security, and in many states the county sheriff's office operates the county jail and/or provides general law enforcement patrols of the unincorporated areas (Hickman & Reaves, 2006). Half of all sheriff's offices employ full-time school resource officers (Burch, 2012). The public can reach most sheriffs' offices by dialing enhanced 9-1-1 systems capable of displaying a caller's name, location, and special needs (Burch, 2012).

During an emergency or disaster, sheriff's offices need to communicate with citizens affected by the event, and sheriff's websites are logical sources for information about disaster preparedness and response efforts. We are aware of no published research, however, that evaluates emergency preparedness resources available through sheriff's websites. These data are integral to an overall assessment of the content and quality of information available to the public during emergencies and disasters given the sheriff's role as the county level public safety director and the fact that websites have become an important informational resource during these scenarios. The current research is a national study of sheriff's websites and information relative to emergency preparedness. We analyzed the content of website homepages for 2,590 sheriff's offices for the presence or absence of nine communication elements important to citizens seeking

information during and in the immediate aftermath of a disaster or emergency. These data can be used to assess informational communications available to citizens on sheriff's websites as well as identify opportunities to improve these websites and the provision of information and emergency services to the public.

Literature Review

No published studies assessing sheriff's websites for effectiveness of communications during an emergency or disaster could be found in the literature; however, there are two areas that provide a relevant context for the current study including: (a) literature on the role and function of the sheriff during emergencies and disasters, and (b) research on the identification of key elements of effective websites, particularly those studies focused on the evaluation of emergency preparedness resources available on the Internet.

The Sheriff and Emergency Response

The sheriff has been largely overlooked as a subject of study by scholars (Helms, 2008; LaFrance & Placide, 2010). Policing scholars have ignored sheriffs and instead portrayed the large urban municipal police department as the dominant mode of policing in the United States (Falcone & Wells, 1995; Liederbach & Frank, 2006). This gap in the literature is no small consideration given the vast organizational and functional differences between these offices and the more-often studied urban municipal agency. First, the sheriff derives authority directly through public election rather than administrative appointment. The political nature of the position supports open communication between the office and the public, as well as coordination between the sheriff and other social service agencies (Falcone & Wells, 1995). Second, sheriffs and their deputy officers typically patrol within a much larger geographic area than municipal police officers, including unincorporated rural areas and/or those having overlapping jurisdiction

within local municipalities. Third, the sheriff has historically been entrusted with a broader range of responsibilities than those performed by municipal agencies. Similar to the historical *shire-reeve*, the modern office of sheriff typically performs several functions in addition to traditional law enforcement, including court services, civil process and writs, correctional administration, and the collection of taxes and fees (Brown, 1989). Struckhoff and Scott (2003) emphasize the degree of variation across these offices nationwide, and the fact that sheriff's operating in smaller nonmetropolitan or rural counties differ from those who "report to an office in a skyscraper and manage an office whose budget exceeds that of many corporations or cities" (p. 68).

Despite these variations, the office of sheriff typically operates as a county-wide law enforcement agency that holds the potential for coordinating efforts designed to mitigate and respond to emergencies and disasters, such as the maintenance of county and civil law enforcement operations, search and rescue, perimeter security, and victim assistance (Hickman & Reaves, 2006). These traditional roles have expanded in the aftermath of the 2001 terrorist attacks and federal strategies designed to improve emergency preparedness and mitigate threats posed by terrorism (Murray, 2005; Pelfrey, 2007). Many agencies have recently developed Sheriff's Emergency Response Teams (SERT) to deal with emergencies that occur both inside and outside the jail system, including those that involve hazardous materials and natural disasters (Strandberg, 2004). Likewise, the National Sheriff's Association's (NSA) Institute for Homeland Security provides training in homeland protection to emergency responders including sheriff's deputies to become Certified Homeland Protection Professionals (CHPP) who specialize in the prevention and mitigation of all types of emergencies and disasters (National Sheriff's Association, 2012).

Evaluation of Emergency Preparedness Resources on the Internet

Studies on websites operated within the retail industry provide a basis for understanding how website design and content influences the user experience. For example, website content that is current and maintained by experts appears to contribute to success (Yen, 2007); but, poor website design can frustrate users and cause them to leave without making a purchase (Tan & Wei, 2006; Yeung & Lu, 2004). Although many features of retail websites are not immediately applicable to sheriff's websites, there is an emerging line of research focused on the evaluation of emergency preparedness resources on the Internet. These studies can be used to identify key elements critical for effective communications during emergencies and disasters and points of comparison between websites operated by sheriffs and those operated by other types of agencies, including local health departments (Fallon, Schmalzried, & Hasan, 2011), local emergency management agencies (Schmalzried, Fallon, Keller, & McHugh, 2011), and local chapters of the American Red Cross (Schmalzried, Fallon, & Harper, 2012).

These studies identified key elements for effective on-line communications during emergencies and disasters that were adapted from the criteria used by Kim et al. (1999) to assess health-related websites. Fallon et al. (2011) analyzed the content of websites operated by local health departments (LHD) based on the presence or absence of nine elements deemed to be critical for effective communications during emergencies or disasters. They found that four of five (80.5%) of LHD website homepages included the agency phone number, half (49.4%) provided links to emergency information, and one in five (19.6%) listed an agency email address. Less than one in 20 (4.3%) of the LHD homepages allowed visitors to sign up for automatic alerts or notifications. Schmalzried et al. (2011) analyzed websites operated by local emergency management agencies (EMA) and found that the content of these websites were

similar to those operated by LHDs in terms of the inclusion of agency phone number (82.3%) and links to emergency information (52%). Homepages operated by EMAs, however, were much more likely to list an agency email address (38.3%) and/or allow users to sign up for alerts or notifications (21.1%). Schmalzried et al. (2012) analyzed websites operated by local chapters of the American Red Cross (ARC). ARC homepages were more likely to include an organizational logo (95.7%) and/or allow users to sign up for alerts or notifications (23%) than either LHDs or EMAs. ARC homepages provided links to other disaster relief/emergency preparedness organizations or information (32%) less commonly than LHDs (49.4%) or EMAs (52%).

Method

A nationwide list of 3, 063 sheriff offices was obtained from the Census of State and Local Law Enforcement Agencies (CSLLEA) (U.S. Department of Justice, 2008). We utilized the nine point scale developed by Fallon, Schmalzried, and colleagues to indicate the presence or absence of important communication elements on these websites (Fallon et al., 2011; Schmalzried et al., 2012, 2011). Table 1 presents an overview of the evolution of essential communication elements derived in part from the guiding principles of emergency communications, and the corresponding webpage criteria developed by Kim et al. (1999). The right-most column in Table 1 lists the nine sheriff-specific website communication elements used in the current study. The homepage for each of the identified sheriff's offices were examined to determine the presence or absence of these elements: 1) organization logo (star-shaped sheriff badge), 2) date the website was last modified, 3) name of the top agency executive, 4) links to agency programs/services, 5) links to emergency preparedness information, 6) state where

agency is located, 7) agency phone number, 8) agency email, 9) availability to sign up for automatic alert/notification.

<<<<< Insert Table 1 about here >>>>>

Analytic Strategy

A quantitative content analysis was conducted of sheriff's website homepages to determine the presence or absence of nine communication elements important to citizens seeking information during and in the immediate aftermath of a disaster or emergency. Content analysis is a research methodology for making valid and reliable inferences from textual or other meaningful content to the contexts of their use (Krippendorff, 2013). Content analysis research involves a process where trained coders record their observation counts of specific units or variables on coding instruments based on predetermined coding definitions. Through this coding process each coder is inferring features of a nonmanifest context—in this case, emergency communication elements—from features of a manifest text. Content analysis is appropriate for this study because it provides a rigorous methodological framework allowing for replication using the nine-point scale developed by Fallon, Schmalzried, and colleagues (Fallon et al., 2011; Schmalzried et al., 2012, 2011) to extend their research on website communications in public health emergencies in the context of sheriff's office website homepages.

Coding was completed over a three month period beginning in March 2012 and involved two individual coders who were trained by one of the authors on the coding protocol and use of the coding instrument. Each of the coders was provided a list of one-half of the sheriff offices on the CSLLEA list. The coders utilized the Google[®] search engine to locate the official website homepage of the sheriff agencies. Coders indicated the presence or absence of each of the essential communication elements on the website homepages. Coders also indicated whether the

homepages included links to a sheriff office's Facebook[®] page and/or Twitter[®] address. We also recorded information on the state (using the 50 states and the District of Columbia), a measure of rurality using the U.S. Department of Agriculture's nine point Rural-Urban Continuum Codes (U.S. Department of Agriculture, 2003), as well as a variable from the CSLEEA that captured the number of full-time sworn employees in the sheriff offices and another that differentiated between those agencies providing routine patrol services and those agencies that do not provide routine patrol services. Coded data were recorded in an SPSS[®] data set for analysis. Completed coding instruments were scanned into encrypted digital PDF files for safekeeping.

Analytic procedures were undertaken to ensure reliability of the data. A third coder was employed to independently code a random sample of five percent of the total number of cases. The overall level of simple agreement between the three coders across the variables of interest in this study (88.45%) established a degree of reliability generally considered acceptable (see Riffe, Lacy, & Fico, 2005). Reliability was also computed for the nine variables making up the communication element scale using Krippendorff's alpha (see Hayes & Krippendorff, 2007). The Krippendorff's alpha coefficient is strong across communication element variables (Krippendorff's $\alpha = .765$). The intercoder reliability coding was performed in July 2012, several months after the primary coders completed their content analysis coding of website home pages. It is possible that some websites changed during this four month period, as web content is not static and sites are constantly being revised, content changes, and elements evolve over time. The alpha coefficient calculated may reflect such changes over time, and may not be indicative of problematic coder reliability.

Strengths and Limitations of the Data

There are no published studies assessing the degree to which local sheriff's effectively communicate during an emergency or disaster—despite the sheriff's integral role in emergency preparedness as the chief law enforcement officer within the vast majority of counties in the United States. This study fills this important gap in the scholarly literature using a methodology that allows data collection from sheriff's offices from across the nation. The study also utilizes a multi-dimensional measure of emergency preparedness and response resources available through the sheriff's websites. The methodology explores a form of communication that has and continues to gain prominence within emergency response networks.

These data have two primary limitations. First, the content analysis of website homepages does not assess other factors that likely indicate the degree to which local sheriff's may or may not communicate during an emergency or disaster. It is likely, for example, that large sheriff's offices devote more resources to the production of high quality websites than do sheriffs in rural counties where face-to-face interaction and more informal forms of communication may be more likely or even preferable to websites for the communication of emergency information. It is also possible that a website might not be available during an emergency. Second, the identification of official sheriff's websites was complicated by the existence of numerous "shadow" or non-official websites promulgated by candidates for the office of sheriff that were constructed to support upcoming political campaigns. These websites were not part of the official sheriff's website and were hosted on commercial servers with non-governmental uniform resource locators (URL). These "shadow" websites were subsequently identified and excluded from the analyses.

Results

A homepage for the official agency website was located for 2,590 (84.5%) of the 3,063 sheriff's offices in 46 states that participated in the 2008 CSLLEA survey. Four states (Alaska, Connecticut, Hawaii, and Rhode Island) and the District of Columbia do not have local sheriffs. Included in the sample are 30 city sheriff's offices for independent cities.¹ The results of the content analysis of website homepages are initially presented in terms of frequencies and percentages of the homepage communication elements for the entire sample, and measures of central tendency and dispersion for the entire sample. We also present the homepage communication elements disaggregated in terms of metropolitan versus nonmetropolitan sheriff's offices given that previous literature highlights the degree of variation across sheriff's offices nationwide and apparent differences between offices that operate in rural jurisdictions and those in urban and/or suburban areas (see Hickman & Reaves, 2006; Reaves, 2011).

Table 2 demonstrates that four communication elements appeared on most websites including: (a) state where the local law enforcement agency is located ($n = 2,376$, 91.7%), (b) name of the top agency executive ($n = 2,292$, 88.5%), (c) agency phone number ($n = 2,166$, 83.6%), and (d) links to agency programs or services ($n = 1,862$, 71.9%). Approximately one-third of the websites listed the sheriff star-shaped badge as an organizational logo ($n = 971$, 37.5%) and the email address of the agency ($n = 846$, 32.7%). The remainder of communication elements appeared much less frequently including availability to sign up for automatic alert/notification ($n = 328$, 12.7%), date the website was last modified ($n = 170$, 6.6%), and links to emergency preparedness information ($n = 168$, 6.5%).

<<<<< Insert Table 2 about here >>>>>

Measures of central tendency and dispersion are presented in Table 3. The mean number of communication elements found was $\bar{X} = 4.3$ ($SD = 1.17$). The median number of communication elements found was 4. The maximum number of communication elements found was 8, and the minimum number of communication elements found was 1.

<<<<< Insert Table 3 about here >>>>>

Table 4 shows how the content of website homepages for agencies located in metropolitan counties compared with those of agencies located in nonmetropolitan counties. We identified 986 sheriff's offices in metropolitan counties and 1,601 sheriff's offices in nonmetropolitan counties. Sheriff's offices located in metropolitan counties were statistically more likely to include links to agency programs and services (85.0%) on their website homepage than were sheriff's offices located in nonmetropolitan rural counties (63.8%). Similarly, sheriff's offices located in metropolitan counties more often included on their website homepage a star-shaped sheriff's badge as an organizational logo (50%) than were sheriff agencies located in rural nonmetropolitan counties (29.8%). Sheriff's offices located in nonmetropolitan counties were more likely to include agency phone number and/or email address than agencies located in metropolitan counties. The bivariate associations for the remaining communication elements were statistically insignificant at the $p < .05$ level, meaning that sheriff's offices in nonmetropolitan counties were just as likely as sheriff's offices located in metropolitan counties to include on their website homepage the name of their top executive, the ability to sign up for automatic alerts/notifications, and the date website was last modified.

<<<<< Insert Table 4 about here >>>>>

Table 5 presents the website homepage emergency communications elements for sheriff's offices providing routine patrol services compared to those sheriff's offices that do not provide

routine patrol services. Sheriff's offices that provide routine patrol services were statistically more likely to include links to emergency preparedness information (6.4%) than were sheriff's offices not providing the provision of routine patrol services (2.0%). Likewise, sheriff's offices that provide routine patrol services were also more likely to provide the ability to sign up for automatic alerts and notifications (12.4%) than were sheriff's offices not providing routine patrol services (6.9%). The bivariate associations for the other seven communications elements were statistically insignificant at the $p < .05$ level, meaning that those sheriff's offices not providing routine patrol services were just as likely as those sheriff's offices providing routine patrol services to include the other elements (i.e., state where located, agency phone number, agency email address, name of top executive, star-shaped sheriff badge logo, and date website was last modified) on their website homepage.²

<<<<< Insert Table 5 about here >>>>>

Discussion

Recent events reinforce the critical importance of clear and readily available information during emergencies and disasters—from the devastated beach-front communities paralyzed in the wake of Hurricane Sandy to the desperate city-wide lockdown, search, and eventual arrest of the suspects associated with the horrific Boston Marathon bombing. We sought to study how well local Sheriff's communicate vital information during emergencies and disasters through content analyses of their website homepages. Sheriff's offices have been identified as an integral part of the local emergency preparedness network, but the question of how well these offices communicate to citizens during these events has not been subjected to *any* degree of empirical scrutiny. The website homepages provide an opportunity to investigate a form of communication that is undoubtedly becoming more important within emergency

communications networks. Some points of discussion and recommendations for policy emerge from the research.

The degree to which sheriff's offices communicate through their website homepages during emergencies is in many ways similar to LHDs, EMAs, and ARC chapters across the nine communication elements scrutinized in the study (\bar{X} = 48.0, 45.9, 49.7, 45.6 respectively) (see Fallon et al., 2011; Schmalzried et al., 2012, 2011). The relative absence of substantial variation in the degree to which these different types of agencies exhibit the nine critical communication elements should not be surprising given that *all* of these types of agencies have been identified as key players within the local emergency preparedness network that share the responsibility to effectively communicate critical information during emergencies and disasters.

The research did, however, identify some key differences among these types of agencies in terms of the nine communication elements. For example, sheriff's offices' website homepages are more likely to list the name of the agency top executive (88.5%) than are LHDs (41.1%), EMAs (64.7%) and local ARC chapters (2.2%). The office of the sheriff is subject to a popular vote of the people, unlike the executive and administrative positions of local government health departments and emergency management agencies whose top executives are appointed civil servants. Likewise, the top executives of local ARC chapters are hired by a local board. The fact that sheriff's websites more commonly identify the name of the organization's top executive should be viewed as a consequence of the office's inherently political nature, as well as yet another indication of the sheriff's unique role within the realms of both local law enforcement and emergency preparedness. Popularly-elected sheriffs are likely to prominently and clearly identify themselves on the website to maintain public name recognition and bolster

bids for re-election. The website homepage provides unique opportunities to accomplish these and other goals irrespective of any current emergency or disaster.

On the other hand, sheriff's offices were much less likely to provide links to emergency preparedness information (6.5%) than were the other types of emergency services agencies including LHAs (49.4%), EMAs (15.1%), and local ARC chapters (32%). This finding seems to suggest a potential disconnect between scholars and others who analyze the operation of local emergency response networks and the perceptions of local sheriffs in regard to their priorities and role within those networks. The local sheriff has been identified as a key player in emergency response within the empirical literature; but, a majority of sheriffs may view themselves and their organizations as "crime fighters" rather than "emergency responders." This disconnect may be more prevalent in jurisdictions wherein the office of the sheriff is the *only* agency that provides primary law enforcement services. Further study of this can help to more directly measure the perceptions and priorities of local sheriffs in regard to their role within the local emergency response network, and the relative importance of that role *vis-à-vis* those activities that are more clearly related to law enforcement.

The study also underscored some critical problems for citizens seeking to utilize sheriff's websites during emergencies and disasters that are likely to confuse and/or complicate the gathering of critical information. For example, we note in the section that describes the limitations of our research that the study was complicated by the existence of numerous "shadow" or non-official websites promulgated by candidates for the office of sheriff that were constructed to support upcoming political campaigns. Some of these websites appeared at first glance to be the official website of a local sheriff's office, a situation that is likely to result in considerable confusion by Internet users during ongoing emergencies and disasters. Likewise,

close to one-third of the homepages failed to provide links to agency programs or services, and the homepages of only 63.8% of nonmetropolitan sheriff's offices provided such links. This could mean that a large portion of the sheriff's websites act merely as on-line "placeholders" providing only some of the reassurance critical to citizens during an emergency or disaster. More effective websites that include multiple links to additional programs and services could provide clarity and much-needed additional information to desperate citizens during emergencies and disasters.

One in eleven sheriff's office homepages failed to provide the geographic location of the agency by state. Although such information may seem obvious and relatively unimportant, citizens may not be able to immediately discern whether they are examining the intended website during an emergency or disaster. More than one-half (53.7%) of county names in the United States are duplicates (Fallon et al., 2011). For example, there are 23 local law enforcement agencies named "Lincoln County Sheriff's Office," 14 named "Greene County Sheriff's Office," and 12 named "Adams County Sheriff's Office." Others have confusingly similar names. There is a "Hot Spring County Sheriff's Office" in Arkansas and a "Hot Springs County Sheriff's Office" in Wyoming. There are agencies named "Allegany County Sheriff's Office" in Maryland and New York, "Alleghany County Sheriff's Office" in North Carolina and Virginia, and "Allegheny County Sheriff's Office" in Pennsylvania. The duplication and subtle differences in county nomenclature demands that sheriff's offices clearly identify themselves by city and state on the agency's website homepage, and within the related metadata tag keywords relied upon by search engines to locate the intended results for those searching for emergency information through the Internet.

Agency contact information was often lacking from sheriffs' offices website homepages. Roughly one-third (32.7%) listed an agency contact email address, and relatively few (12.7%) provided the ability to sign up on their website for opt-in automatic alerts and emergency notifications. Most sheriff's offices participate in emergency 9-1-1 systems (95% as of year 2007) and their deputies can be dispatched as a result of a call to 9-1-1 (Burch, 2012). So-called Reverse 9-1-1 systems are used in many jurisdictions to automatically call telephones in the area with a prerecorded voice message. The problem with these services is that they are limited to calling the universe of directory listed phone numbers having landline telephone service within a specific jurisdiction, as well other phone numbers—including cell phone and voice over internet protocol (VoIP) phone numbers—on an opt-in basis. As consumers drop traditional landlines in favor of cellular and VOIP phone services, counties and cities are increasingly adding automated emergency alert systems that send text messages to Internet-enabled devices in lieu of dialing phone numbers with a prerecorded voice message. Sheriffs' offices may not, however, be the lead county agency responsible for operating these emergency alert systems in many places and that could be reflected in the findings of the current study.

More generally, many of the sheriff's office websites we examined appeared amateur and failed to instill the confidence necessary to reassure the public during emergency and disaster situations. The fact that a majority of websites (62.5%) failed to display the well-recognized pointed-star badge—less than one-third (29.8%) of sheriff's offices in nonmetropolitan counties displayed a badge logo on their homepage³—may be indicative of the lack of graphics-savvy web developers in sheriff's offices more than anything else. Schmalzried et al. (2012) found that most local ARC chapters (95.7%) display the ARC logo on their chapter website homepage. This large disparity can be explained by the fact that the ARC promulgates brand standards on

their national organization's website with camera-ready artwork of the copyrighted ARC logo available for download and use by local ARC chapters (see American Red Cross, 2013) whereas sheriff's office logos are uniquely local.

Policy Implications

There are some clear policy implications generated from this content analysis study. First, we recommend that the nine communication elements identified in our study be used as a minimal standard for the content of sheriff's office website homepages. Uniform placement of the nine elements within a standardized sheriff's office homepage template should also be considered. Content management systems (CMS) commercially available as well as open source CMS software systems could be utilized by sheriff's offices to create, update, and manage website content without specialized knowledge of computer programming languages. The ease-of-use of web CMS software systems makes them invaluable especially in local government agencies that might lack in-house web developers and other information technology expertise such as non-metropolitan sheriff's offices. Costs are greatly reduced when using a web CMS instead of relying on customized computer programming to develop agency websites.

We recommend that any nonofficial website of a sheriff or bona fide candidate for an elected office of sheriff include a disclaimer prominently displayed on its homepage with a link to the relevant sheriff's office website homepage. The problem of these "shadow" websites identified earlier seems to be exacerbated by the webpage within the www.usacops.com domain name on the Internet. USACOPS® is a commercial website that bills itself "the nation's law enforcement site" that appears to be an online advertising platform for various banner and text advertisements delivered by one or more ad servers. The existence of websites and URLs associated with this online advertising platform and the "shadow" websites of those hoping to

successfully challenge the sheriff in an upcoming election serves only to confuse citizens searching for information during an emergency or disaster.

Additional research should study the use of social media such as Facebook and Twitter in emergency and disaster communications. Facebook is an online social networking service used primarily to connect people with friends and groups of interest. Facebook has been used to organize large groups of people in recent social movements and uprisings in Egypt, Libya, and Syria (Barker, 2013), to disseminate crucial information in disaster responses (Houston, 2013), and by public agencies for routine communications and during emergencies (Desouza & Bhagwatwar, 2012). Public agencies such as local health departments, however, are often slow to respond to inquiries posted on their Facebook pages (Fallon & Schmalzried, 2013) and unverified information can cause problems in disaster response during complex emergencies (Barker, 2013).

Twitter is a micro-blogging social networking service that allows users to send and receive short text messages (up to 140 characters) called “tweets.” Twitter has been used as an effective communication tool to establish situational awareness in social movements and activist communities such as at the 2010 Toronto G20 protests (Poell, 2013) and during the “Arab Spring” in 2010-2011 (Murthy, 2013). Twitter has proven to be successful in establishing situational awareness during rapidly changing emergency and disaster scenarios as varied as the 2012 Horseshoe Canyon fire in Jackson Hole, Wyoming (Kent & Capello, 2013), during the 2010 Pakistan floods (Murthy & Longwell, 2013), and whenever earthquakes are detected by the U.S. Geological Survey (Desouza & Bhagwatwar, 2012).

At the time of our research study only 15.3% ($n = 397$) of sheriff’s office homepages included a link to an agency’s Facebook page, and 7.9% ($n = 204$) included a link to an agency’s

Twitter address. These and other future forms of on-line social networking are likely to become prominent features of most if not every emergency response network in the United States. Our findings suggest that many sheriffs' offices have difficulty creating and maintaining a quality website homepage that can effectively link citizens and critical information during emergencies and disasters. This is an electronic age in which emergency information must be delivered in the most efficient and inexpensive method possible. Webpages suit this requirement and while most sheriffs' offices are supportive of webpages, their content is often lacking. These challenges are likely to become more complicated as the revolution in on-line communications and social media advances; and, the venerable office of the county sheriff seeks to redefine itself as a key player within the emergency response network going forward.

Notes

¹ Cities in the Commonwealth of Virginia are not in counties and are considered independent cities. The cities of Baltimore, Maryland, St. Louis, Missouri, and Carson City, Nevada, are also independent cities that are separate from counties.

² The bivariate relationship between the number of full-time sworn personnel employed in a sheriff's office and each of the nine communication elements was not explored because the number of sworn employees as a measure of agency size can be misleading as to sheriff's offices. In many jurisdictions the sheriff's office provides sworn personnel to work in jails and, sometimes, to provide courtroom security. We instead analyze agency size in terms of (a) the provision or lack of routine patrol services and (b) a binary measure of rurality in metropolitan versus nonmetropolitan counties.

³ This is a surprising finding because the American sheriff's badge is iconic in that it is different than the badges of most other state and local law enforcement agencies and because it is rooted in deep tradition. The distinctive five-point, six-point, seven-point, or even eight-point star-shaped badges were first fashioned out of the bottoms of old tin cans collected from garbage dumps by city marshals and county sheriffs in the 1870s across the frontier west and soon became the recognized badge of sheriffs throughout the United States (Virgines, 1966). Most sheriff's offices today incorporate some uniquely local version of the pointed-star logo on their uniform patches and cruiser doors (Claflin, 1997).

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Table 1. Evolution of Essential Communication Elements

Guiding principles	Webpage criteria developed by Kim et al.	Corresponding elements
Establishing credibility	Disclosure of authors, sponsors, developers (includes identification of purpose, nature of organization, sources of support, authorship, origin)	Organization logo (star-shaped sheriff badge)
Providing frequent and up-to-date information	Currency of information (including frequency of update, freshness, maintenance of site)	Date the web-site was last modified
Demonstrating leadership	Authority of source (includes reputation of source, credibility, trustworthiness)	Name of top agency executive
Collaborating with other organizations	Links (includes quality of links, links to other sources)	Links to agency programs/services & links to emergency preparedness info
Defining who is being served	Intended audience (includes nature of intended users, appropriateness for intended users)	State where agency is located
Ensuring multiple channels of information	Contact addresses or feedback mechanism (includes availability of contact information, contact address)	Agency phone number & email
Providing reassurance	User support (includes availability of support and documentation of users)	Availability to sign up for automatic alert/notification

Table 2. Sheriff Agency Homepage Communication Elements (*N* = 2,590)

Rank	Agency communication elements:	<i>n</i>	%
1	State where agency is located	2,376	91.7
2	Name of top agency executive	2,292	88.5
3	Agency phone number	2,166	83.6
4	Links to agency programs/services	1,862	71.9
5	Organization logo (star-shaped sheriff badge)	971	37.5
6	E-Mail address of agency	846	32.7
7	Availability to sign up for automatic alert/notification	328	12.7
8	Date the website was last modified	170	6.6
9	Links to emergency preparedness information	168	6.5

Table 3. Web-Site Communication Elements

Measure	Value
Mean	4.32
Standard deviation	1.177
Median	4
Range	7
Minimum	1
Maximum	8

Table 4. Sheriff Offices Communication Elements Present on Homepage: Bivariate Associations with Metro versus Non-Metro Counties (*N* = 2,590)

Agency communication elements:	Metro County (<i>n</i> = 987)			Non-Metro County (<i>n</i> = 1,603)			χ^2	<i>df</i>	<i>p</i>	<i>V</i>
	<i>n</i>	(Agency%)	%	<i>n</i>	(Agency%)	%				
State where agency is located	881	(89.3)	37.1	1,495	(93.3)	62.9	12.909	1	<.001	.071
Agency phone number	782	(79.2)	36.1	1384	(86.3)	63.9	22.544	1	<.001	.093
Email address of agency	282	(28.6)	33.3	564	(35.2)	66.7	12.133	1	<.001	.068
Name of top executive	882	(89.4)	38.5	1,410	(87.9)	61.5	1.179	1	.278	.021
Links to agency programs/services	839	(85.0)	45.1	1,023	(63.8)	54.9	135.702	1	<.001	.229
Links to emergency preparedness information	79	(8.0)	47.0	89	(5.5)	53.0	6.055	1	.014	.048
Availability to sign up for automatic alert/notification	137	(13.9)	41.8	191	(11.9)	58.2	2.133	1	.144	.029
Date website was last modified	61	(6.2)	35.9	109	(6.8)	64.1	0.382	1	.536	.012
Organizational logo (star-shaped sheriff badge)	494	(50.0)	50.9	477	(29.8)	49.1	107.354	1	<.001	.204

Table 5. Sheriff Offices Communication Elements Present on Homepage: Bivariate Associations with Routine Patrol Services (N = 2,574)

Agency communication elements:	Provides Routine Patrol Services						χ^2	df	p	V
	Yes (n = 2,531)			No (n = 143)						
	n	(Agency%)	%	n	(Agency%)	%				
State where agency is located	2,230	(86.6)	94.5	130	(90.9)	5.5	0.120	1	.729	.007
Agency phone number	2,038	(80.5)	94.7	113	(79.0)	5.3	2.278	1	.131	.030
Email address of agency	792	(31.3)	94.3	48	(33.5)	5.7	0.060	1	.807	.005
Name of top executive	2,152	(85.0)	94.6	124	(86.7)	5.4	0.432	1	.511	.013
Links to agency programs/services	1,742	(68.8)	94.2	108	(75.5)	5.8	0.999	1	.318	.020
Links to emergency preparedness information	164	(6.4)	98.2	3	(2.0)	1.8	4.810	1	.028	.043
Availability to sign up for automatic alert/notification	315	(12.4)	96.9	10	(6.9)	3.1	4.355	1	.037	.041
Date website was last modified	162	(6.4)	95.3	8	(5.6)	4.7	0.250	1	.617	.010
Organizational logo (star-shaped sheriff badge)	909	(35.9)	94.2	56	(39.1)	5.8	0.180	1	.671	.008