Texting 9-1-1 in Emergencies: Is It a Viable Option?

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Abstract

Today 83% of American adults own a cellular telephone and 73% of them send and receive text messages. There are emergencies in which it could be safer for a victim or witness to text 9-1-1 to avoid being heard by an offender. Only a few of the nation's Public Safety Answering Points (PSAPs) are capable of receiving emergency texts to 9-1-1. Surveys completed by Florida sheriff's offices and police departments indicate that texting 9-1-1 in emergencies in not a viable option. However, the Federal Communications Commission (FCC) has plans to implement Next Generation 9-1-1 (NG9-1-1) over the next 10 years that will allow for PSAPs to receive and respond to texts to 9-1-1.

Introduction

One of the deadliest shooting incidents in United States history took place on April 16, 2007, at the Virginia Polytechnic Institute. During the massacre, Seung-Hui Cho shot and killed 32 people and wounded 17 others. Students and witnesses hid to avoid being found by Cho and tried to send text messages to 9-1-1 that were never received. If these texts had been received, first responders might have arrived on the scene faster with firsthand intelligence. (Singel, 2010)

Is texting 9-1-1 a viable option? Could this technology help save lives and assist in prosecution of offenders? Are there situations in which a caller might be safer to text 9-1-1 instead of making a voice call? Could this technology make it easier for members of the deaf community to call for help? Can the law enforcement community afford the expense of implementation of systems to facilitate texting 9-1-1?

It is well known that in an emergency you must dial 9-1-1 to summon the assistance of law enforcement, fire fighters, or emergency medical personnel. Prior to the invention of wireless telephones, calling 9-1-1 from a landline telephone was the only option. About 70% of all 9-1-1 calls now originate from wireless phones. (FCC, 2010) CTIA – The Wireless Association estimates that the number of wireless phone customers grew 6% from 270.3 million in 2008 to 285.6 million at the end of 2009. (FCC, 2011)

The Pew Research Center Internet & American Life Project Study pointed out that 83% of American adults own wireless phones and 73% of them send and receive text messages. The study revealed that 31% of those surveyed preferred texts over a voice call and 14% indicated that the contact method they prefer depends on the situation. (Smith, 2011)

Literature Review

The voice-centric national 9-1-1 system was established in 1968 and last updated in 2001. The 2001 update added the capability for Public Safety Answering Points (PSAPs) or dispatch centers to identify the location of 9-1-1 calls originating from wireless phones through the use of Global Positioning Systems (GPS) or cell-tower location. The current 9-1-1 system is not capable of handling text messaging, multimedia messaging or streaming video. (Singel, 2010)

Research conducted by International Data Corporation noted that in 2012, 49.4% of the U.S. population used a smartphone. This number is expected to rise to 57.3% in 2013. By the year 2017, it is estimated that 67.8% of the U.S. population will use a smartphone. In the study, 7,446 18-44 year old U.S. smartphone owners were surveyed about their smartphone usage. The survey revealed that 84% of their time was spent on the smartphone communicating via text, email and social media. As little as 16% of their time was spent on phone calls. (IDC, 2013)

The Federal Communications Commission (FCC) reported that in the New and Emerging Technologies 911 Improvement Act of 2008, Congress tasked the National E9-1-1 Implementation Coordination Office (ICO) with developing “a national plan for migrating to a national Internet Protocol (IP) enabled emergency network capable of receiving and responding to all citizen-activated emergency communications and improving information sharing among all emergency response entities.” (FCC, 2011) This so called Next Generation 9-1-1 (NG9-1-1) will support IP-based communication of voice, text, data, photo, and video information from a caller to the 9-1-1 PSAP. The system will also be capable of identifying the location of the sender. (TSAG, 2011)

There are crime scenarios in which it might be safer for an individual to text 9-1-1 instead of making a voice call to avoid being heard and detected by an offender. One such example is the 2007 Virginia Polytechnic Institute shooting massacre. Students and witnesses attempted to text 9-1-1; however, the texts were not received. (Singel, 2010) Victims of domestic violence and victims of child abuse could contact 9-1-1 by sending a silent text message. (FCC, 2011)

The FCC reported that with NG9-1-1, reporting a crime such as a robbery or assault, would enable the caller to send important visual information such as a photo of the suspect or a vehicle involved in the crime, and would enable first responders to correlate this information with other sources, such as nearby security cameras, gunshot sensors, or alarm systems, and to quickly access relevant databases that could help identify the suspect or the suspect’s vehicle. Additionally, NG9-1-1 will accommodate a full range of specialized devices and functionalities which includes environmental sensors capable of detecting chemicals, personal medical devices, and telematics in vehicles or on consumer devices. (FCC, 2011)

Currently, members of the deaf community must utilize a legacy teletype printer or TTY device as a primary means to communicate with PSAPs. A TTY device is typically installed within a building and is generally not portable. With NG9-1-1, an IP-enabled mobile device will provide members of the deaf community with means to contact PSAPs from any location. The Emergency Access Advisory Committee Report on Emergency Calling for Persons with Disabilities Survey Review and Analysis 2011

indicates that 48.1% of the disabilities community would prefer to use text messaging to contact 9-1-1. (EAAC, 2011)

In a September 22, 2011, news release, the FCC announced that the assumed costs to transition to NG9-1-1 will be between approximately $1.44 billion and $2.68 billion. The news release goes on to state that the transition to NG9-1-1 will occur over the next ten years. (FCC, 2011) The FCC is the government agency responsible for regulating communications within the United States. The FCC must establish accepted regulatory standards for text-to-9-1-1 before nationwide implementation can begin. (FCC, 2012)

Text-to-9-1-1 will provide citizens with an alternate means of contacting and communicating with dispatch centers in emergencies. During an unusual occurrence or a natural disaster, voice communications systems can become overloaded. During times of high call volume, voice calls to 9-1-1 could be blocked. Text messaging uses far less bandwidth than a voice call allowing for a higher volume of text messages to be received by dispatch centers. It is possible for text messaging to be the only viable communication method when voice calls overwhelm the infrastructure. (FCC, 2012)

A small number of dispatch centers across the nation are currently engaged in ongoing text to 9-1-1 trials. In Black Hawk County, Iowa, residents who subscribe to Intrado and i Wireless, a T-Mobile affiliate, are able to text 9-1-1. However, the location of the sender cannot be identified. Black Hawk County representatives have credited text-to-9-1-1 with positive outcomes in several emergency situations. (FCC, 2011)

In 2012, the FCC reported that during the Black Hawk County trial, victims of domestic violence and child abuse sent texts to 9-1-1 because they feared being heard making a voice call to 9-1-1. (FCC, 2012) According to the FCC report, Black Hawk County did not encounter any text-related problems during the text-to-9-1-1 trial and Black Hawk County noted that, “SMS-to-911 is reliable and available, as clearly demonstrated in our project.” (FCC, 2012) Text messaging is also known as Short Message Service (SMS).

The Marion County, Florida Sheriff’s Office developed an in house text message to 9-1-1 system in August 2010 that cost $1,000.00. The program allows the Marion County Sheriff’s Office Communications Center to receive urgent text messages on a dedicated screen. The system does not identify the location of the sender. (FCC, 2011)

The City of Durham, North Carolina conducted an SMS-to-9-1-1 trial in partnership with Intrado and Verizon Wireless. The trial was designed for emergency situations involving persons who are deaf and those who want to avoid being heard making a voice 9-1-1 call. The system did not automatically identify the location of the sender. (FCC, 2011)

Estonia, Iceland, Luxembourg, Sweden and the United Kingdom already offer or are planning to offer services to allow for texting 9-1-1 in emergencies. The services in all of these countries will not automatically provide the location of the sender. (FCC, 2011) In May 2012, Verizon Wireless announced plans to implement text-to-9-1-1capability for its subscribers across the nationwide Verizon network. In June 2012, AT&T announced the goal of nationwide text-to-9-1-1 in 2013. (FCC, 2012)

Unlike the systems being tested by individual agencies, NG9-1-1 will provide location services. Also, it will not be restricted to specific cellular carriers or Internet service providers. (FCC, 2011) The FCC reported that each PSAP will have discretion

to decide if they will accept text messages to 9-1-1. There will be no cost to those PSAPs that do not accept text messages to 9-1-1. (FCC, 2012)

Method

Literature reviewed suggests that over the next ten years, the nation will transition to NG9-1-1 which will provide PSAPs with the capability to receive and respond to texts to 9-1-1 in emergencies. The reviewed literature also indicates that some dispatch centers have already partnered with private vendors to enable them to receive and respond to 9-1-1 texts. The purpose of this research is to explore the viability of texting 9-1-1 in emergencies to determine if its benefits will outweigh any negatives. To assist in this research, a Uniform Resource Link to an online survey was sent via email to 85 Florida sheriff's offices and police departments identified as having their own dispatch center.

Agencies were identified from a search of a Florida Department of Law Enforcement (FDLE) Criminal Justice Network web page titled Station Information Search. A check of each agency's website was then conducted to determine if each agency had its own dispatch center. In an effort to survey law enforcement agencies with somewhat similar budgetary needs, only those agencies identified as having between 20 and 100 sworn officers or deputies were surveyed. Agency size was identified from the FDLE 2010 Criminal Justice Agency Profile Report.

The survey consisted of nine open-ended and closed-ended questions designed to determine the viability of texting 9-1-1 in emergencies. Three of the questions were designed to ensure the accuracy of the survey. Question 4 was designed to identify the number of dispatch centers, if any, that currently have the capability to receive and respond to 9-1-1 texts. This question also requested the survey participant to briefly explain how their system works and the level of success experienced.

Question 5 was to be answered by those survey participants who did not answer "yes" to Question 4. Question 5 was designed to determine if each survey participant is aware of NG9-1-1 or other technologies allowing for texting 9-1-1 in emergencies. Question 6 was designed to determine how likely each agency is to implement technologies to allow for texting 9-1-1 in emergencies. This question asked the survey participant to consider prohibitive factors identified as the cost of hardware, software, and training of personnel.

Questions 7 and 8 were designed to determine the benefits and negatives of this technology. Specifically, Question 7 requested the survey participant to explain any incidents or situations in which texting 9-1-1 in an emergency could increase the safety of victims, witnesses, and first responders. Conversely, Question 8 requested the survey participant to explain any situations in which texting 9-1-1 in emergencies might be dangerous. Question 9 was designed to determine the survey participant's preferred method of mobile communication. Survey data was collected on June 1, 2012.

Results

A survey was developed to assist in research to explore the viability of texting 9-1-1 in emergencies to determine if its benefits will outweigh any negatives. Of the 85 sheriff's offices and police departments surveyed, 27 participated in the survey for a 31.8% response rate. Of the 27 surveyed agencies, 22 or 81.5% have a dispatch center and 18 or 66.7% of the survey respondents indicated they are in charge of or assigned to their agency's dispatch center. The survey focused on law enforcement agencies having between 20 and 100 sworn officers. Of the survey respondents, 25 or 92.6% indicated that their agency has fewer than 100 sworn officers.

Question 4 of the survey asked, "Does your dispatch center have the capability to receive and respond to texts to 9-1-1? If yes, please skip to Question 8". Question 4 of the survey also asked, "If yes, please briefly explain how the system works and the level of success experienced by your agency." Twenty-two or 88% answered "no" and 3 or 12% answered "yes". Two of the survey respondents who answered "yes" did not explain how their system works and the level of success experienced by their agency. The third survey respondent who answered "yes" wrote "N/A" as the explanation. Two survey respondents skipped the question entirely.

Question 5 asked, "Are you aware of Next Generation 9-1-1 or other technologies allowing for texting 9-1-1 in emergencies?" Eighteen or 69.2% answered "yes" and 8 or 30.8% answered "no". One survey respondent skipped the question entirely.

Question 6 of the survey asked, "Considering prohibitive factors such as the cost of hardware, software, and training of personnel, how likely is your agency to implement technologies to allow your dispatch center to receive and respond to texts to 9-1-1 in emergencies? Respondents were allowed to select one of the following four answers: not likely, somewhat likely, likely, and very likely. Seven or 29.2% answered "not likely", 9 or 37.5% answered "somewhat likely", 5 or 20.8% answered "likely", and 3 or 12.5% answered "very likely". Three survey respondents skipped the question entirely.

Question 7 of the survey asked, "Are you aware of any incident(s) that occurred in your jurisdiction in which your dispatch center's ability to receive texts to 9-1-1 could have increased the safety of victims, witnesses, or first responders?" Question 7 also asked, "If yes, please briefly explain what happened." Twenty-five or 96.2% answered "no" and 1 or 3.8% answered "yes". The one survey respondent who answered "yes" wrote "N/A" as the explanation. One survey respondent skipped the question entirely.

Question 8 of the survey asked, "Are there any situations in which texting 9-1-1 in emergencies might be dangerous?" Six or 24% answered "no", 19 or 76% answered "yes", and 2 survey respondents skipped the question entirely. As requested, 17 of the 19 survey respondents who answered "yes" briefly explained their answer. Nine or 52.9% indicated that texting while driving is dangerous and one of those respondents also indicated that texting while running away could be dangerous.

One respondent indicated that with texting, there can be no one-on-one discussion with the "caller" to ask questions that first responders will need answers to. Another respondent indicated that telecommunicators are trained to ask a series of questions for information that members of the public might not immediately provide in an initial text message to 9-1-1. This survey respondent indicated that the sender of a

text message to 9-1-1 might not be able to respond beyond the initial text message. This respondent also indicated concern regarding the inability for telecommunicators to hear background noises which often prove valuable in assessing a situation prior to the arrival of first responders.

Another survey respondent indicated that text messaging would not allow telecommunicators to hear screaming or background sounds that could help to determine the response level of first responders. One survey respondent indicated that texting back and forth is too time consuming and could delay critical information being delivered to first responders. Another survey respondent indicated that there is no way to verify who is sending a text because you cannot hear their voice and there is no way to know where they are texting from. One survey respondent indicated that texting is an often misunderstood and delayed one-way communication.

Another survey respondent indicated that it takes longer to send a text message than it does to make a voice call to 9-1-1. Likewise, another respondent indicated that text messaging is not as reliable as a phone call to 9-1-1. Lastly, a survey respondent wrote, “Lack of personal and needed information.” and another wrote, “Failure to respond.”

Question 9 asked, “What is your preferred method of mobile communication with others? Respondents were allowed to select one of the following five answers: voice conversation via telephone, text message, email, the method depends on the situation, and other. Nine or 34.6% answered “voice conversation via telephone”, 2 or 7.7% answered “text message”, 1 or 3.8% answered email, 14 or 53.9% answered “the method depends on the situation”, and none of the survey participants answered “other”. One survey participant skipped the question entirely.

Question 9 also asked survey participants “If other, please briefly explain.” Although none of the survey participants selected “other” as their response, one survey participant chose to briefly explain. The respondent wrote, “Or via radio talk group for agencies we deal with daily such as we have for EMS.”

Discussion

The results of the survey indicate that most of the respondent agencies in the State of Florida are “somewhat likely” or “not likely” to implement technologies to allow their dispatch center to receive and respond to texts to 9-1-1 in emergencies. Only one of the survey respondents was aware of any incident(s) in their jurisdiction where the dispatch center’s ability to receive texts to 9-1-1 could have increased the safety of victims, witnesses or first responders. Some survey respondents are concerned about the dangers of texting while driving. Others are concerned that during a text message conversation, telecommunicators will not be able to hear background noises that could assist them in determining the response level of first responders.

Only a very small number of survey respondents indicated that text messaging is their preferred method of mobile communication. More than half indicated that the method of communication depends on the situation. Most of the survey respondents are in charge of or assigned to their agency’s dispatch function and many of them are aware of NG9-1-1 and other technologies allowing for texting 9-1-1 in emergencies.

This is important because these are the people who are most likely to be directly affected by this technology. It is also important because most of the survey respondents answered from a perspective of at least an awareness of NG9-1-1.

The results of the survey suggest that texting 9-1-1 in emergencies is not a viable option. However, the reviewed literature indicates that Next Generation 9-1-1 will be implemented over the next 10 years. If the plan to upgrade the current national 9-1-1 system to NG9-1-1 is followed, it is likely that individual dispatch centers will need to take advantage of this technology. If the popularity of texting continues to grow, dispatch centers must adapt to avoid communication barriers between them and the public.

During the Virginia Polytechnic shooting massacre, students and witnesses attempted to text 9-1-1 in an effort to avoid being discovered by the shooter. These text messages were never received because the 9-1-1 system was not capable of receiving texts. In situations like this, a voice call to 9-1-1 is more likely to give away the hiding position of safety of potential victims than a text message to 9-1-1. From a hiding position of safety, a text message conversation can take place between the “caller” and the dispatch center. The “caller” could update the dispatch center in real time as the incident unfolds. This first-hand information could provide a tactical advantage to first responders.

If texting becomes the preferred method of communication, law enforcement is more likely to embrace this technology. As discussed in the reviewed literature, the current National 9-1-1 Program was upgraded in 2001 to allow for identification of the location of calls made from cellular telephones. However, some dispatch centers still have not upgraded their hardware and software systems to take advantage of this technology. In areas where these upgrades have not occurred, 9-1-1 calls from cellular telephones must be received at one dispatch center and then transferred to the dispatch center with jurisdiction. This is a possible scenario that could occur when NG9-1-1 is made available.

Each PSAP and dispatch center will need to upgrade local hardware and software systems to connect to the NG9-1-1 system. Hardware used to record voice calls to 9-1-1 must be upgraded to allow for recording of text message conversations, photographs, videos, email, and any other digital conversation that could occur between the “caller” and telecommunicators. This advanced hardware must be capable of storing large amounts of digital data with redundancy capabilities. It must also be capable of quickly transferring any form of recorded digital information to another PSAP or dispatch center. The cost of this hardware and software could prevent many PSAPs from taking advantage of NG9-1-1.

A limiting factor in this research is that texting 9-1-1 is not a hot topic in law enforcement. Although texting is gaining in popularity, it is not everyone’s preferred method of communication. Likewise, an unforeseen new technology might become the most preferred method of communication instead of text messaging. This research is important because the law enforcement community must continually examine new technologies that could assist law enforcement efforts. We must also research technological and societal trends in an effort to plan for change so that we can provide the best possible service to the communities that we serve.

Major Kevin Miller has been in law enforcement for 22 years. He began his career in 1991 with the United States Army as a military police officer. In 1994, he joined the Panama City Police Department as a patrol officer. He has served in every section of the police department and held many assignments to include Crimes Against Children, Internal Affairs, Crisis Negotiations Team Leader, Accreditation Manager and Information Technology. He currently serves as Major of the Investigative Services Section. Kevin is working towards obtaining a Bachelor's degree in Information Technology from Columbia Southern University.

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Appendix A

Texting 9-1-1 in Emergencies Survey

My name is Kevin Miller and I am Captain of the Panama City Police Department Professional Services Section. I am conducting a research project for the Florida Department of Law Enforcement Executive Institute Senior Leadership Program. My research project will explore the viability of texting 9-1-1 in emergencies. I am requesting that this brief survey be completed by an agency member in charge of or assigned to your agency's dispatch function.

If your agency does not have a dispatch center, I request that this survey be completed by an agency member with the authority to make purchasing decisions or recommendations. Survey results will not identify you or that your agency participated in the survey. So that I can meet the deadlines associated with my research project, I ask that you complete the survey before June 1, 2012. Thank you for your participation in this survey.

Question 1
Does your agency have a dispatch center?
Yes
No

Question 2
Are you in charge of or assigned to your agency's dispatch center?
Yes
No

Question 3
How many sworn officers does your agency have?
1 – 49
50 – 99
100 – 119
120 or more

Question 4
Does your dispatch center currently have the capability to receive and respond to texts to 9-1-1? If yes, please skip to Question 8. If yes, please briefly explain how the system works and the level of success experienced by your agency.
No
Yes

Question 5
Are you aware of Next Generation 9-1-1 or other technologies allowing for texting 9-1-1 in emergencies?
Yes
No

Question 6
Considering prohibitive factors such as the cost of hardware, software, and training of personnel, how likely is your agency to implement technologies to allow your dispatch center to receive and respond to texts to 9-1-1 in emergencies?
Not likely
Somewhat likely
Likely
Very Likely

Question 7
Are you aware of any incident(s) that occurred in your jurisdiction where your dispatch center's ability to receive texts to 9-1-1 could have increased the safety of victims, witnesses, or first responders? If yes, please briefly explain what happened.
No
Yes

Question 8
Are there any situations in which texting 9-1-1 in emergencies might be dangerous? If yes, please briefly explain.
No
Yes

Question 9
What is your preferred method of mobile communication with others?
Voice conversation via telephone.
Text message
The method depends on the situation.
Other
If other, please briefly explain.