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PLANNING IN NEW YORK CITY HOSPITALS FOR VULNERABLE  
POPULATIONS NEEDING COMMUNICATION OR LANGUAGE  
ASSISTANCE**

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AN EXAMINATION OF THE SUFFICIENCY OF EMERGENCY  
PLANNING IN NEW YORK CITY HOSPITALS FOR VULNERABLE  
POPULATIONS NEEDING COMMUNICATION OR LANGUAGE  
ASSISTANCE

A dissertation submitted in partial fulfillment  
of the requirements for the degree of

DOCTOR OF PROFESSIONAL STUDIES

to the faculty of the

DIVISION OF CRIMINAL JUSTICE AND HOMELAND SECURITY

of

THE LESLEY H. AND WILLIAM L. COLLINS

COLLEGE OF PROFESSIONAL STUDIES

at

ST. JOHN'S UNIVERSITY

New York

by

Rosemary McDonnell

Date Submitted 12/15/2022

Date Approved 12/8/2022

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Rosemary McDonnell

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Dr. Brian Harte

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## ABSTRACT

### AN EXAMINATION OF THE SUFFICIENCY OF EMERGENCY PLANNING IN NEW YORK CITY HOSPITALS FOR VULNERABLE POPULATIONS NEEDING COMMUNICATION OR LANGUAGE ASSISTANCE

Rosemary McDonnell

**Background:** While all populations are susceptible to certain hazards that may expose their vulnerabilities in a disaster, populations with no or limited English proficiency, sight limitations, and hearing limitations are especially at risk due to communication and language barriers that they consistently experience. **Purpose:** This study explored the sufficiency of emergency planning that vulnerable populations with communication barriers may receive in a New York City hospital setting. It investigated the emergency plans, procedures, and practices that hospitals have for these specific, at-risk populations. The sufficiency of these were measured in accordance with their ability to meet the appropriate regulatory standards in existence. By collecting demographic information and characteristics about the hospitals participating, this study tested correlations between these variables with the levels of emergency planning these populations are provided with while in these hospitals. **Methods:** This mixed-methods study attained valuable information on these areas by surveying and interviewing a population of NYC hospital Emergency Preparedness Coordinators (EPC's), from a sufficient representation of independent and healthcare systems hospitals; publicly and privately owned; located in different NYC boroughs; and with and without Emergency Departments. **Findings:** The results of this study draw our attention to the disparities in emergency and resiliency planning for these underserved populations with

communication barriers through a rigorous analysis of the various levels of pre-planning they are afforded before a disaster strikes in a hospital facility setting. The presence of a vulnerability characteristic, as well as type of vulnerability characteristic, were found to have effects on the level of sufficiency of emergency planning they may receive in hospitals. The qualitative results also provided an overview of the challenges associated with this type of specialized planning, as well as suggested practices to achieve it. **Conclusions:** The results of this study should have implications for all emergency management personnel in hospital facilities in terms of enhancing their planning to sufficiently address the needs of vulnerable populations in their emergency planning. Future research should seek to evaluate the sufficiency of the rigor and specificity of the requirements set forth by accrediting bodies for addressing the needs of vulnerable populations in emergency planning.

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*"There are two primary choices in life: to accept conditions as they exist or accept responsibility for changing them." - Denis Waitley*

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## CHAPTER 1: INTRODUCTION

The research topic for this study is the examination of the sufficiency of emergency preparedness and response planning that a vulnerable individual or population receives in hospital facilities. The Center for Disease Control (CDC) identifies six at risk groups during emergencies that help to form their Social Vulnerability Index. They are: socioeconomic status, age, gender, race, language proficiency, and disability (CDC, p. 1, 2015). While unique considerations need to be made for vulnerable populations in terms of emergency preparedness and response planning, the inability of private sector organizations and public agencies to do so effectively and consistently has been displayed, especially in the Healthcare and Public Health Sector of our nation's infrastructure. This study specifically examines those vulnerable populations that require specialized communication and/or language assistance, both during normal and emergency times.

While all populations are susceptible to certain hazards that may expose their vulnerabilities during a major disaster, populations with no or limited English proficiency, sight limitations, and hearing limitations are especially at risk due to communication and language barriers that they consistently face. This problem is important because the needs of vulnerable populations, such as specific crisis alerting needs to account for their physical communication barriers, are not sufficiently addressed. This exposes inequalities, as the needs of the general population typically are adequately addressed and considered in planning practices. The specific emergency planning needs of populations with no or limited English proficiency, sight limitations,

and hearing limitations in hospitals are guided by the six areas that The Joint Commission deems critical to evaluate in an emergency activation: communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs. Those with hearing, visual, and language impairments have unique communication, transportation, evacuation, and sheltering needs that must be planned for in advance. If hospitals do not devote aspects of these areas specifically and separately to each of the three vulnerable populations mentioned, then it can be assumed that their emergency plans for preparedness and response are not sufficient/enough to address the needs of these populations in an emergency and provide them with increased assistance.

Typically, the most vulnerable populations are those whose needs for specific planning and increased assistance are not sufficiently considered in the planning of local response and relief organizations (Flanagan, Gregory, Hallisey, Heitgerd, & Lewis, p. 3, 2011). During emergencies, for example, real-time evacuation information is not generally provided to people with no or limited English proficiency, the hearing and visually impaired, and other special needs groups, and their needs are generally not adequately addressed in most emergency operations plans (U.S. Department of Transportation, p. 4-26, 2006). In the wake of Hurricanes Katrina and Rita, which showed that language barriers in evacuation messages were a problem, the Gulf states began revising their emergency plans and procedures to be more inclusive and specifically address communicating evacuation information in multiple languages to meet the needs of a growing diverse population (U.S. Department of Transportation, p.

4-27, 2006). These examples show that, as opposed to integrating their unique needs into the emergency and resiliency planning processes, the needs of vulnerable populations in emergency situations are attempted to be met after disaster strikes and their inherent vulnerabilities are brought to light. While an all-hazards approach to emergency preparedness is an acceptable form of addressing the general needs of the population, regardless of vulnerability status, each approach needs to specifically address what modifications need to be made in order to meet the needs of each at-risk population that a healthcare entity may serve.

Before the problem is to be identified, the population at hand that is being affected by the issue must be defined. Vulnerable populations (or at-risk populations), within the scope of emergency management preparedness, response, mitigation, and recovery efforts, are defined as groups historically disadvantaged by socioeconomic status; patterns of discrimination and exclusion, or both; a lack of political representation; or cultural distancing (Phillips & Morrow, p. 61, 2007). This can include, but is not limited to, those with physical or mental disabilities such as chronic sensory, mobility, or cognitive impairments, those with low literacy or limited English proficiency, those with financial instability, the frail elderly, adolescent children, medically vulnerable, etc. For the purposes of this study, it has a specific focus on populations with no or limited English proficiency, sight limitations, and/or hearing limitations. Vulnerability, however, is not always a permanent or fixed attribute of a group or an individual. Vulnerability is a circumstantial characteristic that can come and go depending on

timing, the specific hazard presenting itself to the population, and/or the specific phase of the disaster.

Some individuals and groups, on the other hand, have permanent vulnerabilities that inherently lower their resiliency to hazards. These disenfranchised groups' and individuals' vulnerability status are defined by their social circumstances. Vulnerable populations represent significant elements of our communities, as all of us are vulnerable at some point in our lives. There is an 80% chance that any person will experience a temporary or permanent disability at some point in their lives (Nick, Savoia, Elqura, Crowther, Cohen, Leary, Koh, p. 338, 2009). Vulnerable populations are often constrained by poverty, physical or mental disability, health issues, low-English proficiency, and/or age. They can also be categorized by their additional needs before, during, and after an emergency incident in functional areas such as communication, transportation, supervision, and/or medical care.

The Federal Emergency Management Agency's (FEMA's) Guide for All-Hazard Emergency Operations Planning is commonly known as State and Local Guide (SLG) 101. This State and Local Guide (SLG) provides emergency managers and other emergency services personnel with information on FEMA's concept for developing risk-based, all-hazard emergency operations plans. Crucial to this system are emergency operations plans (EOP), which describe who will do what, as well as when, with what resources, and by what authority--before, during, and immediately after an emergency (FEMA, p. 3, 1996). While it is a known concept through SLG 101 that emergency planners should develop community emergency preparedness in order to limit the

amount of unnecessary improvisation in crisis response, plans have historically had an all-hazards approach for the general population. A whole of community approach to emergency planning must be applied towards a region in order to take into consideration the unique vulnerability characteristics of the individuals residing in their geographic area. Without specialized, regulated planning and outreach, the resources and awareness necessary to embolden and empower the residents of a community to invest in their own preparedness will not be accounted for. Subsequently, one size does not fit all when it comes to emergency response resources and preparedness campaigns. Traditional methods and concepts of emergency preparedness planning towards households, businesses, and government agencies need to be tailored in order to be applied towards the more non-traditional populations that make up a community. Vulnerable populations require specialized planning and more involved assistance when it comes to their personal preparedness. In a hospital setting, this principle is upheld. Vulnerable populations within hospital facilities must receive sufficient and specialized planning to meet their unique needs before, after, and during an emergency.

## BACKGROUND OF THE PROBLEM

Scholarship in the field has observed how disaster events expose inequalities inherent in populations by exponentially exasperating its effects. When organizations fail to reach those vulnerable, or marginalized, populations due to economic, social, physical, or cultural circumstances, lives are lost. There are certain social vulnerabilities inherent amongst these populations associated with warning messages and emergency notifications. One example, in particular, is the Saragosa, Texas tornado of 1987, where

two problems occurred in terms emergency warning messages (Phillips & Morrow, p. 61, 2007). The first issue was one of mistranslation of the word “warning” from English to Spanish by local media outlets. This caused confusion amongst the populations in Saragosa with limited English proficiency and downplayed the severity of the storm to them. The second issue, affecting the same population, was one originating from the lack of opportunity and information channels for this group of non-English speaking citizens. Watched heavily by these locals, and operating/originating outside of the local area of Saragosa, was a Spanish-language television station, which these citizens used as their news source during the disaster. Unfortunately, their only source of translatable information available to them in their city was not able to broadcast local warnings.

Another example of how social solidarity due to disabilities creates vulnerabilities exposed by disasters is a study of the 2003 tornadic vortex signature that passed over an Alabama school for the deaf (Phillips & Morrow, p. 61, 2007). Just as it was a prevalent problem in the aforementioned disaster, local broadcasting failed to reach this vulnerable population in their crisis communications and also failed to provide every individual with an accessible message regarding the hazard. Despite a federal requirement to do so, local television stations did not broadcast televised warnings of the storm with closed captioning. This is a common issue to occur in many extreme weather events, which is compounded by the problem of broadcast meteorologists often turning their backs to the cameras. This prevents the hearing impaired from overcoming the barrier of not being provided closed captioning by also taking away their ability to read the lips of the broadcasters. In both of these cases, these populations were stripped

of their ability to take appropriate action against a threat because they were not provided with a comprehensible message to aid in their decision-making process.

After action reviews from past disasters have suggested that vulnerable populations are often the most affected, as well as the most ill-prepared individuals disproportionately impacted. Past research has also implied that these specific, at-risk populations have not traditionally been given their own, individual considerations in emergency planning due to their unique, needs-based conditions. For example, the preparedness status of an individual can be affected by their housing characteristics, and specific type of housing has been shown to be an influencing characteristic of social vulnerability during an emergency. Homeless, households in multi-unit dwellings (e.g., multi-family high-rise housing such as apartments, condos, etc.), or assisted living facilities (e.g., nursing homes) are more likely to be limited in their ability to secure the recommended 72 hours of emergency materials and supplies as opposed to those living in single, detached homes. A 2012 study was conducted to examine the association between housing type and household emergency preparedness among households in Oakland County, Michigan (Murti, Bayleyegn, Stanbury, Flanders, Yard, Nyaku, & Wolkin, p. 1, 2014).

The results of this study suggested that individuals and families that resided in multi-unit dwellings had less access to suggested emergency supplies, as well as less evidence of preparedness planning, compared to individuals or families that reside in single, detached homes. This could be due to factors associated with living in a single, detached home, including easy access to a generator, alternate heat sources, back-up



method of cooking if utilities fail, and/or a 3-day supply of potable water. For example, more than 70% of households in single-detached homes had all three types of emergency plans in place; whereas less than half of the households in multi-unit dwellings had copies of important documents or an evacuation plan (Murthi, et al., p. 5, 2014). While past studies have effectively identified the inherent vulnerabilities and lapses in emergency preparedness planning for certain at-risk populations, they rarely transcend from the problem identification to propose solutions and suggested practices to address these issues. By directly interviewing emergency management personnel in New York City hospitals, this investigation included the requesting of suggestions from these experienced individuals on how to implement permanent solutions to address the inequalities in emergency planning and care that these populations face.

This study is also significant because the deficiencies in providing sufficient emergency planning for vulnerable populations have effects that reach past the individual. For example, the health-related impacts of a strain being placed on the Healthcare and Public Health Sector when vulnerable populations are not provided with proper care initially can be devastating and cascading. Ensuring our nation's ability to provide emergency preparedness support to vulnerable citizens before disaster events, as well as providing life-sustaining services immediately following disaster events, is a fundamental responsibility and mission of many non-governmental and private sector healthcare organizations. A significant component of this responsibility at the hospital facility level is prior identification of these populations, which can lead to more targeted planning efforts to meet their unique communication needs.

This issue has many considerations that are not easily defined or can be easily quantified. For example, while a vulnerability attribute can be identified, the severity of that attribute is difficult to measure in a standardized way. While a patient may have limited English proficiency, it is difficult to measure the exact lack of proficiency that they have as compared to another patient. While a patient may have limited mobility, it is difficult to measure that lack of mobility at any given point in time (i.e., pre-surgery compared to post-surgery). It is for these reasons why this study examines the plans and practices of hospital facilities to address the needs of the vulnerable populations with communication barriers that they may serve, as opposed to examining the populations themselves. A hospital's Emergency Operations Plan must account for any severity level of a populations' vulnerability according to the regulations set forth by various accrediting bodies, including The Joint Commission and the Centers for Medicare and Medicaid Services (CMS). They are required to have proactive strategies that seek to improve their emergency preparedness efforts and safeguard their at-risk patients. In addition, providing for the safety of vulnerable populations must be guided by the six areas that The Joint Commission deems critical to evaluate in an emergency activation: communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs.

Individual hospital facilities, however, have varying methods of forming and administering their emergency preparedness and response programs and initiatives, which makes it extremely difficult to measure in a purely qualitative way by examining these areas through analyzing individual hospital facility Emergency Operations Plans.

Hospital facilities may have very different makeups, as some may be independent, specialty hospitals, while others might be public, emergency care hospitals. Some may have robust emergency management departments and programs, while others might have small-scale operations and may merge emergency management with other departments and functions. It is for these reasons why this investigation was conducted as a mixed methods study that examined hospital emergency plans by conducting surveys and interviews focused on these six key areas (defined by The Joint Commission) with hospital facility emergency management representatives in the New York City metropolitan area. To attempt to address this issue, I have developed the research question as follows: **How does the vulnerability status of an individual or population with communication barriers affect their ability to receive sufficient/enough planning for emergency preparedness and response in a New York City hospital facility?** For my research hypothesis, I assume that there is a relationship between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in NYC hospital facilities. I sought to prove that their vulnerabilities, which often stem solely from certain physical and intangible conditions, cause them to be underserved as populations, which put their safety more at risk in hospital facilities who may be in emergency situations/activations.

#### CULTURAL COMPETENCY AND LINGUISTIC COMPETENCY

If the problem statement is to be defined as a lack of sufficient emergency planning activities specific to vulnerable populations with either no or limited English

proficiency, sight limitations, or hearing limitations in order to address their unique needs and considerations in disasters, then the concept of cultural and linguistic competency in disaster management must be addressed. The U.S. Department of Health and Human Services (HHS) defines cultural competency as “the ability of individuals and systems to respond respectfully and effectively to people of all cultures, classes, races, ethnic backgrounds, sexual orientations, and faiths or religions in a manner that recognizes, affirms, and values the worth of individuals, families, tribes, and communities, and protects and preserves the dignity of each” (National Technical Assistance and Evaluation Center for Systems of Care, p. 2, 2009). HHS further defines cultural competence to include elements of linguistic competence to account for “a set of congruent behaviors, attitudes, and policies that come together in a system, agency, or among professionals that enables effective work in cross-cultural situations” (Office of Minority Health, p. ix, 2001). To break up the phrase, culture would refer to “the patterns of behavior that include the language, thoughts, communications, actions, customs, beliefs, values, and institutions of racial, ethnic, religious, or social groups”... while competence implies “having the capacity to function effectively as an individual and an organization within the context of the cultural beliefs, behaviors, and needs presented by consumers and their communities” (Office of Minority Health, p. ix, 2001).

The emphasis on linguistics in this definition is especially pertinent to this study and its problem statement. As applied to healthcare, culturally competent care, whether seen through a clinical lens or an emergency planning lens, means mindfully attempting to

integrate specialized approaches in order to overcome any cultural, language, and communications barriers that may exist. In order to provide the best patient care possible, as well as to provide the safest environment possible for vulnerable patient populations with either no or limited English proficiency, sight limitations, or hearing limitations, hospitals must ensure that they are striving to provide understandable care in which the patient is being communicated with effectively, comfortably, and inclusively. Linguistic minorities include people with limited English proficiency (LEP), as well as the deaf and hearing impaired, and a social group recognized in the definition of cultural competence includes “disability”, which is inclusive of the sight impaired (SRA International, Inc., p. 12, 2008).

Essentially, the integration of cultural competency into emergency operations and planning means to ensure that culturally and linguistically diverse populations are not overlooked or misunderstood, and that they are afforded the opportunities necessary to receive the appropriate, unique services and resources they require to respond to disasters as effectively as the general population. The delivery of culturally and linguistically appropriate services during each phase of a disaster, especially the response and recovery phases, may help decrease the disproportional impact that disasters have on these minority groups (SRA International, Inc., p. 3, 2008). For example, an emergency response that would be recognized as culturally competent would sufficiently plan to provide language access services for limited English proficiency populations, which facilitate communication with vulnerable individuals or populations in the preparedness, mitigation, response, and recovery phases of a disaster.

In an organization, support for these types of programs must be paramount, as these services should be offered on an ongoing basis. This is especially important in healthcare organizations, as language access services should be offered to patients at every point in their care if needed, not just during emergencies.

A comprehensive strategy should be utilized to account for both linguistic issues, as well as literacy issues. This is especially relevant to emergency response planning and notification, as many emergency operations plans include visual tools as methods of communicating during emergency events. For example, during events that may cause power outages for extended periods of time, emergency operations may be assisted with the use of signage. These operations could include evacuations, alerting, or even directional signage to restrooms that may be difficult to navigate under emergency lighting. Emergency signage, however, may not serve in the best interest of every type of population, most notably the sight impaired. Communication gaps, such as not accounting for a certain vulnerable population's ability to comprehend or recognize a message in a form of communication used for the general public, can severely undermine a vulnerable population's ability to respond to an emergency as effectively as a member of the general public could. Every individual deserves the same amount of information in an emergency so that they are able to make informed decisions to reduce the risk posed to their health, safety, and or property.

In order to achieve cultural proficiency, continuous organizational improvements to cultural competency practices should be occurring to account for the everchanging landscape of the community in which it may serve. A hospital facility should be

prepared to provide culturally and linguistically competent care to its patients under emergency conditions, and it can be difficult to instill a culture that accounts for the needs of every single type of social group and linguistic minority. Developing culturally appropriate emergency management plans is a continuous process, much like the emergency management cycle. An organization's strategy for cultural competency should be evaluated alongside their Emergency Operations Plan during every after-action report from real events, as well as during every annual Hazard Vulnerability Analysis (HVA). Any obstacles that may or could have been presented to the potential vulnerable populations within their care should be accounted for in these reviews, which will serve to increase awareness and consideration of these populations on a regular basis. By incorporating the needs of vulnerable populations into organizational processes, the inclusiveness of the emergency planning program grows stronger and more encompassing as the organization matures. Rather than being a static, one-time achievement, cultural competence is a developmental process that evolves over time (National Technical Assistance and Evaluation Center for Systems of Care, p. 3, 2009).

Hurricane Katrina is an example of an emergency that did not include culturally competent planning or response actions in order to address the unique needs of Louisiana's most vulnerable populations. Not only did the aftermath of Hurricane Katrina reveal inadequacies in emergency communications, but it also revealed that minorities were disproportionately affected in terms of not being provided official support from local, state, or federal organizations to assist in their evacuation from impoverished neighborhoods. In terms of emergency warnings and notifications, the

U.S. government, at both the federal and state levels, did not provide appropriate warning to immigrant communities and did not assist them in evacuating from the disaster area (SRA International, Inc., p. 37, 2008). Similar to many other disaster responses in the country, there was a severe lack of ability to translate and send emergency messages effectively, if at all, in other messages besides English for populations with no or limited English proficiency, or in closed captioning for populations with limited hearing. This example clearly displayed a gap in emergency planning that should have accounted for barriers in communication and language prior to the onset of the storm, and it was compounded further by a lack of resources and cultural barriers. Though the only Spanish-language radio station in the New Orleans area did broadcast warnings and suggest evacuation, many immigrants did not receive necessary information at all (Muñiz, p. 5, 2006).

### SOCIOECONOMIC INTERSECTIONALITY

Hurricane Katrina did not only expose gaps in emergency communications for vulnerable populations with no or limited English proficiency and/or limited hearing. It also drew parallels between the intersectionality of disability and language proficiency with socioeconomic status. Limited English proficiency and disabilities have been strongly associated with socioeconomic disadvantages (Jang, Yoon, Park, & Chiriboga, p. 2 2016). The significance of this connection lies in the compounding factors contributing to the disadvantages that low socioeconomic status individuals face in all disaster phases, especially when those factors include characteristics that further



decrease their chances of receiving sufficient emergency warnings in a way that they can both comprehend and receive in a timely manner.

Furthermore, certain sociodemographic characteristics which represent a lack of power, status, and resources have been linked with limited English proficiency (Diwan, p. S185, 2008). These sociodemographic characteristics further decrease a low socioeconomic status population's chance of receiving sufficient and timely relief during and after a disaster. For example, several studies conducted regarding the response and recovery to earthquakes in California implied that "poor Latinos, undocumented immigrants, and monolingual ethnic groups" seemed to be the populations which were faced with the most difficulties in attaining resources and recovering (Carter-Pokras, et al., p. 466, 2007). The connection between low socioeconomic and communication barriers leading to less support during emergencies is not only prevalent in the response and recovery phases, but those phases are the most crucial in determining the amount of damage, both to person and property, suffered by these populations as a result. In the aftermath and recovery phase of Hurricane Andrew, low-wage Latinos with fragile homes and livelihoods had limited access to post-disaster resources (Peacock, Morrow, & Gladwin, p. 226, 2014)

Other studies suggest that racial and ethnic minorities are more vulnerable to disasters than non-Hispanic Whites for many reasons including, but not limited to, "socioeconomic differences, language barriers, minority preference for particular information sources (e.g., family), and distrust of governmental authorities" (Carter-Pokras, Zambrana, Mora, & Aaby, p. 465, 2007). A similarity of all of these factors is

communication and the modes and channels of communication that can be crucial to preserving life and property in a disaster. Concerning natural disasters and severe weather events, the accuracy, timeliness, and most importantly, inclusivity of the messages being sent by local, state, and federal entities can determine the impact that a disaster will have on a population. For example, during Hurricane Katrina, “70 to 80 Jamaican, Peruvian, and Brazilian immigrants who were employed as casino service workers in Gulfport, Mississippi,” were abandoned by their employer at the apartment complex where they resided (Muñiz, p. 5, 2006).

While local television stations were broadcasting evacuation warnings, unfortunately, none of these advisories were provided in Spanish or Portuguese. In this example, not only are the harmful effects of non-inclusive emergency warning communications displayed, but it also portrays how these communication barriers can be compounded with other socioeconomic factors, such as low income or lack of transportation. Since these same workers reportedly had no access to transportation in order to evacuate from the apartment complex, even if they had been able to interpret the evacuation warnings, they would have had no way to safely evacuate to the emergency shelters. This example clearly displays the need for advanced emergency planning for vulnerable populations, as the local government and traditional media outlets were unable to sufficiently warn them and provide evacuation information in languages and formats that are accessible during those critical hours before a disaster.

Proper and inclusive planning for vulnerable, at-risk populations includes providing them with the tools and resources to respond and recover quickly from emergencies, but

it also should attempt to mitigate the effects of disasters on these populations by providing them with proper means of emergency preparation. The results of a study examining the influence of a series of demographic and socioeconomic factors on preparedness outcomes for a sample of residents of the Rio Grande Valley implied that Latinos' lower preparedness is not simply a function of overall lower income, but perhaps other factors related to culture or demographics, such as age or language (Donner & Lavariega-Montforti, p. 729, 2018). If these socioeconomic and linguistic factors may negatively influence communications during the response and recovery phases of an emergency, similarly, these disparities in proper communication can manifest themselves in the preparedness phase. The outcomes of this study's analysis suggested that the independent effect of ethnicity should be tackled during policy planning alongside economic factors related to disaster preparedness (Donner & Lavariega-Montforti, p. 729, 2018). This means that preparedness programs, initiatives, and public service announcements should not only be tailored in terms of being made to be inclusive of all relevant languages, but there should also be an attempt to make them available to vulnerable populations in a way that will be attainable for them. For example, these messages can be included in Spanish-language announcements on television and radio programs that have high viewership from low-income Latino households.

To further examine the disparities in crisis communications and the connection between low socioeconomic status and language/communication barriers, the propensity for the utilization of technology in public warnings can serve as an example.

Mass notification has advanced significantly over the years, due large in part to technological advancements. Some of these technological advancements may include online platforms and applications that allow for the message sending entity to load pre-made message templates to significantly reduce the time it takes to form and send a mass notification for an emergency. These platforms may also provide for an efficient way to grant and limit access to individuals to be able to send a mass notification, and also to record and track the deliverability details to recipients. Some mass notification programs even allow for two-way communication between the message sender and their recipients to allow for better accountability and victim tracking during emergency situations. With the growing dependence on technology, especially cellular devices, more and more entities are attempting to send their emergency notifications to personal smartphone devices in order to reach their constituents quicker and more efficiently.

Most mass notification systems utilize cell phones and Short Message Service (SMS) or text messaging since many people have cell phones with them at all times, and there is a high level of redundancy in signal distribution (Pelfrey, p. 50, 2020). This practice of choosing to target cellular devices for emergency notifications, however, can be viewed as a non-inclusive practice for individuals of low socio-economic status who may not be able to own a smartphone or mobile device. Even though technological advancements have innovated and transformed the capacity for warning and disaster communication, reliance on these technologies may increase the ‘digital divide,’ or a gap between social groups that have access to digital and information technology, and groups without this access. Digital divide may “accentuate existing inequalities,

particularly among minorities, the elderly, and other poor segments of the population” (SRA International, Inc., p. 45, 2008). To account for this, a reliance on notifying populations through their mobile devices should never be the only source of emergency information and notification. While it can be an effective supplement to any crisis communications plan, other forms of notification, such outdoor warning sirens, should always be paramount for those who do not have access to their own mobile device.

### MEDICAL FRAGILITY AND DISASTER PREPAREDNESS

As this study examines the sufficiency of emergency planning for vulnerable populations with communication barriers (including those with either no or limited English proficiency, sight limitations, or hearing limitations) in a hospital setting, other considerations must be made in relation to the level of care which they require during their stay. Since this study is focused on these populations’ presence in a hospital facility, the concept of medical fragility should be addressed. The health status of a patient within a hospital typically determines the level of care that they require in that facility. This level of care may serve as a baseline for how much resources and assistance are provided to that patient. As such, it can be inferred that patients with higher and more specialized levels of care and health issues should also be afforded more assistance and resources during an emergency or disaster situation. Just as socioeconomic characteristics can be compounded with other vulnerability traits (such as no or limited English proficiency, sight limitations, or hearing limitations) to make an individual more disadvantaged and unable to respond effectively in a disaster

situation, severe medical conditions that cause individuals to be critically ill and/or medically fragile can do this as well.

According to the Centers for Medicare and Medicaid Services (CMS), a medically fragile condition is defined as, “a chronic physical condition, which results in prolonged dependency on medical care for which daily skilled (nursing) intervention is medically necessary and is characterized by one or more of the following:

*(1) There is a life-threatening condition characterized by reasonably frequent periods of acute exacerbation which requires frequent medical supervision, and/or physician consultation and which in the absence of such supervision or consultation would require hospitalization.*

*(2) The individual requires frequent, time consuming administration of specialized treatments which are medically necessary.*

*(3) The individual is dependent on medical technology such that without the technology a reasonable level of health could not be maintained. Examples include but are not limited to dependence on ventilators, dialysis machines, enteral or parenteral nutrition support and continuous oxygen” (U.S. Department of Health and Human Services, p. 4, 2019).*

Essentially, the medical conditions that cause patients to be considered medically fragile require advanced care and/or are dependent on technological equipment in order to ensure their survival. This makes medically fragile populations particularly vulnerable during a disaster when those advanced care services may be

disrupted and/or their life-sustaining technological equipment may stop working. For many of these medically fragile individuals who have persisting and complex health problems, their health conditions can be severely worsened by disaster conditions, particularly if they require supplemental oxygen, renal support, and mobility aids; are paralyzed; or are obese (Dries, et al., p. e76S, 2014). If medically fragile patients cannot access the specialized care that they require to live, the results could likely be fatal.

For hospitals, the most common location for medically fragile patients is in their Intensive Care Units (ICU's) or Critical Care Units. It is in these units where highly specialized staff should be assessing the risk to each, individualized medically fragile patient's health during a disaster. There are many ways that they can reduce this risk, which may include exerting more resources towards patients within the ICU (e.g., bringing in unscheduled staff, emergency ordering of specialized medical equipment from vendors, etc.) or reducing critical care need in order to focus more attention on current ICU patients (e.g., canceling elective surgeries that may require postoperative care in the ICU, performing patient load balancing by diverting ambulances with critically ill patients to other hospitals, etc.) (Rubinson, et al., p. 27S, 2008). Some disaster situations, however, may not allow for these mitigative actions depending on how abrupt, intense, and disruptive its effects are. It is for these reasons why sufficient emergency pre-planning for vulnerable populations is so important in hospital facilities.

The process of assessing and addressing the risks to life and safety for vulnerable patients should be second nature to staff in charge of maintaining their care. The ICU triage that should be performed by these specialized staff is essential in

disaster situations that require a hospital-wide patient evacuation. In the ICU, triage should identify situations where a higher level of care (according to complexity of the patient's condition) will be needed, in terms of who will benefit from the use of limited resources and in whom critical care will be futile (Echevarría-Zuno, et al., p. 230, 2013). A scale does not exist that identifies which exact patients will be first to evacuate according to the evacuation or relocation plans that a hospital may have created. Every single emergency and patient situation is different, and therefore, emergency plans are typically scalable and flexible to accommodate any type of hazard. While an informal triage guide can be formed to assess patient risk for determining their evacuation level, unique situations and risks can always occur. ICU staff should be trained on what criteria to evaluate when it comes to assessing medically fragile patients' priority to evacuate, which includes their need for technological life support devices, as well as their level of fragility. Most importantly, this assessment should be transmitted to hospital leadership through the line of communication delineated by the Hospital Incident Command System (Rubinson, et al., p. 24S, 2008). Communication remains paramount during an emergency response, especially internal communication and coordination during a full-scale hospital evacuation. With so many moving parts and varying units involved, proper and specialized pre-planning for vulnerable populations must be done to ensure that nothing falls through the cracks and risks safety or lives of their most fragile patients.

Just as the previous section displayed how sociodemographic characteristics further decrease a low socioeconomic status population's chance of receiving sufficient



and timely relief during and after a disaster, so too can medical fragility. Any kind of emergency or disaster that affects a large portion of a population has the potential to likely interrupt regular treatments and services for medically fragile patients. For instance, dialysis treatments, needed by patients with kidney failure and injury, are often disrupted during large-scale disaster events. During a post-Hurricane Katrina study, it was found that forty-four percent of 600 patients on chronic dialysis missed at least one session, and 17% missed three or more sessions with a concomitant increase in hospitalization post-disaster (Kutner, et al., p. 762, 2009). Disruption to dialysis treatments for medically fragile patients can be due to a myriad of reasons during disasters including disruption of supplies, effects on staffing, and limited supply chains. During Hurricane Katrina, a lack of sufficient communication was a unique and unforeseen challenge that disrupted dialysis services.

Communication was displayed as a key challenge in providing sufficient/enough emergency response to vulnerable populations in previous sections for populations with low-socioeconomic status, no or limited English proficiency, sight limitations, and hearing limitations. Similarly, the same issue of insufficient communication remains a prevalent influence on the inability to provide the necessary emergency response and medical response to medically fragile populations during a disaster. During Hurricane Katrina, medically fragile dialysis populations who listened to public service announcements were being told to drink plenty of fluids. However, these public service announcements were not taking into consideration the unique situations of medically fragile dialysis and heart failures populations, who should be limiting their fluid intake

(Kutner, et al., p. 764, 2009). In terms of emergency response to dialysis populations, communication failures also presented obstacles in administering their treatments and providing relief for these individuals. After Hurricane Katrina's landfall, chaotic civic conditions that preceded the enormous amount of flooding in the New Orleans metropolitan area interfered with dissemination of crucial information to local authorities (Kutner, et al., p. 764, 2009). While there were emergency plans in place by dialysis corporations to pre-identify medically fragile patients in order to easily assist them in obtaining dialysis services and transportation, supplies, and medications during a disaster, these plans fell short when their communication with local relief entities fell through. Without communication with and assistance from these relief organizations, such as the American Red Cross and first responder agencies, many patients were unable to be rescued in order to be provided with the dialysis services they required.

#### HOSPITALS IN THE WHOLE COMMUNITY FRAMEWORK

Properly examining the sufficiency levels of emergency planning for vulnerable populations in hospitals also entails recognizing where hospitals fall within the whole community response framework. Historically, focus on the response to disasters and public health has emphasized public sector initiatives including public health departments, emergency managers, and deployable medical teams. Thus, the private sector health care system in the United States is an integral component of the response to disasters and public health emergencies. These could include the outbreak of high-consequence infectious diseases, the care of displaced patients with chronic medical conditions following catastrophic natural disasters, as well as acute life-threatening

injuries related to mass casualty events. Effective response to health threats requires a whole-of-government strategy and engagement of the private sector health care system to align incentives and develop a business case for readiness. Hospitals should also parallel the whole community approach utilized by federal, state, and local emergency management agencies in order to account for all of their unique populations' needs during an emergency.

As defined by the Federal Emergency Management Agency, a whole community approach to emergency management is “a means by which residents, emergency management practitioners, organizational and community leaders, and government officials can collectively understand and assess the needs of their respective communities and determine the best ways to organize and strengthen their assets, capacities, and interests” (FEMA, p. 3, 2011). It entails a shared responsibility for preparedness among individuals, businesses, community organizations, nongovernmental organizations, schools and academia, media, and all levels of government. Through the establishment of relationships that facilitate more effective prevention, protection, mitigation, response, and recovery activities, the goal of a whole community approach is to lead to increased individual and collective preparedness and greater resiliency at both the community and national levels. Utilizing a whole community approach means ensuring that every stakeholder and planner sees the problem in the same way or with a common operating picture. This could include taking actions such as conducting community-based planning that engages the whole

community, as well as supporting plan development and execution to address any threat or hazard through an all-hazards approach.

Through a whole community approach, a shared responsibility for preparedness is reciprocal between hospitals and their local, state, and federal partners. This means that hospital preparedness plans and planning activities should include community involvement and participation. Through this constant collaboration, hospitals and their partners should gain a more informed, shared understanding of their constituents' risks, needs, and capabilities. Proactively identifying vulnerable populations within a community means that better outreach can be performed in order to engage them in emergency planning and preparedness activities. This can also serve to empower these populations to be more confident in their ability to respond effectively to emergency situations without relying on so many external resources for immediate support. This empowerment and citizen readiness are especially relevant for hospitals in emergency events that require mass critical care, such as a mass casualty event resulting from a terrorist attack. In these situations, resources can be stretched thin, and priority care must be given to those most in need. The more prepared and informed those non-urgent patients are, this will result in a more efficient disaster response for the hospital and healthcare system as a whole.

Healthcare coalitions (HCC's) serve an important function in this whole community response on a local, state, and federal level. HCCs are led by members representing various hospitals, and they are comprised of health care entities and other response entities that voluntarily work together in order to coordinate an emergency

response. Not only do they better the response capabilities of their community, but they also promote the sharing of information and best practices amongst members to enable more cohesive and inclusive emergency planning and enhance their health system's resilience. The response of evacuating hospitals in New York City due to Hurricane Sandy in 2012 is an example of how successful healthcare coalitions can promote a more resilient emergency response. Through the Emergency Preparedness Coalition of Manhattan (EPCOM), New York City hospitals had been forming strong relationships with one another prior to Hurricane Sandy's landfall. The establishment of EPCOM laid the groundwork for opening up lines of communication between Manhattan hospitals that would prove to facilitate a more efficient system of bed matching and patient transfers during the several hospital-wide evacuations that occurred as a result of Hurricane Sandy. The pre-established relationships with other hospital systems and other elements that were present in the coalition contributed to the successful evacuation of these multiple hospitals (Adalja, et al., p. 72, 2014). Some of these response functions of the coalition included conducting patient bed matching by working with clinicians (especially for medically fragile patients), 'receiving' hospitals making bed space available to evacuating/'sending' hospitals, and receiving hospitals making personnel available to evacuating hospitals. These arrangements may be facilitated by previously established mutual aid agreements or memorandums of understanding (MOU) between either individual hospitals within the coalition, or by establishing a coalition-wide MOU. Such agreements articulate roles and responsibilities, identify the process for distribution of funding sources, and facilitate

the integration of the preparedness community (Kim, p. 552, 2016). Being familiar with one's coalition partners and how to contact them in a timely manner can also have a noteworthy influence on keeping health care services intact during a disaster.

In some emergencies, the capabilities of neither individual hospitals, health systems, nor healthcare coalitions can effectively handle the demand for patient care due to extenuating and disastrous circumstances. These circumstances are often so dire because they are compounded (e.g., hurricanes causing power outages, flooding, fires, structural damage, unsecure situations, patient surge, etc.) and stress the health system's ability to respond effectively without additional support from local, state, and federal entities. Hospitals fall within the National Response Framework of our nation's emergency response infrastructure, which provides guidelines for interactions between public and private entities responsible for maintaining response capabilities throughout a disaster. The National Response Framework (NRF) provides foundational emergency management doctrine for how the Nation responds to all types of incidents, and it is built on scalable, flexible, and adaptable concepts identified in the National Incident Management System (NIMS) to align key roles and responsibilities across the Nation's responders (FEMA, p. ii, 2019.).

As part of this framework, community lifelines and Emergency Support Functions (ESF's) were developed to better organize essential services, such as health and medical services. The purpose of them is to enable the continuity of operation of functions critical to life and safety of the community. ESF's achieve this through establishing organizational structures to provide support, resources, program

implementation, and services, and they have proven to be an effective way to organize and manage resources to deliver core capabilities of an emergency response at all levels (FEMA, p. 21, 2019). Healthcare facilities, including hospitals, fall under ESF #8: Public Health & Medical Services. This ESF is supported by the health and medical community lifeline that assists in the areas of medical care, patient movement (including hospital evacuations), public health, fatality management, and healthcare supply chain during emergency situations. By having ESF #8 fall into local, state, and federal jurisdictions in an organized structure, support can be provided as necessary during a disaster as needed and determined by the ESF coordinating agency. ESF #8 attempts to allow hospitals to provide uninterrupted health and medical support to communities during emergencies by coordinating across the capabilities of partner agencies.

As mentioned, the National Response Framework was created due to the immense amount of entities that are involved in emergency responses. The NRF allows for a coordinated system to manage incidents for these entities in a cohesive and supportive way. The evolution of local, state, and federal involvement in hospital emergency operations is dependent on the severity of the situation and the hospital's capacity to handle it. The NRF provides guidelines as to how and when hospitals should be requesting assistance, and it allows for a central entity to prioritize assistance requests when the ESF becomes overwhelmed with them. This support system becomes especially important when critically ill patients comprise a significant portion of the overwhelmed health system's population. While healthcare coalitions and pre-existing

relationships between healthcare facilities is encouraged in order to not overwhelm state and federal resources in the initial response, an isolated response of individual healthcare facilities is discouraged when it becomes apparent that the risk for harm to critically ill patients has exceeded the baseline. It is in these instances where outreach to procure additional response resources must be initiated.

In situations where individual hospital or healthcare coalition assistance is not sufficient/enough to maintain a proper emergency response where patient life and safety are not at risk, hospitals involved would have typically already activated their Command Centers and Hospital Incident Command Structures (HICS). In these instances where more resources are required to manage the emergency response, the local ESF #8 should have also been activated to assist in operations. The ESF #8 coordinating agency is likely the local emergency management agency, which may have a local emergency operations center that would be staffed at this point. For New York City healthcare facilities, the New York City Emergency Management agency serves as this coordinating ESF #8 agency and has an Emergency Operations Center that is typically staffed with hospital and healthcare system representatives during a disaster. If local response becomes overwhelmed, then state assistance may be needed. After state assistance is overwhelmed, then federal assistance may be requested. The six layers to health and medical response management across intergovernmental and public-private divides typically follows this order: (1) individual hospital, (2) health-care coalition, (3) local jurisdiction, (4) state response, (5) interstate regional response, and (6) federal responses (Rubinson, et al., p. 24S, 2008). In this six-layer approach, assistance is



requested from one layer to the next when it is deemed necessary due to the inability of the previous layer to be able to reduce risk to life and safety of their patient populations, especially the medically fragile patients in critical care.

The position of hospitals in the National Response Framework relates back to the whole community approach in terms of the concept of shared responsibility. Each layer of the emergency response provided by ESF #8 should be interacting with each other prior to disasters to be building sufficient emergency response plans that incorporate one another and account for the resources that could be provided at local, state, and federal levels. Most notably, the pre-planning process that takes a whole community approach should help entities at all levels identify their gaps and vulnerabilities. These gaps may relate back to this study's problem statement, which accounts for the lack of inclusivity in emergency plans for vulnerable populations and not properly considering the unique needs of vulnerable populations in resiliency planning. While there are several definitions of vulnerable populations (which have been already stated in previous sections of this study), the U.S. Department of Health and Human Services has created a definition that aligns with the National Response Framework and Pandemic and All-Hazards Preparedness Act (PAHPA). It is based on the additional needs that vulnerable populations may have in an emergency incident in one or more of the following areas: (1) maintaining independence, (2) communication, (3) transportation, (4) supervision, and (5) medical care. (Dries, et al., p. e77S, 2014). It is the responsibility of all entities in ESF #8 to properly provide specialized plans to address these areas for the different types of vulnerable populations which they may

serve. Hospitals should be working with their healthcare coalition, local, state, and federal response partners in the National Response Framework in all phases of emergency management in order to properly identify these vulnerable populations in their community, define their unique needs in emergency responses, and plan to provide the necessary resources to address these needs and afford them the same chance at a successful emergency response as the general population is afforded.

### LEGAL AND REGULATORY FRAMEWORK

In order to properly define what level of emergency planning for vulnerable populations is deemed sufficient in hospitals, the expectations from regulatory agencies and from a legal standpoint should be reviewed. In terms of the legal requirements for hospitals to provide sufficient/enough emergency planning for the unique needs of all vulnerable populations which they may serve, several disasters have served as the impetus for the development of these requirements. Most notably, The Robert T. Stafford Disaster Relief and Emergency Assistance Act (“Stafford Act”), enacted in 1988, establishes a broad nondiscrimination mandate to protect vulnerable populations (Hoffman, p. 1533, 2009). The Stafford Act establishes the authority for FEMA operations following a Presidential disaster declaration, and it provides them with the legal authority to function inside the Federal government and in partnership with State and local emergency management agencies. These regulations work to ensure that all of these authorities accomplish relief activities “without discrimination on the grounds of race, color, religion, nationality, sex, age, disability, English proficiency, or economic

status” (FEMA, p. 14, 2003). These goals of the Stafford Act were tested during the federal government’s response to Hurricane Katrina.

The federal response to Hurricane Katrina can be defined as dismal, which served as the impetus for Congress to pass a new legislation in 2006 to make FEMA more of a distinct entity within DHS. Several examples can be used to display FEMA’s dismal response and relief efforts, especially for disaster victims of low socioeconomic status. Thousands of Hurricane Katrina victims did not receive FEMA assistance that was desperately needed in the next several months following the storm’s downfall. As a result, these victims continued to suffer harm because of FEMA subjection of them to economic discrimination (Pierre & Stephenson, p.480, 2008). The Stafford Act contains its own civil rights provisions, which prohibit discrimination in how assistance programs are implemented, specifically naming economic status to not be grounds for this type of discrimination. As one example, the decision of FEMA to terminate hotel and motel benefits for individuals who were disadvantaged by the disaster violated a congressional mandate to provide relief and assistance in an equitable and impartial manner without discrimination on the grounds of economic status (Pierre & Stephenson, p.482, 2008). Mostly all of the individuals still living in the FEMA-operated hotels and motels at this point were low-income, losing most of their possessions, jobs, and homes due to the storm.

Following the aftermath and unequal relief efforts of Hurricane Katrina, reforms to the Stafford Act were made to not only ensure socioeconomic status was not a basis for discrimination in response and relief efforts following a disaster, but substantial

improvements were made to ensure that the nondiscrimination mandate was more expansive and inclusive of many other types of vulnerable populations. For example, the position of Disability Coordinator in FEMA was created in order to aid in disaster planning for individuals with disabilities, emphasizing emergency planning requirements in specific areas that impact people with disabilities (i.e., crisis communication methods, evacuation planning, transportation, sheltering operations, temporary housing, etc.) (Hoffman, p. 1535, 2009). Hospitals should be mirroring the efforts of FEMA in their own emergency response planning activities at their facilities. The disproportionate harm suffered by those already disadvantaged provides special reasons for concern about their plight in disasters (Farber, p. 321, 2007). By following the guidelines set forth by the Stafford Act nondiscrimination mandate, hospitals can ensure that their emergency planning efforts are providing for specialized care and attention to their most vulnerable patient populations in order to avoid any unnecessary and discriminatory harm to their lives or safety.

Another significant legislation issued in 2006 in response to federal government response and recovery failures during Hurricane Katrina is the Pandemic and All-Hazards Preparedness Act (PAHPA). PAHPA influenced emergency response planning requirements for vulnerable populations, especially in the healthcare sector. This Act gives special attention to addressing the health and medical needs of vulnerable populations in emergency preparedness and response planning. However, it is extremely vague in terms of providing sufficient guidance for how its goal should be attained. PAHPA defines “at-risk individuals” as “children, pregnant women, senior citizens and

other individuals who have special needs in the event of a public health emergency, as determined by the Secretary of Health”, and it allows for, but does not require, the appointment of a Department of Health and Human Services (HHS) “Director of At-Risk Individuals” for emergency preparedness purposes (Hoffman, p. 1532, 2009). While the means to attain the goal of sufficient emergency planning for vulnerable populations is vague in PAHPA, the Department of Health and Human Services made credible progress towards this goal in the years following the Act’s passing.

Through PAHPA, the Assistant Secretary for Preparedness and Response (ASPR) acts as a leader for hospitals and encourages them to participate in emergency planning activities that support building on regional health care coalitions and better integrating public and private sector partners to improve preparedness and response. In a 2008 HHS progress report on the implementation of provisions addressing at-risk individuals, ASPR-funded programs to encourage and facilitate local hospital-level emergency planning for vulnerable populations were described. Through these federally funded preparedness programs, such as the Hospital Preparedness Program (HPP), hospitals must complete certain deliverables with guidance from ASPR. HPP has included the following language under overarching requirements for all activities: “Regarding the needs of At-Risk Populations, all goals, objectives, and activities proposed in the application should account for the public health and medical needs of at-risk individuals” (ASPR, p. 29, 2008). While this is a notable requirement, little evidence has been shown displaying the collective efforts of individual hospitals throughout the country to conform to this. HHS agency-level activities have certainly displayed their

efforts to protect vulnerable populations before, during, and after public health emergencies, but the enforcement of this same requirement for individual hospitals is not prevalent in HPP programming.

Another significant legislation issued to enhance the preparation and response capabilities for certain vulnerable populations during emergencies is Executive Order 13347, entitled “Individuals with Disabilities in Emergency Preparedness.” This Presidential Executive Order also establishes the Interagency Coordinating Council on Emergency Preparedness and Individuals with Disabilities in the Department of Homeland Security, which ensures that the Federal Government appropriately supports emergency preparedness and response initiatives for disabled populations and encourage their inclusion in emergency plans (Federal Register, p. 44573, 2004). To relate this legislation to the problem statement of this study regarding lack of inclusion of vulnerable populations in emergency planning, EO 13347 makes specific mentions and puts intentional focus on the implementation of emergency preparedness plans as they relate to “individuals with disabilities”. While this Presidential Executive Order does not define what exact populations are included in the term “individuals with disabilities”, it still legitimizes the concept that at-risk populations need specialized emergency plans to account for their unique needs in disasters. It served as an impetus for the federal government to form partnerships with state and local entities to proactively consider the needs of vulnerable populations in traditionally exclusive and non-specialized emergency planning and response activities. In the first few years after the formation of the Interagency Coordinating Council on Emergency Preparedness and

Individuals with Disabilities in the Department of Homeland Security, the unique needs of vulnerable populations were beginning to be highlighted in inclusive emergency exercises, as well as integrated into certain components of key disaster planning and response strategies (DHS, p. 2, 2010).

In terms of regulatory requirements, hospitals are guided by principles, rules, and standards from various accrediting bodies. The most prevalent accreditor guiding most hospitals and healthcare facilities is the Centers for Medicare & Medicaid Services (CMS). This is because CMS accreditation is necessary in order for a hospital to be certified as a Medicare and/or Medicaid hospital provider. Currently, the CMS Emergency Preparedness Rule §484.102(a)(3) that addresses this subject reads as follows:

*“(a) Emergency Plan. The [facility] must develop and maintain an emergency preparedness plan that must be reviewed, and updated at least annually. The plan must do the following:]*

*(3) Address [patient/client] population, including, but not limited to, persons at-risk; the type of services the [facility] has the ability to provide in an emergency; and continuity of operations, including delegations of authority and succession plans”*

(CMS, p. 14, 2019).

As seen in this Rule, the requirements for healthcare facilities are vague in terms of immediate emergency planning actions to take when planning for at-risk populations.

The CMS Center for Clinical Standards and Quality/Quality, Safety & Oversight Group did offer interpretive guidelines to this Rule that, that were stated as follows:

*“The emergency plan must specify the population served within the facility, such as inpatients and/or outpatients, and their unique vulnerabilities in the event of an emergency or disaster. A facility’s emergency plan must also address persons at-risk, except for plans of ASCs, hospices, PACE organizations, HHAs, CORFs, CMHCs, RHCs/FQHCs and ESRD facilities. As defined by the Pandemic and All-Hazards Preparedness Act (PAHPA) of 2006, members of at-risk populations may have additional needs in one or more of the following functional areas: maintaining independence, communication, transportation, supervision, and medical care. In addition to those individuals specifically recognized as at-risk in the PAHPA (children, senior citizens, and pregnant women), “at-risk populations” are also individuals who may need additional response assistance including those who have disabilities, live in institutionalized settings, are from diverse cultures and racial and ethnic backgrounds, have limited English proficiency or are non-English speaking, lack transportation, have chronic medical disorders, or have pharmacological dependency. At-risk populations would also include, but are not limited to, the elderly, persons in hospitals and nursing homes, people with physical and mental disabilities as well as others with access and functional needs, and infants and children.*

*Mobility is an important part in effective and timely evacuations, and therefore facilities are expected to properly plan to identify patients who would require additional assistance, ensure that means for transport are accessible and available and that those*



*involved in transport, as well as the patients and residents are made aware of the procedures to evacuate. For outpatient facilities, such as Home Health Agencies (HHAs), the emergency plan is required to ensure that patients with limited mobility are addressed within the plan” (CMS, p.14, 2019).*

While this interpretation does further define the populations which may be included in this definition of “at-risk”, there is still obvious room for further specification regarding the emergency planning requirements incumbent upon individual healthcare facilities. In order to better align with The Joint Commission requirements, this Rule could spell out these requirements (in terms of the specific areas in which healthcare facilities need to enact differentiated planning for the specific needs of at-risk populations) to be in line with the six areas that The Joint Commission deems critical: communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs. The Joint Commission offers bit more specification, in terms of actionable requirements for healthcare facilities, in their standards for this subject. The following standards addressed healthcare facility emergency planning for vulnerable populations before the Joint Commission revision of the Emergency Management chapter on July 2022:

*“EM.02.02.11—The Emergency Operations Plan describes the following:*

*EP 4. How the hospital will manage a potential increase in demand for clinical services for vulnerable populations served by the hospital, such as patients who are pediatric, geriatric, disabled, or have serious chronic conditions or addictions.*

*EP 6. How the hospital will manage its patients' mental health service needs that occur during an emergency.*

*RI.01.01.03—The hospital respects the patient's right to receive information in a manner he or she understands.*

*EP 2. The hospital provides interpreting and translation services, as necessary. . . .*

*EP 3. The hospital communicates with the patient who has vision, speech, hearing, or cognitive impairments in a manner that meets the patient's needs. . . .” (The Joint Commission, p. 3, 2014).*

As of July 2022, the Joint Commission revised its Emergency Management chapter to include the following language:

*Standard EM 12.01.01, EP 2: “The hospital’s emergency operations plan identifies the patient population(s) that it will serve, including at-risk populations, and the types of services it would have the ability to provide in an emergency or disaster event.*

*Note: At-risk populations such as the elderly, dialysis patients, or persons with physical or mental disabilities may have additional needs to be addressed during an emergency or disaster incident, such as medical care, communication, transportation, supervision, and maintaining independence” (The Joint Commission, p. 27, 2021).*

As displayed in these standards, not all types of at-risk populations are specifically identified, as well as their unique needs and vulnerabilities in emergency situations. For example, while standard EP 4 does address surge planning for some

vulnerable populations (e.g., pediatric, geriatric, disabled, or have serious chronic conditions or addictions), it does not specifically mention those with limited English proficiency. The new EM Standard 12.01.01, EP 2 has the same issue, as well as not specifying that the needs of these populations need to be met for all six of the critical areas; it only addresses medical care, communication, transportation, supervision, and maintaining independence. The need for more inclusive language in these standards is apparent, as well as more specific language regarding how these regulations should be met by healthcare facility emergency planners in all areas of communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs.

#### DEFINITIONS OF VULNERABLE POPULATION GROUPS

As previously mentioned, the specific vulnerable populations that this study focuses on are populations with either no or limited English proficiency, sight limitations, or hearing limitations, in the scope of the sufficiency of emergency planning for these populations at New York City hospital facilities. A full definition of these populations in this scope is necessary in order to perform this study. In defining these populations, their inherent and specialized needs should also be defined in the scope of emergency planning and response. In particular, emergency planning requirements are emphasized in the following areas that impact all three of these vulnerable populations and address their needs:

*“(1) methods of communication must include both visual messages and audio announcements so that they are usable by people with visual and hearing impairments; (2) evacuation plans should be designed to accommodate individuals with mobility, vision, hearing, cognitive, and mental health impairments; and (3) facilities must be fully accessible, staffed with individuals who are educated about the special needs of individuals with disabilities (e.g., communication)” (Hoffman, p. 1535, 2009).*

In addition to the emergency planning requirements outlined in the previous section regarding regulatory (e.g., CMS, TJC, etc.) requirements for healthcare facilities in planning for vulnerable populations, this excerpt highlights the importance that crisis communications play for these three specific populations examined in this study. Populations with either no or limited English proficiency, sight limitations, or hearing limitations all share a common vulnerability of requiring specialized forms of communication, especially in emergency situations. Through defining each of these three populations, their specific communication requirements are described, as well as their needs in terms of resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs, to be specifically considered according the six areas that The Joint Commission deems critical.

The **first population** to be defined is no or limited English proficiency populations. According to the U.S. Department of Health & Human Services, an individual is considered to have no or limited English proficiency if: (1) English is not their primary language; (2) they have difficulty communicating in English, including a limited ability to read, write, speak, or understand English; (3) they may feel more

comfortable speaking or reading a document to someone in a language other than English; and/or (4) they require an interpreter or document translation in order to have meaningful access to a facility's services (U.S. Department of Health and Human Services, p. 6-7, 2004). In order for effective communication to take place with no or limited English proficiency populations, a hospital must be able to provide language assistance or services to them in their native language, or their most comfortable language. The Centers for Medicare and Medicaid Services (CMS) recommends that healthcare facilities develop a language access plan for no or limited English proficiency populations, which details how they intend to accommodate these individuals in terms of providing language assistance or services. While language access plans can be tailored to fit each individual hospital's unique needs, it is suggested that all language access plans include five specific sections pertaining to a needs assessment, language services, notices, training, and evaluation (CMS, p. 2-3, 2011). An important role that should be designated by every hospital under CMS accreditation is a language access coordinator. The individual or group that maintains this role should be responsible for the overall formation, implementation, and monitoring of the hospital's language access plan.

The first portion of the language access plan is the needs assessment. The needs assessment outlines how a hospital will assess the language assistance needs of the communities it serves. It does this by analyzing internal data (such as call center information, electronic health records, etc.) and publicly available data (e.g., U.S. Census Bureau data on non-English languages spoken). The second portion of the

language access plan is the language services section which describes the hospital's plan to provide both verbal interpretation services and written translated materials. The third portion of the language access plan is the notices section which describes the hospital's plans and procedures for posting notices (e.g., "I speak" cards, taglines, etc.) regarding the availability of language assistance services in order to increase patient access to these services. The fourth portion of the language access plan is the training section which describes the hospital's plans and policies for providing and mandating staff training focusing on providing language access services. Topics may include the importance of providing language access services, how to effectively and respectfully communicate and interact with individuals with no or limited English proficiency, or organization's policies and procedures related to providing language access services, and this training is often included as part of the hospital's onboarding process for new hires (CMS, p. 9, 2011). The fifth and final CMS-recommended portion of the language access plan is the evaluation section which describes the hospital's plans and policies for monitoring and continually improving its language access services.

In the scope of emergency planning, hospital emergency managers should be collaborating with their facility's language access coordinator in order to develop specialized and meaningful plans for no or limited English proficiency populations within their care. By incorporating individuals charged with this population's everyday care within the hospital, the same types of methods can be applied to their care in emergency situations. In terms of crisis communication for no or limited English proficiency populations, specific notification tools, methods, or procedures should be

developed and implemented in order to alert them of emergencies, such as an evacuation or other actionable information pertaining to an evacuation. Additionally, non-verbal forms of communication should be considered to facilitate emergency operations, such as an evacuation. For example, pre-printed emergency evacuation signage in varying languages should be available to be printed or posted for populations with no or limited English proficiency during an evacuation. In terms of resources or assets, contracts or procedures should be developed to ensure that necessary translation services are available for no or limited English proficiency patients during an emergency. In an emergency where travel may be restricted, it is important to have proactive measures in place to ensure that essential services for vulnerable populations are not disrupted.

In order to ensure this continuity of services, essential staff people in an emergency should be trained on how to meet the basic needs of at-risk populations, including communication. For example, in terms of staff responsibilities for an emergency situation such as an evacuation, Security personnel (who would be assigned to certain hospital access points to prevent entry) should be trained on how to recognize populations with no or limited English proficiency and effectively interact with them to overcome language barriers. Security personnel are also listed by CMS as examples of “points of contact” for individuals with no or limited English proficiency within a hospital. At each point, the hospital should ensure that its services are linguistically accessible and appropriate (CMS, p. 5, 2011). In terms of utilities, the operators of fire and emergency alarm systems within a hospital should be given training on making

emergency announcements with modifications to accommodate for populations with no or limited English proficiency (e.g., repetition, rephrasing, and slowing of speech, etc.).

The **second population** to be defined is populations with hearing limitations.

According to CMS, the term hearing limitations can apply to the following individuals:

- (1) *“those who are deaf: do not see themselves as part of the deaf community, but might identify themselves as hearing or view their hearing loss narrowly as a clinical or medical condition. They might require a number of different communication approaches, including sign language interpreters, other auxiliary aids and services, or a combination;*
- (2) *individuals who identify as Deaf: view deafness as a part of their identity rather than a disability. Members of the Deaf community often use sign language as their primary mode of communication and share a broader set of cultural identities and beliefs. People who identify as Deaf might need a sign language interpreter; and*
- (3) *individuals who are hard of hearing: refers to anyone with mild to moderate levels of hearing loss, as well as a deaf individual who does not identify as part of the Deaf community. They are more likely to benefit from devices such as pocket amplifiers and other auxiliary aids. They may not understand sign language but might still require communication services of some sort”*

(CMS, p. 5, 2020a).



With any type of individual described above who has a hearing limitation, they share a commonality of having communication barriers that need to be supplemented with communication aids and services from health care providers in order to avoid any misunderstandings regarding their care. These communication aids and services may also serve to ensure that populations with hearing limitations receive an equal amount of resources that the general population does in terms of health information gathering, outreach programs, and mass media health care messages. The Centers for Medicare and Medicaid Services (CMS) recommends that healthcare facilities develop a comprehensive communication access plan for populations with hearing limitations, which details how they intend to accommodate these individuals in terms of providing the most effective plans and services for them to accommodate accessible and mutually comprehensible communication. To ensure effective communication with populations with hearing limitations, a hospital might need to provide auxiliary aids and services or reasonable accommodations, such as qualified interpreters, computer-aided transcription services, written materials, telephone amplifiers, assistive listening devices systems, and/or captioning services (CMS, p. 6, 2020a). An important role that should be designated by every hospital under CMS accreditation is a disability rights advocate or disability accommodations coordinator. The individual or group that maintains this role should be responsible for the overall formation, implementation, and monitoring of the hospital's communication access plan, and should also be responsible for overseeing compliance with federal disability rights laws.

The first portion of the communication access plan recommended by CMS is the needs assessment which “describes the needs of current or prospective health care patients who are deaf or hard of hearing; their “companions,” which includes family members and others involved in the individual’s care; and members of the public who are deaf or hard of hearing” (CMS, p. 8, 2020a). A main purpose of the needs assessment is to determine both the amount of individuals in need of communication access assistance, as well as to determine the extent of this assistance. Hospitals can analyze both internal (e.g., identifying the number of individuals they currently serve with hearing limitations) and external data sources in order to better understand their community’s needs. The second portion of the communication access plan is the determining of provision and types of services which will “typically consider individuals’ varied needs while identifying what services it will provide to meet those needs in both outpatient and inpatient settings (e.g., when and how auxiliary and aids services or reasonable accommodations will be provided)” (CMS, p. 12, 2020a). This may include providing visual aids at varying access points throughout the hospital, including assistive listening devices and systems, pagers or visual alarms for patient notifications, captioning systems, and/or written materials. Most importantly, for individuals who communicate almost exclusively through sign language, interpretation services should be provided [e.g., American Sign Language (ASL) interpreter, oral interpreter, cued speech interpreter, and/or computer-assisted real-time transcription].

The third portion of the communication access plan is the training section which describes how hospitals will properly and regularly train staff to ensure that they are

familiar with the communication access plan, including the policies and procedures for providing auxiliary aids and services or reasonable accommodations for populations with hearing limitations. Suggested CMS topics for this training include, “policies and procedures for providing auxiliary aids and services; respectful and effective communication with people who are deaf or hard of hearing and their companions; navigation of hospital stations, inpatient rooms, auxiliary aids and services, and discharge during an inpatient stay; and collection of data on patients’ communication needs and preferences (CMS, p. 16, 2020a). The fourth portion of the communication access plan is the evaluation which ensures that the policies and procedures addressed in the plan are being continuously upheld to the same standards under which they were formed, as well as being improved upon as the hospital progresses. By periodically updating the communication access plan, hospitals can remain contemporary and relevant in their forms of assistance for populations with hearing limitations, ensuring that they make the provision of auxiliary aids and services that are part of the most current standard operating procedures.

In the scope of emergency planning, hospital emergency managers should be collaborating with their facility’s disability rights advocates or disability accommodations coordinators in order to develop specialized and meaningful plans for populations with hearing limitations. By incorporating individuals charged with this population’s everyday care within the hospital, the same types of methods can be applied to their care in emergency situations. In terms of crisis communication for populations with hearing limitations, specific non-verbal notification tools, methods, or

procedures should be developed and implemented in order to alert them of emergencies, such as an evacuation or other actionable information pertaining to an evacuation. In terms of resources or assets, hospitals should have additional exit and directional signage in areas of low or no light to assist populations with hearing limitations. Considerations should be made because their balance could be affected in no- to low-light areas without visual references, which could affect their ability to respond effectively during a disaster. Hospitals should also have the appropriate visual signage in place for populations with hearing limitations during an evacuation (e.g., paper signage, visual reader boards, use of television screens in public waiting areas, etc.).

In terms of staff responsibilities, as previously mentioned, staff should be trained on their interactions with populations with hearing limitations and their ability to accommodate them. For example, a communication access plan might describe how security guards and those who staff information desks will identify that an individual might need auxiliary aids and services, what types of aids and services are available, and where to find them (e.g., knowing how to call for an interpreter if one is needed) (CMS, p. 16, 2020a). Similarly, in terms of emergency planning for an emergency such as an evacuation, Security personnel who would be assigned to certain hospital access points to prevent entry should be trained on how to direct populations with hearing limitations to a safe location or appropriate resource for specialized aid. In terms of utilities, hospitals' elevators should have both a telephone and an emergency signaling device to accommodate for populations with hearing limitations. In terms of patient care needs, hospitals should have a written procedure or plan regarding how individuals

responsible for patient movement in an evacuation will provide timely assistance to lead populations with hearing limitations to an area of refuge.

The **third population** to be defined is populations with sight or visual limitations. CMS defines populations with sight or visual impairments as individuals who are either: (1) “legally blind (having visual acuity [VA] of 20/200 or worse or a visual field of less than 20 degrees); (2) or are visually impaired (having VA of 20/40 or less)” (CMS, p. 2, 2020b). Regardless of if these individuals were born blind or lost their vision due to injury or disease, it is important to recognize that barriers related to written communication will be faced by these populations. In healthcare and hospital settings, effective communication with populations with sight limitations may require the provision of auxiliary aids and services, such as materials provided in braille, audio, large print, or accessible electronic formats (CMS, p. 2, 2020b). The Centers for Medicare and Medicaid Services (CMS) recommends that healthcare facilities develop a comprehensive communication access plan (very similar to the one recommended to develop for populations with hearing limitations) for populations with sight limitations, which details how they intend to accommodate these individuals in terms of providing the most effective plans and services for them to accommodate accessible and mutually comprehensible communication. Also, similar to the CMS recommended disability rights advocate or disability accommodations coordinator position previously described for populations with limited hearing, this role should be able to serve populations with limited sight.

Since the communication access plan will either mirror the plan developed for populations with limited hearing or will be shared to represent both populations with limited hearing and limited sight, only the specific additions or modifications for populations with sight limitations are discussed. To ensure effective communication with populations with hearing limitations, a hospital might need to provide auxiliary aids and services or reasonable accommodations, such as “audio recordings, materials and displays in braille, large print materials, screen readers, allowing a flexible appointment time to accommodate an individual being driven to appointments by someone else whose availability to drive is unpredictable, and/or letting someone other than the patient sign a form as proxy for an individual who is blind or has low vision” (CMS, p. 6, 2020b). In terms of the needs assessment portion of the communication access plan, it is important for hospitals to realize that populations with limited sight have varying degrees of residual vision and types of assistive devices needed. This can affect the types of services that are most likely to ensure effective communication with individuals with limited sight (e.g., offering large-print or high-contrast printed materials as opposed to materials in braille).

In terms of the provision and types of services portion of the communication access plan, hospitals will need to address how they can ensure effective communication with populations with limited sight, which may include addressing “which materials to provide in braille, large print, or other alternative formats; what type of accessible signage to produce; whether tactile (using braille or raised text) or high-contrast; which steps to take to produce materials in alternative formats (e.g., who

will produce the materials); determining what constitutes large print; deciding whether or not to provide certain materials, such as enrollment paperwork, in an electronic format accessible through a screen reader; and/or determining at what points and how to use verbal cues to more effectively communicate with patients who are blind” (CMS, p. 13, 2020b). Hospitals must also determine what verbalizing services they will offer, including assisting patients with written documents or paperwork by reading them aloud, identifying oneself verbally upon entering a room, etc. In terms of the staff training portion of the communication access plan, hospitals should consider specialized topics to be included in training sessions to pertain to populations with limited sight. These can include “respectful and effective communication techniques with people who are blind or have low vision and their companions; training topics on service animals, including recognizing a service animal, questions that can and cannot be asked about a service animal, respectful interaction with service animals, and location of pet relief areas” (CMS, p. 16, 2020b). Regarding the evaluation portion of the communication access plan, this process remains consistent for both populations with limited hearing and sight.

In the scope of emergency planning, it also remains consistent from the suggestion for populations with limited hearing that hospital emergency managers should be collaborating with their facility’s disability rights advocates or disability accommodations coordinators in order to develop specialized and meaningful plans for populations with sight limitations. In terms of crisis communications for populations with limited sight, specific non-visual notification tools, methods, or procedures should

be developed and implemented in order to alert them of emergencies, such as an evacuation or other actionable information pertaining to an evacuation. In terms of resources or assets, hospitals should have the appropriate visual, tactile, and/or Braille signage in place for populations with sight limitations during an evacuation. Hospitals should also have the appropriate, pre-printed emergency evacuation signage in Braille to post for populations with sight limitations during an evacuation.

In terms of staff responsibilities, as previously mentioned, staff should be trained on their interactions with populations with sight limitations and their ability to accommodate them. For example, a communication access plan might describe how security guards and those who staff information desks will identify that an individual might need auxiliary aids and services, what types of aids and services are available, and where to find them (e.g., knowing how to call for an interpreter if one is needed) (CMS, p. 16, 2020a). Specifically for populations with limited sight, Security personnel should be trained on how to appropriately direct these individuals to a large-print or tactile map of the facility. Additionally, these Security personnel will need to understand that service animals are allowed in a health care facility, even when other animals are not (CMS, p. 11, 2020b). Similarly, in terms of emergency planning for an emergency such as an evacuation, Security personnel who would be assigned to certain hospital access points to prevent entry should be trained on how to direct populations with sight limitations to a safe location or appropriate resource for specialized aid. In terms of utilities, it is recommended that hospitals' fire and emergency alarm systems have directional sound capabilities (audible signals that lead people to safety in a way



that conventional alarms cannot, by communicating the location of exits using broadband noise) or similar features to accommodate for populations with sight limitations. In terms of patient care needs, hospitals should have a written procedure or plan regarding how individuals responsible for patient movement in an evacuation will provide timely assistance to lead populations with sight limitations to an area of refuge.

For all of the three populations defined and described, hospitals may choose to develop three distinct plans (one language access plan for no or limited English proficiency populations, and two separate communication access plans for populations with hearing limitations and populations with sight limitations) to meet the diverse needs of individuals in these populations or instead choose to develop a single comprehensive plan that combines content related to each group (CMS, p. 5, 2020b). Hospitals should also consider incorporating all of these three populations into a specific section of their Emergency Operation Plans. Given their specialized needs and assistance during an emergency, these should be specifically outlined in either the main EOP document, or as an annex to it. Since “evacuation plans should be designed to accommodate individuals with mobility, vision, hearing, cognitive, and mental health impairments,” it is encouraged that hospitals make specific mentions of vulnerable populations in their Evacuation Plan or Annex within their EOP (Hoffman, p. 1535, 2009). Additionally, they should consider assigning one or more specific position(s) in the emergency organizational structure (e.g., Hospital Incident Command System) with duties assigned on their job action sheet specific to addressing the needs of populations with no or limited English proficiency, hearing limitations, and/or sight limitations in

the event of an emergency. Given their specialized needs and assistance during an emergency, specific individuals should be tasked with ensuring that the necessary steps are being taken to protect these at-risk populations.

#### RATIONALE FOR VULNERABLE POPULATION CHOICE

As previously mentioned, populations with either no or limited English proficiency, sight limitations, or hearing limitations all share a common vulnerability of having communication barriers and requiring specialized forms of communication, especially in emergency situations. More specifically, the types of communication barriers that these three populations may experience require specialized assistance in the form of (1) communication assistance; and/or (2) language assistance or services. The Centers for Medicare and Medicaid Services (CMS) provides detailed definitions for each of these forms of assistance:

*“Communication Assistance refers to services necessary for effective communication with individuals with vision or hearing disabilities. They may include auxiliary aids such as transcription services, written materials, assistive listening devices and systems, text telephones for deaf persons (TTYs), or large print or Braille materials” (CMS, p. 3, 2017).*

*“Language Assistance or Services refers to services used to facilitate communication with individuals who do not speak English, who have limited English proficiency, or those who are deaf or hard of hearing. These services can include*

*qualified in-person interpreters, qualified bilingual staff, sign language interpreters, or remote interpreting systems such as telephone or video interpreting” (CMS, p. 3, 2017).*

Both of these forms of assistance are important to provide for the appropriate populations who require them. Access to communication and language assistance or services is important for both patients and hospital providers in order to ensure that the needs of patients and delivery of their care is mutually understood and agreed upon. In the scope of emergency planning at hospital facilities, communication and language assistance or services that are provided to patients by other departments pre-disaster should be incorporated Emergency Operations Plans in order to account for the needs of these populations in emergency situations. The needs of these populations in non-emergency times mirror their needs in a disaster. If communication barriers exist in a patient’s delivery of care, the situation will persist in a time of crisis where the patient needs to be properly warned of emergency situations and their expected response in reaction to those situations. “For [healthcare] providers to ensure equitable care for all of their patients and consumers, they must first understand the language and communication assistance needs of their limited English proficient and visual- and hearing-impaired individuals” (CMS, p. 4, 2017). The same concept applies to emergency managers responsible for the equitable disaster and resiliency response planning for all hospital constituents. Emergency Management departments within hospitals should collaborate with other departments responsible for ensuring the language and communication assistance needs of their limited English proficient and

visual- and hearing-impaired populations are being met, in order to implement inclusive and comprehensive emergency plans that account for these needs.

This concept does not only apply to these three populations' emergency care and planning in hospital facilities, but rather, their need to receive specialized, accessible forms of effective communications before, during, and after disasters has been examined on much broader levels. Commonly grouped together under examinations of their ability to receive effective communications before, during, and after emergencies, populations with either no or limited English proficiency, sight limitations, or hearing limitations have traditionally been similar in their experiences in terms of receiving inadequate or unavailable communications during these instances. In an examination of the current state of affairs concerning the accessibility of emergency-related communications for people with disabilities by the National Council on Disability in a letter to the President and Congress, these three populations were examined under the same lens. This study was significant in that it listed the challenges in responding to emergency communications that people with specific disabilities might face, as well as disability-specific solutions (National Council on Disability, p. 42, 2014). Similar to the study that is being proposed, it examined the gaps in emergency planning for populations with communication barriers (e.g., limited English proficiency, sight limitations, or hearing limitations), yet it still separated them in terms of their specific needs during a disaster. It concluded by stating that, "for people with disabilities and others with access and functional needs, this [the specific and distinct communication medium] is an imperative consideration, as they may need alternative means of

“hearing” emergency communication if they are deaf, hard of hearing, blind, have low vision, intellectual or developmental disabilities, or limited English proficiency”

(National Council on Disability, p. 41-42, 2014).

To further support this connection of all three populations in this study, there are practical applications that set this precedent as well. Several statewide departments of human services have offices and programs which specifically are charged with addressing the needs of populations with either no or limited English proficiency, sight limitations, or hearing limitations. As an example, the Georgia Department of Human Services has a “Limited English Proficiency and Sensory Impaired (LEP/SI) Program” which supports individuals who do not speak English as their primary language and have a limited ability to read, speak, write, or understand English; as well as individuals with sensory impairments, who are Deaf or hard of hearing and communicate using American Sign Language, have speech impairments, or that are blind or have visual impairments (Georgia Department of Human Services, p. 3, 2021). Through this program, Georgia DHS adheres to its policies to provide meaningful language access to “limited English proficient customers and equal access to sensory impaired customers to all programs and activities conducted or supported by the Department” (Georgia Department of Human Services, p. 3, 2021). This may include offering communications resources for program information in alternative means such as Braille, large print, audiotape, American Sign Language, etc. Similarly, the St. John’s County Department of Health and Human Services in Florida developed a plan to provide auxiliary aids for persons with disabilities and limited English proficiency. The plan “provides for the

implementation of policy and establishes procedures for the provision of auxiliary aids ensuring accessibility to all programs, services, and employment to persons with disabilities”, including those with visual impairments, hearing impairments, and limited English proficiency (St. John’s County Department of Health and Human Services, p. 2, 2017). Professional organizations have also grouped these populations together in terms of their communications needs, such as the American Physical Therapy Association, and similarly define individuals with limited English proficiency to include those with sensory impairments, who are Deaf or hard of hearing and communicate using American Sign Language, have speech impairments, or who are blind or have visual impairments.

Referring back to these populations in the lens of healthcare, just as “communication and language barriers are associated with decreased quality of care and poor clinical outcomes, longer hospital stays, and higher rates of hospital readmissions”, these same barriers have been shown to account for more disastrous effects on vulnerable populations from emergencies where the general population fares better (CMS, p. 3, 2017). Since these three populations share common assistance needs, by carefully constructing survey and interview questions to assess the level of specialized communication and language assistance hospitals are able to provide in terms of emergency planning, that assessment and the results can be applied to all of the vulnerable populations considered in this study that have communication barriers. As precedent to defend using all three of these populations in one study, CMS conducted a study in 2017 to better understand key characteristics of the Medicare beneficiaries that

need and want communication and language assistance services, whereby they analyzed data from the 2014 ACS PUMS (an ongoing survey conducted by the U.S. Census Bureau that includes measures related to English proficiency, hearing, and vision disability status) (CMS, p. 5, 2017). This study concluded that “understanding and addressing communication and language assistance needs are essential to the successful delivery of high-quality health care because communication and language barriers are associated with decreased quality of care and poor clinical outcomes” (CMS, p. 18, 2017).

This study serves as the impetus for hospitals to ensure that the same level of communication and language assistance is accounted for in their disaster plans to enable these populations an equal opportunity for a successful emergency response. It is also important to consider that some individuals may have multiple disabilities and may be characterized as belonging to several groups of vulnerable populations. An accurate level of sufficiency of hospital emergency planning for vulnerable populations may not be able to be gained from just examining one population alone. At least in terms of crisis communications, the sufficiency of these plans should at least account for both types of assistance pertaining to communications (communication and language assistance) that address both linguistic, visual, and audible vulnerabilities of patient populations.

By including more than one or two populations in this study’s comprehensive examination of emergency response planning of hospitals, a more holistic approach can be taken to measuring the sufficiency of these plans. Only examining one population’s

sufficiency of emergency planning would not be a holistic approach in attempting to measure this sufficiency for all vulnerable populations who may have communication barriers. As detailed further in the Measurements section, the Emergency Planning Sufficiency scores for each of these three populations respectively were separately analyzed and compared to examine if any differences in them exist. By collecting data on the sufficiency of emergency plans for each of these three populations separately, this study was able to use its collected data to determine what relationships, if any, hospital demographic characteristics have with the level of emergency planning sufficiency in hospitals for each of these three populations.

Another important theme amongst the reviewed studies pertaining to all three populations, respectively, was the recognition of that a significant gap in the literature exists related to the sufficiency of individualized emergency planning and communications for them. In terms of populations with limited hearing, one study determined that there “is almost no literature about broader emergency preparedness communication issues for and by the Deaf/ HH across various domains” (Engelman, et al., p. 5, 2013). In terms of populations with limited sight, another study found that, “Existing disaster research [on the experience of blind individuals before and during disasters] largely focuses on the restoration of communities and is quantitative”, and they were only able to “locate one quantitative study that focused on blind people who experienced earthquakes in Turkey” (Good, et al., p. 426, 2016). In terms of populations with limited English proficiency, one study identified that “despite the expansive scholarship on the effects of various risk communication methods on information flow



and recipients understanding, there has been scant attention paid to the challenges faced by public and nonprofit organizations in implementing effective risk communication programs” (Arlkatti, et al., p. 536, 2014). The proposed study seeks to fill these gaps in research for all three populations with communication barriers, while also addressing potential regulatory gaps at the federal level, as well as planning gaps at the organizational level.

### NEW YORK CITY HOSPITAL FRAMEWORK

For the purposes of this study, which is examining the sufficiency of emergency planning for populations with no or limited English proficiency, hearing limitations, and/or sight limitations in New York City hospitals, it is important to touch on the basic construct and patient makeup of the hospital environment in the area. By examining the hospital landscape of New York City, a better picture can be displayed of what the patient needs might be. Similar to the needs assessment developed in a hospital communication access plan, gathering information on census numbers assisted in determining the amount of individuals in need of communication access assistance in the area. This ultimately aided in determining what extent of this assistance is necessary, which influenced how we define sufficient in terms of emergency planning for these vulnerable patient populations.

In terms of the hospital construct, or landscape, in New York City, the information gathered remained consistent with this study’s methods of information gathering for population selection. Therefore, information was gained from Greater

New York Hospital Association's (GNYHA) online database, Sit Stat 2.0. Each hospital in NYC has a profile in Sit Stat 2.0 that is updated individually by each Emergency Preparedness Coordinator (EPC) for that hospital. It includes such information such as how many generators the facility has, if the facility has a command center, etc. A list of all hospitals within NYC was compiled by the researcher using Sit Stat 2.0. There are 61 total hospitals in New York City that are listed Sit Stat 2.0. Out of these 61 total hospitals, 58 are acute care hospitals, and 3 are stand-alone emergency departments; 7 are independent hospitals, and 54 are hospitals that are part of a larger health system; 11 are public hospitals (belonging to NYC Health + Hospitals), and 50 are private hospitals; 21 hospitals are located in Manhattan, 14 hospitals are located in Brooklyn, 12 hospitals are located in the Bronx, 11 hospitals are located in Queens, and 3 hospitals are located in Staten Island; and 53 are hospitals that have an Emergency Department, and 8 are hospitals that do not have an Emergency Department.

In terms of the patient makeup in the State of New York, data was collected from an analysis that CMS conducted in 2017. In order to further the understanding of who Medicare beneficiaries with language and communication needs are, "CMS OMH undertook an analysis of the 2014 American Community Survey (ACS) Public Use Microdata Sample (PUMS) data to explore details about Medicare beneficiaries with limited English proficiency, as well as beneficiaries with visual and hearing disabilities who may also require communication assistance services" (CMS, p. 4, 2017). The results were as follows: 13% of all Medicare beneficiaries in the U.S. with limited English proficiency reside in the state of New York (CMS, p. 11, 2017). In addition to

the high number of patients in New York with limited English proficiency, it's also important to highlight the diversity in languages spoken. Only preceded by one state (California), New York was reported as the state with the second largest number of languages spoken, totaling 169 languages (The Joint Commission, p. 1, 2015). New York was also identified as one of the areas within the country with the highest concentrations of beneficiaries who are blind or have low vision (CMS, p. 17, 2017).

In terms of the general population of New York City, data was obtained from the U.S. Census American Community Survey (ACS), 2008-2012. It was reported through the ACS that 2.1% of New York City's population had a disability related to vision, and 3.4% of New York City's population had a disability related to hearing (NYC Health + Hospitals, p. 19, 2016a). More specifically to the field of healthcare, New York City Health + Hospitals released information and statistics regarding their patient population makeup in 2016 in their Plan to Enhance Equitable Care. They reported that: "forty nine percent of New Yorkers speak a language other than English at home, and of these, 23%, or 1.8 million residents, are limited English Proficient (LEP). At NYC Health + Hospitals, approximately one out of every three patients are LEP, and prefers health care services in a language other than English" (NYC Health + Hospitals, p. 7, 2016b).

As we can see from these statistics, patient populations of New York City hospitals are likely to include significant percentages of individuals with no or limited English proficiency, hearing limitations, and/or sight limitations. Regardless of the exact prevalence of these populations within each NYC hospital's care, they should be

conducting sufficient emergency planning for them. While it may have more disastrous consequences for a hospital that tends to care for more of these vulnerable populations on a daily basis to have insufficient emergency planning for them, all hospitals have the responsibility to be prepared to provide specialized assistance to these types of patients within their care at any moment. The purpose of this study is to collect baseline information on the sufficiency level of emergency planning conducted for populations with no or limited English proficiency, hearing limitations, and/or sight limitations within New York City hospitals. Future research may address the specific gaps that exist for hospitals that may tend to serve these vulnerable populations more frequently.

### **RESEARCH QUESTIONS**

This study attempts to answer the following research questions, which will be explained in-depth in subsequent chapters:

**RQ1:** How does the vulnerability status of an individual or population with communication barriers affect their ability to receive sufficient/enough planning for emergency preparedness and response in a New York City hospital facility?

**RQ2:** How does the affiliation of a hospital facility (i.e., independent or part of a health system) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?

**RQ3:** How does the presence of an emergency department within a hospital facility affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?

**RQ4:** How does the ownership status of a hospital facility (i.e., privately or publicly owned) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?

**RQ5:** How does the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?

**RQ6:** How does the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) affect their ability to receive sufficient/enough emergency planning from hospital facilities?

## **CHAPTER 2: LITERATURE REVIEW**

The following literature review seeks to provide an overview of the scholarly literature that has addressed this topic to date by summarizing what others have found regarding this research topic of vulnerability characteristics negatively affecting their ability to receive sufficient/enough emergency preparedness and response planning. After-action reviews and studies of certain emergencies and types of disasters have highlighted the disparate effects that these events have on vulnerable populations as compared to the general public. While the vulnerability characteristics examined may vary, the common theme is the presence of any vulnerability characteristic and the inherent influence that characteristic has over the ability of the individual or population possessing it to receive equal emergency preparedness and response planning and resources. Vulnerable patient populations have complex health needs that are likely to also become exacerbated by social determinants such as food insecurity, unstable housing, and lack of transportation given the specific vulnerability characteristic that they possess (Braveman & Gottlieb, p.3, 2014). The literature reviewed also highlights the needs of various vulnerable populations within the Public Health and Healthcare Sector of our nation's infrastructure, which should be addressed by the healthcare facilities in which these individuals entrust their care to.

### **THEORETICAL FRAMEWORK**

Sociological theory can be applied to the study and research of emergency planning for vulnerable populations by investigating the 'why' to this certain phenomenon of

disparities in preparedness and response dependent on vulnerability status, which is dependent upon social trends and constructs. It can give us a greater understanding of the underlying societal factors that may be causing trends in ineffective emergency planning amongst vulnerable populations. By answering the ‘why’ in this issue surrounding ineffective preparedness and response planning, including crisis communications, policy formation can be affected, as well as response and recovery protocols, and preparation and mitigation efforts for these communities.

Sociology is the study of human behavior; therefore, it can assist in predicting behavior patterns for certain groups of people in a community in all four phases of emergency management: preparation, mitigation, response, and recovery. This information predicted is especially relevant to emergency managers and first responders who are closely involved with preparedness and response efforts for the affected communities. During a sociological study conducted of Latino social network dynamic following Hurricane Katrina, the findings illustrated both the role of social networks in gathering information, making decisions, and accessing resources, and how these existing social networks were disrupted and strained by overwhelming needs (Hilfinger Messias, Barrington, & Lacy, p. 101, 2012). Sociological studies on social networks during disasters, such as this one, illustrate the need for homeland security and emergency management practitioners to consider the social network dynamics of marginalized groups in developing innovative strategies to overcome structural barriers to accessing resources essential for disaster preparedness and survival. In natural disasters that affect entire communities, the traditional communication and response

systems we have in place are unable to satisfy all of the resulting human needs of every population.

Symbolic interactionism on a micro level is a frame of reference for crisis communicators in emergency management to better understand how individuals interact with one another to create their symbolic world, and in return, how this world shapes these individual's behaviors. By focusing on seeing society as the product of every day interactions of individuals, emergency managers can view society as nothing more than shared reality that people construct as they interact with one another. By becoming familiar with vulnerable populations and their needs prior to an emergency, this helped in identifying barriers and developing and refining effective messages for these individuals and groups in such crises. Vulnerability, in essence, means the characteristics of a person or group and their situation that influence their ability to anticipate, cope with, resist, and recover from the impact of a natural hazard (Phillips & Morrow, p. 61, 2007).

It is essential that crisis communicators understand these historical patterns of segregation amongst these populations, including the inherent inability to benefit from what society has to offer, in order to fill the gaps in emergency preparedness and communication that these populations face. Without understanding the societal effects and pressures that these communities feel, and without understanding their symbolic world, the messages delivered were not relevant to the intended audience. The crisis communications sent to these vulnerable populations need to be appropriate to their norms and expectations, and they also need to be able to speak to their experiences.



Additionally, the source of the message must be symbolic to the community it is reaching in order for that population to deem it credible. It must come from a source that they trust and respect, such as a celebrity, local public health official, or respected community member. The impact of trust, credibility, and respect cannot be underestimated in interactions with vulnerable populations. Understanding the audience is just as important as understanding the information to be communicated, if not more so (Nsiah-Kumi, p. 67, 2008). With targeted communications for these particular audiences, the characteristics of the everyday interactions of these individuals must be considered in order to overcome barriers to effective communication. It is crucial to factor into considerations when forming an emergency message that the best one for a certain population may not necessarily be the most effective for another.

Sociology of disaster focuses on the link between social solidarity and the vulnerability exposed by disaster (Palidda, p. 6, 2016). Scholarship in the field has observed how such events expose inequalities inherent in the social order by exponentially exasperating its effects. When organizations fail to reach those unequal, or marginalized, populations due to economic, social, physical, or cultural circumstances, lives are lost. There are certain social vulnerabilities inherent amongst these populations associated with warning messages and emergency notifications. The goal of emergency management is to protect lives and properties from the effects of natural and technological disasters and any man-made attack (FEMA, p. 21, 2018). Organizations at all levels of government pursue this goal in many ways, depending on the legislation, regulatory standards, and priorities that guide their emergency planning.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (“Stafford Act”), enacted in 1988, establishes a broad nondiscrimination mandate to protect vulnerable populations (Hoffman, p. 1533, 2009). These regulations work to ensure that authorities accomplish relief activities “without discrimination on the grounds of race, color, religion, nationality, sex, age, disability, English proficiency, or economic status” (FEMA, p. 14, 2003).

At the local level, understanding the principles of emergency management is just as critical as understanding them on a macro level because the effects of a disaster are felt at the local level the most. It is incumbent upon crisis communicators in emergency management to have a firm grasp on the theories and concepts related to emergency management as they relate to vulnerable populations in local communities under their purview, so that their communication efforts can be coordinated and efficient, but more importantly, diverse and accessible. In terms of the effects of a disaster being felt most at the local level, we can look to several examples that display this principle. In terms of the recovery phase of a disaster, negative disaster effects can include population dislocation, losses in discretionary income among those victims who remain in the impact area (which can weaken market demand for many products and services), and competitive pressure from large outside businesses (National Research Council, p. 164, 2006). These types of effects can potentially cause small, local businesses to experience major difficulties recovering from the aftermath of a disaster (Alesch, Holly, Mittler, & Nagy, p. 2, 2001). At the community level, some local communities may have more difficulty recovering than others, even if in the same city. This is because disaster may

exploit existing vulnerabilities in local communities, who may experience more impact and poor recovery outcomes from a disaster than others (National Research Council, p. 155, 2006).

In terms of the mitigation phase of a disaster, we can look to land use planning as an example of the micro level impact of insufficient emergency planning and mitigation. Land use decision making generally occurs at the local level, however, local jurisdictions typically experience pushback when attempting to establish controls on development in the absence of enabling legislation from higher levels of government (National Research Council, p. 171, 2006). Despite the fact that these land-use and zoning changes, in addition to other mitigation measures, are considered highly desirable in the aftermath of disasters, community leaders may lack the political will to promote such efforts over the long term, allowing opponents to regroup and old patterns to reassert themselves (National Research Council, p. 171, 2006). This example further asserts the assumption that local communities at a micro level feel the effects of disaster most, even long after the disaster has hit. Post-disaster changes in local communities need to be long-term and sustainable, as opposed to consistently being quick, incremental fixes. More attention should be devoted towards building the capacity of organizations at the local level, including hospital facilities, to ensuring their individualized emergency planning and mitigation strategies are robust and have the capacity to address that locations' most vulnerable populations which they may serve.

Organizational theory states that organizations are defined as social units of peoples that are structured and managed to meet the needs or to pursue collective goals (Burton

& Obel, p. 4, 2018). For the purposes of the topic at hand, I believe that organizational theory can be applied to crisis communications with vulnerable populations if emergency managers are willing to view communities as groups of organizations. Organizational theories can help address issues successfully by highlighting specific organizational problems and how structures can deal with them (Burton & Obel, p. 4, 2018). Just as organizations have structure, goals, and members, so do certain vulnerable populations in communities. Vulnerable populations tend to be, for the most part, tight-knit communities if the vulnerabilities are widespread and shared amongst a certain group. A broad, diverse public notification strategy needs to be developed to ensure that no population is excluded from crisis communications. By viewing a community in the lens of organizational theory, the individuals or groups charged with developing emergency notifications can base their messages around the diverse social units of peoples that are structured within a population in order to meet their needs. Using tiered approaches of crisis communication should ensure that each diverse population within a community can be reached.

The Jewish community in Boston is an example of a well-prepared vulnerable population, which can be considered its own organization within the community. Created in 2006 as a program of the Combined Jewish Philanthropies organization, the Greater Boston Jewish Emergency Management System (JEMS) keeps the more than 200 Jewish agencies — from synagogues to preschools to social service agencies — updated about possible emergencies and public safety concerns (Pittman, p. 18, 2011). The director of this System sends messages and notifications to hundreds of

Jewish community leaders to promote emergency preparedness and situational awareness amongst these organizations. These community leaders then forward or provide these messages to their specific populations they serve.

The messages are not only tailored to the local issues of these specific populations, but the System also provides an effective means of pre-established, consistent, and timely communication to them. By initiating the message from an established emergency management agency, the messages validity and accuracy is assured by collaborating with Boston PD, Boston Regional Intelligence Center (BRIC), FEMA, and DHS. Additionally, by delivering the message to vulnerable populations from trusted Jewish community leaders, the messages are recognized and respected by the community. By providing consistent messaging regarding possible hazards and threats specific to the Jewish community (e.g., suspicious possible anti-Semitic activity near local and national synagogues), emergency notifications are more effective within these vulnerable communities when major incidents may occur.

By understanding the needs of these populations and the gaps in their emergency preparedness and response planning, hospital facilities can better tailor their efforts to make their procedures and practices more inclusive and resilient for patients with vulnerability characteristics. They can also better meet the requirements set forth by accrediting bodies regarding the outlining of specific considerations to be made for these vulnerable populations, included in documents such as their Emergency Operations Plans. Better planning for vulnerable populations within hospital facilities can, in turn, influence more inclusive resource allocation, more targeted training and

exercise programs, and more holistic crisis communications plans to account for the unique needs of these groups. Public health agencies may also learn from the gaps in care identified in order to influence healthcare facility emergency preparedness deliverables, such as ASPR's Hospital Preparedness Program.

### **Subsection 1: Limited English Proficiency and Insufficient Emergency Preparedness and Response Planning**

Populations with either no or limited English proficiency hold communication barriers that inhibit their ability to attain the same level of emergency preparedness, as well as be afforded the same level of emergency planning, than that of the general population. The examined studies for this subsection were mainly beneficial in displaying how crisis communications are rarely tailored to specific limited English proficiency subsets of the population in which they are sent to. Most of the examined studies concluded that public warnings about disasters and dangers are often broadcast only in English, which may lead to emergency awareness deficiencies among non-English speaking ethnic minorities (Maldonado, Collins, & Grineski, p. 112-113, 2016). As a result, this could also result in limited English proficiency populations receiving misleading information from unreliable sources during an emergency. Most significantly, for the safety of these limited English proficiency populations, deficiencies in emergency alerting and awareness could lead to them not being sufficiently notified or warned of an emergency at all. Most of the studies that were examined had not differentiated the levels of English proficiency amongst participants at all. Some studies only examined the proficiency of plans for limited English

proficiency populations, as opposed to the populations themselves. Of the studies that had participants with no or limited English proficiency, only a couple of the studies actually differentiated the levels of English proficiency amongst participants, with one study only using one self-reported variable of “language ability” (e.g., participants interviewed self-reporting speaking English “somewhat”, “well”, or “not at all”), and the other study separating the participants as either “proficient” or “not proficient”.

As a prime example of this, during the 1987 tornado in Saragosa, Texas (a community with a very large portion of the population being of Mexican decent), two problems occurred in terms emergency warning messages (Phillips & Morrow, p. 61, 2007). The first issue was one of mis-translation of the word “warning” from English to Spanish by local media outlets. This caused confusion amongst the populations in Saragosa with limited English proficiency and downplayed the severity of the storm to them (Aguirre, p. 72, 1991). The second issue, affecting the same population, was one originating from the lack of opportunity and information channels for this group of non-English speaking citizens. Watched heavily by these locals, and operating/originating outside of the local area of Saragosa, was a Spanish-language television station (Univision), which these citizens used as their news source during the disaster. Unfortunately, their only source of translatable information available to them in their city was not able to broadcast local warnings. One study presumed that many lives could have been saved if the emergency weather announcements has been transmitted in the Univision channel to the people of Saragosa (Aguirre, p. 71, 1991).

Crisis communications and public warning is not the only area of disparity in emergency planning for populations with limited English proficiency. As an example of this disparity in emergency planning for populations with limited English proficiency, Hurricane Andrew can be examined in terms of response and recovery efforts. In a disaster which disproportionality affected a majority of the population of Latin or Haitian decent, federal and local response agencies (e.g., FEMA, Red Cross, etc.) did not initially have translators. This resulted in the unnecessarily slow distribution of food, medical supplies, and disaster grants to the neediest Latino and Haitian victims as compared to the English-speaking survivors (Arlikatti, Taibah, & Andrew, p. 536, 2014). However, in terms of crisis communications, these same Latino and Haitian populations effectively received timely emergency information in their native languages from both radio and television sources. This case study can serve as an impetus for public organizations to work with Hispanic TV networks to air greater number of PSAs to their audiences (Arlikatti, et al., p. 536, 2014).

In terms of emergency alerting, one study examined what commonly constitutes an emergency signal among Latin American immigrants by conducting focus groups to determine their preferred and actual sources of emergency preparedness information. The results of this study showed that the most common emergency signals that participants recognized and reported included “alarms (smoke detectors, alarms at work); phone calls from family members or friends; police, ambulance or fire engine sirens; television and radio announcements; people running (“If people are running . . . each person is on their own” [Si hay gente corriendo . . . salvase el que pueda]); and



church bells” (Carter-Pokras, Zambrana, Mora, & Aaby, p. 472, 2007). While also concluding that the vast majority of participants had not received information on emergency preparation, it is obvious from the most common responses pertaining to emergency alerting that a majority of these sources of information were either from unofficial sources or were not proactive in nature as to prepare these limited English proficiency populations before a disaster strikes. It also found that language barriers contribute significantly to the inadequacy of the circulation of information about disaster, particularly in communities that consist of multicultural populations (Carter-Pokras, et al., p. 466, 2007).

Without sufficient advance notification of emergency situations, limited English proficiency populations will not be afforded the same amount of time to react and evaluate the risk that they are faced with as the general population would. In a similar study pertaining to the assessment of disaster preparedness among Latino migrant and seasonal farmworkers in eastern North Carolina, the emergency preparedness of the population studied incorporated the limited English proficiency of participants and how that affected their ability to sufficiently prepare and respond to disasters. The results of this study addressed participants’ barriers to accessing resources both before and during emergency events, with one of the more common barriers being language (Burke, Bethel, & Britt, p. 3122, 2012). This study also pointed to the inherent feelings of disenfranchisement that limited English proficiency populations may possess. A common theme of the desire to have emergency information and alerts in English

translated automatically to Spanish was identified, with this concept also applying to preparedness information in the forms of brochures, television specials, etc.

While several studies examined the effects that English-language deficiencies have on emergency preparedness, some studies focused more on the effects this vulnerability has on risk awareness. The results of one study, which examined Hispanic immigrants' vulnerability to flood and hurricane hazards in two U.S. metropolitan areas, identified that challenges to addressing Hispanic-immigrant risk disparities include: (1) the fact that many have English-language deficiencies, (2) seek to avoid contact with government agents, (3) and have low incomes (Maldonado, et al., p. 131, 2016). An example of a measure that this study used when determining the vulnerability of these Hispanic immigrant populations with limited English proficiency includes their knowledge of whether they reside in a flood zone. This study also determined that the risk perception of Hispanic-immigrant populations with limited English proficiency may tend to come more from their familial connections, which may provide more effective channels of communication for them than other conduits, such as mass media (Maldonado, et al., p. 132, 2016). This finding suggests that more community-based approaches to communicating with limited English proficiency populations may prove to be more effective than utilizing traditional modes of media communication.

While these studies effectively identified the inherent vulnerabilities and lapses in emergency preparedness planning and crisis communications for populations with either no or limited English proficiency, a small number of these studies transcended the identification of the issues in order to provide recommendations for addressing these

disparities going forward. One study, in particular, stood out as doing so. In a study that identified the challenges for organizations in communicating risk to Colonias residents in Texas, U.S., the purpose of the study also included seeking proactive solutions for these same organizations to improve risk communication and education to these constituents (Arlikatti, et al., p. 533, 2014). This study's recommendations for proactive solutions to improve risk communication were informed by examining the preferred sources of information for specific limited English proficiency populations in the results of their survey. For example, instead of just merely accepting the finding from their survey that TV and radio were identified as the most effective channels of communication by these organizations, this study suggested exploring which TV or radio channels were most viewed to inform future modes of distributing emergency communications and warnings to these limited English proficiency populations (Arlikatti, et al., p. 544, 2014). By incorporating the preferred channels of communication of these populations into emergency planning, these specialized plans can better serve the vulnerable populations they should be created for.

## **Subsection 2: Sight Limitations and Insufficient Emergency Preparedness and Response Planning**

Populations with limited sight experience communication barriers that inhibit their ability to attain the same level of emergency preparedness, as well as be afforded the same level of emergency planning, than that of the general population. The examined studies for this subsection were mainly beneficial in displaying how disasters disproportionately affect populations who are completely blind or visually disabled,

especially in terms of insufficient knowledge of emergency plans, as well as how these populations may experience greater difficulty in sufficiently receiving and understanding emergency alert information. A majority of the studies measured the effects and preparedness levels of populations with limited sight by examining their experiences in past earthquake emergencies. This could be due to the level of physical disorientation that earthquakes cause, especially to populations with sight limitations. In one study that which examined persons with disabilities' preparedness, perceptions, and experiences of disasters in Tuvalu, the potential type of emergency that they may experience was found to have an effect on these visually impaired populations' perception of their own preparedness. In this study, those with visual impairments mentioned that they felt they were especially vulnerable to disasters that caused strong winds, drought, and storm surges (Elisala, Turagabeci, Mohammadnezhad, & Mangum, p. 11, 2020). The participants in this study were referred to generally as those with visual disabilities, with no distinction in terms of the level of this visual impairment. While some studies made the distinction between the levels of visual impairments that individuals may experience (i.e., total blindness or visually disabled), other studies just examined one of these two subsets of visually impaired populations, or they examined participants as a general population of those with sight limitations/visual impairments.

In terms of the disproportionate susceptibility to harm of populations with limited sight during emergency events to that of the general population, several studies examined this through the lens of the sufficiency of emergency planning. In a study examining the level of disaster preparedness of visually impaired residents of Banda

Aceh (an area at high risk of earthquakes), results showed that a majority of the participants had a low level of preparedness to plan an emergency response, especially the group of participants with total blindness (Fatin, Sofia, & Oktari, p. 6, 2020). Therefore, the author recommended that a more specialized and robust disaster preparedness program be tailored to and offered to residents of Banda Aceh with vulnerabilities related to limited sight. This study was significant in that it split its participants into two groups to differentiate between visually impaired individuals and totally blind individuals. By doing so, the results highlighted the differences in the visual impairment group having better and more robust preparedness plans than a majority of the total blindness group. Other studies only examined the effects of disasters on either one of these two subsets of populations with sight limitations, or they examined participants as a general population of those with sight limitations/visual impairments.

For example, in a study examining the effects of the 1999 earthquake on the completely blind living in and outside of Marmara, Turkey, only the totally blind population were included as participants. However, the results of this study were similar to the previous study, in that a lack of sufficient outreach and programming for the completely blind populations in an earthquake-prone area were consistent, which had disproportionately detrimental effects on them. In the case of this study, those effects were on the participants' mental health following a disaster, specifically an earthquake. The results suggested that the completely blind individuals living in the earthquake region (Sakarya) had self-esteem scores that were lower, and anxiety scores that were

higher, than the ones living in the non-earthquake region (Duyan & Karatas, p. 618, 2005). Just as enhanced and specialized programming was recommended in the previous study examined, the author of this study similarly recommended enhanced resources for these especially vulnerable populations with sight limitations. While these resources are not specifically pertaining to emergency preparedness, they display how the emotional effects of disasters can be exacerbated amongst vulnerable populations with sight limitations in the recovery phase of a disaster.

Crisis communications was considered a factor in the emergency preparedness of populations with limited sight in several of the studies examined. In terms of insufficient warnings and notifications for populations with limited sight during emergency events, one study (which examined persons with disabilities' preparedness, perceptions, and experiences of disasters in Tuvalu) identified the theme of insufficient crisis communication with blind populations as a common barrier to disaster preparedness for them. Several participants in this study expressed their belief that information communicated to persons with disabilities is specific and should be delivered by their caregiver considering their relationship and disabilities, particularly those who are physically impaired, deaf, or blind (Elisala, et al., p. 9, 2020). Regardless, if individuals with sight limitations have a caregiver or not, the findings of this study helped to establish the concept that they prefer to receive their emergency warnings, public health and safety information, and preparedness messages from a trusted source of theirs, as well as in a modality that they feel most comfortable with. It was recognized that these messages should be "specific", meaning they would feel most

comfortable and informed if emergency alerts and messages were specialized to fit their needs to overcome any communication barriers that may exist.

In another study that examined the experiences of people with visual impairments during and after the Christchurch, NZ earthquakes of 2010 and 2011, this concept of specialized emergency messaging and modes of tailored crisis communications for populations with sight limitations was also supported. Through the results of this study's interviews with adults with impaired vision, it became clear that the radio was the most important source of information for these participants, yet participants expressed experiencing poor quality of information received from radio broadcasts (Good, Phibbs, & Williamson, p. 428, 2016). This study highlighted the need for the recognition of the preferred methods of emergency communications for populations with limited sight, but furthermore, ensuring the quality of communications is upheld and maintained on these modes. Misinformation, difficulty in accessing emergency information during an earthquake, and difficulty in accessing safety information in the extended aftermath of an earthquake (e.g., cancelled bus routes, local walkway conditions, etc.) were reported by participants as barriers to effective communication they experienced (Good, et al., p. 428-429, 2016). While this study did provide useful recommendations to individuals or populations themselves with sight limitations for backup plans when crisis communications fail (e.g., having at least two people organized to contact them in a disaster), it did not put accountability on emergency planners to maintain effective emergency alerting methods for these populations.

Emergency plans should account for these pitfalls in crisis messaging with vulnerable populations that have inherent barriers to effective communication in normal times.

While several studies recognized the insufficiency of emergency warnings for populations with sight limitations, few transcended that realization to provide suggestions and recommendations for how to ameliorate these communication barriers. However, one study did examine the use of innovative and modern technology to bridge gaps in emergency alert sufficiency for populations with sight limitations. It did this by assessing the receptiveness of populations with sight limitations to utilize social media during public emergencies in order to receive critical alerts and preparedness information. By assessing the current use of social media during emergencies by its blind and low vision participants, this study aimed to gauge how well established the use of social media in emergency communication is with disabled populations. The results of their survey found that those with physical disabilities, including blind and low vision participants, were the least likely group (as opposed to those with speaking disabilities) to use social media to receive public emergency alerts, attain emergency information, or obtain information about their safety (Morris, Mueller, & Jones, p. 571-572, 2014). The difficulty and cost associated with keeping up with rapidly evolving accessibility features for desktop and mobile information and communications technology (e.g., screen readers, voice command, speech-to-text, eye-gaze trackers, custom configuration of interfaces, etc.) may account for this lack of utilization of technology for important and potentially life-saving emergency information. However, this study also found that levels of social media use by people with disabilities are



similar to those of the general population for everyday communication, recommending that “effective emergency communications strategies should include social media both for posting official alert information and for monitoring traffic originating in the community” (Morris, et al., p. 572, 2014). Therefore, a combination of both traditional forms of media (including print media sources translated in Braille) and social media should complement one another and be promoted amongst populations with limited sight to utilize for obtaining emergency alerts and information from trusted sources.

### **Subsection 3: Hearing Limitations and Insufficient Emergency Preparedness and Response Planning**

Populations with limited hearing hold communication barriers that inhibit their ability to attain the same level of emergency preparedness, as well as be afforded the same level of emergency planning, than that of the general population. The examined studies for this subsection were mainly beneficial in displaying how disasters disproportionately affect populations who are completely deaf or hard of hearing, especially in terms of insufficient emergency preparedness and response planning for these populations, as well as how these populations may experience greater difficulty in sufficiently receiving and understanding emergency alert information. Most of the studies had referred to their examined participants as a general population of those with hearing limitations (specifically using the terms “deaf and hard of hearing populations” or “deaf community”), and none of the studies solely examined one of the subsets of populations with hearing limitations (e.g., only completely deaf populations, only hard of hearing populations, etc.). In the studies examined, there was no distinction amongst

the varied participants in terms of the level of hearing impairment. For all of the studies examined, there was at least some mention of the communication barriers populations with limited hearing face in terms of emergency alerting, even if the main objective of the study was not completely surrounding that topic. This is important because it highlights the undeniable challenges these populations face in emergency preparedness and response due to their unique, and often underserved, communication needs in disasters.

The diverse modalities of communication utilized by populations with limited hearing include American Sign Language (ASL), Signed Exact English (SEE), Pidgin Signed English (PSE), Cued Speech, lip-reading and spoken English (Engelman, Ivey, Tseng, Dahrouge, Brune, & Neuhauser, p. 2, 2013). Besides the various forms of communication they may use, there is also a cultural significance amongst populations with limited hearing, especially those that are fully deaf. Similar to limited English proficiency populations, these cultural ties and segregated relationships may further the communication barriers they face with emergency responders, especially in terms of warnings and alerts, as well as the vulnerabilities they may face in disasters due to their unique considerations. Cultural competence, as described in the previous section in the Introduction chapter, should be an important consideration for emergency planners for these reasons.

In terms of crisis communications as applied to populations with limited hearing, there was significant precedent in the literature that supports the concept that emergency alerting and warning is often insufficient to meet their unique needs. Historically, there

have been many examples of past disasters where insufficient crisis communications with populations with limited hearing have impacted how disproportionality affected them by these emergencies. Compounded by these populations' inability to hear traditional natural or manmade warning signals of emergencies, such as tornado sirens or the natural noises of an approaching storm, their crisis communications have seldom been sufficiently planned for by emergency planners. Most significantly, there has been evidence that closed captioning is often forgotten in emergency communications over television broadcasts in past disasters, which is a key source of information for populations with limited hearing. For example, during a severe flooding event in Sacramento, CA in 1997, none of the local television stations provided captioned information regarding evacuations, road closing, or other dangers (Wood & Weisman, p. 188, 2003). As another example, the Federal Communications Commission also upheld a fine against a San Diego, California television station for failure to provide adequate visual warning to hearing-impaired viewers during the San Diego wildfires in October 2003 (Ivey, Tseng, Dahrouge, Engelman, Neuhauser, Huang, & Gurung, p. 153, 2014).

While there are many methods, some relatively novice and innovative, of notifying populations with limited hearing of impending weather-related emergencies (e.g., personal notification, special-needs weather radio, internet and mobile applications, weather pagers, etc.), televisions have proven to be the most widely available to populations with limited hearing. One study found from surveying its deaf participants that the preferred method of obtaining emergency warnings was real-time closed

captioning during regular programming (Wood & Weisman, p. 190, 2003). This is significant in that, while other methods of specialized notification are used for populations with limited hearing, one of the most popular and preferred forms of emergency weather notifications for these populations has still been overlooked in some disasters. Even when broadcast-related emergency communications for populations with limited hearing are sufficiently included during disaster events, they can sometimes prove to be ineffective. For example, the translation to sign language on TV and internet broadcasts using bubbles to display an individual using sign language (typically appearing on the bottom of the screen) has been described as difficult to see and interpret by populations with limited hearing. One study revealed that that deaf populations do not perceive this method of translation/notification to be effective “due to the small bubble size, and the distance/size of the person signing in it which makes the hand motions and face mimic almost impossible to decipher; furthermore, differences in sign dialect used among people in varying geographic areas pose another barrier” (Tannenbaum-Baruchi, Feder-Bubis, Adini, & Aharonson-Daniel, p. 109, 2014). This is significant in that it displays how even when a solution for communication barriers is offered to populations with limited hearing, they are rarely evaluated for effectiveness or attributed the necessary resources in order to consistently improve upon the communication mechanisms.

This focus on broadcast-related emergency communications for populations with limited hearing is not to say that the other forms of specialized notification have not been insufficiently utilized as well. In the same study previously mentioned that

analyzed the communication obstacles of deaf people in Israel during emergency situations, it also found that the emergency pagers specifically created for populations with limited hearing had significant faults in terms of the timeliness of notifications and the quality of the message content/context (Tannenbaum-Baruchi, et al., p. 108, 2014). From interviewing members of the deaf community in Israel who were issued these pagers, this study discovered that not only were the emergency warnings sent to the participants through these devices significantly delayed (in some cases, after the emergency was already over), but it also found gaps in the quality of the messages sent. For example, all-clear messages to close the loop on emergency situations were rarely issued, therefore making the information communicated incomplete.

In terms of emergency planning for populations with limited hearing, the literature was also consistent in displaying that these programs have been insufficient, specifically in the areas of providing emergency preparedness resources for populations with limited hearing, as well as providing training for first responders on how to communicate effectively with populations with limited hearing. A landmark report that examined lessons learned post-9/11 revealed that there are many weakness in the nation's emergency planning for populations with limited hearing, especially in terms of not "actively involving [populations with limited hearing] in community, regional, state, and federal emergency planning processes; equipment testing; disaster exercises; CERT trainings; Citizen Corps activities; training of public safety and security personnel; and other activities (Stout, Heppner, & Brick, p. 4, 2004). This report was significant in bringing to light the lack of sufficient and specialized emergency planning for

populations with limited hearing in federal, state, and local agencies throughout the country, even after such a monumental failure of communications for these populations three years prior during the 9/11 terrorist attacks. The other studies examined in this section build upon the results from this report in that they help to measure whether or not any progress has been made since its release in the area of emergency planning for populations with limited hearing.

These studies examined, which addressed the sufficiency of emergency planning for populations with limited hearing, did so mainly in the lens of preparedness. In a study that assessed the state- and territorial-level preparedness capacity for serving deaf and hard-of-hearing (Deaf/HH) populations in disasters, it was found that a significantly low number of Emergency Operations Plans (EOPs) specifically mentioned Deaf/HH populations in their plan (Ivey, et al., p. 150, 2014). Due to the very specific and inherent communication needs that differ across the various types of vulnerable populations that may exist, EOPs need to account for their individualized and specialized needs in order to be sufficient and properly serve specific vulnerable populations, such as populations with limited hearing, during disasters and emergencies. Furthermore, this study accounted for the human aspect of emergency response by interviewing key informants (KI's) from the same state/territorial agencies that provided the EOPs. By doing this, this study was able to transcend the analysis of the written plan and examine how the plan would be utilized by the emergency plans and responders it was written for in order to effectively serve and communicate with vulnerable populations. Through this analysis, of a KI's familiarity with communication issues for

Deaf/HH populations, this study determined a positive relationship between whether the KI's department provides any training about serving Deaf/HH people during disasters to their level of ability to effectively serve and communicate with these populations by knowing how to do things such as make relay calls to connect calls between hearing people using voice phones and Deaf people using videophones or teletypewriters (Ivey, et al., p. 151, 2014).

The significance of this finding is that it highlights the importance of proper training for emergency responders and any individuals charged with the care of constituents who may have limited hearing capabilities. It also made the connection between including a proper training plan in an organization's EOP that specifically addresses individual vulnerable populations and their unique needs. There were several other studies that supported this concept, including one which presented a key finding from its evidence that "trainees who attended a local law enforcement training on serving the Deaf community demonstrated greater perceived self-efficacy when working with the Deaf and greater knowledge of communication and translation needs for interacting with Deaf/HH individuals following the training" (Engelman, et al., p. 5, 2013). These findings clearly illustrate the need for organizations to incorporate sufficient, consistent, and specialized training to their staff for how to effectively communicate and respond to specific types of vulnerable populations which all have their own unique needs.

In terms of preparedness for populations with limited hearing, it is critical that the information they are presented with during non-emergency times is both readily available to them and easily readable. In a study which examined the availability and

readability of emergency preparedness materials for Deaf/HH populations, printed emergency preparedness materials which were collected from staff at local community-based organizations (CBOs) serving Deaf/HH populations were analyzed, as well as web-based emergency preparedness materials. The findings from this study revealed that a large majority of the participating CBOs could not readily provide the researchers with those materials, indicating that they were not very accessible (Neuhauser, Ivey, Huang, Engelman, Tseng, Dahrouge, Gurung, & Kealey, p. 8, 2013). Another trend that was identified was that these materials were only provided to individuals within the Deaf/HH populations that they served in an episodic fashion, indicating that it was not incorporated into a sufficient, consistent, and specialized emergency planning effort of these organizations. In terms of the quality and readability of the emergency preparedness materials, the findings from this study determined that they were not appropriate for the intended Deaf/HH audience. The results from this study showed that “all materials intended for clients of Deaf/ HH-serving organizations exceeded the recommended 4<sup>th</sup> grade reading level, and half of the print and web-based materials tested in the 10<sup>th</sup> grade to college range” (Neuhauser, et al., p. 8, 2013). This is significant in that it highlights the insufficiency of both the accessibility and quality of emergency preparedness resources for populations with limited hearing, but most importantly, this study examined this topic by using participants which belong to organizations meant to specifically serve vulnerable populations. This could point to a strong indication that organizations not specifically in existence to serve vulnerable



populations have the same, or even worse, emergency planning sufficiency levels for specialized, at-risk populations such as those with limited hearing.

#### **Subsection 4: Age and Insufficient Emergency Preparedness and Response**

##### **Planning**

Elderly populations hold unique limitations in emergency situations that may inhibit their ability to be able to sufficiently respond independently in disasters. Older adults are usually more severely injured, have prolonged hospital length of stay, lower physical quality of life and psychological well-being, are slower to recover, and have a higher death rate compared with the younger aged group in disaster situations (Sri-On, Vanichkulbodee, Sinsuwan, Rojsaengroeng, Kansom, & Liu, p. 2, 2019). In relation to this study's examined populations, elderly populations may also have several co-existing vulnerabilities, such as a propensity to have limited vision or hearing. Due to these unique limitations inherent of elderly populations in homecare, healthcare facility, and general population settings, this group's particularly vulnerable characteristics in emergency situations may not be properly identified or addressed by their caretakers in terms of emergency preparedness and response planning. The examined studies for this subsection were mainly beneficial in identifying the unique limitations inherent of elderly populations, as well as highlighting the lack of equal emergency preparedness and response planning for them as compared to the general population. In terms of the elderly population in a healthcare facility setting, one study identified that many patients in an Emergency Department (ED) setting lacked comprehensive plans for a disaster situation, especially in terms of evacuation procedure knowledge and planning,

emergency contact identification, and emergency toolbox formation (Sri-On, et al., p. 6, 2019). In terms of the elderly population in a home-care setting, one study found that the community-dwelling elderly had a propensity to being underprepared in the following areas: not having made back-up plans for caregiver assistance during times of crisis, not having made plans for transportation to a shelter, lacking a back-up plan for electrical equipment in case of power outages, and not having prepared an emergency contact list (Gershon, Portacolone, Nwankwo, Zhi, Qureshi, & Raveis, p. 606, 2016). In terms of the general population setting, a study conducted in both Hong Kong and New York City concluded that Social Vulnerability Indexes have not typically been tailored to assess the vulnerability of older populations to emergencies and disasters, in terms of factors such as communication obstacles and access to primary care (Chau, Gusmano, Cheng, Cheung, & Woo, p. 1048, 2014). This study effectively proved that elderly populations should be given their own considerations, in terms of emergency planning, due to their unique physiological, psychological, and social needs in times of disaster.

While these studies effectively identified the inherent vulnerabilities and lapses in emergency preparedness planning for elderly populations, both in home-care and healthcare facility settings, neither study transcends the problem identification to propose solutions and suggested practices to address the issue. While the barriers to preparedness were defined, strategies to address these barriers were not suggested or evaluated in terms of feasibility of implementation. Agreement between the studies exists in terms of the need for future researchers and policy makers to utilize these identified risks of elderly populations to influence their emergency preparedness and

response plans. A Social Vulnerability Index adapted for older people living in a particular community may provide important information for emergency preparedness planning, but only if the person viewing it is adept at analyzing and recognizing the differences in influencing vulnerability factors that may exist in the many, varying parts of a community (Chau, et al., p. 1060, 2014). The studies also agreed on the point that, in addition to older age, many other factors associated with that influence this population's propensity to having cascading and debilitating effects from emergency situations (e.g., low income, chronically ill, dependent on caretakers, low mobility, ethnicity, etc.). In particular, the most common areas of lacking preparedness were a lack of an emergency contacts list, as well as a lack of evacuation planning (including a lack of contingency plans for elderly populations in terms of interruption of clinical and pharmaceutical services following a disaster). For future studies, these areas should be addressed as high priority in terms of creating improvements and awareness programs in emergency planning for elderly populations.

### **Subsection 5: Chronically Ill and Insufficient Emergency Preparedness and Response Planning**

Those individuals with chronic healthcare needs are not properly considered in current emergency planning activities in the healthcare sector, especially in terms of a lack of attempting to increase continuity of medical services by properly anticipating medical surge following a disaster. The examined studies for this subsection were mainly beneficial in proving that illness level or baseline health disparities are significant predictors of health facility surge during a disaster, and that these predictors

are not properly being accounted for in surge and emergency planning on the private and public health levels. Without having the knowledge of baseline health disparities in a particular population, it will not be possible for emergency planners to prioritize health service needs, secure health systems support, or coordinate provision of care during a disaster. In terms of general patient surge during a disaster caused by populations with chronic health issues, one study had a model which suggested that baseline health disparities, including chronic disease burden and preexisting unmet care needs, must be included in surge forecasting models to more accurately predict post-disaster health needs and corresponding service provision (Runkle, Brock-Martin, Karmaus, & Svendsen, p. e26, 2012). In terms of Emergency Room visit surge from Type II Diabetes patients, one study observed substantial increases in Emergency Room visits for primary Type II Diabetes diagnoses associated with Hurricane Sandy in New Jersey; suggesting that future public health preparedness efforts during storms should include planning for the healthcare needs of populations living with diabetes (Velez-Valle, Shendell, Echeverria, & Santorelli, p. 36, 2016).

While one study concluded that most patient surge during a disaster would be from vulnerable subgroups (e.g., low-income, homeless, racial/ethnic minority populations, etc.), the other study concluded that the increased number of Emergency Room visits were made by non-Hispanic, White individuals (Velez-Valle, et al., p. 33, 2016). While it can be assumed through previous research that chronically ill populations tend to have the aforementioned characteristics (e.g., low-income, homeless, racial/ethnic minority populations, etc.), transportation resources need to be a consideration when making

assumptions about patient surge in hospital facilities and ER visits during disastrous situations that may severely limit individuals' access to emergency communications and transport. It can be inferred from the latter study that these non-Hispanic White individuals may have had more resources to travel to ED's to address their needs for diabetes treatment. Racial or ethnic minority populations may not have been able to get to the ED if roads were closed or public transportation was not functioning or had limited function, as use of roads during Hurricane Sandy was suspended until they were cleared of damaged power lines, trees, etc. (Velez-Valle, et al., p. 34, 2016). What is missing in the literature is the consideration of these logistical factors in the study of the ED visiting populations' characteristics. For future research, these characteristics should be considered and studied in order to allow for proper identification of the needs of the chronically ill following a disaster. For example, if transportation was an issue for those suffering from the effects of not being able to receive their normal treatment, future emergency planning could account for this.

#### **Subsection 6: Socioeconomic Status/Ethnicity and Insufficient Emergency Preparedness and Response Planning**

An individual's socioeconomic status and ethnicity largely affect their ability to receive proper pre-disaster emergency preparedness planning and post-disaster response resources, impacting their health and exacerbating the impacts of certain threats. The examined studies for this subsection were mainly beneficial in highlighting the importance of public information prior to a disaster, as well as pointing to the disparities amongst vulnerable populations with low economic income and minority groups. In one

study on power outage concern amongst vulnerable New York City residents, it was determined that socioeconomic barriers were a key component in households' lack of having emergency supplies. They were also more likely to be Hispanic, possibly reflecting limited availability of or access to preparedness resources, including materials in Spanish, or cultural differences that influence perception by respondents and communication of risk by emergency response and preparedness planners (Dominianni, Ahmed, Johnson, Blum, Ito, & Lane, p. 723, 2018). In another study on influenza preparedness and response amongst immigrants and refugees, in addition to the finding that these populations had a greater propensity towards contracting influenza, it was also found that disparities in preparedness, response, and recovery can be compounded by variations in exposure to pandemic influenza viruses, susceptibility after exposure, and treatment. Causes determined to influence their propensity towards contracting influenza include social, linguistic, economic, and housing barriers to adoption and uptake of vaccines, antiviral agents, and no pharmaceutical interventions promoted by public health officials (Truman, Tinker, Vaughan, Kapella, Brenden, Woznica, & Lichtveld, p. S279, 2009).

While these studies examined two different populations in light of two different threats, they had many similarities in terms of cross-section characteristics that applied to both. Minority groups (i.e., immigrants and refugees) typically also had characteristics of being low-income and chronically ill, and vice versa, those under-prepared populations with low incomes tended to also be no or limited English proficiency and may have had chronic health issues. The literature was missing the

addressing of these limitations in communications and preparedness messaging to these populations. Future research should provide recommendations for the best ways to increase preparedness amongst these vulnerable groups by determining their preferred modes of communication.

### **Subsection 7: Unique Implications and Consequences of Health Crises on Vulnerable Populations**

While all populations are exposed to certain hazards that may exacerbate their vulnerabilities during a major disaster, vulnerable populations have a higher propensity to be at-risk and exposed to threats, and the deficiencies in providing sufficient healthcare and emergency planning for vulnerable populations have effects that reach past the individual. The examined studies for this subsection were mainly beneficial in exposing the lack of emergency planning for vulnerable populations regarding health crises, as well as the effects that these suffering populations can have on general public health. In a study focused on the implications of pandemic influenza on people with disabilities, it was proposed that current plans to address a health crises/outbreak in vulnerable populations tend to delegate critical responsibilities regarding disability to third parties or make scattered references to people with disabilities; these plans lack consistency of approach, depth, or evidence of safeguards and effective implementation, and most jurisdictions significantly underestimate the amount of advance planning and coordination that is required to effectively address the integration and accommodation of individuals with disabilities (Campbell, Gilyard, Sinclair, Sternberg, & Kailes, p. S295, 2009). In addition, this study proved that certain vulnerable characteristics, such

as living arrangements (e.g., group living home), may have debilitating effects on these populations by enabling the quick spread of disease. In another study focused on public health consequences on vulnerable populations from acute chemical releases, it was proven that there is more of an impact to the general public in events that are in close proximity to vulnerable populations (Ruckart & Orr, p. 8, 2008).

Both studies transcended the typical evaluation of pitfalls in emergency planning (e.g., training, drills, plan writing, etc.) to include in-depth sections on risk communications to vulnerable populations. A major planning objective of health crises preparedness is to ensure an adequate system for risk communication, mobilization of communication resources and response, and disaster management (Campbell, et al., p. S296, 2009). These risk communications have historically been inaccessible to vulnerable populations before, during, and after emergencies for a multitude of reasons. In terms of an acute chemical release, facilities serving vulnerable populations should know how they will be notified in the event of an accident and be prepared to protect those under their care (Ruckart & Orr, p. 9, 2008). Both studies also effectively offered proposed solutions to addressing their identified issues regarding separate public health crises in vulnerable populations. In fact, they both proposed numerous recommendations in great detail. The only area missing in the literature is an in-depth analysis of the implementation of these proposed solutions and recommendations. Future studies could focus on testing these hazard reduction measures and testing their viability in terms of mitigating the spread and effects of health crises on vulnerable populations.



## **Subsection 8: Distinctive Healthcare Needs of Vulnerable Populations in Emergency Preparedness and Response Planning**

The healthcare needs of vulnerable populations in emergency situations are distinctive and unique, and they need to be planned for and addressed based on their specific situations and characteristics. The examined studies for this subsection were mainly beneficial in promoting the need for addressing the needs of vulnerable populations in a more defined and specialized way, separating specific sub-groups based on their vulnerability characteristics. In a post-2005 hurricane season analysis, it was shown that combining groups too broadly translates into imprecise planning and, as a result, emergency response failures (Kailes & Enders, p. 230, 2007). In a study of vulnerable populations in hospital and healthcare emergency preparedness planning, it was suggested that medical and public health preparedness organizations, particularly hospitals, are not currently identifying the most vulnerable populations, their locations, and the number of people included as a first step in the assessment process, and they are definitely not extending this assessment beyond this to include engaging with service populations in order to understand critical health delivery barriers and opportunities for disaster planning (Kreisberg, Thomas, Valley, Newell, Janes, & Little, p. 212, 2016). In a study on vulnerability and unmet healthcare needs, researchers chose to operationalize the concept of vulnerability using profiles that account for multiple risk factors that are associated with access to care. This study further demonstrates that a substantial proportion of U.S. adults (about one in five) has multiple risk factors for unmet health care needs, and that these risk factors create up to five-fold differences in rates of unmet

needs (e.g., delayed medical care) between the highest and lowest profiles, regardless of race/ethnicity (Shi & Stevens, p. 152, 2005).

The literature had a consensus on the need to distinctively define and address the varying risk factors and vulnerability characteristics of separate populations in order to account for their unique healthcare and emergency planning needs, but they differed in their approaches to providing frameworks for improvement. While one study proposed a function-based framework built on five essential function-based needs (communication, medical needs, maintaining functional independence, supervision, and transportation), another study suggested an integrated healthcare and public health preparedness framework that incorporates the need for the integration across the healthcare sector necessary for reducing individual and cultural vulnerabilities (representing both a bottom-up and top-down approach). For future research, it would be interesting to see a comparison between these two frameworks and measure the effectiveness of both separately. It might even be possible to create a combination of both frameworks in order to promote a holistic and flexible approach to addressing the healthcare needs of vulnerable populations based off of separate risk factors. What is missing from the research is an exhaustive list of the risk factors to be included in vulnerability profiles, which could be an extremely daunting task.

### **Subsection 9: The Proposed Study and Its Importance**

There is agreement amongst researchers on the point that, in addition to the particular factors being studied (e.g., limited English proficiency, limited sight, and/or

limited hearing), many other factors (e.g., age, chronic health condition, ethnicity, etc.) associated with that factor typically will influence a population's propensity to having cascading and debilitating effects from emergency situations (e.g., low income, dependent on caretakers, low mobility, etc.). It was consistent amongst the literature that vulnerable populations typically have multiple or several vulnerability factors that may not be properly considered by emergency planners and policy makers. The need for proper intervention was also a consistent recommendation across the literature, with specific attention placed on the Healthcare and Public Health Sector, as most studies (while not specifically focused on a healthcare issue) eventually addressed the propensity of these vulnerable populations to experience health concerns following a disaster. If the unique considerations to be made for vulnerable populations remains to be left unaddressed, the effects could be debilitating on the entire healthcare system. This could cause a cascading effect in the Healthcare and Public Health Sector and cause an entirely separate public health emergency than the already existing one. As the literature shows, historically, as opposed to integrating their unique needs into the emergency and resiliency planning processes, their needs are attempted to be met after disaster strikes and their inherent vulnerabilities are brought to light. This study proposes the need for a solution to address the conditions, needs, and vulnerabilities of at-risk populations and integrating them into resiliency planning from the beginning; they can no longer be afterthoughts to incorporate afterward.

### **CHAPTER 3: METHODOLOGY**

The following methodology was used and actualized in order to conduct this study of the emergency preparedness and response practices of New York City hospital facilities and their ability to consider the needs of the vulnerable populations with communication barriers which they may serve. Through sampling methods, considering ethical issues, measuring observable and empirical indicators, and collecting and analyzing data, the researcher performed this descriptive research. They provided justification for the mixed-method design that this study utilized in order to attempt to obtain valuable insight into the current practices of New York City hospital facilities in their emergency planning for vulnerable populations with communication barriers, as well as identifying solutions to potential gaps in this planning process and their sufficiency levels.

This section focuses on elaborating on the purpose of the study, fully defining the research questions and hypotheses, describing the research design, providing characteristics of the target population and sample, going over the procedures and tools used to collect and analyze data, addressing participant selection and the protection of participants, an overview of the instruments used to collect data from the participants, addressing the validity and reliability of such instruments and methods (including limitations to the study), and addressing ethical considerations concerning this study. This chapter concludes with a summary of the information presented, as well as any preliminary information that may affect subsequent chapters. The exploration of this topic described in the previous chapter informed the path that this formal study took in

terms of influencing its formal design to test the hypotheses or answers to the research questions posed, involving precise procedures and data source specifications.

## PURPOSE OF THE STUDY

The purpose of this descriptive study was to measure the sufficiency of emergency planning for vulnerable populations with either no or limited English proficiency, sight limitations, or hearing limitations at New York City hospital facilities. Additionally, by collecting certain demographic information and characteristics about these hospital facilities participating, this study tested correlations between these variables and the level of emergency planning for vulnerable populations with either no or limited English proficiency, sight limitations, or hearing limitations at these hospitals. The results of this study may help these hospitals to better understand their current capabilities for conducting specialized emergency planning activities for these specific vulnerable patient populations, as well as potentially identify any deficiencies in addressing the emergency planning needs of these populations as defined by regulatory agencies. The findings of this study could lead to the development or improvement of specific emergency plans focused on these vulnerable populations for the participating hospital facilities, as well as an increase in resources, training, and personnel to support these plans. It could also lead to the inclusion of certain emergency preparedness deliverables for all New York City hospital facilities to produce that would solely focus on vulnerable populations within the Healthcare and Public Health Sector of our nation's infrastructure.

Sponsored and required by the HHS Office of the Assistant Secretary for Preparedness and Response (ASPR), the Hospital Preparedness Program (HPP) is a cooperative agreement program administered by ASPR that establishes a foundation for national health care preparedness. As the only source of federal funding for health care system preparedness and response, HPP promotes a consistent national focus to improve patient outcomes during emergencies and disasters and enables rapid recovery. It enables the health care delivery system in New York City to save lives during emergencies and disaster events that exceed the day-to-day capacity and capability of existing health and emergency response systems. In order to receive such funding, participating hospitals must comply with and complete certain emergency preparedness deliverables within a given budget period, typically lasting one calendar year. The HPP is administered and ran by the NYC Department of Health and Mental Hygiene's (NYC DOHMH) Office of Emergency Preparedness & Response (OEPR) for participating NYC hospitals and health systems. This entity develops the HPP deliverables to ensure that they are in line with Health Care Preparedness and Response Capabilities as defined by ASPR. The findings of this study should prove beneficial in identifying deficiencies in NYC hospital facilities' ability to provide sufficient emergency planning for specific vulnerable populations. This study could be used to potentially influence the formation of one of these HPP deliverables to focus on addressing this issue.

The findings from this study could also be used to enhance the existing regulatory requirements for hospital facilities regarding emergency planning for vulnerable populations with communication barriers. The CMS requirements for

healthcare facilities are vague in terms of immediate emergency planning actions to take when planning for at-risk populations. There is obvious room for further specification regarding the emergency planning requirements incumbent upon individual hospital facilities for vulnerable populations. In order to better align with The Joint Commission requirements, the CMS Emergency Preparedness Rule §484.102(a)(3) could spell out these requirements (in terms of the specific areas in which hospital facilities need to enact differentiated planning for the specific needs of at-risk populations) to be in line with the six areas that The Joint Commission deems critical: communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs. The Joint Commission has standardized guidance that address emergency preparedness requirements for vulnerable populations (*EM 12.01.01, EP 2*), however, these standards display that not all types of at-risk populations are specifically identified, as well as their unique needs and vulnerabilities in emergency situations. For example, while the standard does address surge planning for some vulnerable populations (e.g., pediatric, geriatric, disabled, or have serious chronic conditions or addictions), it does not specifically mention those with no or limited English proficiency, sight limitations, or hearing limitations. The need for more inclusive language in these standards is apparent, as well as more specific language regarding how these regulations should be met by hospital facility emergency planners in all areas of communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs.

## RESEARCH QUESTIONS AND HYPOTHESES

The following research question was formed to assess the relationship between the vulnerabilities of certain populations with communication barriers (specifically, populations with either no or limited English proficiency, sight limitations, or hearing limitations) and the sufficiency of emergency planning for these populations at New York City hospital facilities. The hypothesis below reflects the various variables that may influence a hospital facility's ability to provide sufficient/enough planning for these aforementioned vulnerable populations with communication barriers.

RQ1: How does the vulnerability status of an individual or population with communication barriers affect their ability to receive sufficient/enough planning for emergency preparedness and response in a New York City hospital facility?

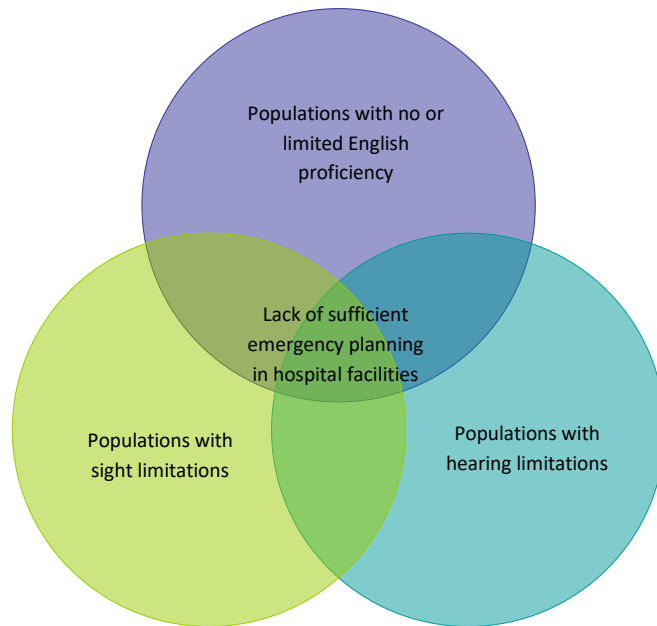
*H<sub>11</sub>*: There is a relationship between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in a hospital facility.

Through this study's research design, the researcher sought to prove that an individual or population with communication barriers, which stem from certain physical and in-tangible conditions, cause them to be underserved as populations, which puts their safety more at risk in hospital facilities who may be experiencing an emergency situation(s). The data collected was analyzed through bivariate analysis, which deals with two variables that can change and are compared to find relationships. The independent variable in this hypothesis is defined as the vulnerability status of a



population with communication barriers, and the dependent variable is defined as the ability of a vulnerable population with communication barriers to receive sufficient/enough emergency preparedness and response planning in a NYC hospital facility. The specific types of vulnerability status that were examined in this study were populations with no or limited English proficiency, sight limitations, and/or hearing limitations. The sufficiency of emergency preparedness and response planning at NYC hospital facilities for these populations was examined. Additionally, by collecting certain demographic information and characteristics about these hospital facilities participating, this study was able to test correlations between these variables and the sufficiency of emergency planning for vulnerable populations with communication barriers at these hospital facilities. The researcher developed the research questions below to address the additional correlations being examined in this study.

In order to illustrate the complexity of the problem to be examined in this study, the Venn diagram below (Figure 1) was created. This diagram clearly displays the populations with communication barriers involved in this study as the independent variable, as well as the convergence of these populations as it pertains to their lack of sufficient/enough emergency preparedness and response planning in NYC hospital facilities as the dependent variable:



**Figure 1 Venn Diagram Displaying Vulnerable Populations Considered in Study**

RQ2: How does the affiliation of a hospital facility (i.e., independent or part of a health system) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?

$H_{12}$ : There is a relationship between the affiliation of a hospital facility (i.e., independent or part of a health system) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

In this hypothesis, the independent variable is defined as the affiliation of the hospital facility (either independent or part of a health system), and the dependent variable is defined as the ability of the hospital facility to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. It

was predicted in this hypothesis that there would be a relationship between the affiliation of a hospital facility and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers based on the characteristics associated with healthcare systems. Healthcare systems, or conglomerates, tend to have more resources to devote towards emergency preparedness and planning initiatives, as well as more emergency management staff devoted towards these functions. They will typically have system-level emergency management structures in addition to their individual hospital facilities' emergency management structures. Independent hospital facilities do not have the added support that comes from a system-level emergency management structure that assists with setting the overall emergency management program's goals, advocating for resources, and the collaboration with the other hospital facilities within the system. In the event of an emergency or disaster, healthcare systems can depend on the immediate support from and coordination between the individual facilities within their network. With less staff, support, and resources to devote towards emergency management functions, it is predicted that independent hospital facilities will not have sufficient/enough emergency planning for vulnerable patient populations with communication barriers, as opposed to hospital facilities that are part of a health system or conglomerate.

RQ3: How does the presence of an emergency department within a hospital facility affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?

*H<sub>13</sub>*: There is a relationship between the presence of an emergency department within a hospital facility and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

In this hypothesis, the independent variable is defined as the presence of an emergency department within a hospital facility, and the dependent variable is defined as the ability of the hospital facility to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. It was predicted in this hypothesis that there would be a relationship between the presence of an emergency department within a hospital facility and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers based on the characteristics associated with hospital facilities that have emergency departments. Hospital facilities that have emergency departments tend to serve more diverse populations due to the inherent nature of no-notice visits of patients to these departments. Also due to this nature, these hospital facilities tend to have more experience with providing emergency care, as well as immediately meeting accelerated patient demand in strenuous conditions. Hospital facilities that do not have emergency departments do not have the same experience in providing emergency care for such diverse populations, and therefore, their emergency management plans may not be as robust and comprehensive. Therefore, it was predicted that hospital facilities without emergency departments would not have sufficient/enough emergency planning for vulnerable patient populations with communication barriers, as opposed to hospital facilities that do have emergency departments.

RQ4: How does the ownership status of a hospital facility (i.e., privately or publicly owned) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?

*H<sub>14</sub>*: There is a relationship between the ownership status of a hospital facility (i.e., privately or publicly owned) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

In this hypothesis, the independent variable is defined as the ownership status of a hospital facility (i.e., privately or publicly owned), and the dependent variable is defined as the ability of the hospital facility to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. It was predicted in this hypothesis that there would be a relationship between the ownership status of a hospital facility (i.e., privately or publicly owned) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers based on the characteristics associated with hospital facilities that are publically owned. Hospital facilities that are publically owned tend to serve more diverse populations than private hospital facilities (non-profit/voluntary hospital) due to their inherent nature to serve the community as a whole, providing health care services to all persons in the community regardless of their insurance coverage status. To a large extent, such care is provided to individuals who, for reasons relating to poverty, social circumstances, health (including mental health) status, employment, race, and culture, make up the community's most vulnerable populations (Andrulis, Acuff, Weiss, & Anderson, p. 162, 1996). Also, these hospital facilities tend to share

local governmental oversight and financial support, which are not resources that privately owned hospital facilities possess. Hospital facilities that are privately owned do not have the same experience in providing care for such diverse populations, and therefore, their emergency management plans may not be as inclusive and comprehensive towards vulnerable populations. Based on these assumptions, it was predicted that hospital facilities that are privately owned (non-profit/voluntary hospital) would not have sufficient/enough emergency planning for vulnerable patient populations, as opposed to hospital facilities that are publically owned.

RQ5: How does the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?

*H<sub>15</sub>*: There is a relationship between the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

In this hypothesis, the independent variable is defined as the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island), and the dependent variable is defined as their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. It was predicted in this hypothesis that there would be a

relationship between the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. Based on data collected in 2011 by the New York Center for Independence of the Disabled, each of the five boroughs have varying percentages of vulnerable populations with limited sight and limited hearing within them. In terms of limited hearing populations in New York City, the percentage of the borough population with limited hearing is the highest in Brooklyn (2.5%) and the Bronx (2.4%), and lowest in Manhattan (2.3%), Queens (2%) and Staten Island (1.7%) (Dooha, p. 31-34, 2011). In terms of limited sight populations in New York City, the percentage of the borough population with limited sight is the highest in Brooklyn (3.2%) and the Bronx (3.2%), and lowest in Manhattan (2.5%), Queens (2%), and Staten Island (1.2%) (Dooha, p. 31-34, 2011). Based on data collected in 2013 by the NYC Department of City Planning in the American Community Survey, each of the five boroughs have varying percentages of vulnerable populations with limited English proficiency within them. In terms of limited English proficiency populations in New York City, the percentage of the borough population with limited English proficiency is the highest in Queens (7.3%) and Brooklyn (6.9%), and lowest in the Bronx (4%), Manhattan (3%), and Staten Island (0.6%) (Department of City Planning, 2015). It was predicted that the boroughs with the higher percentages of vulnerable populations with communication barriers residing within them (i.e., Brooklyn, the Bronx, and Queens) would have higher Total Emergency Planning Sufficiency scores than the boroughs with the lower

percentages of vulnerable populations with communication barriers residing within them (i.e., Manhattan and Staten Island).

RQ6: How does the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) affect their ability to receive sufficient/enough emergency planning from hospital facilities?

*H<sub>16</sub>*: There is a relationship between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities.

In this hypothesis, the independent variable is defined as the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations), and the dependent variable is defined as their ability to receive sufficient/enough emergency planning from hospital facilities. It was predicted in this hypothesis that there would be a relationship between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities based on the inherent differences between each type of vulnerability type. It is unlikely for hospital facilities to equally account for the needs of every type of vulnerable population with communication barriers due to the financial and time constraints associated with



sufficient emergency planning. Hospital facilities may focus more of their efforts on only a few populations with vulnerabilities based on their resources and construct. Populations with sight and/or hearing limitations, for example, are supported by the ADA (Americans with Disabilities Act) requirements for healthcare facilities that are clearly written, stringent, and typically supported by individual Accessibility Services departments respective to each hospital facility. These departments create accountability for sufficient emergency planning for these populations with communication barriers. Similarly, populations with no or limited English proficiency may be supported by the same accountability through a hospital's language services department.

## RESEARCH DESIGN

This mixed-methods study had a nonexperimental correlational research design utilizing both quantitative and qualitative methods by using a cross-sectional survey, as well as semi-structured interviews with open-ended questions. In this communication study, the researcher questioned the subjects and collect their responses by both personal and impersonal means. Personal means consisted of in-person or virtual interviews, and impersonal means consisted of an online-based survey tool that automatically compiled results for the researcher to review. The survey collected responses by impersonal means in an anonymous fashion, and the interview collected responses by personal means in the form of video conference to adhere to social distancing guidelines. A survey instrument, which was validated by a panel of experts, was used to gain quantitative data on certain demographic characteristics of hospital facilities, as well as to form an overall "Emergency Planning Sufficiency Score" for

participating hospital facilities. Interview questions were used to gain qualitative data that expanded upon the types of emergency planning programs and efforts for vulnerable populations with communication barriers at participating hospital facilities, provided insight into and identified trends in the reasoning behind the level of emergency planning for vulnerable populations with communication barriers at participating hospital facilities, and elicited suggestions for enhancing emergency preparedness planning programs for vulnerable patient populations with communication barriers within participating hospital facilities.

For the purposes of this study, select vulnerability characteristics were chosen in order to form the survey and interview questions for participants. By choosing specific vulnerability characteristics to question participants on, the instruments were more structured and less vague in order to elicit more accurate responses from participating hospital facilities. The three sub-groups that were the basis for evaluating hospital facility emergency planning efforts for were: (1) populations with no or limited English proficiency; (2) populations with sight limitations; (3) and/or populations with hearing limitations. This study used these groups to form survey and interview questions around the areas of emergency preparedness specifically for them at participating hospital facilities. The areas of emergency preparedness in hospitals that were measured in this study were in line with the six areas that The Joint Commission deems critical: communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs.

This descriptive study had an ex post facto design, where the researcher had no control over the variables in the sense of being able to manipulate them. The survey asked for the participating hospital facilities to answer certain questions regarding their facility's demographic characteristics which are standard for all hospitals. This was a cross-sectional study that was carried out once and represented a snapshot of one point in time. This correlational study attempted to discover associations among different variables, and its task was to determine if the variables were interdependent or unrelated through bivariate statistics. This study attempted to determine the strength or magnitude of the relationship through bivariate analysis.

## TARGET POPULATION AND SAMPLE

### **Population**

Each hospital facility in the New York City region has at least one employee devoted towards emergency planning and response programming at their institution. While some hospital facilities may be small, independent hospitals that only have one or two employees in their Emergency Management departments, other hospitals that are part of a larger health system may have a corporate structure for their Emergency Management departments with several employees each having specialized functions (i.e., training and drills, continuity, crisis communications, etc.). Regardless, the one similarity that each hospital facility holds is that they assign one primary Emergency Preparedness Coordinator (EPC) per hospital to participate in the Greater New York Hospital Association (GNYHA) and NYC Department of Health and Mental Hygiene

(NYC DOHMH) emergency preparedness deliverable program. Sponsored and required by the HHS Office of the Assistant Secretary for Preparedness and Response (ASPR), the Hospital Preparedness Program (HPP) enables the health care delivery system in NYC to save lives during emergencies and disaster events that exceed the day-to-day capacity and capability of existing health and emergency response systems. HPP is the only source of federal funding for health care delivery system readiness, intended to improve patient outcomes, minimize the need for federal and supplemental state resources during emergencies, and enable rapid recovery.

HPP prepares the health care delivery systems to save lives through the development of health care coalitions (HCCs) that incentivize diverse and often competitive health care organizations with differing priorities and objectives to work together. Since the criteria to participate as a certain hospital facility's EPC in order to complete the annual preparedness deliverables sponsored by ASPR is standardized, the researcher used this cohort of primary EPC's to form the population for the study. This EPC cohort had equal representation from every hospital facility in the NYC region (i.e., one primary EPC or emergency management representative per hospital), regardless of the size or type of the facility. The definition of this EPC population as a cohort is accurate, as a cohort is defined as individuals or groups with a common starting point (Bachman & Schutt, p. 159, 2020). Each hospital in this population began the HPP program at the same point in time, and they have continued to participate in the program each year since it began in 2002. The population was comprised of 61 primary

EPC's, each representing either one of the 58 acute care hospitals or 3 stand-alone emergency departments in New York City.

### **Sample**

The nonprobability sampling technique of purposive sample was used in order to specifically select participants with the common characteristic of being a primary Emergency Preparedness Coordinator at a New York City hospital facility. A list of all hospitals within NYC was compiled by the researcher using Greater New York Hospital Association's database called Sit Stat 2.0 (powered by Juvare software). The list of 61 hospital facilities includes their respective primary EPC's, as well as contact information for them (i.e., e-mail addresses and phone numbers); the hospital facility's affiliation status (i.e., independent or part of a health system); an indication of the presence of an emergency department (yes/no) in the hospital facility; the hospital facility's ownership status (i.e., privately or publicly owned); and the hospital's location (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island). Different sampling methods were utilized for the quantitative (survey) and qualitative (interview) methods respectively.

Since the population of this study was so small, the researcher sent the survey questionnaire to every one of the 61 primary EPC's. Each of these individuals was responsible for the emergency preparedness and response planning for each hospital facility in NYC, therefore, it was inferred that analyzing their programs for addressing the needs of vulnerable populations (or lack thereof) could give the study an accurate

depiction of the efforts to do so for every hospital in NYC. In order to elicit a sufficient number of responses and encourage participation in this study, the responses were anonymous. Instead of requiring participants to disclose the specific hospital facility that they were representing, the survey asked certain questions regarding their facility's demographic characteristics in order to divide all cases into strata/variables based on their shared attributes or characteristics.

Based on the number of responses and the types of hospital facilities that participated in the survey, the researcher needed to equally represent each type of hospital within the NYC healthcare system, as each hospital branches off into multiple distinctive sub-groups, otherwise known as strata or variables. The eleven different sub-groups, or strata/variables, of the hospital population are as follows: (1) public hospitals; (2) private (non-profit/voluntary hospital) hospitals; (3) independent hospitals; (4) health system (or conglomerate) hospitals; (5) hospitals located in Manhattan; (6) hospitals located in Brooklyn; (7) hospitals located in the Bronx; (8) hospitals located in Queens; (9) hospitals located in Staten Island; (10) hospitals with an Emergency Department; and (11) hospitals without an Emergency Department. Out of a population of 61 EPCs, 11 represented public hospitals, and 50 represented private hospitals; 7 represented independent hospitals, and 54 represented hospitals that are a part of a larger health system or conglomerate; 21 represented hospitals located in Manhattan, 14 represented hospitals located in Brooklyn, 12 represented hospitals located in the Bronx, 11 represented hospitals located in Queens, and 3 represented

hospitals located in Staten Island; 53 represented hospitals that have an Emergency Department, and 8 represented hospitals that do not have an Emergency Department.

While the researcher sampled the entire population, they could not guarantee that all hospital facility EPC's would participate. In order for the respondents to be representative of the entire population, the researcher attempted to highlight the differences between the groups in the study's population (i.e., all 61 EPC's representing all NYC hospital facilities). By highlighting their differences, the researcher made informed assumptions based on them. For example, if hospitals that were a part of larger health care systems were surveyed and interviewed and shown to better accommodate for vulnerable populations needs through more emergency planning than independent hospitals, it might have been worth considering that this might be because they are provided with more resources at a corporate level to be able to meet the HPP deliverables and regulatory requirements better.

Ideally, the researcher aimed to elicit survey responses from 100% of the total population. If this was not possible due to low response rates, the researcher would have at least liked to elicit responses from at least 25% of the 61 hospitals in the population. By accomplishing this, the researcher effectively would have ensured a heterogeneous pool of study respondents. 25% of 61 equals 15 participants. Out of a population of 61 EPCs:

- 18% (11 individuals) represented public hospitals, and 82% (50 individuals) represented private hospitals

- 89% (54 individuals) represented hospitals that are a part of a larger health system or conglomerate, and 11% (7 individuals) represented hospitals that are independent
- 34% (21 individuals) represented hospitals located in Manhattan, 23% (14 individuals) represented hospitals located in Brooklyn, 20% (12 individuals) represented hospitals located in the Bronx, 18% (11 individuals) represented hospitals located in Queens, and 5% (3 individuals) represented hospitals located in Staten Island
- 87% (53 individuals) represent hospitals that have an Emergency Department, and 13% (8 individuals) represent hospitals that do not have an Emergency Department

In the minimum respondent sample of 15 participants:

- At least 3 participants must have represented public hospitals (18% of 15 = 2.69), and at least 12 participants must have represented private hospitals (82% of 15 = 12.29) in order for the respondent sample to be representative of the overall population of 61 EPC's
- At least 13 participants must have represented hospitals that are a part of a larger health system or conglomerate (82% of 15 = 13.35), and at least 2 participants must have represented independent hospitals (11% of 15 = 1.65) in order for the respondent sample to be representative of the overall population of 61 EPC's



- At least 5 participants must have represented Manhattan hospitals (34% of 15 = 5.1); at least 3 participants must have represented Brooklyn hospitals (23% of 15 = 3.45); at least 3 participants must have represented Bronx hospitals (20% of 15 = 3); at least 3 participants must have represented Queens hospitals (18% of 15 = 2.69); and at least 1 participant must have represented Staten Island hospitals (5% of 15 = .75) in order for the respondent sample to be representative of the overall population of 61 EPC's
- At least 13 participants must have represented hospitals that have an Emergency Department (87% of 15 = 13.05), and at least 2 participants must have represented hospitals that do not have an Emergency Department (13% of 15 = 1.95) in order for my respondent sample to be representative of the overall population of 61 EPC's

This minimum participation criteria (at least 3 individuals representing public hospitals; at least 12 individuals representing private hospitals; at least 13 participants representing hospitals that are a part of a larger health system or conglomerate; at least 2 participants representing independent hospitals; at least 5 participants representing Manhattan hospitals; at least 3 participants representing Brooklyn hospitals; at least 3 participants representing Bronx hospitals; at least 3 participants representing Queens hospitals; at least 1 participant representing Staten Island hospitals; at least 13 participants representing hospitals with an Emergency Department; at least 2 participants representing hospitals without an Emergency

Department) was be used to form the sample of 15 or more participants for both the survey and interview portions of this study.

## PARTICIPANT SELECTION

In order to reach the subjects of the study, the researcher sent individual communications to the selected sample of participants, and follow-up communications were sent by the Greater New York Healthcare Association (GNHYA). First, the researcher utilized GNYHA's online platform for EPC's, called Sit Stat 2.0 (powered by Juvare software), in order to gather EPC contact information. Each hospital in NYC has a profile in Sit Stat 2.0 that is updated individually by each EPC for that hospital. It includes such information such as how many generators the facility has, if the facility has an Emergency Operations Center, contact information for the EOC, and most importantly for this study, who the current EPC for the hospital is (along with their contact information and backup EPC). A list of all hospitals within NYC was compiled by the researcher using Sit Stat 2.0. The list of 61 hospital facilities included their respective EPC's, as well as contact information for them (including e-mail address and phone number), the hospital facility's affiliation status (i.e., independent or part of a health system), an indication of the presence of an emergency department (yes/no) in the hospital facility, and the hospital facility's ownership status (i.e., privately or publicly owned). This list was then sent to individuals within GNYHA's Legal, Regulatory, and Professional Affairs Department. These individuals verified that the data was complete and accurate. When the survey was formed and ready to be sent to the entire EPC population of 61 individuals, the researcher sent a copy of the e-mail

communication in Appendix E. Seven days after the researcher sent the original e-mail communication to the population regarding the request for survey completion, GYNHA sent a follow-up e-mail communication to each of the 61 hospital EPC's to further request their participation in the survey. GYNHA forwarded a copy of the e-mail communication in Appendix E, and also included the statements listed in Appendix F.

Using a similar method for defining a heterogeneous pool of study respondents, the sample for conducting interviews for this study was selected using random selection. The population of 61 EPC's was individually assigned random numbers, which were entered in a random number generator in order to select the interview participants. First, the researcher used the random number generator to select participants for sufficient representation from public and private hospitals. They assigned the 11 individuals representing public hospitals a number from 1 through 11. Then, they used the random number generator to generate 3 separate numbers. Once they set the parameters in the random number generator, they let the calculator choose the number for them. Those numbers generated represented the 3 corresponding EPC's that the researcher reached out to in order to participate in an interview. The researcher then assigned the 50 individuals representing private hospitals a number from 1 through 50. Then, the researcher used a random number generator to generate 12 separate numbers. Those numbers generated represented the 12 corresponding EPC's that were contacted in order to participate in an interview. The researcher then ensured that out of this selection of 15 individuals (3 individuals representing public hospitals and 12 individuals representing private hospitals), that they also had at least 13 participants

representing hospitals that were a part of a larger health system or conglomerate; at least 2 participants representing independent hospitals; at least 5 participants representing Manhattan hospitals; at least 3 participants representing Brooklyn hospitals; at least 3 participants representing Bronx hospitals; at least 3 participants representing Queens hospitals; at least 1 participant representing Staten Island hospitals; at least 13 participants representing hospitals with an Emergency Department; and at least 2 participants representing hospitals without an Emergency Department. Since the initial sample was not inclusive of these criteria, the researcher then used a random number generator to generate more numbers corresponding to EPC's until they met these criteria.

Once all criteria were met (with at least 3 individuals representing public hospitals; at least 12 individuals representing private hospitals; at least 13 participants representing hospitals that are a part of a larger health system or conglomerate; at least 2 participants representing independent hospitals; at least 5 participants representing Manhattan hospitals; at least 3 participants representing Brooklyn hospitals; at least 3 participants representing Bronx hospitals; at least 3 participants representing Queens hospitals; at least 1 participant representing Staten Island hospitals; at least 13 participants representing hospitals with an Emergency Department; and at least 2 participants representing hospitals without an Emergency Department), these 15 or more hospital facility EPC's were contacted. An e-mail was sent directly from the EPC requesting an interview with them. If the EPC did not respond to the e-mail sent within seven to nine days, the researcher asked GNYHA to send a follow-up e-mail. If the EPC

did not respond within two to three days after the follow-up e-mail was sent, the researcher used the random number generator to generate more numbers corresponding to EPC's and contacted them appropriately according to the criteria needed. If the EPC selected did respond and requested that the researcher obtain permission to conduct the interview from their hospital's IRB, then that hospital's IRB would have been contacted directly in order to obtain permission. Consistent with the survey results, all interviewee identities remained anonymous.

When the interview questions were formed and ready to be conducted, the researcher sent a copy of the e-mail communication in Appendix G to the EPC sample selected of 15 or more individuals. If the researcher did not receive a response from the selected interview participant within seven to nine days after the researcher had sent the original e-mail communication, the researcher sent a follow-up e-mail communication to the unresponsive hospital EPC to further request their participation in the interview. The researcher sent a copy of the e-mail communication in Appendix H.

## PROTECTION OF PARTICIPANTS

As previously mentioned, the identities of the EPC's were not disclosed, and the hospital facilities that they represented remained anonymous. Instead, the researcher used the demographic data collected in the survey in order to group their responses into specific identifiable categories. Participants were further protected by attesting to an informed consent form that was presented to them before they were able to complete both the survey and the interview. This informed consent form ensured the

confidentiality of all identifying information collected (see Appendix D: Zoom Interview Consent Form, as well as the first page of Appendix A: Survey Instrument).

All data collected from this study was kept on an encrypted database that was password protected. It was only accessible to the researcher, as well as any participants or stakeholders involved in this research that they deemed necessary to grant certain access to. This could have included, but was not limited to, interview participants, the Dissertation Committee (including the Committee Chairperson, two internal Committee Members, and two external Committee Members, five subject matter experts composing a panel used to validate the survey instrument, and other stakeholders at the discretion of the researcher). The researcher reviewed all interview transcriptions (with assistance transcribing them provided by a professional transcription service) and performed all data analyzation themselves. E-mail communications to participants were sent from a secure server, and virtual interviews were conducted via a secure Zoom platform.

This doctoral dissertation study was presented to the Institutional Review Board (IRB) at St. John's University for approval. The researcher was not attempting to study vulnerable populations, but rather, human subjects with knowledge and experience planning for the emergency management needs of these vulnerable populations with communication barriers within their hospital facilities. St. John's University is guided by the ethical principles governing all research involving humans as subjects, as set forth in the report of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (the "Belmont Report") and by the principle of respect for human persons as taught by the Catholic Church. St. John's University

accords supervisory responsibility for the fulfillment of its commitment to the human person to the Institutional Review Board. This policy applies to all research involving human subjects conducted by faculty, staff or students of St. John's University, regardless of the source of funding, or the location of the study, as per registered Federal Wide Assurance (FWA)00009066.

## INSTRUMENTS

### **Survey**

The researcher did not find any encompassing, standardized survey instrument in the literature to utilize for this study. Therefore, the researcher developed a survey tool that utilized certain aspects of validated tools already in existence. This survey instrument was utilized in order to gain quantitative data on certain demographic characteristics of hospital facilities, as well as to form an overall “Emergency Planning Sufficiency Score” for participating hospital facilities. Interview questions were structured in four sections in order to cover the topic of demographic information, as well as to evaluate the level of emergency planning for practices of hospital facilities for three sub-groups of vulnerable populations: populations with no or limited English proficiency, sight limitations, and/or hearing limitations. Each sub-group had their own section with similar questions pertaining to the six areas that The Joint Commission deems critical (some questions differed based on the specific needs of that population): communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs. Survey questions in each section (besides the

demographic information section) were assigned specific value labels on a 5-point Likert scale that added to the participant's overall "Emergency Planning Sufficiency Score". These scores were compared in order to assess the potential correlations between the demographic variables and the level of sufficiency of emergency planning for vulnerable populations with communication barriers at these hospital facilities (i.e., the "Total Emergency Planning Sufficiency Score").

This survey instrument utilized some aspects of the PRI (Public Readiness Index) that is currently used by American Red Cross and Ready.gov for assessing personal preparedness for emergencies of all citizens in the United States. This validated survey consists of ten questions developed by the Council for Excellence in Government. The PRI measures the preparedness of communities, families, and individuals, assessing an individual's readiness for disasters on a 10-point scale based on responses to 10 questions (Council for Excellence in Government, p. 530, 2006). For this study, this instrument was modified to measure the preparedness level for vulnerable populations with communication barriers within hospital facilities based on their specific emergency planning efforts for populations with no or limited English proficiency, sight limitations, and/or hearing limitations.

The instrument also utilized certain aspects of an Emergency Preparedness Survey used by the Michigan Department of Community Health's (MDCH) Office of Public Health Preparedness and the Michigan Primary Care Association (MPCA) in 2010 to inventory the levels of preparedness of Michigan's federally qualified health centers across the state. This inventory was conducted to gather consistent baseline



information on resources at Michigan's federally qualified health centers. Most relevant to this study, it incorporated questions regarding emergency planning resources for specifically vulnerable populations in the context of a hospital setting. In general terms, these health centers that were surveyed using this tool were community-based and patient-directed organizations that serve populations with limited access to health care. In Michigan, these agencies serve a critical portion of the health delivery system, especially for children, the elderly, homeless, and migrant populations of Michigan. The survey instrument was originally developed by Public Sector Consultants with input from both the MDCH and the MPCA, and it was administered through a secure website (Michigan Department of Community Health & Michigan Primary Care Association, p. 1, 2010).

The survey tool developed for this study can be found in Appendix A.

## **Interviews**

This interview tool was important to further define the concepts rated in the survey. Interview questions were used to gain qualitative data that expanded upon the types of emergency planning programs and efforts for vulnerable populations with communication barriers at participating hospital facilities, attempted to provide insight into and identify trends in the reasoning behind the level of emergency planning for vulnerable populations with communication barriers at participating hospital facilities, and attempted to elicit suggestions for enhancing emergency preparedness planning programs for vulnerable patient populations with communication barriers within

participating hospital facilities. Most studies have measured quantitatively by distributing surveys to participants, and those participants are typically the vulnerable populations themselves. This study took a different approach by performing in-depth follow-up interviews from the source; with the individual who controls the emergency planning efforts that these vulnerable populations may or may not be afforded. A sensitive, complicated, and in-depth issue such as emergency planning for vulnerable populations with communication barriers needs just as in-depth of a study. By keenly observing respondents, sensitively planning their participation, systematically taking notes, and strategically questioning respondents, the researcher was prepared to spend more time and invest more of their whole self than they would on just a survey alone (Bachman & Schutt, p. 264, 2020).

These interviews utilized a questionnaire template to standardize the content of each of them that were conducted. Unlike interviews that rely on fixed-choice questions, the researcher's interviews relied only on an interview guide that posed several open-ended questions to the EPCs, approaching the research questions inductively, not deductively. First, the researcher gathered data, and then, they interpreted the data and developed analytic categories from which more questions were developed. Most importantly, not only did the study collect data regarding the potential gaps in emergency preparedness and response planning for vulnerable populations with communication barriers, it also collected best practices from these NYC hospital EPC's as they described the efforts in emergency planning that they independently have created and administered at their facilities to meet their healthcare needs. By compiling these emergency planning

deliverables, they can be applied towards future studies in terms of measuring the effectiveness of each one and comparing them to one another. Only after many in-depth interviews and countless hours of transcribing and analyzing did the researcher attempt to develop general principles to account for their observations, which is the kind of specialized and devoted attention that this issue deserves.

The interview questionnaire developed for this study can be found in Appendix B.

## VALIDITY AND RELIABILITY

The validity and reliability of the survey instrument which this study utilized was an important consideration that was addressed. The researcher's modified version of the Public Readiness Index (PRI) needed to maintain the same validity and reliability of the original survey. A Cronbach's alpha test was previously performed after combining the PRI with a demographic index, the internal consistency of emergency preparedness  $\alpha = 0.910$ , and awareness  $\alpha = 0.994$  (Kapachu, p. 531, 2008). Previous researchers have used the PRI and proven it psychometrically sound, possessing strong reliability and validity estimates (Najafi, Ardalan, Akbarisari, Noorbala, & Jabbari, p. 3, 2015). Further validation of the instrument occurred in a joint study during August and October 2005; the period before, during, and after Hurricane Katrina made landfall in the Southeastern United States. Findings indicated that post-Katrina, 44% of Americans reported they had not done more to prepare for a disaster because they did not know how to prepare (Council for Excellence in Government, p. 528, 2006). Another study

reported that validation of the survey-based tool is at risk when it is not conceptually equivalent for cultural subgroups (Heagele, p. 980, 2016). However, it emerged when testing the instrument for validity that participants were from multicultural groups, rendering Heagele's report inaccurate.

The survey tool developed for this study was further validated by a panel of five experts. The experts consisted of individuals from city health departments, higher education, regional healthcare support agencies, and individual hospitals. Four of the five experts on this panel had a terminal degree. Experts were provided with a rubric to rate the survey instrument in terms of its appropriateness, suitability, usefulness, consistency, and comprehensiveness. After reviewing the survey alongside the rubric, experts filled out a form based on the rubric which also allowed for additional recommendations in a free text block. After the panel of experts provided their feedback, the researcher used Chronbach's Alpha to analyze the questions in order to ensure that the survey had scale validity. The rubric used for this study's survey validation can be found in Appendix C. This survey validation rubric tool was modified by this author from the Survey/Interview Validation Rubric for Expert Panel (VREP) created by Marilyn K. Simon with input from Jacquelyn White (Simon, M.K., 2016).

Based on the responses from the expert panel, several changes were made to the "Hospital Emergency Planning for Vulnerable Populations (with No or Limited English Proficiency, Sight Limitations, and/or Hearing Limitations) Survey" (Appendix A). The rubric (in the form of a survey) completed by each member of the expert panel found no major deficiencies in the survey's appropriateness, suitability, usefulness, consistency,

and comprehensiveness. However, several questions were removed or edited based on the panel's feedback. In terms of additions, the researcher edited the survey's instructional page to include a statement regarding the fact that survey results would "only be accessible to this researcher."

In terms of what the expert panel suggested to be omitted from the survey, the researcher removed several questions. Due to the anonymity of the survey, the variable of "size of the hospital" (e.g., how many beds) was removed. This was originally listed as a demographic question on this study's survey, but it was removed in an attempt to ensure the anonymity of the hospitals submitting the survey and increase the response rate. For the same reason of anonymity, the demographic question on this study's survey regarding which hospital type best described the facility (i.e., Acute Care Hospital or Stand-Alone Emergency Department) was removed. Given the limited amount of stand-alone Emergency Departments in New York City, the expert panel felt that this question could be used to identify the specific hospital answering the survey.

Several non-demographic questions were also removed from the survey as a result of the expert panel validation. A question was removed regarding Security personnel training, as the panel felt it would involve the EPC potentially needing to get that answer from their hospital's Security Department. This would extend the amount of time it would take for them to complete the survey. Another question was removed regarding just-in-time training for emergency volunteers, as the panel felt it would involve the EPC potentially needing to get that answer from their hospital's Volunteer Department. Lastly, a question was removed regarding an indicator in the hospital

Electronic Medical Record System (EMR) identifying patients' vulnerabilities, as the panel felt it would involve the EPC potentially needing to get that answer from their hospital's clinical staff because the EPC may not have access to EMR system. Overall, the panel felt that removing these questions was important in order to make survey less lengthy for participants, which would hopefully increase the response and completion rates.

## MEASUREMENTS

### **Survey**

The results of each survey were analyzed both individually and collectively in order to perform various statistical tests for independence and significant differences. Questions #5-40 (36 questions total) were used to determine the Emergency Planning Sufficiency Score for each hospital participant. For each question that the participant answered on a 5-point Likert scale, they were granted an equal number of points towards their score. For example, if a participant chose the answer "only once" for question #5, they were granted 1 point towards their Emergency Planning Sufficiency Score. After completion of the survey, the score was tabulated based on the answers, and the participant fell into one of the categories below for their total Emergency Planning Sufficiency Score. The researcher used a five-point Likert scale to codify total Emergency Planning Sufficiency Score findings (total equals the sum of the values gained from survey questions #5-40):

- 1 = Excellent: Emergency Planning Sufficiency Score of 116-144 - Hospital has sufficient/enough planning for vulnerable populations with communication barriers.
- 2 = Good: Emergency Planning Sufficiency Score of 87-115 - Hospital is close to having sufficient/enough planning for vulnerable populations with communication barriers, but there is room for improvement in some areas.
- 3 = Acceptable: Emergency Planning Sufficiency Score of 58-86 - Hospital has a good foundation for sufficient/enough planning for vulnerable populations with communication barriers, but there is room for improvement in many areas.
- 4 = Poor: Emergency Planning Sufficiency Score of 29-57 - Hospital has a weak foundation for sufficient/enough planning for vulnerable populations with communication barriers, and there is need to address the gaps in most critical areas.
- 5 = Very Poor: Emergency Planning Sufficiency Score of < 28 - Hospital does not have a foundation for sufficient/enough planning for vulnerable populations with communication barriers, and there is a severe need to address the gaps in most critical areas.

The statistical tests that the researcher used to analyze the results of this study's survey were Chi-Square tests and Kruskal-Wallis tests. Kruskal-Wallis tests are used for determining whether the means of two or more groups are different. This test was used for the hypotheses below:

*RQ5: How does the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?*

A Kruskal-Wallis test was used to determine if there was a significant difference between the survey Total Emergency Planning Sufficiency Score for hospitals that are located in each of the five NYC boroughs (Manhattan, Brooklyn, Bronx, Queens, and Staten Island). Therefore, the categorical independent variable was borough (with the categories of Manhattan, Brooklyn, Bronx, Queens, or Staten Island), and the continuous dependent variable was the survey's Total Emergency Planning Sufficiency Score (measured on a 5-point Likert scale from Excellent to Very Poor). The Kruskal-Wallis test displayed if there were significant differences in the mean scores of the dependent variable across these five groups. The Kruskal-Wallis test determined whether to accept or reject the null hypothesis that the means are equal for the five independent variables (hospitals located in Manhattan, Brooklyn, Bronx, Queens, or Staten Island) with the dependent variable (Total Emergency Planning Sufficiency Score).



After performing the Kruskal-Wallis test, it could be determined if there was a significant difference between the survey's Total Emergency Planning Sufficiency Scores for hospitals located in the borough of Manhattan, Brooklyn, Bronx, Queens, or Staten Island, respectively. However, this test would not indicate which groups were different; it would only indicate if there was a significant difference between groups. Therefore, the researcher planned to run a Post-Hoc test afterwards to determine which of the five groups were different in terms of the higher mean.

*RQ6: How does the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) affect their ability to receive sufficient/enough emergency planning from hospital facilities?*

A Kruskal-Wallis test was used to determine if there was a significant difference between the survey's Population-Specific Emergency Planning Sufficiency Score for populations with no or limited English proficiency, sight limitations, and/or hearing limitations. Therefore, the categorical independent variable was type of vulnerability (with the categories of populations with no or limited English proficiency, sight limitations, and/or hearing limitations), and the continuous dependent variable was the survey's Population-Specific Emergency Planning Sufficiency Score (measured on a 5-point Likert scale from Excellent to Very Poor). The Kruskal-Wallis test displayed if there were significant differences in the mean scores of the dependent variable across these three groups. The Kruskal-Wallis test determined whether to accept or reject the null hypothesis that the means are equal for the three independent variables (populations

with no or limited English proficiency, sight limitations, and/or hearing limitations) with the dependent variable (Population-Specific Emergency Planning Sufficiency Score).

In order to evaluate and compare the survey scores for each individual group of the three groups comprising the categorical independent variable (populations with no or limited English proficiency, sight limitations, and/or hearing limitations), the three sections of each survey were separated and scored on a separate five-point Likert scale. There are three separate sections of the survey; one representing each of the three populations. Each section of the survey has an equal amount of twelve questions that measure the same areas in emergency planning sufficiency. In order to calculate Population-Specific Emergency Planning Sufficiency Scores for each separate group in the survey, the researcher used a five-point Likert scale to codify Population-Specific Emergency Planning Sufficiency Score findings [total equals the sum of the values gained from twelve survey questions (5-16; 17-28; and 29-40)]:

- 1 = Excellent: Population-Specific Emergency Planning Sufficiency Score of 39-48 - Hospital has sufficient/enough planning for this specific vulnerable population.
- 2 = Good: Population-Specific Emergency Planning Sufficiency Score of 29-38 - Hospital is close to having sufficient/enough planning for this specific vulnerable population, but there is room for improvement in some areas.

- 3 = Acceptable: Population-Specific Emergency Planning Sufficiency Score of 19-28 - Hospital has a good foundation for sufficient/enough planning for this specific vulnerable population, but there is room for improvement in many areas.
- 4 = Poor: Population-Specific Emergency Planning Sufficiency Score of 9-18 - Hospital has a weak foundation for sufficient/enough planning for this specific vulnerable population, and there is need to address the gaps in most critical areas.
- 5 = Very Poor: Population-Specific Emergency Planning Sufficiency Score of < 9 - Hospital does not have a foundation for sufficient/enough planning for this specific vulnerable population, and there is a severe need to address the gaps in most critical areas.

After performing the Kruskal-Wallis test, it was determined if there was a significant difference between the survey's Population-Specific Emergency Planning Sufficiency Scores for populations with no or limited English proficiency, sight limitations, and/or hearing limitations. However, this test would not indicate which groups are different; it would only indicate if there was a significant difference between groups. Therefore, the researcher planned to run a Post-Hoc test afterwards to determine which of the three groups were different in terms of the higher mean. Qualitative data extracted from the interviews of this study was also used to evaluate RQ6.

The Chi-Square test for independence was used to determine whether two categorical variables were related, where each of the variables may have two or more categories. A Chi-Square test allowed this study to determine if what we observed in a distribution of frequencies is what we expected to occur by chance. The categorical variables, taken from this study's hypotheses, to be tested separately were as follows:

*RQ2:* Chi-Square test for independence was used to determine whether the two categorical variables of the affiliation of a hospital facility and sufficient/enough emergency response planning for vulnerable populations with communication barriers were related. The categories in the variable of the affiliation of a hospital facility were defined as independent and health system. The categories in the variable of sufficient/enough emergency response planning for vulnerable populations with communication barriers were (determined by Emergency Planning Sufficiency Scores from the survey): 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor.

*RQ3:* Chi-Square test for independence was used to determine whether the two categorical variables of the presence of an emergency department and sufficient/enough emergency response planning for vulnerable populations with communication barriers were related. The categories in the variable of the presence of an emergency department were defined as ED present and ED not present. The categories in the variable of sufficient/enough emergency response planning for vulnerable populations with communication barriers were (determined by Emergency Planning Sufficiency Scores from the survey): 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor.

*RQ4*: Chi-Square test for independence was used to determine whether the two categorical variables the ownership status of a hospital facility and sufficient/enough emergency response planning for vulnerable populations with communication barriers were related. The categories in the variable of the ownership status of a hospital facility were defined as private and public. The categories in the variable of sufficient/enough emergency response planning for vulnerable populations with communication barriers were (determined by Emergency Planning Sufficiency Scores from the survey): 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor.

In order to address RQ1, the researcher did not use a statistical test. RQ1 would not be able to be answered with a statistical test, as this study did not choose to measure an Emergency Planning Sufficiency Score for non-vulnerable populations. This study is assuming that the general population is accounted for in hospital Emergency Operations Plans. Therefore, finding the measures of central tendency for the Emergency Planning Sufficiency Scores for vulnerable populations with communication barriers from all of the surveys combined would suffice in analyzing the overall sufficiency of the NYC hospital system in emergency planning for vulnerable populations with communication barriers. By calculating the mean, median, and mode scores, it was determined where they fall on the 5-point Likert scale (for the Emergency Planning Sufficiency Scores, measured from Excellent to Very Poor) which determined their sufficiency level. Qualitative data extracted from the interviews of this study were also used to support RQ1.

RQ1: An analysis of the measures of central tendency from the total number of Emergency Planning Sufficiency Scores for vulnerable populations with communication barriers from all of the surveys combined was used to determine the sufficiency of emergency planning for vulnerable populations with communication barriers within the NYC hospital system. The two categorical variables of vulnerability status and sufficient/enough emergency response planning for vulnerable populations with communication barriers are related. The categories in the variable of vulnerability status were defined as no or limited English proficiency, sight limitations, and hearing limitations. The categories in the variable of sufficient/enough emergency response planning for vulnerable populations with communication barriers were (determined by Emergency Planning Sufficiency Scores from the survey): 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor.

### **Interview**

In order to analyze the data collected from the interviews conducted, the first phase began with the Zoom audio/video recording of the interview. The researcher had each interview transcribed verbatim following their conclusion. After the verbatim interviews were transcribed, the researcher searched the data for emerging codes, categories, and themes. The transcribed text was checked for accuracy in the interview by listening and checking the written transcript multiple times. First cycle analysis included identifying similarities in the context from the transcript to code the data, which included concept coding and descriptive coding. Similar words or concepts were color coded, underlined, and/or highlighted from each interview, and then organized in

a table. Examples found in the interviews related to the categories that formed ideas and themes.

Second cycle analysis included looking at the data and highlighted areas previously preceded and coded to find additional ways to code the data by looking for patterns. NVivo qualitative research analysis software was reviewed for theme analysis. Themes were created by looking for words with similar meanings. “Generic coding” method was applied to the data (Saldaña, p. 64, 2009). Structural coding was used for the content response data to identify broad categories with limited use of code frequency. An Excel document was created for data analysis. In the Excel worksheet, each research question was represented, and answers from the participants that were specific to the research questions were pulled out from the transcript for further analysis. As ideas and themes emerged, they were noted in the themes and no themes columns on the worksheet.

Third cycle analysis included the resultant codes being reviewed. In this review, common or similar codes were grouped. Each group was reviewed, analyzed, and assigned a pattern code. The pattern code was further analyzed in context and refined into a theme.

All of these methods of data analysis, both qualitative and qualitative, are displayed below (Table 1).

**Table 1 Table Displaying Methods of Data Analysis**

<b>Hypothesis</b>	<b>Research Question Relation</b>	<b>Hypothesis Testing Type</b>	<b>Statistical Test</b>
There is a relationship between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in NYC hospital facilities.	RQ1	Quantitative and Qualitative (QDA)	N/A (Independent Analysis of Measures of Central Tendency)
There is a relationship between the affiliation of a hospital facility (i.e., independent or part of a health system) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.	RQ2	Quantitative	Chi-Square test for independence
There is a relationship between the presence of an emergency department within a hospital facility and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.	RQ3	Quantitative	Chi-Square test for independence
There is a relationship between the ownership status of a hospital facility (i.e., privately or publicly owned) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.	RQ4	Quantitative	Chi-Square test for independence



There is a relationship between the borough a hospital is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, and Staten Island) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.	RQ5	Quantitative	Kruskal-Wallis test
There is a relationship between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities.	RQ6	Quantitative and Qualitative (QDA)	Kruskal-Wallis test

All of the hypotheses, along with their respective independent and dependent variables, are displayed below (Table 2).

**Table 2 Table Displaying Variables in Hypotheses**

<b>Hypothesis</b>	<b>Independent Variable</b>	<b>Dependent Variable</b>	<b>Unit of Measurement for Dependent Variable</b>
<i>H<sub>11</sub></i>	The vulnerability status of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations)	Their ability to receive sufficient/enough emergency planning from hospital facilities	Total Emergency Planning Sufficiency Score (five-point Likert scale: 1=excellent, 2=good, 3=acceptable, 4=poor, and

			5=very poor)
<i>H<sub>12</sub></i>	The affiliation of the hospital facility (i.e., independent or part of a health system)	The ability of the hospital facility to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers	Total Emergency Planning Sufficiency Score (five-point Likert scale: 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor)
<i>H<sub>13</sub></i>	The presence of an emergency department within a hospital facility (i.e., yes or no)	The ability of the hospital facility to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers	Total Emergency Planning Sufficiency Score (five-point Likert scale: 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor)
<i>H<sub>14</sub></i>	The ownership status of a hospital facility (i.e., privately or publicly owned)	The ability of the hospital facility to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers	Total Emergency Planning Sufficiency Score (five-point Likert scale: 1=excellent, 2=good, 3=acceptable, 4=poor, and

			5=very poor)
<i>H<sub>15</sub></i>	The borough a hospital is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, and Staten Island)	The ability of the hospital facility to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers	Total Emergency Planning Sufficiency Score (five-point Likert scale: 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor)
<i>H<sub>16</sub></i>	The vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations)	Their ability to receive sufficient/enough emergency planning from hospital facilities	Population-Specific Emergency Planning Sufficiency Scores for each of the three groups (five-point Likert scale: 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor)

## ETHICAL CONSIDERATIONS

The ethical concerns of this study that were considered and effectively dealt with were honesty with professional colleagues, as well as exploitation. When dealing with vulnerable populations, an exploitation of them has been displayed in some past studies. In this study, the researcher offered an outside perspective that was completely objective, and exploiting vulnerable populations was not an intention or outcome. Instead, the researcher's intention was to analyze the results of the interviews and data sets in an informed way, and if they proved to answer the research question in a way that supported the viewpoint of there being disparities in emergency preparedness and response opportunities for these populations, the researcher hoped to influence these populations positively by calling for reforms to these practices in order to better support their needs during an emergency in a hospital setting. The researcher also addressed this ethical issue of exploitation by not directly studying or interviewing these populations. By focusing solely on the emergency management programs at hospital facilities, as well as the emergency management administrators of these programs, the researcher analyzed the opportunities for emergency preparedness and response afforded to these vulnerable populations (or lack thereof), as opposed to focusing on their "supposed" inherent vulnerabilities as individuals. In the hypotheses, the researcher sought to prove that their vulnerabilities stem solely from certain physical and intangible conditions that cause them to be underserved as populations, which put them more at risk in hospital facilities who may be in emergency situations.

The other ethical concern that had the potential to affect this study was honesty with professional colleagues, which would be due to the fact that the researcher was (at the time the study was conducted) a practitioner in the field that was seeking to serve these vulnerable populations and expose any gaps in emergency preparedness and response programs that may exclude them or place them at a disadvantage. The researcher also interviewed professional colleagues of theirs, as the emergency management practitioners in hospitals meet regularly in symposiums and meetings held by healthcare associations, departments of health, healthcare coalitions, etc. The researcher addressed this ethical issue and ensured complete objectivity by reporting their findings in a complete and honest fashion, without misrepresenting what they had done. In no way did the researcher intentionally mislead their findings or fabricate data to support a specific conclusion. They provided complete transcripts of all of their interviews, and they selected their subjects in a random fashion to form a representative sample. The researcher conducted their study in partnership with the Greater New York Healthcare Association (GNYHA), who sent messaging to participants on their behalf. The follow-up messages did not personally come from the researcher, and they utilized GNYHA's online database ("Sit Stat 2.0", powered by Juvare software) to gather the most accurate information for determining the emergency preparedness coordinators from each hospital facility (as well as their contact information).

## CHAPTER 4: RESULTS

The purpose of this chapter is to share the results of both the survey and interview portions of this study. The research findings from each of these separate quantitative and qualitative measures is presented in their own respective sections, but the Descriptive Statistics section accounts for the response rates for both measures and a summary of the hospital characteristics from participants. Following the description of the sample characteristics, results are presented according to the research questions and corresponding hypotheses.

### DESCRIPTIVE STATISTICS

The response rates, including the hospital characteristics from participants, for both the surveys and interviews conducted for this study are displayed below (Table 3). The section titled 'Variable' represents the hospital characteristics. The section titled 'Total Number in Population' represents the total number of hospitals in the population for each of the characteristics listed. The section titled 'Amount Needed in Sample Survey/Interview Participants' represents the goal number of EPC participants per each characteristic to participate in the survey and interview (25% of 'Total Number in Population'). As previously explained in the 'Target Population and Sample' section of this dissertation, by reaching these goal numbers, the researcher effectively ensured a heterogeneous pool of study respondents that was representative of the overall population of 61 EPC's. The section titled 'Actual Amount of Survey Participants' represents the actual response rate of EPC participants per each characteristic that

participated in the survey. The section titled ‘Actual Amount of Interview Participants’ represents the actual response rate of EPC participants per each characteristic/variable that participated in the interview.

**Table 3 Table Displaying Survey and Interview Response Rate**

<b>Variable</b>	<b>Total Number in Population</b>	<b>Amount Needed in Sample Survey/Interview Participants</b>	<b>Actual Amount of Survey Participants</b>	<b>Actual Amount of Interview Participants</b>
<b>Public hospital</b>	11	3	7	3
<b>Private hospital</b>	50	12	20	15
<b>Independent hospital</b>	7	2	8	3
<b>Health System hospital</b>	54	13	19	15
<b>Manhattan hospital</b>	21	5	9	9
<b>Brooklyn hospital</b>	14	3	10	4
<b>Bronx hospital</b>	12	3	4	3
<b>Queens hospital</b>	11	3	3	2
<b>Staten Island hospital</b>	3	1	1	0
<b>Emergency Room hospital</b>	53	13	24	14
<b>Non-Emergency Room hospital</b>	8	2	3	4

## SURVEY RESPONSE RATE DEMOGRAPHICS

Out of 61 New York City hospital Emergency Preparedness Coordinators (EPC's) in the study's population, 27 EPC's responded to the survey (44% survey response rate). This actual survey response rate exceeded the goal survey response rate by 19%. As displayed in Table 3 above, each of the variables either met or exceeded the 25% response rate per category for the survey portion of the study. The highest percentage of survey responses came from EPC's representing (a) private hospitals (74% of survey sample); (b) Health System hospitals (70% of survey sample); (c) hospitals located in Brooklyn (37% of survey sample); and (d) hospitals with Emergency Rooms (89% of survey sample).

## INTERVIEW RESPONSE RATE DEMOGRAPHICS

Out of 61 New York City hospital Emergency Preparedness Coordinators (EPC's) in the study's population, 18 EPC's responded and had interviews conducted/recorded (30% interview response rate). This actual interview response rate exceeded the goal interview response rate by 5%. As displayed in Table 3 above, almost all of the variables either met or exceeded the 25% response rate per category for the interview portion of the study. The only two variables that did not meet the goal interview participant response rate were hospitals located in Queens (needed 1 more participant to reach 25% response rate goal) and hospitals located in Staten Island (needed 1 participant to reach 25% response rate goal). The highest percentage of interview responses came from EPC's representing (a) private hospitals (83% of



interview sample); (b) Health System hospitals (83% of interview sample); (c) hospitals located in Manhattan (50% of interview sample); and (d) hospitals with Emergency Rooms (78% of interview sample).

## SURVEY RESULTS

As described in the “Measurements” section of this study, the results of each survey were analyzed both individually and collectively in order to perform various statistical tests for independence and significant differences. Questions #5-40 (36 questions total) were used to determine the total Emergency Planning Sufficiency Score for each hospital participant. For each question that the participant answers on a 5-point Likert scale, they were granted an equal number of points towards their score. For example, if a participant chose the answer “only once” for question #5, they were granted 1 point towards their Emergency Planning Sufficiency Score. After completion of the survey, the scores were tabulated based on the answers, and the participants fell into one of the categories below for their Emergency Planning Sufficiency Score. The researcher used a five-point Likert scale to codify total Emergency Planning Sufficiency Score findings (total equals the sum of the values gained from survey questions #5-40):

- 1 = Excellent: Emergency Planning Sufficiency Score of 116-144 - Hospital has sufficient/enough planning for vulnerable populations with communication barriers.

- 2 = Good: Emergency Planning Sufficiency Score of 87-115 - Hospital is close to having sufficient/enough planning for vulnerable populations with communication barriers, but there is room for improvement in some areas.
- 3 = Acceptable: Emergency Planning Sufficiency Score of 58-86 - Hospital has a good foundation for sufficient/enough planning for vulnerable populations with communication barriers, but there is room for improvement in many areas.
- 4 = Poor: Emergency Planning Sufficiency Score of 29-57 - Hospital has a weak foundation for sufficient/enough planning for vulnerable populations with communication barriers, and there is need to address the gaps in most critical areas.
- 5 = Very Poor: Emergency Planning Sufficiency Score of < 28 - Hospital does not have a foundation for sufficient/enough planning for vulnerable populations with communication barriers, and there is a severe need to address the gaps in most critical areas.

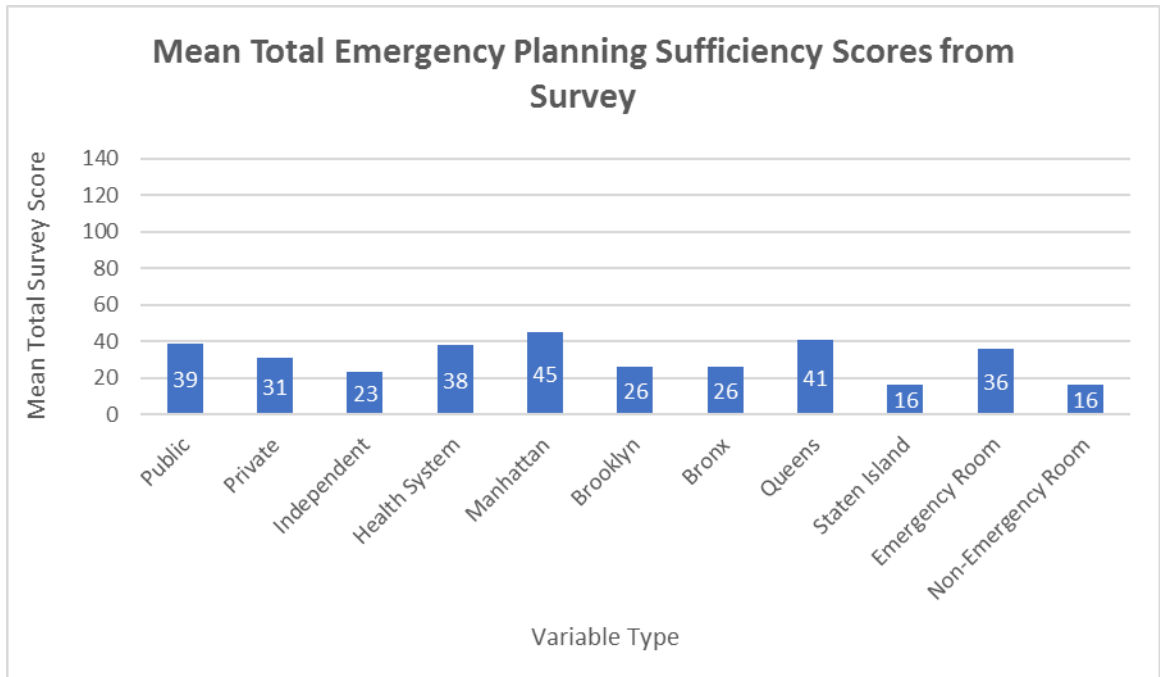
The total Emergency Planning Sufficiency Scores for participants are summarized in Table 4 and Figure 2 below.

**Table 4 Table Displaying Mean Total Emergency Planning Sufficiency**

*Scores from Survey for Each Variable*

<b>Variable</b>	<b>Total Possible Emergency Planning Sufficiency Score</b>	<b>Total Possible Emergency Planning Sufficiency Score Category</b>	<b>Mean Emergency Planning Sufficiency Score</b>	<b>Mean Emergency Planning Sufficiency Score Category</b>
<b>Public hospital</b>	144	Excellent	39	Poor
<b>Private hospital</b>	144	Excellent	31	Poor
<b>Independent hospital</b>	144	Excellent	23	Very Poor
<b>Health System hospital</b>	144	Excellent	38	Poor
<b>Manhattan hospital</b>	144	Excellent	45	Poor
<b>Brooklyn hospital</b>	144	Excellent	26	Very Poor
<b>Bronx hospital</b>	144	Excellent	26	Very Poor
<b>Queens hospital</b>	144	Excellent	41	Poor
<b>Staten Island hospital</b>	144	Excellent	16	Very Poor
<b>Emergency Room hospital</b>	144	Excellent	36	Poor
<b>Non-Emergency Room hospital</b>	144	Excellent	16	Very Poor

**Figure 2 Bar Chart Displaying Mean Total Emergency Planning Sufficiency Scores from Survey for Each Variable**



The mean Total Emergency Planning Sufficiency Score for all 27 participants equals 33 (Poor). The median Total Emergency Planning Sufficiency Score for all participants equals 31 (Poor). The Total Emergency Planning Sufficiency Score for all participants had four modes equaling 7 (Very Poor), 44 (Poor), 52 (Poor), and 65 (Acceptable). The standard deviation for the Total Emergency Planning Sufficiency Score for all participants equals 24.021. These descriptive statistics can be seen in Table 5, Table 6, and Figure 3 below.

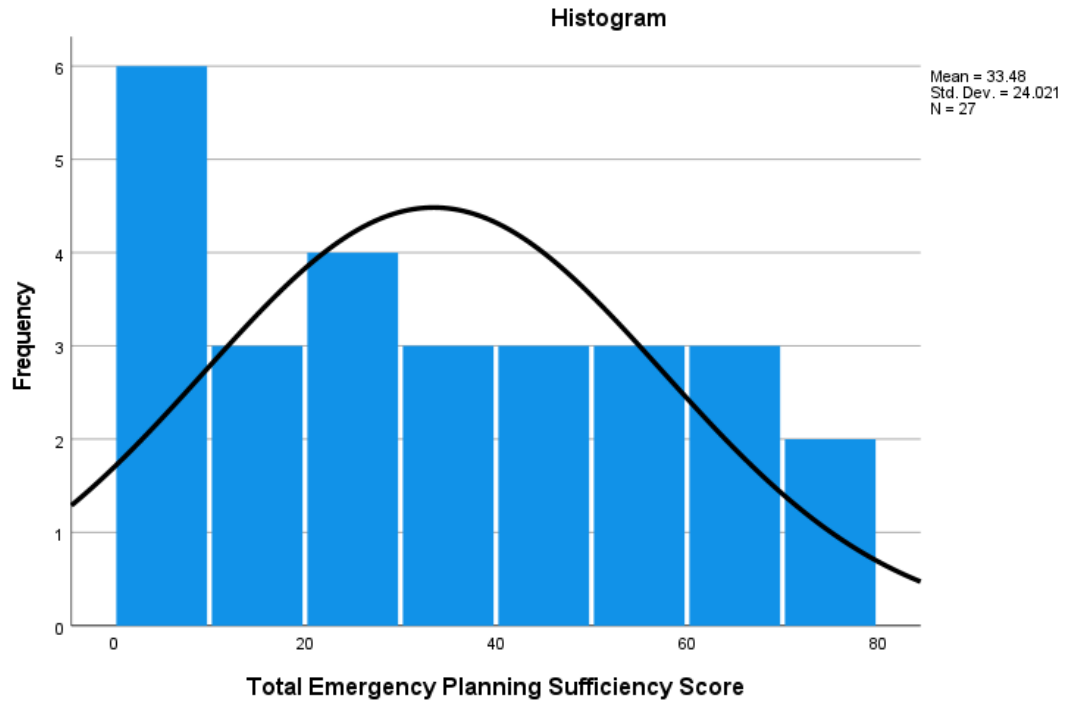
**Table 5 Table Displaying Mean Total Emergency Planning Sufficiency Score from Survey**

<b>Statistics</b>		
Total Emergency Planning Sufficiency Score		
N	Valid	27
	Missing	0
Mean		33.48
Median		31.00

**Table 6 Frequency Distribution Table Displaying Total Emergency Planning Sufficiency Score Mode from Survey**

		Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	0	1	3.7	3.7	3.7	
	1	1	3.7	3.7	7.4	
	3	1	3.7	3.7	11.1	
	7	2	7.4	7.4	18.5	
	8	1	3.7	3.7	22.2	
	13	1	3.7	3.7	25.9	
	15	1	3.7	3.7	29.6	
	16	1	3.7	3.7	33.3	
	22	1	3.7	3.7	37.0	
	23	1	3.7	3.7	40.7	
	24	1	3.7	3.7	44.4	
	26	1	3.7	3.7	48.1	
	31	1	3.7	3.7	51.9	
	33	1	3.7	3.7	55.6	
	35	1	3.7	3.7	59.3	
	40	1	3.7	3.7	63.0	
	44	2	7.4	7.4	70.4	
	52	2	7.4	7.4	77.8	
	57	1	3.7	3.7	81.5	
	65	2	7.4	7.4	88.9	
	68	1	3.7	3.7	92.6	
	76	1	3.7	3.7	96.3	
	77	1	3.7	3.7	100.0	
		Total	27	100.0	100.0	

**Figure 3 Histogram Displaying Total Emergency Planning Sufficiency Scores from Survey**



In order to evaluate and compare the survey scores for each individual group of the three groups comprising the categorical independent variable (populations with no or limited English proficiency, sight limitations, and/or hearing limitations), the three sections of each survey were separated and scored on a separate five-point Likert scale. There are three separate sections of the survey; one representing each of the three populations. Each section of the survey has an equal amount of twelve questions that measure the same areas in emergency planning sufficiency. In order to calculate Emergency Planning Sufficiency Scores for each separate group in the survey, I used a five-point Likert scale to codify population-specific Emergency Planning Sufficiency

Score findings [total equals the sum of the values gained from twelve survey questions (5-16; 17-28; and 29-40)]:

- 1 = Excellent: Population-Specific Emergency Planning Sufficiency  
Score of 39-48 - Hospital has sufficient/enough planning for this specific vulnerable population.
- 2 = Good: Population-Specific Emergency Planning Sufficiency Score of 29-38 - Hospital is close to having sufficient/enough planning for this specific vulnerable population, but there is room for improvement in some areas.
- 3 = Acceptable: Population-Specific Emergency Planning Sufficiency  
Score of 19-28 - Hospital has a good foundation for sufficient/enough planning for this specific vulnerable population, but there is room for improvement in many areas.
- 4 = Poor: Population-Specific Emergency Planning Sufficiency Score of 9-18 - Hospital has a weak foundation for sufficient/enough planning for this specific vulnerable population, and there is need to address the gaps in most critical areas.
- 5 = Very Poor: Population-Specific Emergency Planning Sufficiency  
Score of < 9 - Hospital does not have a foundation for sufficient/enough planning for this specific vulnerable population, and there is a severe need to address the gaps in most critical areas.



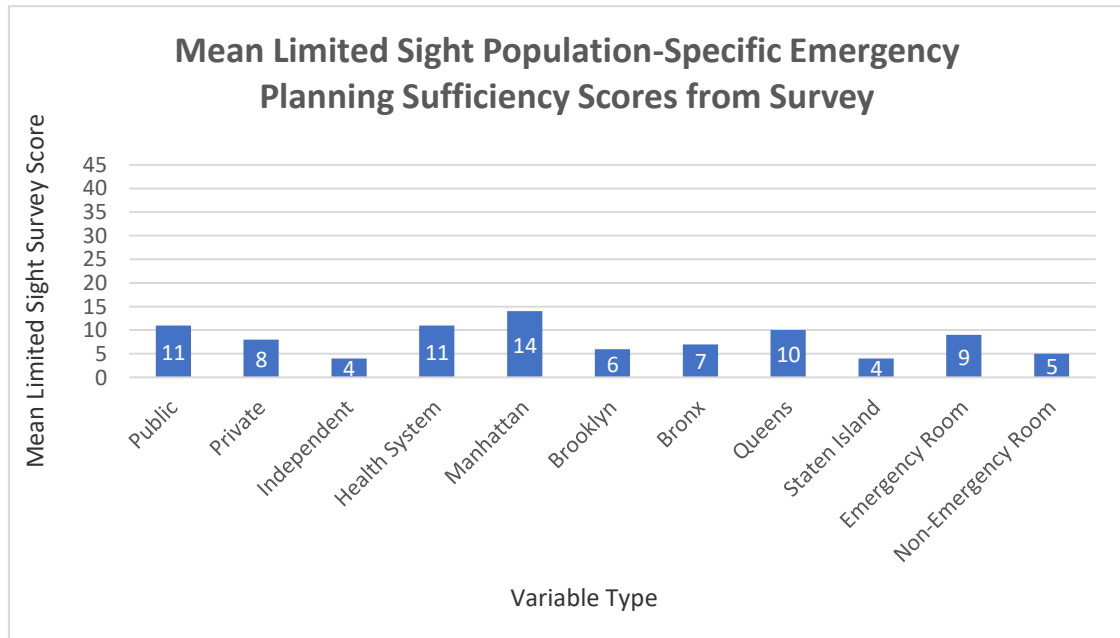
The Limited Sight Population-Specific Emergency Planning Sufficiency Scores for participants are summarized in Table 7 and Figure 4 below.

**Table 7 Table Displaying Mean Limited Sight Population-Specific Emergency Planning Sufficiency Scores from Survey for Each Variable**

<b>Variable</b>	<b>Total Possible Limited Sight Population-Specific Emergency Planning Sufficiency Score</b>	<b>Total Possible Limited Sight Population-Specific Emergency Planning Sufficiency Score Category</b>	<b>Mean Limited Sight Population-Specific Emergency Planning Sufficiency Score</b>	<b>Mean Limited Sight Population-Specific Emergency Planning Sufficiency Score Category</b>
<b>Public hospital</b>	48	Excellent	11	Poor
<b>Private hospital</b>	48	Excellent	8	Very Poor
<b>Independent hospital</b>	48	Excellent	4	Very Poor
<b>Health System hospital</b>	48	Excellent	11	Poor
<b>Manhattan hospital</b>	48	Excellent	14	Poor
<b>Brooklyn hospital</b>	48	Excellent	6	Very Poor
<b>Bronx hospital</b>	48	Excellent	7	Very Poor

<b>Queens hospital</b>	48	Excellent	10	Poor
<b>Staten Island hospital</b>	48	Excellent	4	Very Poor
<b>Emergency Room hospital</b>	48	Excellent	9	Poor
<b>Non-Emergency Room hospital</b>	48	Excellent	5	Very Poor

**Figure 4** Bar Chart Displaying Mean Limited Sight Population-Specific Emergency Planning Sufficiency Scores from Survey for Each Variable



The mean Limited Sight Population-Specific Emergency Planning Sufficiency Score for all 27 participants equals 9 (Poor). The median of the Limited Sight Population-Specific Emergency Planning Sufficiency Score for all participants equals 7 (Very Poor). The mode of the Limited Sight Population-Specific Emergency Planning Sufficiency Score for all participants equals 0 (Very Poor). The standard deviation for the Limited Sight Population-Specific Emergency Planning Sufficiency Score for all participants equals 8.062. These descriptive statistics can be seen in Table 8, Table 9, and Figure 5 below.

**Table 8** *Table Displaying Mean Limited Sight Population-Specific Emergency Planning Sufficiency Score from Survey*

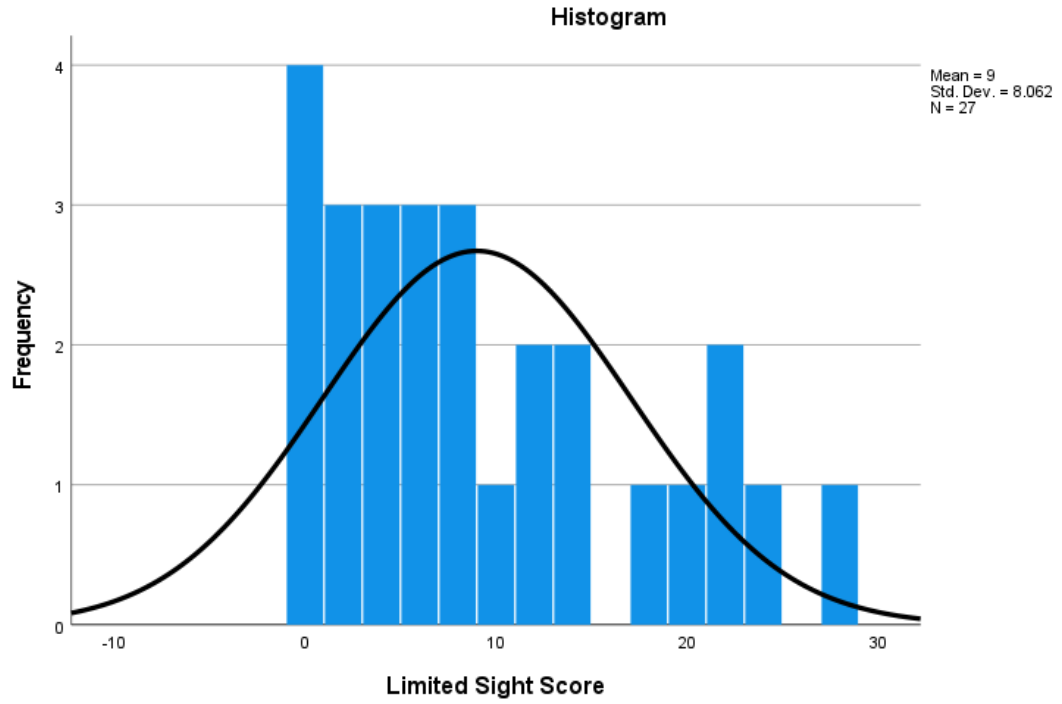
<b>Statistics</b>		
Limited Sight Score		
N	Valid	27
	Missing	0
Mean		9.00
Median		7.00

**Table 9 Frequency Distribution Table Displaying Limited Sight Population-Specific Emergency Planning Sufficiency Score Mode from Survey**

		Limited Sight Score			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	0	4	14.8	14.8	14.8
	1	3	11.1	11.1	25.9
	3	1	3.7	3.7	29.6
	4	2	7.4	7.4	37.0
	6	3	11.1	11.1	48.1
	7	1	3.7	3.7	51.9
	8	2	7.4	7.4	59.3
	9	1	3.7	3.7	63.0
	11	1	3.7	3.7	66.7
	12	1	3.7	3.7	70.4
	13	2	7.4	7.4	77.8
	18	1	3.7	3.7	81.5
	20	1	3.7	3.7	85.2
	21	2	7.4	7.4	92.6
	23	1	3.7	3.7	96.3
	27	1	3.7	3.7	100.0
		Total	27	100.0	100.0

**Figure 5 Histogram Displaying Limited Sight Population-Specific Emergency**

**Planning Sufficiency Scores from Survey**



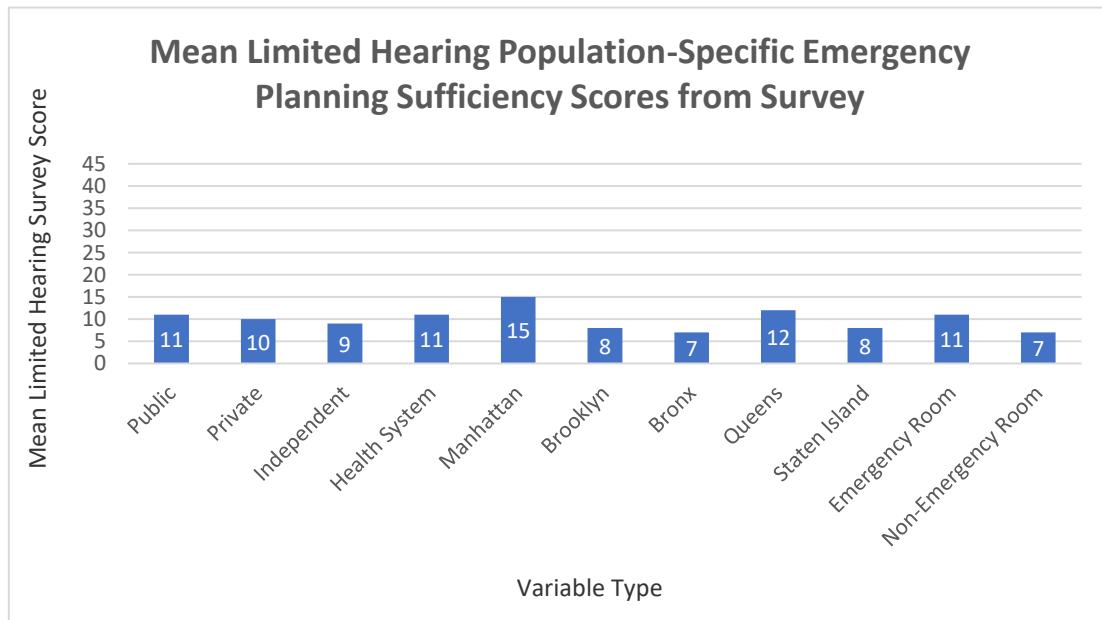
The Limited Hearing Population-Specific Emergency Planning Sufficiency Scores for participants are summarized in Table 10 and Figure 6 below.

**Table 10** *Table Displaying Mean Limited Hearing Population-Specific Emergency Planning Sufficiency Scores from Survey for Each Variable*

<b>Variable</b>	<b>Total Possible Limited Hearing Population-Specific Emergency Planning Sufficiency Score</b>	<b>Total Possible Limited Hearing Population-Specific Emergency Planning Sufficiency Score Category</b>	<b>Mean Limited Hearing Population-Specific Emergency Planning Sufficiency Score</b>	<b>Mean Limited Hearing Population-Specific Emergency Planning Sufficiency Score Category</b>
<b>Public hospital</b>	48	Excellent	11	Poor
<b>Private hospital</b>	48	Excellent	10	Poor
<b>Independent hospital</b>	48	Excellent	9	Poor
<b>Health System hospital</b>	48	Excellent	11	Poor
<b>Manhattan hospital</b>	48	Excellent	15	Poor
<b>Brooklyn hospital</b>	48	Excellent	8	Very Poor
<b>Bronx hospital</b>	48	Excellent	7	Very Poor

<b>Queens hospital</b>	48	Excellent	12	Poor
<b>Staten Island hospital</b>	48	Excellent	8	Very Poor
<b>Emergency Room hospital</b>	48	Excellent	11	Poor
<b>Non-Emergency Room hospital</b>	48	Excellent	7	Very Poor

**Figure 6 Bar Chart Displaying Mean Limited Hearing Population-Specific Emergency Planning Sufficiency Scores from Survey for Each Variable**



The mean Limited Hearing Population-Specific Emergency Planning Sufficiency Score for all 27 participants equals 11 (Poor). The median of the Limited Hearing Population-Specific Emergency Planning Sufficiency Score for all participants equals 8 (Very Poor). The Limited Hearing Population-Specific Emergency Planning Sufficiency Score for all participants had two modes equaling 0 (Very Poor) and 8 (Very Poor). The standard deviation for the Limited Hearing Population-Specific Emergency Planning Sufficiency Score for all participants equals 8.895. These descriptive statistics can be seen in Table 11, Table 12, and Figure 7 below.

**Table 11** *Table Displaying Mean Limited Hearing Population-Specific Emergency Planning Sufficiency Score from Survey*

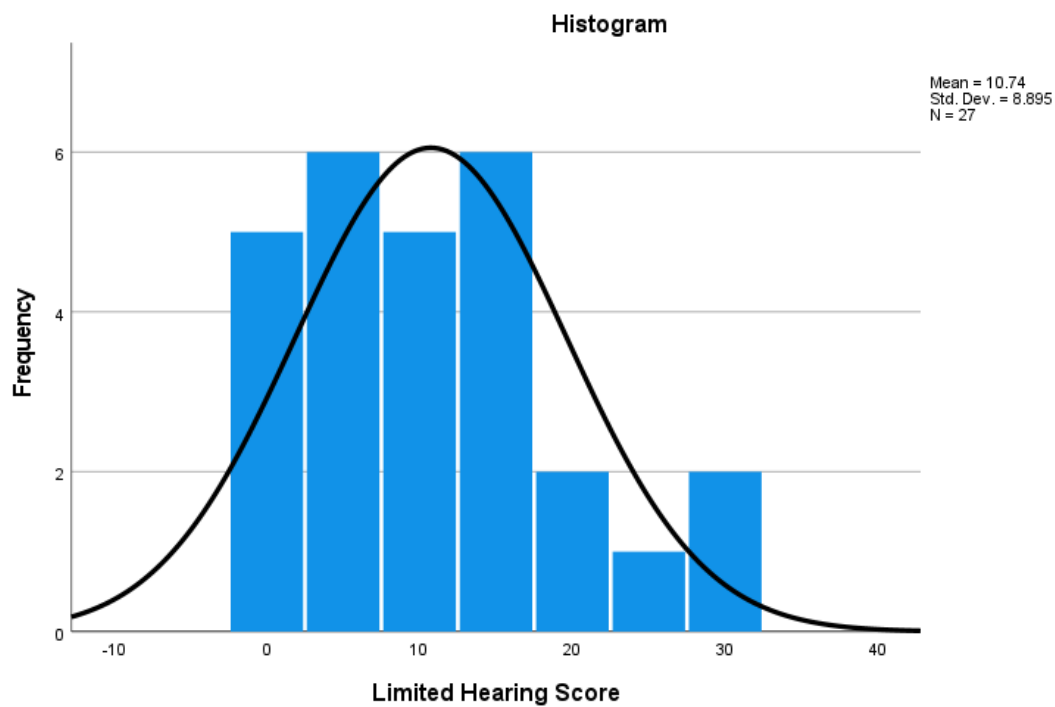
<b>Statistics</b>		
Limited Hearing Score		
N	Valid	27
	Missing	0
Mean		10.74
Median		8.00



**Table 12 *Frequency Distribution Table Displaying Limited Hearing  
Population-Specific Emergency Planning Sufficiency Score Mode from Survey***

		Limited Hearing Score			Cumulative	
		Frequency	Percent	Valid Percent	Percent	
Valid	0	4	14.8	14.8	14.8	
	1	1	3.7	3.7	18.5	
	3	1	3.7	3.7	22.2	
	4	2	7.4	7.4	29.6	
	5	1	3.7	3.7	33.3	
	7	2	7.4	7.4	40.7	
	8	4	14.8	14.8	55.6	
	12	1	3.7	3.7	59.3	
	13	1	3.7	3.7	63.0	
	14	2	7.4	7.4	70.4	
	15	1	3.7	3.7	74.1	
	16	1	3.7	3.7	77.8	
	17	1	3.7	3.7	81.5	
	19	1	3.7	3.7	85.2	
	21	1	3.7	3.7	88.9	
	27	1	3.7	3.7	92.6	
	28	1	3.7	3.7	96.3	
	31	1	3.7	3.7	100.0	
	Total		27	100.0	100.0	

**Figure 7 Histogram Displaying Limited Hearing Population-Specific  
Emergency Planning Sufficiency Scores from Survey**



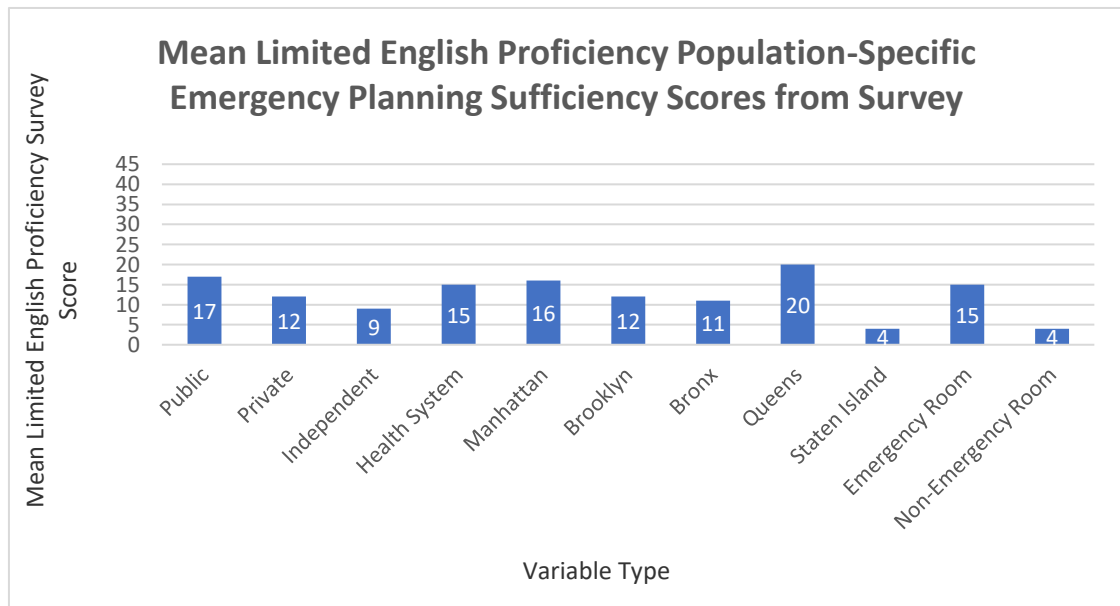
The Limited English Proficiency Population-Specific Emergency Planning Sufficiency Scores for participants are summarized in Table 13 and Figure 8 below.

**Table 13 Table Displaying Mean Limited English Proficiency Population-Specific Emergency Planning Sufficiency Scores from Survey for Each Variable**

<b>Variable</b>	<b>Total Possible Limited English Proficiency Population-Specific Emergency Planning Sufficiency Score</b>	<b>Total Possible Limited English Proficiency Population-Specific Emergency Planning Sufficiency Score Category</b>	<b>Mean Limited English Proficiency Population-Specific Emergency Planning Sufficiency Score</b>	<b>Mean Limited English Proficiency Population-Specific Emergency Planning Sufficiency Score Category</b>
<b>Public hospital</b>	48	Excellent	17	Poor
<b>Private hospital</b>	48	Excellent	12	Poor
<b>Independent hospital</b>	48	Excellent	9	Poor
<b>Health System hospital</b>	48	Excellent	15	Poor
<b>Manhattan hospital</b>	48	Excellent	16	Poor
<b>Brooklyn hospital</b>	48	Excellent	12	Poor
<b>Bronx hospital</b>	48	Excellent	11	Poor
<b>Queens hospital</b>	48	Excellent	20	Acceptable
<b>Staten Island hospital</b>	48	Excellent	4	Very Poor
<b>Emergency</b>	48	Excellent	15	Poor

<b>Room hospital</b>				
<b>Non-Emergency Room hospital</b>	48	Excellent	4	Very Poor

**Figure 8 Bar Chart Displaying Mean Limited English Proficiency Population-Specific Emergency Planning Sufficiency Scores from Survey for Each Variable**



The mean Limited English Proficiency Population-Specific Emergency Planning Sufficiency Score for all 27 participants equals 14 (Poor). The median of the Limited English Proficiency Population-Specific Emergency Planning Sufficiency Score for all participants equals 11 (Poor). The mode of the Limited English Proficiency Population-Specific Emergency Planning Sufficiency Score for all participants equals 17 (Poor). The standard deviation for the Limited English Proficiency Population-Specific

Emergency Planning Sufficiency Score for all participants equals 13.74. These descriptive statistics can be seen in Table 14, Table 15, and Figure 9 below.

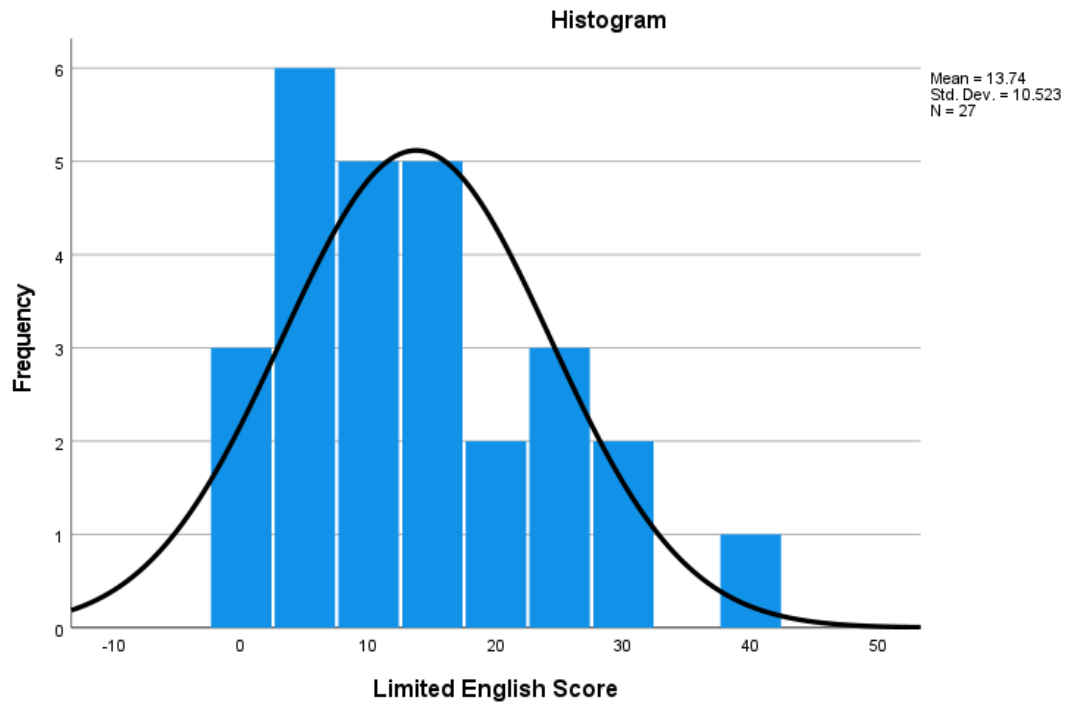
**Table 14** *Table Displaying Mean Limited English Proficiency Population-Specific Emergency Planning Sufficiency Score from Survey*

<b>Statistics</b>		
Limited English Score		
N	Valid	27
	Missing	0
Mean		13.74
Median		11.00

**Table 15 Frequency Distribution Table Displaying Limited English Proficiency  
Population-Specific Emergency Planning Sufficiency Score Mode from Survey**

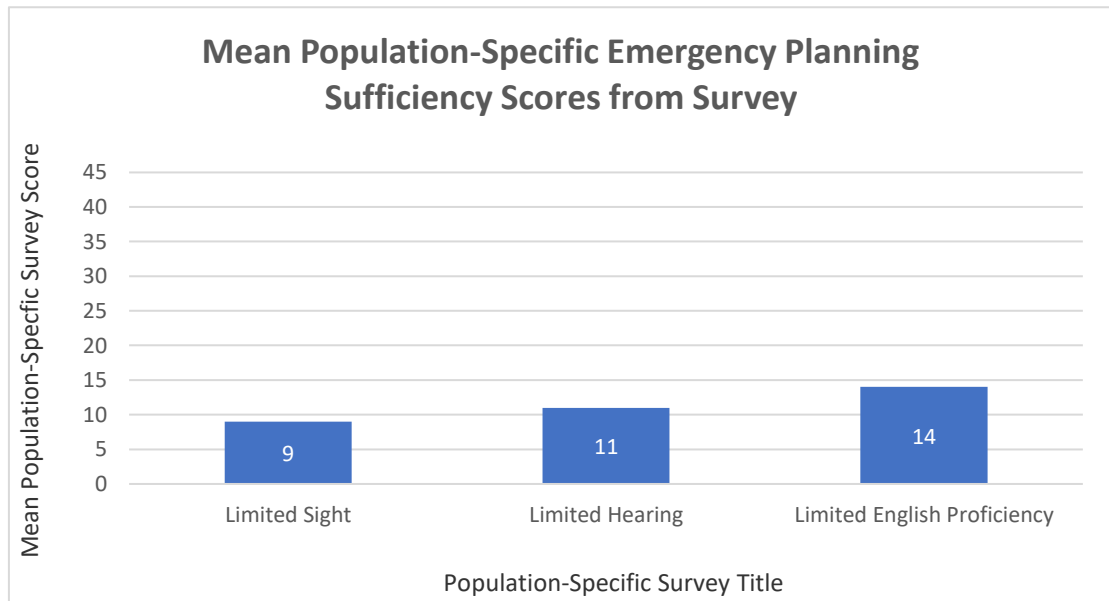
		Limited English Score			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	0	2	7.4	7.4	7.4
	2	1	3.7	3.7	11.1
	3	2	7.4	7.4	18.5
	4	1	3.7	3.7	22.2
	5	1	3.7	3.7	25.9
	6	1	3.7	3.7	29.6
	7	1	3.7	3.7	33.3
	8	2	7.4	7.4	40.7
	10	2	7.4	7.4	48.1
	11	1	3.7	3.7	51.9
	13	1	3.7	3.7	55.6
	14	1	3.7	3.7	59.3
	17	3	11.1	11.1	70.4
	19	2	7.4	7.4	77.8
	26	2	7.4	7.4	85.2
	27	1	3.7	3.7	88.9
	28	1	3.7	3.7	92.6
	31	1	3.7	3.7	96.3
	40	1	3.7	3.7	100.0
	Total		27	100.0	100.0

**Figure 9 Histogram Displaying Limited English Proficiency Population-Specific Emergency Planning Sufficiency Scores from Survey**



All three (3) of the mean Population-Specific Emergency Planning Sufficiency Scores are displayed in Figure 10 below.

**Figure 10 Bar Chart Displaying Mean Population-Specific Emergency Planning Sufficiency Scores from Survey**





## HYPOTHESIS TESTING

***RQ1: How does the vulnerability status of an individual or population with communication barriers affect their ability to receive sufficient/enough planning for emergency preparedness and response in a New York City hospital facility?***

*H<sub>1</sub>*: There is a relationship between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in New York City hospital facilities.

For this hypothesis, a statistical test was not used. RQ1 is not able to be answered with a statistical test, as this study did not choose to measure an Emergency Planning Sufficiency Score for non-vulnerable populations. This study is assuming that the general population is accounted for in hospital Emergency Operations Plans. All participating hospitals in the survey held active Joint Commission accreditation status, whose standards require hospitals to plan sufficiently for the general population in terms of the six critical areas that were tested in the survey: communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs. By fulfilling these basic standards in the Joint Commission Emergency Management Chapter, this study assumed that the general population had sufficient emergency plans in place at these participating hospitals.

Therefore, an analysis of the measures of central tendency from the total number of Emergency Planning Sufficiency Scores for vulnerable populations with

communication barriers from all of the surveys combined was used to determine the sufficiency of emergency planning for vulnerable populations with communication barriers within the NYC hospital system. The two categorical variables of vulnerability status and sufficient emergency response planning for vulnerable populations with communication barriers are related. The categories in the variable of vulnerability status are defined as no or limited English proficiency, sight limitations, and hearing limitations. The categories in the variable of sufficient emergency response planning for vulnerable populations with communication barriers are (determined by Emergency Planning Sufficiency Scores from the survey): 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor.

After analyzing the mean Total Emergency Planning Sufficiency Scores for all variables from the survey in Table 4, Table 5, and Figure 2, it was determined that there is a relationship between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in New York City hospital facilities. We reject the null hypothesis because, assuming the hospital plans sufficiently for the general population according to existing regulatory agency standards (all participating hospitals had Joint Commission accreditation), it is apparent from the mean Total Emergency Planning Sufficiency Scores that most hospitals scored Poor or Very Poor in terms of their sufficiency of emergency planning for vulnerable populations with communication barriers. With the mean Total Emergency Planning Sufficiency Score for all 27 participants equaling 33 (Poor), it was displayed that most participants lacked

sufficient/enough emergency planning for vulnerable populations with communication barriers.

After analyzing the mode Total Emergency Planning Sufficiency Scores for all variables from the survey in Table 6, it was displayed that none of the participants had Total Emergency Planning Sufficiency Scores equaling Excellent or Good rankings, and only 19% of participants had Total Emergency Planning Sufficiency Scores equaling Acceptable rankings. 33% of participants had Total Emergency Planning Sufficiency Scores equaling Poor rankings, and 48% of participants had Total Emergency Planning Sufficiency Scores equaling Very Poor rankings. The Total Emergency Planning Sufficiency Score for all participants had four modes equaling 7 (Very Poor), 44 (Poor), 52 (Poor), and 65 (Acceptable). Therefore, we can reject the null hypothesis that there is no relationship between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in New York City hospital facilities.

***RO2: How does the affiliation of a hospital facility (i.e., independent or part of a health system) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?***

*H<sub>12</sub>:* There is a relationship between the affiliation of a hospital facility (i.e., independent or part of a health system) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

For this hypothesis, a Chi-Square test for independence was used to determine whether the two categorical variables of the affiliation of a hospital facility and sufficient/enough emergency response planning for vulnerable populations with communication barriers are related. The categories in the variable of the affiliation of a hospital facility are defined as independent and health system. The categories in the variable of sufficient/enough emergency response planning for vulnerable populations with communication barriers are (determined by Emergency Planning Sufficiency Scores from the survey): 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor. The results of this statistical test are displayed in Table 16 and Table 17 below.

**Table 16 Table Displaying Total Emergency Planning Sufficiency Score and Affiliation Status Crosstabulation**

			Total Emergency Planning Sufficiency Score			Total
			Acceptable	Poor	Very Poor	
Affiliation Status	Independent	Count	1	1	6	8
		Expected Count	1.5	2.7	3.9	8.0
		% within Affiliation Status	12.5%	12.5%	75.0%	100.0%
		% within Total Emergency Planning Sufficiency Score	20.0%	11.1%	46.2%	29.6%
		% of Total	3.7%	3.7%	22.2%	29.6%
	Health System	Count	4	8	7	19
		Expected Count	3.5	6.3	9.1	19.0
		% within Affiliation Status	21.1%	42.1%	36.8%	100.0%
		% within Total Emergency Planning Sufficiency Score	80.0%	88.9%	53.8%	70.4%
		% of Total	14.8%	29.6%	25.9%	70.4%
Total	Count	5	9	13	27	
	Expected Count	5.0	9.0	13.0	27.0	
	% within Affiliation Status	18.5%	33.3%	48.1%	100.0%	
	% within Total Emergency Planning Sufficiency Score	100.0%	100.0%	100.0%	100.0%	
	% of Total	18.5%	33.3%	48.1%	100.0%	

**Table 17 Table Displaying Total Emergency Planning Sufficiency Score and Affiliation Status Chi-Square Test Results**

<b>Chi-Square Tests</b>			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.405 <sup>a</sup>	2	.182
Likelihood Ratio	3.588	2	.166
Linear-by-Linear Association	2.043	1	.153
N of Valid Cases	27		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is 1.48.

The results of the statistical test are as follows: The value of the test statistic (Chi-square) is 3.405. Because the test statistic is based on a 3x2 crosstabulation table, the degrees of freedom (df) for the test statistic is 2 [df=(R-1)\*(C-1)=(3-1)\*(2-1)=2\*1=2]. The corresponding p-value of the test statistic is p = .182. Since the p-value is greater than our chosen significance level ( $\alpha = 0.05$ ), we do not reject the null hypothesis. Rather, we conclude that there is not enough evidence to suggest an association or significant relationship between the affiliation of a hospital facility and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

I would accept the null hypothesis that there is no relationship between the affiliation of a hospital facility (i.e., independent or part of a health system) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers, as  $\chi^2(\text{obtained}) < \chi^2(\text{critical})$ .

$$\chi^2 (\text{obtained}) = 3.405$$

$\chi^2 (\text{critical}) = 5.99$  (Tokunaga, p. T-25, 2019, “Table 8: Critical Values of Chi-Square”)

My conclusions are that the results of this analysis support the null hypothesis that the affiliation of a hospital facility has no effect on their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. The distribution of observed frequencies fits the distribution of expected frequencies. The observed values do not differ significantly from the expected values. However, it is worth noting that 4 out of the 5 hospitals whose Total Emergency Planning Sufficiency Scores ranked as “Acceptable” (the highest scores attained from the survey) were hospitals that were affiliated with health systems, as opposed to independent hospitals.

***RQ3: How does the presence of an emergency department within a hospital facility affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?***

*H<sub>13</sub>*: There is a relationship between the presence of an emergency department within a hospital facility and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

For this hypothesis, a Chi-Square test for independence was used to determine whether the two categorical variables of the presence of an emergency department and sufficient/enough emergency response planning for vulnerable populations with

communication barriers are related. The categories in the variable of the presence of an emergency department are defined as ED present and ED not present. The categories in the variable of sufficient/enough emergency response planning for vulnerable populations with communication barriers are (determined by Emergency Planning Sufficiency Scores from the survey): 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor. The results of this statistical test are displayed in Table 18 and Table 19 below.



**Table 18 Table Displaying Total Emergency Planning Sufficiency Score and Presence of Emergency Department Crosstabulation**

		Total Emergency Planning Sufficiency Score				Total
		Score				
		Acceptable	Poor	Very Poor		
Presence of ED	Yes	Count	5	9	10	24
		Expected Count	4.4	8.0	11.6	24.0
		% within Presence of ED	20.8%	37.5%	41.7%	100.0%
		% within Total	100.0%	100.0%	76.9%	88.9%
		Emergency Planning Sufficiency Score				
		% of Total	18.5%	33.3%	37.0%	88.9%
	No	Count	0	0	3	3
		Expected Count	.6	1.0	1.4	3.0
		% within Presence of ED	0.0%	0.0%	100.0%	100.0%
		% within Total	0.0%	0.0%	23.1%	11.1%
	Emergency Planning Sufficiency Score					
	% of Total	0.0%	0.0%	11.1%	11.1%	
Total		Count	5	9	13	27
		Expected Count	5.0	9.0	13.0	27.0
		% within Presence of ED	18.5%	33.3%	48.1%	100.0%
		% within Total	100.0%	100.0%	100.0%	100.0%
		Emergency Planning Sufficiency Score				
	% of Total	18.5%	33.3%	48.1%	100.0%	

**Table 19 Table Displaying Total Emergency Planning Sufficiency Score and Presence of Emergency Department Chi-Square Test Results**

<b>Chi-Square Tests</b>			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.635 <sup>a</sup>	2	.162
Likelihood Ratio	4.792	2	.091
Linear-by-Linear Association	2.780	1	.095
N of Valid Cases	27		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .56.

The results of the statistical test are as follows: The value of the test statistic (Chi-square) is 3.635. Because the test statistic is based on a 3x2 crosstabulation table, the degrees of freedom (df) for the test statistic is 2 [df=(R-1)\*(C-1)=(3-1)\*(2-1)=2\*1=2]. The corresponding p-value of the test statistic is p = .162. Since the p-value is greater than our chosen significance level ( $\alpha = 0.05$ ), we do not reject the null hypothesis. Rather, we conclude that there is not enough evidence to suggest an association or significant relationship between the presence of an emergency department and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

I would accept the null hypothesis that there is no relationship between the presence of an emergency department and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers, as  $\chi^2(\text{obtained}) < \chi^2(\text{critical})$ .

$$\chi^2 (\text{obtained}) = 3.635$$

$\chi^2 (\text{critical}) = 5.99$  (Tokunaga, p. T-25, 2019, “Table 8: Critical Values of Chi-Square”)

My conclusions are that the results of this analysis support the null hypothesis that the presence of an emergency department has no effect on their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. The distribution of observed frequencies fits the distribution of expected frequencies. The observed values do not differ significantly from the expected values. However, it is worth noting that all of the hospitals whose Total Emergency Planning Sufficiency Scores ranked as “Acceptable” (the highest scores attained from the survey) were hospitals that had the presence of an Emergency Department. Additionally, out of the 3 total hospital participants that had no presence of an Emergency Department, their Total Emergency Planning Sufficiency Scores ranked as “Very Poor” (the lowest scores possibly attained from the survey).

***RO4: How does the ownership status of a hospital facility (i.e., privately or publicly owned) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?***

*H<sub>14</sub>*: There is a relationship between the ownership status of a hospital facility (i.e., privately or publicly owned) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

For this hypothesis, a Chi-Square test for independence was used to determine whether the two categorical variables the ownership status of a hospital facility and sufficient/enough emergency response planning for vulnerable populations with communication barriers are related. The categories in the variable of the ownership status of a hospital facility are defined as private and public. The categories in the variable of sufficient/enough emergency response planning for vulnerable populations with communication barriers are (determined by Emergency Planning Sufficiency Scores from the survey): 1=excellent, 2=good, 3=acceptable, 4=poor, and 5=very poor. The results of this statistical test are displayed in Table 20 and Table 21 below.

**Table 20 Table Displaying Total Emergency Planning Sufficiency Score and Ownership Status Crosstabulation**

		Ownership Status * Total Emergency Planning Sufficiency Score Crosstabulation				
		Total Emergency Planning Sufficiency Score			Total	
		Acceptable	Poor	Very Poor		
Ownership Status	Private	Count	3	7	10	20
	Expected Count	3.7	6.7	9.6	20.0	
	% within Ownership Status	15.0%	35.0%	50.0%	100.0%	
	% within Total Emergency Planning Sufficiency Score	60.0%	77.8%	76.9%	74.1%	
	% of Total	11.1%	25.9%	37.0%	74.1%	
	Public	Count	2	2	3	7
	Expected Count	1.3	2.3	3.4	7.0	
	% within Ownership Status	28.6%	28.6%	42.9%	100.0%	
	% within Total Emergency Planning Sufficiency Score	40.0%	22.2%	23.1%	25.9%	
	% of Total	7.4%	7.4%	11.1%	25.9%	
Total	Count	5	9	13	27	
	Expected Count	5.0	9.0	13.0	27.0	
	% within Ownership Status	18.5%	33.3%	48.1%	100.0%	
	% within Total Emergency Planning Sufficiency Score	100.0%	100.0%	100.0%	100.0%	
	% of Total	18.5%	33.3%	48.1%	100.0%	

**Table 21 Table Displaying Total Emergency Planning Sufficiency Score and Ownership Status Chi-Square Test Results**

<b>Chi-Square Tests</b>			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.635 <sup>a</sup>	2	.728
Likelihood Ratio	.593	2	.743
Linear-by-Linear Association	.370	1	.543
N of Valid Cases	27		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is 1.30.

The results of the statistical test are as follows: The value of the test statistic (Chi-square) is .635. Because the test statistic is based on a 3x2 crosstabulation table, the degrees of freedom (df) for the test statistic is 2 [df=(R-1)\*(C-1)=(3-1)\*(2-1)=2\*1=2]. The corresponding p-value of the test statistic is p = .728. Since the p-value is greater than our chosen significance level ( $\alpha = 0.05$ ), we do not reject the null hypothesis. Rather, we conclude that there is not enough evidence to suggest an association or significant relationship between the hospital ownership status and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

I would accept the null hypothesis that there is no relationship between the hospital ownership status and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers, as  $\chi^2(\text{obtained}) < \chi^2(\text{critical})$ .

$$\chi^2 (\text{obtained}) = .635$$

$\chi^2 (\text{critical}) = 5.99$  (Tokunaga, p. T-25, 2019, “Table 8: Critical Values of Chi-Square”)

My conclusions are that the results of this analysis support the null hypothesis that the hospital ownership status has no effect on their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. The distribution of observed frequencies fits the distribution of expected frequencies. The observed values do not differ significantly from the expected values.

***RO5: How does the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?***

*H<sub>15</sub>:* There is a relationship between the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

For this hypothesis, a Kruskal-Wallis test was chosen over performing an ANOVA test because normality could not be found in the small sample sizes from this survey. The researcher checked for normality by inspecting the histograms in Figure 11

below with abnormal curves for each of the five groups. The height/width of each curve are unique, and they do not show good symmetry, as there is substantial skewing.

**Figure 11 Histogram Displaying Total Emergency Planning Sufficiency Scores by Borough**



Therefore, a Kruskal-Wallis test was performed to determine if there is a significant difference between the survey Total Emergency Planning Sufficiency Score for hospitals that are located in each of the five NYC boroughs (Manhattan, Brooklyn, Bronx, Queens, and Staten Island). The categorical independent variable in this test is the borough that the EPC participant’s hospital is located in (with the categories of Manhattan, Brooklyn, Bronx, Queens, and Staten Island), and the continuous/ordinal dependent variable is the survey’s Total Emergency Planning Sufficiency Score



(measured on a 5-point Likert scale from Excellent to Very Poor). The results of this test are displayed in Table 22 below.

**Table 22 Table Displaying Results of RQ5 Kruskal-Wallis Test**

<b>Test Statistics<sup>a,b</sup></b>	
Total Emergency Planning Sufficiency Score	
Kruskal-Wallis H	2.361
df	4
Asymp. Sig.	.670

a. Kruskal Wallis Test

b. Grouping Variable: Location

The Asymp. Sig (.670) is the p-value associated with a  $X^2$  test statistic of 2.361 with 4 degrees of freedom. Since the p-value (.670) is not less than .05, we fail to reject the null hypothesis. We do not have sufficient evidence to say that there is a statistically significant difference between the Total Emergency Planning Sufficiency Scores across these five groups/boroughs. If the relationship was statistically significant,  $p < .05$ . The histogram in Figure 11 further emphasizes this point. I would not reject the null hypothesis that the borough a hospital is located in has no effect on their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. I would not reject the null hypothesis because  $p > .05$ .

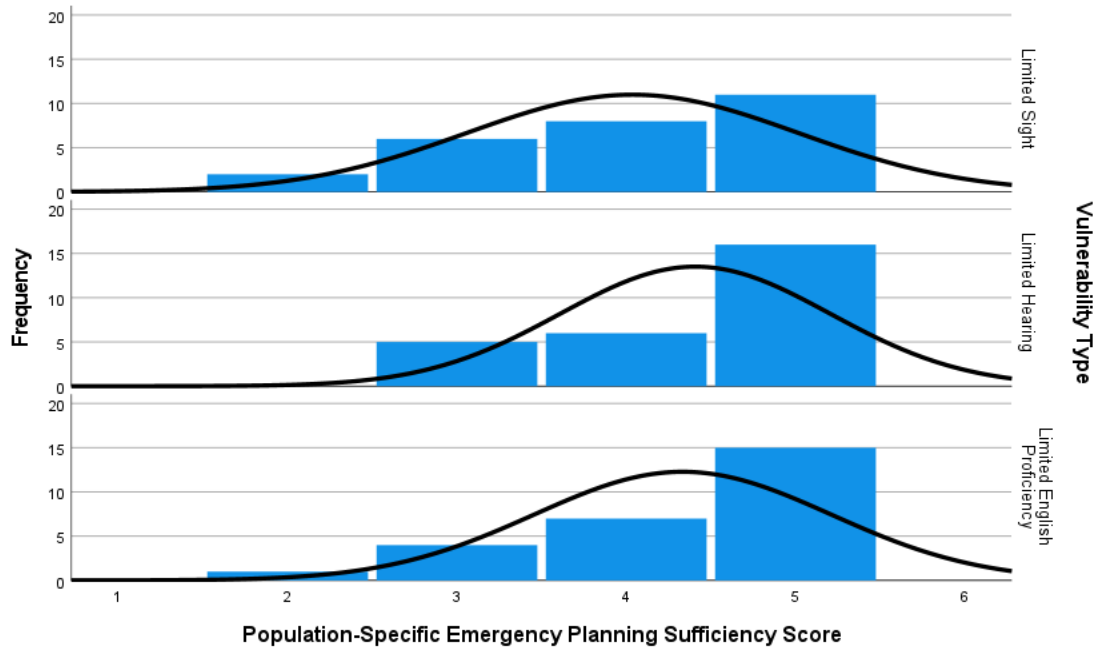
***RO6: How does the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) affect their ability to receive sufficient/enough emergency planning from hospital facilities?***

*H<sub>16</sub>*: There is a relationship between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities.

For this hypothesis, a Kruskal-Wallis test was chosen over performing an ANOVA test because normality could not be found in the small sample sizes from this survey. The researcher checked for normality by inspecting the histograms in Figure 12 below with abnormal curves for each of the three groups. The height/width of each curve are unique, and they do not show good symmetry, as there is substantial skewing.

**Figure 12 Histogram Displaying Population-Specific Emergency Planning**

***Sufficiency Scores by Vulnerability Type***



Therefore, a Kruskal-Wallis test was performed to determine if there is a significant difference between the survey Population-Specific Emergency Planning Sufficiency Score for each vulnerability type (o or limited English proficiency, sight limitations, and/or hearing limitations). The categorical independent variable in this test is the vulnerability type (o or limited English proficiency, sight limitations, and/or hearing limitations), and the continuous/ordinal dependent variable is the survey’s Population-Specific Emergency Planning Sufficiency Score (measured on a 5-point Likert scale from Excellent to Very Poor). The results of this test are displayed in Table 23 below.

**Table 23 Table Displaying Results of RQ6 Kruskal-Wallis Test**

**Test Statistics<sup>a,b</sup>**

Population-Specific Emergency  
Planning Sufficiency Score

Kruskal-Wallis H	2.400
df	2
Asymp. Sig.	.301

a. Kruskal Wallis Test

b. Grouping Variable: Vulnerability Type

The Asymp. Sig (.301) is the p-value associated with a  $X^2$  test statistic of 2.400 with 2 degrees of freedom. Since the p-value (.301) is not less than .05, we fail to reject the null hypothesis. We do not have sufficient evidence to say that there is a statistically significant difference between the Population-Specific Emergency Planning Sufficiency Scores across these three vulnerability types (limited English proficiency, sight limitations, and/or hearing limitations). If the relationship was statistically significant,  $p < .05$ . The histogram in Figure 12 further emphasizes this point. I would not reject the null hypothesis that the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) has no effect on their ability to receive sufficient/enough emergency planning from hospital facilities. I would not reject the null hypothesis because  $p > .05$ .

## POST-HOC TESTS

***RQ5: How does the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island) affect their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers?***

*H<sub>05</sub>*: There is no relationship between the borough that a hospital facility is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, or Staten Island) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

Since the results of this Kruskal-Wallis test performed for RQ5 displayed that we did not have sufficient evidence to say that there is a statistically significant difference between the Total Emergency Planning Sufficiency Scores across these five groups/boroughs, a post-hoc test is not necessary to perform. A post-hoc test would have only been necessary to perform if the Kruskal-Wallis test indicated that there were significant differences in Total Emergency Planning Sufficiency Scores among these five groups/boroughs, and we wanted to tell which boroughs' Total Emergency Planning Sufficiency Scores were different from another.

***RQ6: How does the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) affect their ability to receive sufficient/enough emergency planning from hospital facilities?***

*H<sub>06</sub>*: There is no relationship between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities.

Since the results of this Kruskal-Wallis test performed for RQ6 displayed that we did not have sufficient evidence to say that there is a statistically significant difference between the Population-Specific Emergency Planning Sufficiency Scores across these three vulnerability types (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations), a post-hoc test is not necessary to perform. A post-hoc test would have only been necessary to perform if the Kruskal-Wallis test indicated that there were significant differences in Population-Specific Emergency Planning Sufficiency Scores among these three vulnerability types, and we wanted to tell which vulnerability types' Population-Specific Emergency Planning Sufficiency Scores were different from another.

## INTERVIEW RESULTS

As described in the “Research Design” section of this study, interview questions were used to gain qualitative data that expanded upon the types of emergency planning programs and efforts for vulnerable populations with communication barriers at participating hospital facilities, provided insight into and identified trends in the reasoning behind the level of emergency planning for vulnerable populations with communication barriers at participating hospital facilities, and elicited suggestions for

enhancing emergency preparedness planning programs for vulnerable patient populations with communication barriers within participating hospital facilities. As described in the “Instruments” section of this study, this interview tool was important to further define the concepts rated in the survey, but also to look deeper into the underlying issues or barriers that may influence the sufficiency of emergency planning for vulnerable populations with communication barriers in New York City hospitals. These interviews utilized a questionnaire template to standardize the content of each of them that were conducted. This interview guide posed several open-ended questions to the EPCs, approaching this study’s research question inductively, not deductively. The interview questionnaire developed for this study can be found in Appendix B.

As described in the “Measurements” section of this study, each of the 18 interviews that were conducted via Zoom (audio and video) were recorded. They were then transcribed using a professional transcription service (GoTranscript). All transcripts were reviewed by the researcher to ensure for accuracy. After the verbatim interviews were transcribed, the researcher searched the data for emerging codes, categories, and themes. The transcribed text was checked for accuracy in the interview by listening and checking the written transcript multiple times. First cycle analysis included identifying similarities in the context from the transcript to begin coding the data, which included concept coding and descriptive coding. Similar words or concepts were color coded, underlined, and highlighted from each interview, and then organized in a table. Examples found in the interviews related to the categories that started to form ideas and themes. This Coding Scheme table can be found in Appendix I.

Second cycle analysis included looking at the data and highlighted areas previously preceded and coded to find additional ways to code the data by looking for patterns. NVivo qualitative research analysis software was reviewed for theme analysis. Themes can be created by looking for words with similar meanings. “Generic coding” method was applied to the data (Saldaña, p. 64, 2009). Structural coding was used for the content response data to identify broad categories with limited use of code frequency. An Excel document was created for data analysis. In the Excel worksheet, each research question was represented, and answers from the participants that were specific to the research questions were pulled out from the transcript for further analysis. As ideas and themes emerged, they were noted in the themes and no themes columns on the worksheet.

Third cycle analysis included the resultant codes being reviewed. In this review, common or similar codes were grouped. Each group was reviewed, analyzed, and assigned a pattern code. The pattern code was further analyzed in context and refined into a theme. These in-depth interviews provided important insight into factors that have influenced the sufficiency emergency planning for vulnerable populations with communication barriers in New York City hospitals. Some highlights from these interviews are listed below. Important themes that emerged from the transcripts are highlighted first, followed by a summary of key responses under the five domain-level codes. Headings under domains represent specific questions that were asked of participants.



Key themes emerged from coded interview transcripts and are highlighted below. See Appendix I for the Coding Scheme table.

### *1. Stakeholder Engagement*

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Hospital EPC's discussed the involvement of internal and/or external partners as necessary in any efforts to enhance emergency planning for vulnerable populations with communication barriers. Examples included internal hospital departments, Health System offices, and/or community partners. Interviewees described varying ways in which they could best engage stakeholders in an initiative to improve the sufficiency of emergency planning for vulnerable populations with communication barriers in their respective hospitals.

*"I would probably have a conversation with key leaders of those three areas [Nursing, Pastoral Care, and Patient Experience] and then talk about what their feedback would be and then move something forward that way. It would probably take some time. This is one of those things that sound easy until you start and then there's 50,000 barriers."*

- **Emergency Preparedness Coordinator**

*"Well, I'd set up a meeting and get them in a room, just explain them, put a little agenda together of what we're looking to accomplish, and then try and go down the list, elicit their feedback. I don't want to be the only one talking to them. It's really more for them to give me the feedback on what they think about how we could best implement the rollout. It's using their expertise and skills and knowledge to put something together, and hopefully, the people we get in the room will be people interested in something like this."*

- **Emergency Preparedness Coordinator**

*"We have been working with our marketing and communications elements so that we can look at how we're branding ourselves, but as we start to go into the core elements, clearly, the stakeholders that are closest with them need to be included in the process. Our thought and our goals are to work with the stakeholders and work with them in developing information together, however,*

*we've realized we can't go in there with a blank piece of paper, to start to go in there with various drafts."*

**- Emergency Preparedness Coordinator**

*"We have an Emergency Management Committee. We can make that an agenda item where we would bring in language services, the director as the subject-matter expert, and work with them to develop a protocol that would be able to effectively cater to the needs of those communities. Then we could bring in the other stakeholders that I mentioned, like nursing, ancillary, and so on, and so forth, to sign off on a protocol and a common understanding of if there was an emergency or disaster, what would be the most appropriate way to communicate and effectively discharge those patients while we were going to go with the patients and develop a policy around."*

**- Emergency Preparedness Coordinator**

*"What I usually do is I force stakeholders to be patients, and to be the patient that has that issue. They get to see it from the patient's perspective. Once you see things from a patient's perspective, your whole way of thinking changes. So, it's very easy for caregivers to have this arm's length approach to things. "This is what I do every day, I take care of people every day," and then you miss the details."*

**- Emergency Preparedness Coordinator**

*"I think that when senior leadership gets involved in something and they also see why it's important to do it, it leads for that trickle effect for everyone else to see that it is important. Because I think a lot of the times when we don't have our COO or our Vice President of Operations sitting in these meetings with us, people are just checking it off, okay, another EM meeting that we completed, but having them in there and agree with us as to why it is important to have it would really create that domino effect of wanting everyone to get involved."*

**- Emergency Preparedness Coordinator**

*"I think basically it should be done in the Emergency Management Committee, which has over 50 people from all the different departments because everybody should have that on their radar because all these populations will end up invariably inside their departments at one point in time."*

**- Emergency Preparedness Coordinator**

*"Like any new initiative, it's talking about it first, bringing it to the attention of our planning committees, of our Emergency Management Committee, that this could be a deficiency of our program and taking it from there. Just like with*

*anything, we've got to go about it at first, you've got to shed light on it before you can then evaluate and then plan for it.”*

- **Emergency Preparedness Coordinator**

*I think that because we have all these partners working with us, I do think it's a good idea if in one of these committee meetings that we have of Greater New York [Hospital Association] or [NYC] DOHMH if we start discussing that so that our C-suite doesn't think that it's just something that we want to burden them with. It's an actual crisis that can happen and that there are gaps. We're not addressing that.*

*If we can get the partners to help us disseminate that information to our leadership to say, this is something we're speaking about with your EM folks and you guys should really think about putting that in your next drills, it would help support us as emergency managers to make sure that they know why this is important and why we should implement that in our drills.”*

- **Emergency Preparedness Coordinator**

## 2. Responsibility

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Some EPC's mentioned who owns the process of planning for vulnerable populations with communication barriers within the hospital. While this study focused on emergency planning, some EPC's stated that any planning for these populations may rest on other departments within the hospital that they may or may not collaborate with (e.g., Language Access Services, Deaf Health Services, ADA Offices, etc.). Other mentions of responsibility focused on dedicating a specific position within the hospital's Incident Command Structure to devote to vulnerable populations and ensuring their needs are addressed during an emergency activation.

*“Our Patient Experience Group, which is under risk management, obviously anyone that needs any additional assistance or have an issue, like a complaint or anything like that, that's what they do. That's what they handle.”*

- **Emergency Preparedness Coordinator**

*“We're not saying that [emergency notification in different languages] over the overhead. We're not going to go through language one, language two, language three. By the time we get to the last language, the emergency's over. The idea is to get the emergency moving, and then each floor would then be managing their patients based upon what their needs are. From the notification standpoint, it's just to tell the inside people [i.e., clinical staff] and they'll work it out from there.”*

**- Emergency Preparedness Coordinator**

*“I think what I would like to do is put it under the auspices of one specific part of our response. We have a family care unit, which is our social work and our Patient Relations team, and also our chaplaincy services are there. I think having that branch director responsible for also that communication to our limited sight, limited hearing patients, I think we can make that as part of the role and responsibility of that individual.”*

**- Emergency Preparedness Coordinator**

*“I think it's important to note that emergency management is not one person's problem. It's every person's problem, and the doctors who don't want to be bothered, or the nurses who are overworked, or the clerks who's mandated for two shifts, everybody needs it at the forefront of their brain. I think that these vulnerable populations just make it more obvious that everybody has to be on the same page.”*

**- Emergency Preparedness Coordinator**

*“I think they [Nursing] have a degree of responsibility to notify every patient to the best of their ability. To say that it's fine-tuned and it's going to work flawlessly, I would say no. You're going down an avenue that has never been tested.”*

**- Emergency Preparedness Coordinator**

*“I don't know how many of these people are in the building at any given time, whether they're a patient, family, visitor or otherwise, but we don't know necessarily how to address them individually, in other words, to say, “Hey, we have one person here who needs signing. Let's go up there.”*

*That would happen as a result of other things that had nothing to do with me. That would be like, “We need a signing person to update this person on their having surgery. They need to sign a consent, but we need to sign it too.” They would do that clinically without having anything to do with me.”*

**- Emergency Preparedness Coordinator**

Regarding any mentions of responsibility focused on dedicating a specific position within the hospital's Incident Command Structure to devote to vulnerable populations and ensuring their needs are addressed during an emergency activation, only one EPC responded saying that they have somewhat implemented this at their hospital. They stated that this would be done on the inpatient floors in terms of identifying which vulnerable patients need specialized assistance, and then this report would be sent to the Emergency Operations Center. Two EPC's responded saying that they would be open to adding an ICS position specifically focused on ensuring the wellbeing and considerations of vulnerable populations during an emergency activation. One of these EPC's suggested that Patient Experience would likely fill this role, and the other EPC suggested that they would like to assign this type of role to the existing HICS Family Care Unit Branch Director (Social Work, Patient Relations, Chaplaincy Services).

### *3. Experience*

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EPC's discussed the presence of or lack of any real experience interacting with vulnerable populations with communication barriers within the hospital. This can include actual emergency occurrences, interactions with these populations in the scope of emergency preparedness planning (e.g., focus groups), lived experience in a hospital with one of these vulnerability characteristics (either themselves or a loved one), or a simulated experience with vulnerable populations in an emergency (e.g., emergency exercise or drill). Most of the hospital EPC's who had some form of sufficient planning

for these populations seemed to have an experience, personal or professional, that highlighted the importance of meeting their unique needs in an emergency.

*“Most of the people that run healthcare facilities, I hate to say this, are not impaired, so they haven't experienced what these people live through on a daily basis. They're not sure how they would like to know or how they would like to be communicated, what technology, what methods, what ways. It would be helpful if a group that is already in their condition could explain to us, "Okay, this is how we would like it. Here's some of the guidelines to inform us about this disaster or what to do," that would be extremely beneficial. That's the barrier right there. People don't know exactly. They're not living in their shoes, so they don't know how they would like to be communicated with.”*

- **Emergency Preparedness Coordinator**

*“We had a major bus crash that happened, and it took the top of the bus off. It caused us to activate our disaster plan, because 11 of the 28 [victims] were level one or two traumas, and this was a very specific population. It was a largely Asian group of folks who spoke Mandarin, and we do have language lines, obviously, that we would use in normal business, but for this particular instance, it's very difficult to hold a language line phone up to an individual in a resuscitation room after they have severed an arm or a leg.*

*It's a much different experience when you have that traumatic event happen, and what we realized is we were having very difficult times communicating with people, and we were able to find an individual in-house who did speak Mandarin after some time trying to figure it out, and the language line, believe it or not, had struggled finding that language as well, and that was not our demographic. That was not our typical population that we serve.”*

- **Emergency Preparedness Coordinator**

*“Every year we do a Patient Evacuation exercise. During that exercise, one of the things that we look for from our social workers and our patient experience teams, is the ability to translate if needed, and so translation services should be available. We test that during that exercise. We do not necessarily call attention to people with limited sight or limited hearing, but for those who are limited English speaking, we address the capability of: do we have translation services available? I don't know that we've had necessarily any actor scripts that would include people who cannot see or cannot hear.”*

- **Emergency Preparedness Coordinator**

*“There was a school bus accident that was filled of kids and children that came into our RED, and one of the things that they identified in the hot wash was all the parents that flooded the ED, a lot of them were Spanish-speaking or other languages and it was a little difficult getting a process in place to address every single parent that was flooding the ED trying to get information for their child.*

*No, we have not done an exercise after that, and you would think that that would prompt to do some sort of drill and exercise, especially trying to open up the window like, "Okay, we know that there's a deficiency with the language, what other vulnerable populations are out there?" That should have prompted us to think about vision impaired, hearing impaired, but we have not conducted any exercises or drills on that. Unfortunately, I think that in the EM world, it seems to be that sometimes it takes the things to happen first before prompting an actual drill or exercise.”*

**- Emergency Preparedness Coordinator**

*“I have to say we have not targeted them. We usually target, unfortunately, more obvious things, right? The mass casualty event, we're worrying about what is physically wrong with you as opposed to whether or not you can speak to us. That has not really been at the forefront. One of the things that we did make note of doing is bringing more pediatric cases to the forefront, because that's a real thing, and those physicians and those nurses need much training for that population as they do for our adult population, but this sort of specialty group has come up in conversation over the course of the last year, honestly.*

*Our goal in 2022 is to now start pulling out these groups and creating these scenarios for the staff, and to drill that. That is a priority for this year.”*

**- Emergency Preparedness Coordinator**

*“We have significant challenges in our hospital just within our own staff. We have a large population of staff that English is not their first language that still struggle to speak English. Most of our administrators, I think, unfortunately don't speak Spanish or have the capacity for Spanish. Across our director level middle management, we run into a lot of language barriers on a regular basis.”*

**- Emergency Preparedness Coordinator**

*“I wouldn't say that we flagged a specific emergency with a disproportionate impact to those populations. I don't think we've ever really looked at it through that lens before.”*

**- Emergency Preparedness Coordinator**

*“We responded to a large fire and we were lucky enough, we do have a language bank, but between the group families that were waiting for response, there were people who spoke the language that they were able to translate. Of course, we didn't use anybody for medical information for translation, but at least to be able to tell other people, we're waiting for information, we're waiting for the authorities to take over.*

*We received a large number of patients, including children. I don't know any more about whether some of those patients were in that category, but the families were in a category that they couldn't understand the language, some of them, or were not clear, but they did have people in the group that were able to explain to them and translate with them, not medical conditions again, just about what was going on and the procedures that we were following.”*

**- Emergency Preparedness Coordinator**

*“When I look through all of those exercises, no, we don't look at the vulnerable populations at all, let alone specifically limited vision, limited hearing, or limited English. It is probably something that we really need to consider focusing on when we get back to doing exercises and drills [post-COVID].*

*The evacuation drills, I think, would be our best opportunity to incorporate those things because there has to be somebody in my hospital right now with limited vision. There has to be somebody in my hospital now with limited hearing. Certainly, I know for a fact there are hundreds of people in my hospital right now with limited in English. Just our staff, there's hundreds of people. If we add in patients, there's even more.*

*I know we do a lot of work when we're doing the after-actions for all of our exercises and drills to talk about communication from a more global perspective, but I don't think we've ever put it to a test, to be honest.”*

**- Emergency Preparedness Coordinator**

*“We did get a sudden influx from a nursing home during COVID, which was a large number of elderly patients who-- they did have some challenges hearing. Nothing on the language side. Sight was good, but on the hearing side, it was a little bit challenging. They did come with their equipment, some who didn't have hearing aids.”*

**- Emergency Preparedness Coordinator**



#### 4. Crisis Communication

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EPC's discussed the tools, methods, and/or plans that hospitals may or may not use to send timely, accurate, and consistent messages to vulnerable populations with communication barriers within the hospital. This may be referring to emergencies that immediately affect life and/or safety, or emergencies that give the hospital time to craft a message and method to deliver it to these populations.

*"If we were to send a message out for an active shooter, we wouldn't have the time to reach out to a translator and say, "Hey, can you translate this message for us in four different types of languages?" That would have to be sent out via the public address system. Who would make that announcement? The telephone operators? I don't know. It would have to be some kind of recording. That would be a difficult experience."*

- **Emergency Preparedness Coordinator**

*"We do have interpreter phones, we do have a lot of signage in a lot of different languages that they can kind of direct them or at least guide them, especially coming into the emergency department and throughout the facility itself. I think between the interpreter phones, that would be the best that we would be able to do in a quick emergency kind of situation."*

- **Emergency Preparedness Coordinator**

*"I would say the extent that we're looking at that element because our mass notification system was immature and non-operationalized. We're in the process of building those basics, and as we build, again, we're focusing primarily right now on the staff, but as we start to build it out from a larger perspective, that's when we'll start to take into account the other language entities."*

*Broadly we don't have anything, but I think that those clinical coordinators would be a critical piece in communicating. I'm not sure how we address the language piece for them. Clearly from a patient perspective, I know we have the language lines to deal with the physician. As far as in the scheduling and typical communication with the patients, I'm not sure what those capabilities are. It's definitely a gap for us."*

- **Emergency Preparedness Coordinator**

*“Some barriers include integrating an effective communication tool that is just in time because when you're facing a disaster, there are a whole bunch of priority checklists that people start addressing and that can get buried down lower and lower as a priority, when really what you want to do is have every patient empowered with the information they need to follow the guidance that they're being given by the staff and to make sure that we're keeping everybody safe, and keeping everybody knowledgeable to the extent that that's appropriate.*

*Being able to integrate those communication tools into what is already in our existing policies, that's a challenge and something we'd have to talk to some subject-matter experts to advise what the most effective means to do that is.”*

**- Emergency Preparedness Coordinator**

*“... if you're in any disaster, it's always going to be a challenge to get the word out. Obviously, we have electronic triggers for these things. We have alerts that are sent out to the staff and announcements made to the general public. The problem with that is, you may not be able to reach somebody who can't see or hear very readily during an event, like an active shooter event.*

*We have since enhanced our language line program, but it was problematic. So, that was a lesson learned for us that, although you could have technology, technology doesn't always help in every situation.”*

**- Emergency Preparedness Coordinator**

*“We do have visual signages in several languages but we don't have them in all languages. To quickly implement them and get them where there would be a process for if we knew there was an emergency and we knew that there were x amount of patients in the hospital that needed specific translation there, we would need to implement a trigger on how to implement that quickly.”*

**- Emergency Preparedness Coordinator**

*“Our [Health] System-wide communications team has actually done a really good job of taking this particular issue on. We're moving to digital signage right now, in the early stages, and it allows us to present the material on a rotating basis through multiple sets of languages. Hopefully, one day soon, we'll have the interactive capability that when you walk in, you can use your language and use an interactive digital signage to do that.*

*The idea is if we have an issue, as soon as the original notification goes out, communications has templates that they would put up on the digital signage. This is something we're still working on. That would be in English and in Spanish. It would be large enough for somebody that's somewhat visually*

*impaired maybe not to a point. The idea was we want people to be able to see it from far away or at least notice something so that they can approach the digital sign and read it.”*

**- Emergency Preparedness Coordinator**

*“I don't know if let's say there was an active shooter and someone was coming to grab the patient and run away, I don't know that they would take the time to pick up a phone and call a translator to do that. I think that might be a gap. We do have a lot of staff who do speak Spanish and who do speak French, so we have that ability, but it would just be luck of the draw if they're by that patient. I think maybe it is a gap, but I don't know of a practical solution to it. Say there is an active shooter, and you grab the patient, try to respond best as you can, and then as soon as you're safe, being able to explain what happened afterwards.”*

**- Emergency Preparedness Coordinator**

## 5. Inclusivity

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Some EPC's mentioned that they (personally) and/or their hospital places a high level of importance on inclusivity in their emergency planning efforts and/or everyday practices/culture. Inclusivity may account for efforts to provide enhanced access to health services for vulnerable populations. Regulatory agencies also provide more rigorous standards and guidance for vulnerable populations with communication barriers in terms of their patient care needs (i.e., translation services to navigate the health care space or communicate effectively with providers).

*“I think in the past two years, there's been a lot of focus on the diversity aspects within many organizations, and our organization is no different. The focus at this point has really been from a staff perspective. My specific department, we are diversified from an ethnic and a gender perspective, however my plan is to take a different perspective in that, primarily dealing with preparedness.”*

**- Emergency Preparedness Coordinator**

*“I do think that we as an institution go above and beyond, because of our role within the system, and within the city of taking care of vulnerable populations, so we see that as part of our core mission. I do think that if requested that we would be able to get the resources to acquire what was necessary.”*

**- Emergency Preparedness Coordinator**

*“We do have a very strong diversity, equity, and inclusion committee at the hospital level, but we have an entire department dedicated to it at the system level. In fact, we have monthly training, we have awareness programming and activities. We have ongoing discussions of where we should bring some of this training and what should we be doing to better meet the needs of these populations.*

*A lot of it is done at the system level and then brought to us. Then it's really part of our staff culture here at the hospital level to embrace those types of things. If a training comes out, you're the odd man out not to take a diversity equity or inclusion training when it comes out. We plan around it where we'll set up a conference room and we can all take the training together.”*

- **Assistant Director, Emergency Management**

## 6. Training and/or Education

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EPC’s discussed either specifically formed training and/or education given to hospital staff regarding interacting with vulnerable populations with communication barriers in an emergency or any incorporation of this topic into existing emergency training and/or education given to hospital staff (e.g., evacuation device training, evacuation training, active shooter training, education materials including flyers, pocket guides, etc.).

*“There's no training. The only training would be translation services for foreign languages, but it's not a training that we do during a disaster.”*

- **Emergency Preparedness Coordinator**

*“I know you keep asking about training, but a lot of it really is common sense. I have to say it's common sense, for example, if you're dealing with a blind person and you're leading them, don't tell them, "Watch your head. Watch your step.”*

- **Emergency Preparedness Coordinator**

*“Not a specific training on that specific thing [emergency training on how to communicate with vulnerable populations], but I guess, whatever they're [Nursing staff] already doing from day to day, they're coming in there, checking*

*their vital signs, bringing their food, interviewing them for different things. If they have a language deficit or a language barrier, they know that already. They would probably just build on that. It's not enumerated in training for those particular things.”*

**- Emergency Preparedness Coordinator**

*“I think it's absolutely feasible to do. It's just a matter of the challenge of who gets trained, how they get trained, what exactly are they going to get trained on. I think that would be the challenge for us. Training in general is a challenge for us, as it is for anything, it's to pick a specific population like this. Although very important, it would still be challenging to get the word out. I think it's more the providers who would be the challenge. The nurses, I don't think are so bad. Nurses will do what they have to do, but you start talking about the physicians and things like that, I think it's a bit more challenging to get the information and training to them.*

*Then, how often do you do it? Is it something you just do annually? Something you catch in the [Health] Systems' mandatory education that they do or is it some at the site level? You can do it, it's just I think it'd be a challenge.”*

**- Emergency Preparedness Coordinator**

*“We don't have anything within our emergency management program that discusses that for individuals with limited sight or limited hearing. We do have an educational process through our language services department that is utilized as part of the general orientation to the hospital. We just haven't linked that to our disaster planning piece. The staff have that knowledge base of how we're able to communicate with those individuals who are inpatients or at clinical, but we just haven't linked that to our disaster response.”*

**- Emergency Preparedness Coordinator**

*“The staff do get [general] training on special needs populations once they're on boarded, it's part of the onboarding process. Then the annual assessment that you must take every year, that's part of that as well. Really, the training focuses on being mindful, and what tools we have to address these populations, and to utilize those tools.”*

**- Emergency Preparedness Coordinator**

*“We have programs where we work with our nurses and frontline staff to prepare them for what they would do during a crisis situation. We haven't incorporated necessarily how they would respond focusing on these three patient populations. One of the main ways that we train our staff, we have high*

*reliability organization huddles every week on each of our units, that bring together all staff from that unit. Not just nursing but anybody who's working on that floor. About once a month, they will run a discussion-based drill where we provide them with a scenario.*

*They talk through the scenario as a unit, and they talk about how they would respond to that type of incident. We've been doing that for about a year now, but none of our scenarios have specifically included those patient populations as a part of the scenario. We could, but we haven't. We also have online training videos for some of our basic principles, but they do not necessarily address those three patient populations.”*

**- Emergency Preparedness Coordinator**

*“I would say the honest answer is no [emergency preparedness training that includes these populations]. I would have to go through all of the policies for the different programs to find that answer but off the top of my head and to answer honestly, I would say no. I think that a lot of the answers to these questions arise after we exercise. It's an afterthought. It's not a forethought, which is shame on us.*

*I love to go back to the exercise design as an example. You can write all of these nuances into your exercise. You can have the patient population coming in, being limited hearing. You can integrate this easily. We just don't because we're so focused on the clinical aspect. Ancillary departments and resources like supply chain and pharmacy and all those. We're not thinking about those other populations that we should be thinking about. It's super easy to do it. You just really have to be mindful enough to do it.”*

**- Emergency Preparedness Coordinator**

*“It's possible [creating emergency preparedness training that includes these populations], of course, but at what cost? What's the cost benefit? Not to marginalize those communities, but we only have so much time and attention and effort to put into training, so efficiency and length of time, all those things are of importance. It would have to be a discussion, it'll have to be a value analysis, but possible, for sure. I would never say anything is impossible.”*

**- Emergency Preparedness Coordinator**

*“We don't have anything specifically for those populations specifically around emergencies. Our annual in-service does talk about dealing with patients with special needs, especially those three populations, talks about language service and special considerations, but that's just in the scope of being a hospital rather than emergency procedures.*

*I think that it's a little dangerous because you're already giving a lot of people a lot of information, and it can be a challenge to integrate specific things, especially about specific populations on top of everything else if it's not directly tied to the content per se. I think when you're talking about something like an active shooter training, it gets to be a little difficult because the purpose of the training is to focus people on what they need to do [run, hide, fight]. I feel like it's easy to add subjects in that detract away from the purpose of the training. I think having general training and general competency around communication and special populations is a little bit better and making sure that's just a standard part of everyone's mentality.”*

- **Emergency Preparedness Coordinator**

*“If we're just talking about emergencies in general, part of the training is for them [hospital staff] to reassure the patients, but it doesn't specifically outline vulnerable populations. Whether that's letting them know what's going on, everything is safe, etc. If we need to move, we'll move you. That's part of it.”*

- **Emergency Preparedness Coordinator**

#### 7. Lack of Accessibility Knowledge

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Without the proper insight or knowledge into the unique needs vulnerable populations with communication barriers have in an emergency, some EPC's expressed a difficulty in being able to sufficiently plan for them. This also applies to lacking a general knowledge of the types of accessibility challenges the populations may face (e.g., deaf-blind populations, varying levels of English proficiency, partial hearing and/or sight loss, etc.) in day-to-day interactions within and outside of the hospital.

*“I think the biggest obstacle would be just an overall general knowledge on how to effectively communicate with them. If it's a foreign-speaking person, what's the easiest and best way to communicate with them? If it's someone who's got a hearing impairment, how do we do that? Just the general knowledge and guideline is not there.”*

- **Emergency Preparedness Coordinator**

*“They're [the Health System] going to say there are issues of rolling out this information. What's the source of the information? Is there something that is*

*recognized in a broader scope? In other words, who else is doing this, if anybody? What are they using? Where do they get their source material from? What's their training piece look like? Those are not necessarily barriers; those are logistical realities to instituting something like this. The barrier isn't the idea, is the execution of the idea."*

**- Emergency Preparedness Coordinator**

*"I don't know how to answer this one. I'm not sure what types of resources hearing and sight-impaired people would need exactly. Language, I know it's just- you need a communicator or interpreter. I think we can have some stuff there, some resources there, but I'm not sure what exactly we would need for those other two populations exactly. Is it a person to escort them and hold their arm to make sure they get where they're going? Is it from a staffing resource or is it just something for someone to write out."*

**- Emergency Preparedness Coordinator**

*"Being able to integrate those communication tools into what is already in our existing policies, I think that's a challenge and that's something we'd have to talk to some subject-matter experts to say, "What would be the most effective means of doing that? I'm not expert on it just casually, but it's certainly something that I need to know more about."*

**- Emergency Preparedness Coordinator**

*"We do tend to sway towards the limited English and the limited hearing, the limited sight is getting a little bit forgotten still, so I'll probably push that one to the forefront just so folks can get more comfortable. I'm not deaf, or blind, or limited English. I'm not any of those things, so how would I know what's the right thing to do? I wouldn't. I could assume, and that's inappropriate. I would have to bring a specialized population in to say, "Tell me what we are lacking, tell me what it is that you think is the right thing to do." Even going to the corporations that do the ADA stuff, I would still go to the source and ask the source, "Tell me what works.""*

**- Emergency Preparedness Coordinator**

*"It's not often that as we are planning, somebody says, "Wait, let's stop and make sure we include a section for those who can't see." I think it's a lack of awareness."*

**- Emergency Preparedness Coordinator**

*"I think that also, I'm not familiar with it because I don't think people speak about it often enough. I think it's not mentioned often enough, it's not on the*



*radar, right? We focus so much on our just evacuation plans, on our mass fatality plans, on our active shooter plans, we don't speak about it often enough to remember that, "Hey, we're forgetting about this requirement as well."*

- **Emergency Preparedness Coordinator**

*"That's just one example of a vulnerable population that I don't think people think about, special needs. It's a lot. The EDs are stressed, they're dealing with patients, they're dealing with staffing issues, but any information that you can give them to help prep them to serve these patients in a way that's efficient and in a way that adheres to our standard of excellent patient care. You need information.*

*Also, awareness in the sense of that it exists as a community that's marginalized within our emergency planning efforts. Awareness in terms of the scope of the issue, how many people are we missing and is it at 1% or is it at 25% of our population that's not being captured. Those types of awareness perspectives. Awareness of even how to approach the problem, like how we plan accordingly to then incorporate these vulnerable populations into our efforts."*

- **Emergency Preparedness Coordinator**

#### 8. Capacity for Sufficient Planning

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EPC's discussed their ability to sufficiently emergency plan for vulnerable populations with communication barriers and how that may be dependent on other external factors such as a lack of resources, time, staff, etc. Some respondents discussed the challenges they face on a daily basis due to lack of resources when attempting to sufficiently emergency plan for the general population, not including these specialized, vulnerable populations.

*"I just haven't had the time. It's like you're always drawn in so many different directions and of course holidays and everything else and Joint Commission. Also, anything that's free, that's the route we go. That's the route we have to go. If there's an expense associated to it, then comes the factor of how much do we need this?*

*Whatever I could do as far as that's free or that makes sense, or especially if it's regulatory and we have to do it, then yes. Something like, "Hey, we could*

*purchase this device?" or, "We could do this training and take half away from patient care for several hours to do this," and so forth, they're going to say, "Is it really necessary? How many events have we had in the past two years?"*

**- Emergency Preparedness Coordinator**

*"If I woke up tomorrow and said, "I'm going to start this project," I'm not saying this is a barrier, this is a reality, this is something that we would have to do at all of our campuses. We're a health system, you can't just do this in one spot. What that means is then you now you have to backtrack to-- I'll have this conversation with the corporate people and say, "Hey, listen, what do you think about this? How can we do this?" This is one of those things that would probably take quite a while to get-- you're not going to find anybody who says they're not going to do it because they don't want to.*

*The buy-in is more like how do we do this effectively over time and what's the ROI on it, if you want to call it that? Because if you look across historically-- when they evacuated [redacted hospital] during Sandy, they just moved everybody out. They didn't go to bring in somebody who speaks Togo here and somebody who speaks Russian over here, they just threw them in the thing [evacuation device] and moved you. They figured it out. Did that work? Yes. Could it have been better? Sure. How much time are we going to spend to make that better if the end result is the same that we still got them out of the building, whether we talk to them or not? That's the objective. The objective is to bring you to safety, not to meet every need that you have."*

**- Emergency Preparedness Coordinator**

*"You could put something in place, but then how is it going to sustain itself without people, and is that the job of the emergency manager? Is that the job of HR? I wouldn't necessarily want to say I'd want to take on that job unless you have the support. Obviously, if you have support, then you can do a lot more. You take the hat, put it on for two hours, take it off and put a different hat on, and that's how you navigate your day. It's hard to have these structures in place.*

*I can request anything, but we don't really generate revenue so much. It's always a challenge when you're not really generating anything. You're an expenditure on you and your department."*

**- Emergency Preparedness Coordinator**

*"The intent is, every year we have to do a hazard vulnerability analysis, and that's a huge multidisciplinary effort. In that HVA, we never talked about vulnerable populations, and so I've added the vulnerable populations component to it. Now, we'll score that out, and in scoring that out, it'll fall on our HVA*

*somewhere on the matrix. We will pull that out as part of the drilling process because the reason for drilling will be that we have not addressed it. It'll rise to the top, and that's how I get around asking permission and just asking forgiveness.*

*Whatever we ask for, we typically get. Just generally in disaster management, we make money to spend money on the things that are important. These things, once we're pushing it to the forefront, will then be given most of the resources that they need."*

**- Emergency Preparedness Coordinator**

*"I think first it would be important to show something that already occurred, remind them of, " This happened this day. We were challenged with this. Imagine if we were also challenged with vision impaired, hearing impaired." I think giving a good proposal as to what the benefits will be, how it would take our facility to the next level, and take the EM program to the next level would really give them a lot more situational awareness and wanting to buy in on that planning and how are we going to exercise that planning."*

**- Emergency Preparedness Coordinator**

*"As far as personnel goes, I think that it would come down to them asking us to stick to whoever we already have and figure out how we can do that and how we can move forward with this plan without bringing new staff on. It's just not realistic.*

*If this is something that we can accomplish using our grant deliverable money although that there's very strict parameters in how we use that money for EM, it would be beneficial as well because I know that there's a lot of facilities that have that money sitting there, but because of those strict guidelines on how we can use it, we don't use it, it just sits there."*

**- Emergency Preparedness Coordinator**

*"I think that I could probably make an argument depending on the amount. I would have to do some research and find out how much that population was affecting our institution. If their needs were not being addressed, then I could probably make the case for their needs not being addressed. We have to address them and to give us the funding for it. Or to provide through our emergency preparedness dollars that we get from the city. It would be nice to have New York City Department of Health add this as a deliverable to make sure that those are being addressed."*

**- Emergency Preparedness Coordinator**

*“In a pre-COVID world, the opportunity probably was a lot better than now or maybe even next year, just simply because of the struggles we have post-COVID and staffing issues, and some of the other stuff that we’re still dealing with. If you were to ask me in another year, or if you were to ask me in 2019, I would say that our program has the buy-in and support that it would be seriously considered in any one fiscal year.*

*We could make a business case going forward into the next fiscal year, I would think that we would have broad support for anything that didn’t cost a ridiculous amount of money, which I don’t think a program like this would. I don’t think a project like this would bear significant costs so much as it would be time, effort, and training.”*

**- Emergency Preparedness Coordinator**

*“New York City is this threat-rich environment. It’s not a question of cadence. It’s a question of when. It’s a question of when it’s going to happen. I think we have this catastrophic mindset where that question of when is always in the back of our heads. It really is about building that site picture with those facts to justify the purchase.*

*I think that we’ve really built a strong team that if we’re asking for resources that’ll support clinical response or supporting these vulnerable populations, I think for the most part we rarely get kicked back because we do our due diligence. With the exercising and the validation and the continuous validation. These plans and processes are continuous. These are living documents. You have to validate them all the time.”*

**- Emergency Preparedness Coordinator**

## 9. Regulations

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EPC’s discussed the guidance and/or standards published by regulatory agencies (e.g., The Joint Commission, CMS, etc.) regarding sufficient emergency planning for vulnerable populations with communication barriers. Some EPC’s expressed the need for these agencies to lead the efforts in researching and publishing best practices that are specific and actionable for hospitals to follow. Many stated that existing standards regarding emergency planning for vulnerable populations were vague and lacked any

specific details regarding actions that should be taken by hospitals to plan more sufficiently for them.

*“The problem with standards is sometimes they put it in and then you put a word in your plan just to say okay, visual impaired, so special populations, including visually impaired, you just put that there, but it doesn't necessarily translate to actively planning around it as kind of a general thought process.*

*I think they [The Joint Commission] should try to list it out and maybe in some of the interpretive documents talk about some of the groups that are included in special populations and the standard, they're like, "It can include, but is not exclusively the pediatrics, geriatrics, visually impaired, hearing impaired, psychiatric, et cetera, et cetera."”*

- **Emergency Preparedness Coordinator**

*“It would be helpful if there was a template out there or some kind of guidance from a regulatory agency. The guideline is very generic. It's not specific as to how to do it. Because the guideline is generic, our emergency operation plan will also be generic to that guideline to say, "Yes, we will be dealing with people with disabilities or people who speak foreign languages. When the time comes, we'll deal with that," but it doesn't specify how we're going to do it.”*

- **Emergency Preparedness Coordinator**

*“I could tell you I'm looking at the 117 elements of performance for emergency management. None of them address that [vulnerable populations with communication barriers]. They have [standards] about volunteer, rapid credentialing, all this other stuff, but nothing in there about that. That much I could tell you.”*

- **Emergency Preparedness Coordinator**

*“Unless something like this became a regulatory requirement, it's just another nice thing to have. There's a long list of nice things to have that you don't ever have. This is the slippery slope of this. This is important. There is clearly some impact here. If let's say somehow you come out of the study, you get some data, and next thing you know it gets to be a Joint Commission requirement or Department of Health, two things will happen. They'll have to input this, and then, we'll have to spend more resources than we ever really thought around this.”*

- **Emergency Preparedness Coordinator**

*“If they [The Joint Commission] spelled it out a little more specifically, you'd sell it a lot more, because it's easy then to say, "Look. Well, we have to do it. It's black and white." I don't think it's spelled out well enough now to do that. It speaks to a couple like hearing impaired, disabled- children, like I said, elderly. It speaks to a couple different groups of people.”*

**- Emergency Preparedness Coordinator**

*“In general, they usually make very standard statements that almost feel vague and unachievable at the same time. You almost have to figure out what they're looking for. For me, it's always about, well, what's the worst-case scenario? If that's the worst-case scenario, and we can address the worst-case scenario, then we've met the standard. That's usually how I approach it.”*

**- Emergency Preparedness Coordinator**

*“The regulatory requirements should be in alignment with whatever the ADA compliance is for a specific facility. Any sort of compliance related to ADA should be intertwined into the Joint Commission requirements for emergency planning.”*

**- Emergency Preparedness Coordinator**

*“I think that it would be very interesting for the New York City Department of Health. We've been trying to have them focus on doing drills with vulnerable populations for a very long time. I would love to re-send them those plans on how to do those, to re-peak their interests. What are their positions on the regulatory Joint Commission and CMS regulations for hospitals and why aren't they more proactive about giving emergency preparedness dollars?”*

**- Emergency Preparedness Coordinator**

*“It's not adequate. I have a person that is a regulatory emergency manager. His entire job is breaking down the regulations and tell us what we need to do. The requirements to include accessibility for populations in emergency planning are not sufficient because if it's not on his radar, I'm going to tell you it's not adequate. We just went through our triennial survey last [redacted month] and nowhere was it mentioned. There is nowhere in my plan does it say we're going to incorporate these things. Unless it's part of the new 2022 standards and it's more focused on there, I'm going to say no because I don't know about it.”*

**- Emergency Preparedness Coordinator**

*“You're not going to get action unless there's regulatory backing and the specificity of the regulation make it easier for hospitals to be actionable.”*

**- Emergency Preparedness Coordinator**

## 10. Barriers/Challenges

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EPC's mentioned conditions that they believe inhibit their ability to sufficiently emergency plan for vulnerable populations with communication barriers. These could include lack of resources, guidance, demographic data, support, regulatory standards, etc. for this type of planning initiative/effort.

*"It's going to be financial to a certain extent. It's going to be support or administrative to a certain extent. Those will probably be the some of the major barriers. Getting buy-in from people would be a challenge, as far as barriers are concerned."*

- **Emergency Preparedness Coordinator**

*"Probably conflicting priorities and the program's not developed. It's something that needs to be delivered from a holistic perspective. I don't think the best case for it is to gather people together just to target one type of training. If indeed we're going to target something for the visually impaired or those patients with sight and hearing vulnerabilities, the question is how do we maximize that and I also think we can't go down a lane. We need to evaluate the other vulnerabilities that may exist as well. English, clearly the communication entities are one, but also looking at the vulnerabilities of the population who needs assistance in moving and not to mention if we have patients or visitors with other mental capacity challenges as well."*

- **Emergency Preparedness Coordinator**

*"It really is about consistency. These aren't one-and-done things. Staff change. Residents graduate every three years, and there's always some staff turnover. I think the barrier is always how well you can keep the education momentum going. That is always the barrier."*

- **Emergency Preparedness Coordinator**

*"People would say, "Yes, it's challenging to implement technology and there are a lot of barriers in the way to implementing things like that. Connecting our mass notification system to our monitors and displays throughout the hospital. That's a big lift." Can it be done? "Sure." Is there the will to do so? "Maybe not.""*

- **Emergency Preparedness Coordinator**

*“The engagement, the participants, the personnel, the support from upper C-suite people, administration, the ones that truly can help push the program forward. That's what's really missing because like I said, if we can use staff that we have, if we already can use the resources from our grant money, we would just need to get that support from senior leadership as the first step forward so that everyone else could follow. I think that would really help out with getting a good plan in place, at least coming to the initial proposal”*

**- Emergency Preparedness Coordinator**

*“The challenge would be if I tried to sit down with leadership and said, "Okay, let's plan this out," there is always going to be, "We can't do it, we don't have enough resources." Until the moment happens, I just think the planning portion would be a struggle.”*

**- Emergency Preparedness Coordinator**

*“The training. Time. Their ability to sit through another training or drill which is why, if I make the changes we're talking about today, I would make sure it was integrated into the training we already have or the drills we already conduct and just including that population. I think bandwidth of our staff would probably be my biggest challenge.”*

**- Emergency Preparedness Coordinator**

*“There are no barriers stopping us except our own ability and our own time constraints. It's capability, resources, and whether or not it is something that falls in line with system or hospital priorities.”*

**- Emergency Preparedness Coordinator**

*“I think one of the big limitations is how reliant we are on technology, and that technology is a great resource and something that is very important to us and useful, especially to account for these populations. Again, talking about interpreters or video connectivity. If we face a disaster where those communication methods are unavailable, it would become very problematic.”*

**- Emergency Preparedness Coordinator**

*“I think first getting the people in a room together is always an issue. Then when you get the people in a room, getting them engaged where they would have enough enthusiasm where they would want to continue. "Yes, that's a good idea. Let us know when you figure it out." After that, then funding would be a large barrier.”*

**- Emergency Preparedness Coordinator**



## *11. Spontaneous Response*

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Some EPC's mentioned the concept of not pre-planning, but rather, relying on emergency response leaders in the hospital to figure out ways to address the needs of vulnerable populations in the moment that an emergency occurs, as necessary. Some of their hospitals rely on their Command Centers or Emergency Operations Centers to address certain issues as they occur, rather than pre-planning for every type of scenario and/or population the hospital may need to consider.

*"We didn't notice any trends for any type of special action for that specific patient population. It doesn't mean that we're not going to have a disaster that will require us to focus on that, but when that does happen, then our command center will have to deal with that emergency as it comes or as it happens.*

*But no, there is no one person that has very specific duties and responsibilities specific to that patient population. There's nothing in any of our job action sheets that says, "No, we need to pay attention to this group." I think as it happens, we'll take actions, basically. Usually, when a disaster occurs, it'll encompass the population in general unless there's a specific disaster that has affected that patient population."*

- **Emergency Preparedness Coordinator**

*"If anything they would have one of those [translation] machines right there. Any healthcare provider, that's going to speak to them or anything to that effect. They can have it handy right there because it's like the fire extinguisher. It exists. We have it. It's not really being used until the time that's needed, but if we know we already have somebody who may need it, then we locate one right there by them.*

*I do have a section that mentions the vulnerable populations [in the Emergency Operations Plan]. As far as that kind of specifics, I have to say no. As far as stating that we do have these things in place and anything, any issues, so forth, we have to refer to Patient Relations. Then, if it becomes something else where we get involved, we do what may be needed."*

- **Emergency Preparedness Coordinator**

*“Probably in an emergency situation, probably not other than people waving and gesturing and doing those types of things. Because interpreter phones for a situation like that is not going to really work. If there's people or staff members who know the language or getting someone who's sight-impaired would be probably a bit challenging to get them moving.”*

**- Emergency Preparedness Coordinator**

*“For that situation [active shooter], the staff is going to do what they're trained to do, which is, try to get as many people out as possible without harming themselves or anybody else. Going to close doors, going to lock down units, going to do stuff like that. In that moment, I don't think that figuring out how to translate for somebody at that moment is going to be at the forefront of their brain no matter what we do.”*

**- Emergency Preparedness Coordinator**

*“Again, I don't think we drill down specifically to identifying and assisting a patient who might be limited hearing, for example. We talk about the very generalities of making sure we communicate effectively with the patients. Whatever that looks like. Then our nursing staff, I would think the unit staff would know and understand where any patient of concern, so to speak, might have to go in and one-on-one communicate with that patient for whatever reason. I think our staff would have a very good handle on that and a relationship with the patient to be able to do that.”*

**- Emergency Preparedness Coordinator**

*“I honestly don't know but if we're talking about an active shooter situation it's run, hide, fight. Everyone's going to know that something is happening and if you have staff directing people to exit the building I don't think at that point, any of that matters; people are just going to follow and ask questions later.”*

**- Emergency Preparedness Coordinator**

*“The leadership is aware of the various populations that we serve. They know of the different languages. Telling them that is not going to be a surprise, but then when it comes to saying, "Okay, what will we do in this situation?" Then it would be like, "Oh, okay. We'll figure it out.””*

**- Emergency Preparedness Coordinator**

*“I don't think we have done a great job about that. We do a great job when we need it on a daily basis, but thank God, we never had a major emergency where it became a major issue. Once you institute the hospital incident command system, you have the resources and you scale your exercise and you look for the*

*people you need and who's around and what time it is and who's coming, who can make it, who can take over if needed."*

- **Emergency Preparedness Coordinator**

## 12. Patient Tracking

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Some EPC's mentioned an ability or process already in place to record and track the patients admitted to the hospital who have communication barriers. This can be done either virtually (via the Admitting system or Electronic Medical Record System) or physically (e.g., signs or icons posted outside of the patient's room/area). There are varying levels of awareness, tracking, and following of these policies that the EPC's expressed. While some EPC's stated that this tracking may be done, none of them had mentioned that this information is being utilized in the scope of emergency management (e.g., being displayed or utilized in the Command Center/Emergency Operations Center during certain types of emergency activations where this information would be relevant, such as an evacuation).

*"Yes. If a patient comes to the hospital, once they get registered, some of the questions, when we basically register the patient, will involve, "Does this patient need any type of translator services?", and, "Does the person have any disabilities, hearing, sight, et cetera?" Yes, that will happen once the patient is basically registered."*

- **Emergency Preparedness Coordinator**

*"They actually have a sign above them so that everybody's aware that they may not speak or understand English so forth, if they need that interpretation."*

- **Emergency Preparedness Coordinator**

*"We don't keep a running tab. I don't keep a running tab or would easily have a breakdown of patients or visitors that fall into that category."*

- **Emergency Preparedness Coordinator**

*“Historically we used stickers before we had Epic [Electronic Medical Record system], but Epic allows you to put that flag on the patient, and we do utilize that. But you have to look for it, right? You have to want to find it. You need some old-fashioned triggers, because the teams around those units, they're not necessarily embedded in the chart when they're doing that. They may have gone over the didactic with their team leader, and maybe the team leader remembered to say something, and maybe they didn't. We need more visual tools within the space that says, "Oh, yes. This is somebody who cannot hear me very well, ".”*

- **Emergency Preparedness Coordinator**

*“Yes, it's done in the EMR system because I know that one of the challenges was that when they would post certain things like outside the door of a patient, the Patient Experience department felt that that wasn't always well received by patients. Sometimes patients just are not-- they're very private and they'd just rather not have that information completely exposed on their door, so we created a system to include those notes in the EMR system. If there's someone that's coming to that room that did not need to check the EMR for anything, they just simply need to come and check in with the patient, how would they know?”*

- **Emergency Preparedness Coordinator**

Documenting a patient’s limited hearing, sight, or English proficiency status was most commonly reported via the hospital’s Electronic Medical Record system (EMR), with 39% of interviewees confirming this, and 11% of interviewees stating that there is a possibility of it being notated in the EMR. Some EPC’s stated that they would not know this because they do not have access to the hospital’s EMR. Some knew that it was a question asked of the patient during registration, but they were unsure of how that was tracked or communicated after admission. Others stated that the Nursing staff should know which patients in their unit have those vulnerabilities, but they could not confirm this or confirm if this was written in any policy or training.

### 13. Lack of Planning/Guidance

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Some EPC's mentioned either the confirmation that the hospital does not currently have an emergency plan for vulnerable populations with communication barriers, does not incorporate vulnerable populations with communication barriers into existing emergency plans and/or annexes, or does not see a need to create such plans or guidance for the hospital and its staff. This can also include confirmation from the respondent that this consideration has never been made or thought about by themselves or any other individuals and/or groups within the hospital and/or Health System (if applicable) responsible for emergency planning.

*"We may even have to outsource this to someone from the outside to come and do it, but there's nothing in our policy that says, "This is what we have to do or how we do it." That's a weakness on our part. If we did have a policy to basically specify what company to reach out to or a more specific guideline or a method or a procedure to follow to basically communicate with this patient population, then yes. We don't have that. It would be helpful if there was a template out there or some kind of guidance from a regulatory agency."*

- **Emergency Preparedness Coordinator**

*"Honestly, the reason [for not having specific plans for these populations] is very simple; because the chances of something like that [an influx of these populations] happening especially in this area is small compared to a lot of the other things that we should be exercising. It's not like it's not important or we don't care about it, but out of like 100 different hazard vulnerabilities that can occur, we have to do the exercises that we're most likely to, and then on the HVA it's very, very low on the scale.*

*I do have a section that mentions the vulnerable population. As far as that kind of specifics, I have to say no."*

- **Emergency Preparedness Coordinator**

*"We don't address this in the plan right now. That's our goal this year, to embed this in properly. We do have special needs populations that we address, because you have guide dogs, you have all kinds of stuff. It's a small blurb in the plan*

*that is not-- It needs to really be looked at and revamped to make it comprehensive.*

*The point is to take it from being a footnote in the plan, creating its own plan, and then creating the training module around it. Then drilling it obviously.”*

**- Emergency Preparedness Coordinator**

*“I think it would really help to start visualizing that more or seeing it more because we constantly get newsletters from Joint Commission on new standards, but if a notice can come out, even from our partners at Greater New York [Hospital Association], CMS new standards or refresher on the EM portion part saying, "This is what you guys should be thinking about aside from what you already know that is required. Did you know that this is also something that is a Joint Commission requirement?" I think that would really start triggering us to think about that more. We're just not seeing it and we're not hearing about it as often as we should.”*

**- Emergency Preparedness Coordinator**

*“I just sent you an excerpt from our EOP regarding vulnerable populations and it does not specify right now these populations we're discussing. It does say pediatric, geriatric, disabled, or have serious chronic conditions or addictions. It does incorporate involving Case Management and Social Work, but we don't have them on the call right now or on this meeting.”*

**- Emergency Preparedness Coordinator**

Documenting populations with limited hearing, sight, or English proficiency in the hospital emergency plans was not confirmed by any of the interview participants. Documenting of general “vulnerable populations” in the hospital emergency plans was confirmed by 28% of interviewees, but all of those that reported this also stated that the section regarding this was very general. None of the plans were specific in terms of what exact support they will be providing to individual vulnerable populations (e.g., limited hearing, sight, or English proficiency). One interviewee did confirm that their Emergency Operations Plan mentioned the translation devices that the hospital uses to communicate with limited hearing and English proficiency populations. Another

interviewee stated that they added a section in their Emergency Operations Plan regarding vulnerable populations after being influenced to by taking this dissertation study's survey questionnaire.

#### *14. Patient Demographics*

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Some EPC's mentioned the need for or current practice of collecting demographic information regarding the percentage of vulnerable patient populations with communication barriers that visit their hospitals. The need for this data was mentioned in some instances in order to inform the amount of resources the hospital should dedicate to planning for these populations based on the frequency of visits they saw from them (i.e., more frequent equals more planning and resources). In other instances, this data was mentioned to support the level of emergency planning the hospital already does for certain populations over others (e.g., if a hospital sees more Spanish-speaking patients than any other preferred language, they will only incorporate Spanish into their considerations for crisis communications).

*"We do have people that are foreign language speaking. We have people from all over the world coming here. We've noticed an increase of foreigners coming to us. Yes, we do have a strong need for translators, and we have an infrastructure to reflect that. People with disabilities [limited sight and hearing], yes, they do come in, but not that much, basically."*

- **Emergency Preparedness Coordinator**

*"Everybody, at least in this area speaks English. I can say in another hospital I worked at it was 71% Hispanic. Right here is primarily Haitian Jamaican, but they all speak English. Very rarely do we have anyone that may have a language barrier."*

- **Emergency Preparedness Coordinator**

*“I think the biggest thing for us would be the language barrier, because there are so many different people in this area and they come to this facility. I don't even know statistically, I'd love to see how many patients really come in who are hearing-impaired or who have sight impaired, who are actually coming in whether they're impatient or ambulatory. Same with the language, I know we have a lot but not sure exactly how much.*

*You're going to have to show them [hospital leadership] statistics and numbers, and you just have to show them stuff to sell it. Selling it with data and statistics and things like that, how it impacts, what's the impact of that impact, etc.”*

**- Emergency Preparedness Coordinator**

*“We've taken a renewed focus on staff preparedness, and the thought process and our vision is that in the mid of 2022, we will start to frame out preparedness for patients and their families. What I mean, start to frame it out, start to look at, do some research and understand what our patient population makeup is, and then be able to as we push things out, acknowledge the different populations that may exist and to try to address that.*

*The thought right now is primarily on the language perspective, but you raise a good question from a vision and a hearing perspective, which I have not thought of totally. I think we need to have a sense of what percentage of the organization has those challenges, but how can we best target it?”*

**- Emergency Preparedness Coordinator**

*“We have a very elderly, sick population in [redacted borough location], and oftentimes, our general population is hard of hearing. Interestingly enough that my dad who was 92 years old, is very hard of hearing, and he has been a patient in this hospital on multiple occasions, and what I can tell you is that, in general, it's very difficult, because staff don't think about that first, right? That's not the thing that comes to their mind at first.”*

**- Emergency Preparedness Coordinator**

*“The hospital I'm sure is full of people who cannot hear or see. I don't know, off the top of my head, the general population and what percent might fall into this category.”*

**- Emergency Preparedness Coordinator**

*“Our demographic would definitely justify us doing this [improving the sufficiency of emergency planning for these populations] and moving forward, absolutely, especially just with the language alone would be huge. It doesn't*



*hurt. [redacted hospital name] has a very vulnerable patient population. They are very underserved, [redacted borough location], it's a tough area, and there are a lot of patients that probably don't receive that quality patient experience because of a lack in preparing from us in the hospital. Even if it's just two or three or four patients that we see a month that are vision-impaired or hearing impaired, it's those four patients that we could actually impact."*

**- Emergency Preparedness Coordinator**

*"I think that it's probably language, but never really sight and never really hearing. That's because it's so rare that you see that the percent of population that you get into a facility. It's something again to be addressed but I think that if our population or patient population had a large number of those, that would've already been addressed but it really isn't. If we were in a nearby school that was for the deaf or something like that, then we would definitely have a plan in place.*

*I would have to do some research and find out how much that population was affecting our institution. I think the most important barrier is that lack of knowledge of whether or not those populations are even a large number in our institution or in our community and what we would provide them."*

**- Emergency Preparedness Coordinator**

*"We're only picking two languages [to translate emergency communications into], but at our hospital, that's I think most of the need."*

**- Emergency Preparedness Coordinator**

*"With some limited sight and limited hearing, we don't have as much. We do have a diverse population of patients who speak various languages. I think we become more prepared to handle those. We do have translation lines and things like that as well. The other two really, I don't think it really came up. I think, as a general rule, if we do get patients like that, the nursing staff have their procedures in place to handle that."*

**- Emergency Preparedness Coordinator**

*"Again, the difference between us and probably hospitals around us here is that we see them [vulnerable populations] every day. We kind of have more worry than maybe other areas because we constantly, this is something that we live with every day."*

**- Emergency Preparedness Coordinator**

When speaking about hospital demographics in terms of limited sight, hearing, and English proficiency populations, knowledge of Limited English proficiency demographics (even basic knowledge, such as knowing the hospital saw these populations frequently) was mentioned by 61% of interviewees. This drastically exceeded any mention of limited hearing population demographics (11%) or limited sight population demographics (0%). Many interviewees also made it a point to recognize that did not think their hospitals saw many limited sight or hearing patients, without knowing exact statistics/demographics. There was a general consensus that having this demographic information to present to hospital leadership would assist them in guiding the emergency planning for these populations, as well as justifying the need for such an initiative.

### *15. Patient Feedback*

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Some EPC's mentioned solicited or unsolicited feedback received and/or suggestions to elicit feedback from vulnerable patient populations with communication barriers regarding their unique considerations during an emergency while in the hospital. This could include actual complaints, expressed concern, or overall opinions given by patients during actual or potential emergency activations. This could also include a suggestion by the EPC to gather feedback from vulnerable patient populations with communication barriers in order to incorporate them in the planning process (i.e., conduct interviews or focus groups to solicit feedback to inform emergency planning practices).

*“Not that often [emergences impacting these populations] in a sense where we have to do anything special for them. What is being done now is sufficient, I think, for them. We haven't had any complaints from these patients with these disabilities. If we did, of course, we would spring into action and come up with a plan to make their experience here a lot better.”*

**- Emergency Preparedness Coordinator**

*“We need more visual tools within the space that says, “Oh, yes. This is somebody who cannot hear me very well,” because my father’s [a patient admitted to the hospital] biggest complaint was always, “A bunch of people come in here, mumble something, nod and leave, so, I don't know what's happening.” He had the luxury of me being able to pull in those individuals that were involved in the care and say, “Hey, he did not understand a word you said, and so go over it with me, and then I will translate, and/or I will help you understand what you couldn't get out of him.””*

**- Emergency Preparedness Coordinator**

*“One of the challenges was that when they would post certain things like outside the door of a patient [indicating that patient was limited sight, hearing, or English proficiency], the Patient Experience Department felt that that wasn't always well received by patients. Sometimes patients just are not-- they're very private and they'd just rather not have that information completely exposed on their door, so we created a system to include those notes in the EMR system.”*

**- Emergency Preparedness Coordinator**

## **General Sufficiency of Emergency Planning for Vulnerable Populations Factors**

The next sections were coded *a priori* into eight domains; key responses are summarized under each domain. Each heading represents a specific question that was asked of participants.

***Real Emergencies Experienced That Assessed Hospital Capabilities to Provide***

***Sufficient Emergency Response for Vulnerable Populations with Communication***

***Barriers***

Most EPC's could not recall a real emergency that their hospital experienced that tested its capabilities to provide sufficient emergency response for vulnerable populations with communication barriers. Seven EPC's (39% of interviewees) described only one incident per the hospital they were representing that did involve vulnerable populations with communication barriers. Out of those seven hospitals, only one EPC's stated that after the emergency event, they started incorporating vulnerable populations with communication barriers into their emergency exercises and drills or edited their Emergency Operations Plan as a result of that incident regarding vulnerable populations with communication barriers. Out of those seven hospitals that reported an emergency event, five events only included limited English proficiency populations, one event only included limited hearing populations, and one event included all three populations (limited sight, hearing, and English proficiency). These emergency events included:

- Bus crash (external MCI that caused an influx of Mandarin speaking patients)
- School bus accident (external MCI that caused an influx of pediatric patients with Spanish-speaking parents/guardians)
- Apartment building fire (external MCI that caused an influx of limited English proficiency patients)
- Afghani refugees coming in through John F. Kennedy airport (inquiries from New York State to hospital regarding ability to provide physicians & nurses that had proficiency in certain Afghani languages)
- COVID-19 vaccination campaign & daily care during the pandemic (limited sight, hearing, and English proficiency populations had difficulty with technology-based appointment making)
- COVID-19 hospital care (influx of limited English proficiency patients caused issues with limited number of translation iPads/devices; influx of limited hearing patients including elderly)

Some EPC's discussed a lack of awareness in terms of even identifying whether or not an emergency event had stressed the hospital's capabilities and capacity to provide sufficient emergency response for vulnerable populations with communication barriers. A lack of awareness may cause the hospital to not notice if an emergency response had disproportionately affected these populations, and as such, it would not be indicated in the after action report for the emergency event. One hospital mentioned that, separate from their patient population, a large portion of their staff were limited English proficiency. Given the important role that all hospital staff play in an emergency response, this was of concern for them in terms of ensuring that their experiences are considered in real emergency event debriefs regarding crisis communications and their ability to properly respond.

***Emergency Drills or Exercises That Assessed Hospital Capabilities to Provide Sufficient Emergency Response for Vulnerable Populations with Communication Barriers***

Most EPC's (83%) stated that their hospital has never conducted a disaster drill or exercise that assessed its capabilities to provide sufficient emergency response for vulnerable populations with communication barriers. Of the EPC's (17%) that did state that their hospital has conducted a disaster drill or exercise that assessed its capabilities to provide sufficient emergency response for vulnerable populations with communication barriers, they also mentioned that this only included injects for limited English proficiency populations. None of the interviewees stated that they incorporated

limited hearing or sight populations into any of their past exercises or drills. One EPC stated that, while they have not included limited sight, hearing, and English proficiency populations in their exercises or drills, they have included other types of access and functional needs (e.g., mobility issues, cognitive issues, etc.).

***Stakeholders and/or Departments That Need to Be Involved in Emergency Planning for Vulnerable Populations with Communication Barriers***

Most interviewees named internal departments within their hospital that would need to be involved in any effort to address and/or enhance emergency planning for vulnerable populations with communication barriers within their hospital. The most mentioned departments included:

- Nursing/Patient Care Services (named by **61%** of interviewees)
- Social Work/Social Services (named by **50%** of interviewees)
- Service Excellence/Patient Experience/Patient & Family Centered Care/Guest Relations/Patient Relations (named by **44%** of interviewees)
- Administration/Senior Leadership (named by **28%** of interviewees)
- Clinical Roles such as Medical Service Providers, Providers, Physicians, Physician Assistants, Hospitalists, Trauma (named by **28%** of interviewees)
- Security (named by **28%** of interviewees)
- Language Access Services (named by **22%** of interviewees)
- Emergency Department (named by **17%** of interviewees)
- Patient Access/Admitting (named by **17%** of interviewees)
- Psychiatry/Mental Health (named by **17%** of interviewees)
- Public Relations/External Affairs (named by **17%** of interviewees)
- Case Management (named by **11%** of interviewees)
- Environmental Services (named by **11%** of interviewees)
- Pastoral Care/Chaplaincy/Spiritual Care (named by **11%** of interviewees)
- Safety/Environmental Safety (named by **11%** of interviewees)
- Patient Transport/Patient Escort (named by **11%** of interviewees)
- Dietary/Food and Nutrition (named by **11%** of interviewees)

Other lesser mentioned departments by interviewees included Human Resources, Marketing and Communications, Radiology, Respiratory, Blood Bank, Hematology, Regulatory/Quality, Patient Placement Operations Center, Operations, Emergency Management, Physical Therapy, Speech Therapy, Telecommunications, Pharmacy, Community Affairs, Pediatrics, and Volunteer Departments. EPC's also mentioned their respective Emergency Management and Environments of Care Committees (named by **17%** of interviewees) as stakeholders, which are multidisciplinary and include representatives from a variety of departments throughout the hospital. Additionally, only a couple of EPC's mentioned external stakeholders (named by **22%** of interviewees), including Greater New York Hospital Association (to advise regarding Mass Casualty Incident notifications), vulnerable populations in their community (to better inform the emergency planning process), and outside communication vendors (to advise expanding capabilities of mass notification systems).

EPC's also discussed ways that they would best engage these stakeholders if they were to start an initiative to address and/or enhance emergency planning for vulnerable populations with communication barriers within their hospital. The most mentioned methods for engaging stakeholders included:

- Creating an agenda item for this in an Emergency Management Committee meeting
- Creating a Subcommittee of the Emergency Management Committee that focuses on vulnerable populations
- Holding an ad hoc meeting of key stakeholders
- Having a casual conversation with hospital leadership to elicit feedback

A key theme in these responses was the importance of relationship-building in Emergency Management. EPC's mentioned that relationship-building should be established before this type of initiative takes place and would help in terms of eliciting support and engagement from stakeholders. While some EPC's mentioned that a roadmap should be developed before engaging with stakeholders, other EPC's expressed that brainstorming should happen with stakeholders, especially the subject matter experts. As mentioned in the *Lack of Accessibility Knowledge* and *Lack of Planning/Guidance* sections, some EPC's expressed that they were hesitant to engage stakeholders before they fully understood the problem and needs of these populations. One interviewee mentioned that they would want to engage with Greater New York Hospital Association, who regularly forms toolkits to address certain topics in healthcare emergency management (e.g., Mass Casualty Incident Toolkit, Pediatric Toolkit, etc.). They mentioned that it would be helpful to have a toolkit for vulnerable populations with communication barriers which provides guidance for hospitals to accommodate and consider them in their emergency planning.

### ***Hospital Crisis Communication Tools for Vulnerable Populations with Communication Barriers***

All interviewees assessed what communication tools or methods their hospitals had in place to provide timely notification to vulnerable populations with communication barriers in a no-notice emergency that immediately affected life and/or safety (e.g., active shooter attack). Only two (11%) of the EPC's interviewed mentioned



any type of automatic alert that would be available within patient rooms and/or hallways and common spaces within the hospital (e.g., digital signage) in multiple languages and large text. A majority of the EPC's (72%) stated that they would rely on staff (e.g., clinical Nursing staff) to notify these patients in a no-notice emergency, however, it was not indicated anywhere in their plans. One hospital confirmed that this was indicated in their Emergency Operations Plan, but that staff were not trained on it. Some themes that came up when discussing crisis communications for these populations included:

- The main objective should be *safety, not communication*. Some EPC's expressed that staff should only be concerned with moving the patients to safety, and once the incident is over, they can attempt to communicate with the patient and tell them what happened.
- All EPC's reported that their mass notification systems were only available to staff people, and they are only sending messages in the English language on these systems
- The need to embed translating these emergency messages (i.e., other languages and visual signage) into existing technology. Some EPC's expressed that integration is necessary in order to automate the communication and ensure accountability that it will always be translated. They also expressed that this was necessary in order to ensure the timeliness of this notification given the direness of the situation it would be sent in.
- A lack of knowledge in terms of crisis communication solutions for these populations. Some EPC's were unsure of what technological solutions existed that could solve this communication/notification issue.
- The reliance the hospital has on technology in terms of being able to offer translation services. Some EPC's expressed how this dependency can be problematic in terms of both outages of technology (e.g., internet outages, phone outages, etc.) and lack of technology resources (e.g., not having enough translation devices during an external surge of these populations)

## *Training and/or Education Conducted in Hospital That Support Emergency*

### *Planning for Vulnerable Populations with Communication Barriers*

None of the EPC's who were interviewed stated that their hospitals had any sort of emergency preparedness or emergency-related training and/or education efforts that addressed vulnerable populations (including vulnerable populations with communication barriers). Many of the sentiments around training reflected how difficult it is to commit hospital staff's time to general emergency preparedness training, making adding another type or component of training related to vulnerable populations even more difficult. EPC's gave some suggestions on how they could potentially accomplish this, or how current training is somewhat supporting these populations in terms of an emergency response from staff:

- Hospital sign language, language services, interpreter services, etc. training that is assigned to certain staff would support basic communication with limited hearing and limited English proficiency populations in internal hospital emergency situations (e.g., evacuation, active shooter, etc.)
- Just-in-time training (given to staff at the time of an emergency response, e.g., hospital evacuation)
- Diversity, equity, and inclusion training assigned to staff at onboarding
- Special needs populations training assigned to staff at onboarding
- FEMA decontamination training (created and administered by FEMA) includes a brief section on dealing with vulnerable populations during a decontamination operation; some staff on hospital decontamination teams will take this training for certification
- Staff taught to categorize patients in fire safety training to ambulatory & non-ambulatory (could easily teach them to categorize them into communication barriers to report to Command Center/EOC)

***Hospital Resources That Support Emergency Planning for Vulnerable Populations with Communication Barriers***

All interviewees assessed the sufficiency of resources their hospital had to provide satisfactory emergency planning for vulnerable populations with communication barriers, as well as the ability to request those resources and the likelihood that those requests would be granted for this type of initiative. 56% of EPC's stated that they would likely have and/or get the resources they would need for this type of initiative to enhance the emergency planning for vulnerable populations with communication barriers. Most of these respondents, however, included the caveat that they would need to provide sufficient justification for this need in order for their requests to be approved. 33% of EPC's stated that their hospital would not have or dedicate the resources necessary to address this issue, however, some did mention that they could possibly use HPP grant deliverable funding to support it. 11% of EPC's stated that they were not sure if they would receive the resources they needed if requested, as a lot of it depended on research they would need to conduct in terms of patient demographics and establishing a need for this initiative. Other themes identified included:

- This would need to be an initiative adopted by the entire Health System and all the hospitals that fall within it. Several EPC's stated that this would be more difficult of an initiative to pursue given the fact that they are a part of a Health System that would need to roll this out as a whole across all hospitals. Some EPC's, however, stated that this was a benefit and they could gain more staffing resources to support this initiative by being part of a Health System.

- Competing priorities within the emergency management programs at the hospital, in terms of other prioritized threats and initiatives. Many EPC's stated that it would be difficult to take time and staff away from other emergency management program priorities in order to pursue addressing this issue.
- A major theme throughout the responses was needing to provide justification in order to elicit support for this initiative and prioritize it. They named examples such as patient demographics to show the frequency of these populations being admitted to the hospital, as well as needing enhanced and targeted regulatory guidance. This will be addressed in the *Regulatory Guidance* sections of this study, which describe how this issue may likely be given much more support and resources if there were more specific regulatory guidance and standards related to it that forced hospitals to fully address the gaps in emergency planning for specific vulnerable populations with communication barriers.
- Similar to the previous point, several EPC's (22%) mentioned standardization of this requirement to sufficiently emergency plan for vulnerable populations with communication barriers within the New York City Department of Health and Mental Hygiene's development of deliverables for the Hospital Preparedness Program grant. They discussed how making a deliverable specifically focused on these populations would not only create automatic buy-in from leadership, but this would also provide grant deliverable funding that could directly be spent on enhancing planning for these populations. Separately, some EPC's discussed using the grant money to support this initiative, regardless of a deliverable being developed or not to target it.
- The lack of hospital Emergency Management Departments generating revenue was a consideration stated by a few EPC's in terms of why it might be more difficult for them to request resources as opposed to other hospital departments that do generate revenue.
- In terms of time commitment and lack of Emergency Management Department staffing, some EPC's stated that incorporating these populations into existing structures (e.g., creating injects for them in already scheduled drills or exercises) within the EM program would be more feasible than creating separate and distinct programming for these populations.

***Barriers and/or Challenges to Sufficient Emergency Planning for Vulnerable Populations with Communication Barriers***

All interviewees discussed the common barriers and/or challenges when conducting emergency planning for vulnerable populations with communication barriers, as well as any attempts or plans to overcome them. These included:

- Lack of awareness/knowledge of vulnerable population needs during an emergency
- Lack of knowledge of best practices
- Lack of knowledge of patient demographics in community
- Lack of adequate staffing
- Lack of adequate funding
- Lack of adequate equipment (e.g., translation devices)
- Reliance on technology & not having enough qualified interpreters
- Ensuring standardization of efforts across a Health System
- Lack of justification to hospital leadership
- Lack of engagement and support from hospital leadership
- Lack of engagement with/insight from vulnerable populations themselves
- Conflicting priorities
- Not knowing how to integrate an effective communication tool or ensuring rapid emergency messaging for these populations
- Maintaining a consistency of planning with high turnover rates (e.g., ensuring staff are trained)
- Bandwidth for staff involvement and commitment
- Getting individuals engaged and enthusiastic about addressing this issue (especially post-COVID pandemic)

***Familiarity with Regulatory Guidance Regarding Sufficient Emergency Planning for Vulnerable Populations with Communication Barriers***

EPC's discussed their familiarity with guidance from regulatory agencies (such as The Joint Commission, CMS, etc.) regarding emergency planning requirements for

vulnerable populations, as well as their opinions on the sufficiency of this guidance in terms of specificity and overall adequacy. 50% of interviewees stated that they were not familiar at all with any regulatory guidance specific to vulnerable populations with communication barriers in the scope of emergency planning. 33% of interviewees stated that they were vaguely familiar with such guidance, and 17% stated that they were familiar with such guidance. Additionally, 17% of EPC's noted that they have been through Joint Commission accreditation surveys, and this topic of emergency planning for vulnerable populations with communication barriers has never come up or been asked by a surveyor.

Regarding their opinions on the sufficiency of this guidance in terms of specificity and overall adequacy, none of the interviewees stated that they thought the guidance was sufficient. Many EPC's thought that the guidance should be more specific and should call out specific vulnerable populations in terms of their unique needs in an emergency. Some EPC's mentioned the concept of "checking a box" when it came to satisfying the Joint Commission requirement due to its vagueness. One EPC suggested that the Joint Commission emergency preparedness requirement for vulnerable populations should be aligned with the Americans with Disabilities Act (ADA) standards that hospitals have to adhere to in order to make the guidance more holistic and aligned with other regulatory priorities. Another theme that emerged was the connection between more rigorous regulatory standards on this topic and the justification for more resources to dedicate to it. EPC's stated that with more detailed requirements from regulatory agencies, they would likely be able to elicit more support

if they decided to enhance emergency planning for vulnerable populations with communication barriers.

#### HYPOTHESES ADDRESSED BY INTERVIEW RESULTS

***RQ1: How does the vulnerability status of an individual or population with communication barriers affect their ability to receive sufficient/enough planning for emergency preparedness and response in a New York City hospital facility?***

*H<sub>1</sub>*: There is a relationship between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in New York City hospital facilities.

Throughout the many interviews that were conducted, consistent themes arose regarding a lack of sufficient planning for vulnerable populations with communication barriers in New York City hospitals. All EPC's that were interviewed were consistent in confirming that the emergency planning they conduct for the general population is given more consideration, support, and resources than the planning conducted (or not conducted) for these vulnerable populations. The results of this interview proved this to be true for many facets and critical areas of emergency planning, including emergency drills and exercises, crisis communications, training and education, resource management/procurement, patient tracking, etc. Only 28% of interviewees confirmed that general "vulnerable populations" were documented in the hospital emergency plans, but all of those that reported this also stated that the section regarding this was

very general. None of the plans were specific in terms of what exact support they will be providing to each individual vulnerable population (e.g., limited hearing, sight, or English proficiency).

Most EPC's (83%) stated that their hospital has never conducted a disaster drill or exercise that assessed its capabilities to provide sufficient/enough emergency response for vulnerable populations with communication barriers. Only two (11%) of the EPC's interviewed mentioned any type of automatic alert that would be available within patient rooms and/or hallways and common spaces within the hospital (e.g., digital signage) in multiple languages and/or large text. A majority of the EPC's (72%) stated that they would rely on staff (e.g., clinical Nursing staff) to notify these patients in a no-notice emergency, however, it was not indicated anywhere in their plans. Therefore, the qualitative interview results from this study support rejecting the null hypothesis that there is no relationship between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in New York City hospital facilities. These results are consistent with the quantitative results from the survey portion of this study, which, after analyzing the Measures of Central Tendency, also rejected the null hypothesis.



***RO6: How does the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) affect their ability to receive sufficient/enough emergency planning from hospital facilities?***

*H<sub>16</sub>*: There is a relationship between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities.

Throughout the many interviews that were conducted, consistent themes arose regarding more thought, attention, planning, and resources being dedicated to limited English proficiency populations, and less being dedicated to limited hearing and sight populations. When speaking about hospital demographics in terms of limited sight, hearing, and English proficiency populations, knowledge of limited English proficiency demographics (even basic knowledge, such as knowing the hospital saw these populations frequently) was mentioned by 61% of interviewees. This drastically exceeded any mention of limited hearing population demographics (11%) or limited sight population demographics (0%). Many interviewees also made it a point to recognize that did not think their hospitals saw many limited sight or hearing patients, without knowing exact statistics/demographics. Of the EPC's (17%) that did state that their hospital has conducted a disaster drill or exercise that assessed its capabilities to provide sufficient emergency response for vulnerable populations with communication barriers, however, they mentioned that this only included injects for limited English

proficiency populations. None of the interviewees stated that they incorporated limited hearing or sight populations into any of their past exercises or drills.

Therefore, the qualitative interview results from this study support rejecting the null hypothesis that the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) has no effect on their ability to receive sufficient/enough emergency planning from hospital facilities. These results are not consistent with the quantitative results from the survey portion of this study, which, after performing a Kruskal-Wallis test, did not reject the null hypothesis because the relationship between variables was not proven to be statistically significant.

## **CHAPTER 5: CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS**

This research examined the sufficiency of emergency planning for vulnerable populations with communication barriers (limited hearing, limited sight, and limited English proficiency) in New York City hospitals. This study sought to contribute to the understanding of barriers these populations may face in emergency response while in a hospital, while also exploring the barriers that hospital Emergency Preparedness Coordinators (EPC's) may face when trying to address the issue of emergency planning in the scope of addressing the needs of vulnerable populations with communication barriers. This study is unique in the literature that was assessed in terms of seeking to understand the needs of these populations and the gaps in their emergency preparedness and response planning in hospitals. In past studies, the vulnerable populations themselves have been the focus of assessing their perceptions to hospital emergency preparedness. EPC's of hospital facilities were the main focus of this study, as they can best interpret hospital emergency planning efforts and have an influence on future prioritization of this populations in focused and specialized resiliency planning.

This chapter summarizes the results, identifies strengths and limitations of the study, and discusses the significance of the results. The chapter closes with policy implications and implications for the practice of healthcare emergency management and resiliency, as well as recommendations for future research.

## SUMMARY OF RESULTS

This study investigated the emergency plans, procedures, and practices that hospital facilities have for these specific, at-risk populations with communication barriers. The sufficiency of these plans, procedures, and practices were measured in accordance with their ability to meet the standards, regulations, and conditions of participation of accrediting bodies, such as The Joint Commission and CMS, relating to hospitals being required to address the needs of vulnerable individuals within their care. The areas of emergency preparedness for vulnerable populations in hospitals that are measured in this study are in line with the six areas that The Joint Commission deems critical: communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs. This mixed-methods study utilized a nonexperimental correlational research design utilizing both quantitative and qualitative methods by using a cross-sectional survey, as well as semi-structured interviews with open-ended questions. Through this design, the study attained valuable information regarding the sufficiency of emergency planning for vulnerable populations with communication barriers (limited hearing, limited sight, and limited English proficiency) in New York City hospitals by surveying and interviewing a population of Emergency Preparedness Coordinators (EPC's), defined and compiled from the Greater New York Hospital Association's database (named Sit Stat 2.0), from a sufficient representation of independent hospitals and hospitals that are a part of healthcare systems, both public and private, and serving diverse populations within New York City and its five boroughs.

Out of 61 New York City hospital Emergency Preparedness Coordinators (EPC's) in my population, 27 EPC's responded to the survey (44% survey response rate). This actual survey response rate exceeded the goal survey response rate (25%) by 19%. As displayed in Table 3, each of the variables either met or exceeded the 25% response rate per category for the survey portion of the study. The highest percentage of survey responses came from EPC's representing (a) private hospitals (74% of survey sample); (b) Health System hospitals (70% of survey sample); (c) hospitals located in Brooklyn (37% of survey sample); and (d) hospitals with Emergency Rooms (89% of survey sample). As described in the "Measurements" section of this study, the results of each survey were analyzed both individually and collectively in order to perform various statistical tests for independence and significant differences. Questions #5-40 (36 questions total) on the survey were used to determine the total Emergency Planning Sufficiency Score for each hospital participant (score results summarized in Table 4, Table 5, and Figure 2). The mean Total Emergency Planning Sufficiency Score for all 27 participants equaled 33 (Poor). The various statistical tests performed for independence and significant differences were used to test the six research questions for this study (summarized in Table 1).

For research question RQ2 through RQ6, the results of various statistical tests performed were that none of these null hypotheses could be rejected. The results from the survey found that there was no relationship between (separately) the (1) affiliation of a hospital facility (i.e., independent or part of a health system); (2) presence of an emergency department within a hospital facility; (3) ownership status of a hospital

facility (i.e., privately or publicly owned); or the (4) borough a hospital is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, and Staten Island) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers. The quantitative analysis portion of the study also found that there was no relationship between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities.

The only research questions that could reject the null hypotheses were RQ1 and RQ6. For RQ1, an analysis of the measures of central tendency from the total number of Emergency Planning Sufficiency Scores for vulnerable populations with communication barriers from all of the surveys combined was used to determine the sufficiency of emergency planning for vulnerable populations with communication barriers within the NYC hospital system. After analyzing the mean Total Emergency Planning Sufficiency Scores for all variables from the survey in Table 4, Table 5, and Figure 2, it was determined that there is a relationship between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in New York City hospital facilities. It is apparent from the mean Total Emergency Planning Sufficiency Scores that most hospitals scored Poor or Very Poor in terms of their sufficiency of emergency planning for vulnerable populations with communication barriers. With the mean Total Emergency Planning Sufficiency Score for all 27

participants equaling 33 (Poor), it was displayed that most participants lacked sufficient emergency planning for vulnerable populations with communication barriers. After analyzing the mode Total Emergency Planning Sufficiency Scores for all variables from the survey in Table 6, it was displayed that none of the participants had Total Emergency Planning Sufficiency Scores equaling Excellent or Good rankings, and only 19% of participants had Total Emergency Planning Sufficiency Scores equaling Acceptable rankings. 33% of participants had Total Emergency Planning Sufficiency Scores equaling Poor rankings, and 48% of participants had Total Emergency Planning Sufficiency Scores equaling Very Poor rankings. The Total Emergency Planning Sufficiency Score for all participants had four modes equaling 7 (Very Poor), 44 (Poor), 52 (Poor), and 65 (Acceptable).

For RQ6, while the statistical test failed, the low sample size accounted for the qualitative results to hold more weight than the quantitative results. For RQ6, the results of the survey showed a relationship between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities. Throughout the many interviews that were conducted, consistent themes arose regarding more thought, attention, planning, and resources being dedicated to limited English proficiency populations, and less being dedicated to limited hearing and sight populations. When speaking about hospital demographics in terms of limited sight, hearing, and English proficiency populations, knowledge of limited English proficiency demographics (even basic knowledge, such as knowing the

hospital saw these populations frequently) was mentioned by 61% of interviewees. This drastically exceeded any mention of limited hearing population demographics (11%) or limited sight population demographics (0%). Many interviewees also made it a point to recognize that did not think their hospitals saw many limited sight or hearing patients, without knowing exact statistics/demographics. Of the EPC's (17%) that did state that their hospital has conducted a disaster drill or exercise that assessed its capabilities to provide sufficient emergency response for vulnerable populations with communication barriers, they mentioned that this only included injects for limited English proficiency populations. None of the interviewees stated that they incorporated limited hearing or sight populations into any of their past exercises or drills.

Out of 61 New York City hospital Emergency Preparedness Coordinators (EPC's) in my population, 18 EPC's responded and had interviews conducted/recorded (30% interview response rate). This actual interview response rate exceeded the goal interview response rate (25%) by 5%. As displayed in Table 3, almost all of the variables either met or exceeded the 25% response rate per category for the interview portion of the study. The only two variables that did not meet my goal interview participant response rate were hospitals located in Queens (needed 1 more participant to reach 25% response rate goal) and hospitals located in Staten Island (needed 1 participant to reach 25% response rate goal). The highest percentage of interview responses came from EPC's representing (a) private hospitals (83% of interview sample); (b) Health System hospitals (83% of interview sample); (c) hospitals located in



Manhattan (50% of interview sample); and (d) hospitals with Emergency Rooms (78% of interview sample).

The results of the qualitative analysis of the interviews supported rejecting the null hypotheses for RQ1 and RQ6. Regarding RQ1, all EPC's that were interviewed were consistent in confirming that the emergency planning they conduct for the general population is given more consideration, support, and resources than the planning conducted (or not conducted) for these vulnerable populations. Only 28% of interviewees confirmed that general "vulnerable populations" were documented in the hospital emergency plans, but all of those that reported this also stated that the section regarding this was very general. Most EPC's (83%) stated that their hospital has never conducted a disaster drill or exercise that assessed its capabilities to provide sufficient/enough emergency response for vulnerable populations with communication barriers. Only two (11%) of the EPC's interviewed mentioned any type of automatic alert that would be available within patient rooms and/or hallways and common spaces within the hospital (e.g., digital signage) in multiple languages and/or large text. A majority of the EPC's (72%) stated that they would rely on staff (e.g., clinical Nursing staff) to notify these patients in a no-notice emergency, however, it was not indicated anywhere in their plans.

Regarding RQ6, consistent themes arose regarding more thought, attention, planning, and resources being dedicated to limited English proficiency populations, and less being dedicated to limited hearing and sight populations. When speaking about hospital demographics in terms of limited sight, hearing, and English proficiency

populations, knowledge of Limited English proficiency demographics (even basic knowledge, such as knowing the hospital saw these populations frequently) was mentioned by 61% of interviewees. This drastically exceeded any mention of limited hearing population demographics (11%) or limited sight population demographics (0%). Many interviewees also made it a point to recognize that they did not think that their hospitals saw many limited sight or hearing patients, without knowing exact statistics/demographics.

The final results of this study's quantitative and qualitative analysis of the research questions and hypotheses are listed below (Table 24).

**Table 24 Table Displaying Final Results of Quantitative and Qualitative**

*Analysis*

<b>Hypothesis</b>	<b>Research Question Relation</b>	<b>Hypothesis Testing Type</b>	<b>Final Result</b>
<p>There <b>is a relationship</b> between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in NYC hospital facilities.</p>	<p>RQ1</p>	<p>Quantitative and Qualitative (QDA)</p>	<p>There <b>is a relationship</b> between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in NYC hospital facilities.</p>
<p>There <b>is a relationship</b> between the affiliation of a hospital facility (i.e., independent or part of a health system) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.</p>	<p>RQ2</p>	<p>Quantitative</p>	<p>There <b>is not a relationship</b> between the vulnerability status of an individual or population with communication barriers and their ability to receive sufficient/enough planning for emergency preparedness and response planning in</p>

			NYC hospital facilities.
There <b>is a relationship</b> between the presence of an emergency department within a hospital facility and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.	RQ3	Quantitative	There <b>is not a relationship</b> between the presence of an emergency department within a hospital facility and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.
There <b>is a relationship</b> between the ownership status of a hospital facility (i.e., privately or publicly owned) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.	RQ4	Quantitative	There <b>is not a relationship</b> between the ownership status of a hospital facility (i.e., privately or publicly owned) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.
There <b>is a relationship</b> between the borough a hospital is located in (i.e., Manhattan, Brooklyn, Bronx, Queens, and Staten Island) and their ability to provide	RQ5	Quantitative	There <b>is not a relationship</b> between the borough a hospital is located in (i.e., Manhattan,

<p>sufficient/enough emergency planning for vulnerable patient populations with communication barriers.</p>			<p>Brooklyn, Bronx, Queens, and Staten Island) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.</p>
<p>There <b>is a relationship</b> between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities.</p>	<p>RQ6</p>	<p>Quantitative and Qualitative (QDA)</p>	<p>There <b>is a relationship</b> between the vulnerability type of a population with communication barriers (i.e., no or limited English proficiency, sight limitations, and/or hearing limitations) and their ability to receive sufficient/enough emergency planning from hospital facilities.</p>

## DISCUSSION OF RESULTS

The results of this study draw our attention to the disparities in emergency and resiliency planning for these underserved populations with communication barriers through a rigorous analysis of the various levels of pre-planning they are afforded before a disaster strikes in a hospital facility setting. They also highlight key themes in how to best address insufficient planning for these populations and common barriers that may inhibit an Emergency Preparedness Coordinator's ability to address this issue.

### **Mindfulness**

The term "mindful" was mentioned by a few interview participants when referring to how a hospital can effectively address the issue of insufficient emergency planning for vulnerable populations with communication barriers. Several EPC's mentioned that it wasn't a matter of a lack of support or resources to address the issue; it had just never been brought up or thought of before. This absence of "mindfulness" or "awareness" in hospital leadership regarding the lack of sufficient preparedness planning for these populations needs to be addressed in order for the issue to receive the attention it deserves. In order to ensure a standardized approach to this awareness, as well as almost guaranteed support from leadership (as expressed by several interview participants), regulatory and preparedness grant requirements should be more specific and intentional when addressing this issue. For many EPC's, this type of standardization would assist them in defining their scope when tackling this issue. Being mindful and aware of the individual hospital's impact from these vulnerable populations came up

when discussing patient tracking (being aware of how many patients with these specific vulnerabilities are in the hospital at any given time), demographics (being knowledgeable about, on average, how many of these specific populations the hospital sees on an annual basis), and patient feedback (being mindful about the experiences of these specific populations in emergency events). It is important to elicit feedback from these populations regarding their experiences in emergency activations, as they may not be able or comfortable with expressing their concerns on their own and unprompted.

### **Personal Experience**

From the researcher's observations during the interviews conducted, it seemed that EPC's that had personal or professional experience with vulnerable populations had a more in-depth sense of awareness of their hospital's emergency planning for these populations, and they also seemed to place more importance on the subject than other EPC's with no experience with these populations. Experience was not only limited to actual emergency activations at their hospital involving these populations, but it also encompassed personal experience or connection to someone with one of these vulnerabilities (e.g., one EPC's father was a patient at their hospital and experienced barriers to communication with clinical staff due to his limited hearing). EPC's with lived experience seeing the disparities in emergency planning that these populations face seemed to support and advocate for more sufficient emergency planning for vulnerable populations with communication barriers in their hospitals. They seemed more open to integrating them within the hospital's emergency training, education, drill,

exercises, and other aspects of emergency planning, as well as supporting this kind of initiative with their own time and effort.

### **Importance of Stakeholder Engagement**

Addressing the issue of insufficient planning for vulnerable populations with communication barriers was expressed by most study participants to be a multifaceted issue that requires the input, guidance, and involvement from stakeholders outside of Emergency Management. Hospital EPC's discussed the involvement of internal and/or external partners as a necessary component in any efforts to enhance emergency planning for vulnerable populations with communication barriers. Examples included internal hospital departments, Health System offices, and/or community partners. There were varying ways described in which they could best engage stakeholders in an initiative to improve the sufficiency of emergency planning for vulnerable populations with communication barriers in their respective hospitals. These included forums such as meetings of their Emergency Management Committees, ad-hoc meetings, staff huddles, advisory committees, etc. This stakeholder engagement was also described as necessary due to the lack of guidance and knowledge some EPC's had for issues related to vulnerable populations with communication barriers. Without being knowledgeable regarding their needs, everyday modifications to care practices, and conditions, EPC's felt that they would not be able to sufficiently plan for them. Engaging stakeholders who interact with these populations and plan for them regarding other services would provide the necessary insight and perspectives as subject-matter experts. Other departments/units not necessarily familiar with these populations would still have



helpful perspectives in terms of how they may interact with them in emergency situations (e.g., Security, Environmental Services, Patient Transport, etc.).

### **Delegation of Responsibility**

The ownership of emergency planning for vulnerability populations with communication barriers, as well as the expectations for being responsible for this task was brought up by many study participants. In terms of the overall expectation, EPC's expressed that regulatory agencies need to be specific and intentional when creating standards that address emergency planning for vulnerable populations. This specificity and intentional focus are what EPC's stated would be the impetus for hospitals to take a more dedicated approach to assigning responsibility for addressing this issue. It was also questioned whether or not hospitals were responsible for collecting and documenting the demographics of their constituents (staff, patients, visitors, etc.) that enter the hospital, and if so, who would be responsible for collecting and disseminating this information. This displayed a crossover with the hospital's health equity efforts and how emergency managers could potentially collaborate with leaders in that realm to enhance emergency planning for vulnerable populations. In terms of internal responsibility within the hospital, there was some confusion with EPC's regarding who owns the process of planning for vulnerable populations with communication barriers. While this study focused on emergency planning, some EPC's stated that any planning for these populations may rest on other departments within the hospital that they may or may not collaborate with (e.g., Language Access Services, Deaf Health Services, ADA Offices, etc.) who are responsible for the day-to-day interactions with and care of these

populations, ensuring their needs are being met. Responsibility for emergency planning for these populations should be clearly outlined in the Emergency Operations Plan, and it should be a collaborative process with involvement from all aforementioned parties.

### **Lack of Guidance and/or Best Practices**

A lack of documented guidance or best practices regarding sufficient emergency planning for vulnerable populations within hospitals was expressed by many of the study participants. They mentioned this specifically for crisis communication tools/methods for vulnerable populations with communication barriers, as well as how to effectively integrate them into existing emergency plans, drills and exercises, and training and education. With this lack of guidance and best practices comes a lack of accessibility knowledge. From the researcher's perspective, many EPC's seemed intimidated to approach the subject without having the appropriate knowledge base of the needs of vulnerable populations or proficiency in dealing and interacting with them. The need for detailed guidance for hospital EPC's is paramount in effectively addressing this issue. EPC's need to be provided the tools and information needed to become advocates for this type of emergency planning, and that needs to be formed by subject matter experts and representatives from vulnerable populations who are in tune with their needs during a crisis situation.

### **Advocacy**

A lack of advocacy for these populations in regards to emergency planning in hospitals was discussed by several study participants. This lack of advocacy seemed to

stem from challenges in the capacity of the hospital to sufficiently plan for these populations. With most EPC's being already overwhelmed with emergency planning efforts for the general population, becoming an advocate for these specific populations would take an intentional dedication of time and resources that they may not have. Participants described staffing, funding, and resource issues, with some of these issues being exacerbated by the effects of the COVID-19 pandemic. As a result, some EPC's explained the concept of "spontaneous response", which describes the emergency response for vulnerable populations with communication barriers as something that will be addressed in the moment as it occurs. While these EPC's seemed to be assured that the hospital would be able to respond effectively without any pre-planning for these populations, they also indicated that the spontaneous response was mostly expected from clinical/Nursing staff who were not trained on this type of interaction. Without the proper documented planning and training, there is always the possibility that these populations' needs will not be sufficiently addressed in an emergency activation, and more importantly, their life and/or safety could potentially be at risk due to this unnecessary improvisation in a crisis response. It is important for the hospital EPC and Emergency Management Departments to serve as advocates for these populations in terms of their right to receive proper and sufficient pre-planning for emergencies. This type of issue needs a dedicated individual and/or team committed to setting the priorities for planning and engaging stakeholders to advise, implement, and test their capabilities.

## STRENGTHS AND LIMITATIONS

### **Strengths**

Past research on the topic of sufficiency of emergency planning for vulnerable populations has primarily focused on either plan/documentation reviews or surveying/interviewing the vulnerable populations themselves. While the perspectives of these populations should not be discounted, a major strength of this study was being able to examine the perspective of the individuals responsible for planning for these populations (the hospital Emergency Preparedness Coordinators). These EPC's have the most insight into the inner workings of a hospital's emergency management program, including its history, priorities, partnerships, and capabilities. Another strength is that this study examined the sufficiency of emergency planning for vulnerable populations with communication barriers comprehensively and in line with the six areas that The Joint Commission deems critical to evaluate in an emergency activation: communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs. By relating the threshold for defining sufficient emergency planning back to the regulatory guidance that exists for hospitals, the researcher ensured that a commonly accepted set of standards was used to evaluate the sufficiency of emergency planning for these populations (as these standards are used for and focused towards the general population).

## **Limitations**

There were several limitations of the study. First, the small sample size was not ideal for conducting statistical analyses, as the results are not generalizable to the larger population of hospitals within the state, country, or even a similar sized city. Expanding the sample size within the selected geographic region or including other geographic regions could have strengthened the study. The metrics of this study need to be applied to a larger population and validated to ensure reproducible results.

Second, the study was conducted as a self-report of hospital Emergency Preparedness Coordinators, which may raise the issue of validity and accuracy. Additionally, there may have been response bias based on social desirability, in which the EPC may have presented a more favorable image of their hospital emergency management program and emergency planning for vulnerable populations. They may have overexaggerated the true sufficiency of emergency planning conducted at the hospital for vulnerable populations with communication barriers, as the responsibility for emergency planning ultimately falls within their job description.

Third, as a result of the anonymity of the survey responses, it is possible that some hospitals may have had duplicate surveys submitted. Communications were sent to EPC's and backup EPC's of each hospital, and they were instructed to only fill out one survey per hospital. However, there is the possibility that both the EPC and backup EPC filled out separate surveys for the same hospital without communicating to each other to avoid duplicity of submissions. Some EPC's also serve as the EPC for multiple

hospital sites within their health system. While they were instructed to only fill out one survey per each hospital separately, they could have mistakenly filled out the survey for multiple hospitals under their jurisdiction. Also due to the anonymity of the survey, the variable of the size of the hospital (e.g., how many beds) was removed. This was originally listed as a demographic question on this study's survey, but it was removed in an attempt to ensure the anonymity of the hospitals submitting the survey and increase the response rate. As a result, the study was not able to attempt to determine if there was a relationship between the size of the hospital (e.g., how many beds) and their ability to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

Fourth, the study was limited in its ability to gather certain demographic information regarding the participating hospitals that EPC's represented. While the researcher did examine the general New York City hospital framework in the Introduction Chapter which touched on the basic construct and patient makeup of the hospital environment in the area, they were not able to use specific demographics for limited sight, hearing, and English proficiency for each hospital participant as a variable. Due to the anonymity of participating hospitals, the researcher was unable to compare these demographics to the ability of the hospital to provide sufficient/enough emergency planning for vulnerable patient populations with communication barriers.

Lastly, the researcher only tested these three vulnerable populations separately. They did not account for populations that may have simultaneous conditions (e.g., individual who is both blind and deaf) and how that may distinctly affect a population's

ability to receive sufficient emergency planning in a hospital. For example, the communication methods that may be put in place for limited sight and limited hearing populations separately may not be effective for an individual with deaf-blindness. This study only accounted for populations that had one vulnerability, as opposed to populations that possess multiple vulnerabilities simultaneously.

### IMPLICATIONS FOR PRACTICE

As mentioned in the Legal and Regulatory Framework section of this study, as well as in the responses from some interviewees, the regulatory requirements for hospital facilities are vague in terms of immediate emergency planning actions to take when planning for at-risk populations. There is obvious room for further specification regarding the emergency planning requirements for vulnerable populations incumbent upon individual hospital facilities. In existing standards, not all types of at-risk populations are specifically identified, as well as their unique needs and vulnerabilities in emergency situations. The need for more inclusive language in these standards is apparent, as well as more specific language regarding how these regulations should be met by healthcare facility emergency planners in all areas of communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs.

In addition to more specific and actionable standards, regulatory agencies, public health agencies, healthcare coalitions, and healthcare associations should place a more intentional focus on ensuring hospitals and other healthcare facilities are aware of

the risk to these vulnerable populations if their needs are not addressed in emergency and resiliency planning. For example, the New York City Department of Health and Mental Hygiene's (NYC DOHMH) Office of Emergency Preparedness & Response (OEPR) administers and runs the Hospital Preparedness Program (HPP) for participating NYC hospitals and health systems, which is sponsored and required by the HHS Office of the Assistant Secretary for Preparedness and Response (ASPR). NYC DOHMH develops the HPP deliverables to ensure that they are in line with Health Care Preparedness and Response Capabilities as defined by ASPR. By creating a deliverable that specifically focuses on enhancing emergency plans for these vulnerable populations with communication barriers, hospitals would not only be able to justify dedicating resources towards this issue, but (as indicated in several interview responses) they may also possibly elicit buy-in from leadership and be able to utilize grant deliverable funding that could directly be spent on planning for these populations.

These same regulatory agencies, public health agencies, healthcare coalitions, and healthcare associations should also provide detailed guidance in terms of how to best address the issue of sufficiently planning for these vulnerable populations with a multidisciplinary and collaborative approach. They should develop and test guidance by engaging a wide array of emergency management and public health entities, as well as vulnerable populations themselves in the form of Community-Based Organizations, Faith-Based Organizations, or other types of focus groups and representatives of these vulnerable populations that actually have these accessibility issues. Greater New York Hospital Association (GNYHA) has used this approach to form several toolkits,



including a Mass Casualty Incident Toolkit, Community Health Needs Assessment Toolkit, etc. In order to form these toolkits, GNYHA has formed and engaged cross-disciplinary advisory committees with adequate representation from hospital EPC's, subject matter experts, and members of the community for which the toolkits were addressing. A similar approach to developing a Vulnerable Populations Emergency Planning Toolkit is recommended, as well as engagement from various local, state, and federal agencies, as this would be the first of its kind specifically targeting hospital emergency preparedness for vulnerable populations. This toolkit should provide ample suggestions for enhancing planning that is not too costly to the organization (e.g., incorporating these populations into emergency exercises and drills, adding an ICS position responsible for ensuring the wellbeing of vulnerable populations, etc.), as to encourage implementation at hospitals without stressing resources too greatly. Similar to the suggestion for enhancing regulatory guidance, this toolkit should advise hospitals on how to sufficiently plan for vulnerable populations in all six areas that The Joint Commission deems critical to evaluate in an emergency activation: communication, resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs.

Lastly, individual hospital and Health System leadership and Emergency Preparedness Coordinators are recommended to evaluate their specific hospital's level of sufficiency of emergency planning for vulnerable populations with communication barriers, as well as explore their demographics of these populations, applicability and feasibility of solutions and enhancements to this planning, and advocate for support and

collaboration/partnerships to address this issue. A reoccurring theme in many interview responses amongst EPC's was that the response during emergencies for these vulnerable populations was thought to be more of a patient care issue than an emergency management responsibility. Given this connection, it is apparent that any patient care issue or vulnerability of the hospital to provide sufficient patient care (especially during an emergency) should be considered a high priority issue of the hospital that should be addressed, supported, and given the necessary resources to ameliorate. It is paramount that EPC's and hospital Emergency Management Departments serve as advocates for these populations in terms of their right to receive proper and sufficient pre-planning for emergencies. It is equally important that this planning not be done in a silo, but as a multi-disciplinary planning group. As mentioned in several interview responses, hospitals could form a Vulnerable Populations Subcommittee of their Emergency Management Committee, with the mission of enhancing and addressing the disparities in their emergency planning for vulnerable populations. EPC's should work to build a support network within the hospital and/or Health System that also advocate for and/or are involved in patient care for these populations (e.g., Social Work, Case Management, ADA offices, Language Access, Deaf Health Services, Guest/Patient Experience, etc.) as well as those involved in emergency planning for the general population, all of whom should share common goals, interests, and hurdles to overcome when it comes to this topic.

## RECOMMENDATIONS FOR FUTURE STUDIES

This study attempted to measure the sufficiency of emergency planning for vulnerable populations with communication barriers in hospitals. The findings serve as a baseline measurement for New York City hospital preparedness for these specific populations (limited sight, limited hearing, and limited English proficiency). This study should be repeated with attempts to further increase the response rate. It should also be repeated in different geographic areas within the United States so that the variable of location can be compared to the Emergency Planning Sufficiency Scores hospitals in other states receive. Additional variables should also be added, such size of the hospital (e.g., how many beds). This was originally listed as a demographic question on this study's survey, but it was removed in an attempt to ensure the anonymity of the hospitals submitting the survey and increase the response rate.

Future research should also attempt to measure the sufficiency of emergency planning for other types of vulnerable populations. These may include, but are not limited to, populations with cognitive impairments, mobility issues, children, elderly, behavioral health issues, etc. Research should also attempt to measure how having simultaneous conditions (e.g., individual who is both blind and deaf) may affect a population's ability to receive sufficient emergency planning in a hospital. For example, the communication methods that may be put in place for limited sight and limited hearing populations separately may not be effective for an individual with deaf-blindness. New solutions may need to be thought about for populations that possess multiple vulnerabilities simultaneously.

In terms of the concepts and themes identified in this study, other research topics and questions could be explored. One other research topic suggestion would be attempting to measure the effectiveness of a 'spontaneous response' for these vulnerable populations in a hospital. It could focus on a specific emergency incident that occurred and evaluate how sufficiently the vulnerable populations were responded to and cared for without any pre-planning being conducted for them specifically; relying solely on improvisation. Another research topic could attempt to measure the level of collaboration that exists between emergency management departments and the departments in the hospital that take the responsibility of equity, inclusion, and ensuring accessibility for vulnerable populations in terms of patient care (e.g., Social Work, Case Management, ADA offices, Language Access, Deaf Health Services, Guest/Patient Experience, etc.). Measuring and examining the relationship between these entities could prove to be helpful when creating recommendations for hospitals to best conduct stakeholder engagement and assignment responsibilities as it relates to emergency planning for vulnerable populations. Lastly, in-depth research should be conducted to measure the sufficiency of regulatory requirements and standards by organizations such as the Joint Commission, Center for Medicaid Services, etc. in relation to emergency planning for vulnerable populations. Specific focus should be placed on the sufficiency of the specificity and rigor of these requirements set forth by these accrediting bodies, and it should measure whether the guidance truly prepares hospitals to be able to sufficiently plan for these populations as it relates to the six areas that The Joint Commission deems critical to evaluate in an emergency activation: communication,

resources and assets, safety and security, staff responsibilities, utilities management, and patient care needs.

## CONCLUSION

This study of the sufficiency of emergency planning for vulnerable populations with communication barriers in New York City hospitals revealed no relationship between the location, affiliation (i.e., independent or part of a health system), ownership status (i.e., privately or publicly owned), or presence of an Emergency Department and the ability of the hospital to provide sufficient emergency planning for these populations, but did show a relationship between the vulnerability status and type of a vulnerable population and their ability to receive sufficient emergency planning from the hospital for their specific and differentiated needs from the general population. This makes it apparent that any type of hospital is susceptible to not properly recognizing and addressing the unique needs of these vulnerable populations in emergency situations while in their care. The results of this study should have implications for all emergency management personnel in individual hospital facilities and health systems in terms of sufficiently meeting the requirements set forth by accrediting bodies for addressing the needs of vulnerable populations. Hospitals can better tailor their efforts to make their procedures and practices more inclusive and resilient for patients with vulnerabilities. Future research should seek to further evaluate the sufficiency of the rigor and specificity of these requirements set forth by these accrediting bodies. Public health agencies, healthcare coalitions, and healthcare associations should also place a more intentional focus on ensuring hospitals and other healthcare facilities are aware of

the risk to these vulnerable populations if their needs are not addressed in emergency and resiliency planning. They should also provide guidance in terms of how to best address this issue with a multidisciplinary and collaborative approach. Developing and testing guidance should engage a wide array of emergency management and public health entities, but most importantly, it should engage the vulnerable populations themselves which the planning is being conducted for. The vulnerable populations are experts when it comes to their individual and personal needs, and the emergency planning process should be conducted *with* them, not just *for* them.

## APPENDIX A: SURVEY INSTRUMENT

**Survey instrument title:** Hospital Emergency Planning for Vulnerable Populations (with No or Limited English Proficiency, Sight Limitations, and/or Hearing Limitations) Survey

### INTRODUCTION

This survey will be used by the researcher, Rosemary McDonnell, in a dissertation study to assess the sufficiency of the current levels of emergency planning of New York City hospitals for vulnerable populations. This assessment is being conducted in order to gather consistent baseline information on the levels of specialized evacuation plans in New York City hospitals for populations with no or limited English proficiency, populations with sight limitations, and populations with hearing limitations. These populations can consist of any patients, staff, and visitors with no or limited English proficiency, sight limitations, and/or hearing limitations that may be in your hospital at any given time.

As the Emergency Preparedness Coordinator representing one New York City hospital, your answers to this questionnaire are anonymous and confidential. Your answers will not be shared with any other hospital or agency, and the data collected from this survey will be kept on an encrypted database that will be password protected and only accessible to this researcher. Regional data—containing an analysis of anonymous information from all hospital EPC participants in New York City—will be released and published as a doctoral study on an open access database. **By completing this survey, you are consenting to allow the researcher to use this anonymous data in their research.**

This survey is an attempt to use a consistent instrument to collect information on the current evacuation planning efforts that exist for populations with no or limited English proficiency, populations with sight limitations, and populations with hearing limitations. Your accurate answers to this survey are critical to the citywide emergency planning efforts to address the unique needs of vulnerable populations. The responses to this survey will not be used for regulatory or licensing purposes; rather, the results will be used only as an impetus to influence future citywide emergency preparedness activities.

Specifically, the results of the survey will be used to:

- assess and identify gaps in emergency planning for vulnerable populations;

- improve and provide more specification to the standard regulatory requirements for emergency planning for vulnerable populations; and
- improve coordination of resources and broader emergency planning for vulnerable populations.

## **INSTRUCTIONS**

Please complete the Hospital Emergency Planning for Vulnerable Populations Survey by November 30, 2021. Select the answer to each question that best describes your hospital facility's level of emergency planning for the specific population addressed in each of the last three sections.

**IMPORTANT:** Please fill out a separate survey instrument for each hospital under your purview that you serve as the Emergency Preparedness Coordinator for.

If you have any questions regarding the online survey, please contact Rosemary McDonnell by phone at (718) 990-8025 or by e-mail at [mcdonner@stjohns.edu](mailto:mcdonner@stjohns.edu).

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## FACILITY INFORMATION

1. What New York City borough is your hospital located in?
  - Brooklyn
  - Bronx
  - Manhattan
  - Staten Island
  - Queens
  
2. What is your hospital's affiliation status?
  - Independent hospital
  - Hospital is part of a health system
  
3. Does your facility have an Emergency Department?  
Note: For the purposes of this survey, ED is defined as a dedicated Emergency Department within a hospital facility that is responsible for the provision of medical and surgical care to patients arriving at the hospital in need of immediate care.
  - Yes
  - No
  
4. What is your hospital's ownership status?
  - Privately owned (Non-profit/voluntary hospital)
  - Publicly owned

## **EMERGENCY PLANS, POLICIES, AND PROCEDURES FOR POPULATIONS WITH NO OR LIMITED ENGLISH PROFICIENCY**

The following series of questions deals with your hospital's written Emergency Operations Plan, including any sections or annexes related to evacuation planning. The EOP describes how the organization will generally ensure effective response to disasters or emergencies affecting the environment of care. The plan should address four phases of emergency management activities: mitigation, preparedness, response, and recovery. The EOP may have a specific annex devoted to disasters or emergencies resulting in a partial or full evacuation of the hospital facility, or the hospital may have a completely separate Evacuation Plan.

Specifically, the questions ask for details about whether your plan includes specific information or annexes for **populations with no or limited English proficiency** in the following areas: communication, resources and assets, security, staff responsibilities, utilities management, and patient care needs. These populations can consist of any patients, staff, and visitors with no or limited English proficiency that may be in your hospital at any given time. According to the U.S. Department of Health & Human Services, an individual is considered to have no or limited English proficiency if: (1) English is not their primary language; (2) they have difficulty communicating in English, including a limited ability to read, write, speak, or understand English; (3) they may feel more comfortable speaking or reading a document to someone in a language other than English; and/or (4) they require an interpreter or document translation in order to have meaningful access to a facility's services.

Please select the answer to the following questions that best describes your facility's emergency planning for **populations with no or limited English proficiency**.

5. Does your hospital make a specific mention of populations with no or limited English proficiency in your Emergency Operations Plan?
  - 0 = Never
  - 1 = Only once
  - 2 = Two to three times
  - 3 = Four to five times
  - 4 = Over five times

*Optional comment box to elaborate on answer:*

Click here to enter text.

6. Has any specific section regarding provisions made for populations with no or limited English proficiency in your Emergency Operations Plan been updated and/or reviewed within the last 12 months?
- 0 = No sections have been updated and/or reviewed within the last 12 months
  - 1 = Only some sections have been partially updated and/or reviewed within the last 12 months
  - 2 = Only some sections have been fully updated and/or reviewed within the last 12 months
  - 3 = All sections have been partially updated and/or reviewed within the last 12 months
  - 4 = All sections have been fully updated and/or reviewed within the last 12 months

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

7. Does your hospital make a specific mention of populations with no or limited English proficiency in your Evacuation Plan or Annex?
- 0 = Never
  - 1 = Only once
  - 2 = Two to three times
  - 3 = Four to five times
  - 4 = Over five times

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

8. Has any specific section regarding provisions made for populations with no or limited English proficiency in your Evacuation Plan or Annex been updated and/or reviewed within the last 12 months?
- 0 = No sections have been updated and/or reviewed within the last 12 months
  - 1 = Only some sections have been partially updated and/or reviewed within the last 12 months
  - 2 = Only some sections have been fully updated and/or reviewed within the last 12 months

- 3 = All sections have been partially updated and/or reviewed within the last 12 months
- 4 = All sections have been fully updated and/or reviewed within the last 12 months

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

9. In terms of emergency communications, does your Evacuation Plan or Annex mention specific notification tools, methods, or procedures to alert populations with no or limited English proficiency of an evacuation or other actionable information pertaining to an evacuation?

- 0 = Never
- 1 = Only once
- 2 = Two to three times
- 3 = Four to five times
- 4 = Over five times

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

10. In terms of resources or assets, does your hospital have a reliable contract and procedure for emergency translation services to utilize for populations with no or limited English proficiency during an evacuation?

- 0 = My hospital does not have any contract or procedure for utilizing translation services at all for LEP populations during an evacuation
- 1 = My hospital has a procedure for utilizing translation services at all for LEP populations during an evacuation, but no active contract
- 2 = My hospital has an active contract for utilizing translation services at all for LEP populations during an evacuation, but no procedure
- 3 = My hospital has both a contract and a procedure for utilizing translation services at all for LEP populations during an evacuation
- 4 = My hospital has both a contract and a procedure for utilizing translation services at all for LEP populations during an evacuation, as well as a backup contract with a different vendor

***Optional comment box to elaborate on answer:***

Click here to enter text.

11. In terms of resources or assets, does your hospital have any pre-printed emergency evacuation signage in one or more language(s) besides English to post for populations with no or limited English proficiency during an evacuation?

- 0 = My hospital has no pre-printed emergency evacuation signage in any language besides English
- 1 = My hospital has an unequal amount of pre-printed emergency evacuation signage in English as it does in one language besides English
- 2 = My hospital has an equal amount pre-printed emergency evacuation signage in English as it does in one language besides English
- 3 = My hospital has an unequal amount of pre-printed emergency evacuation signage in English as it does in more than one language besides English
- 4 = My hospital has an equal amount of pre-printed emergency evacuation signage in English as it does in more than one language besides English

*Optional comment box to elaborate on answer:*

Click here to enter text.

12. In terms of training and exercises, has your hospital conducted a drill or exercise that specifically addressed or included populations with no or limited English proficiency?

- 0 = Have not addressed or included populations with no or limited English proficiency in any drills or exercises within the past 5 years
- 1 = Have addressed or included populations with no or limited English proficiency in at least one drill or exercise within the past 2-5 years
- 2 = Have addressed or included populations with no or limited English proficiency in more than one drill or exercise within the past 2-5 years
- 3 = Have addressed or included populations with no or limited English proficiency in at least one drill or exercise within the past 12 months
- 4 = Have addressed or included populations with no or limited English proficiency in more than one drill or exercise within the past 12 months

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

13. In terms of staff responsibilities, does the hospital have one or more specific position(s) in the emergency organizational structure (e.g., Hospital Incident Command System) with duties assigned on their job action sheet specific to addressing the needs of populations with no or limited English proficiency in the event of an evacuation?

- 0 = Not at all (no positions in the structure specifically address the needs of populations with no or limited English proficiency in the event of an evacuation)
- 1 = Only one position in the structure specifically addresses the needs of populations with no or limited English proficiency in the event of an evacuation
- 2 = Two to three positions in the structure specifically address the needs of populations with no or limited English proficiency in the event of an evacuation
- 3 = Four to five positions in the structure specifically address the needs of populations with no or limited English proficiency in the event of an evacuation
- 4 = Over five positions in the structure specifically address the needs of populations with no or limited English proficiency in the event of an evacuation

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

14. In terms of utilities, are the operators of fire and emergency alarm systems for your hospital given frequent training on making emergency announcements with modifications to accommodate for populations with no or limited English proficiency (e.g., repetition, rephrasing, and slowing of speech, etc.)?

- 0 = No training at all on this topic is given to these individuals
- 1 = Training on this topic is given to some of these individuals at least annually
- 2 = Training on this topic is given to some of these individuals at least bi-annually
- 3 = Training on this topic is given to all of these individuals at least annually

- 4 = Training on this topic is given to all of these individuals at least bi-annually

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

15. In terms of patient care needs, does your hospital conduct any training on a written procedure/plan regarding how individuals responsible for patient movement in an evacuation will communicate with populations with no or limited English proficiency that may need to be moved or transferred to another healthcare facility?

- 0 = No procedure/plan or training at all that addresses this issue
- 1 = We have a procedure/plan that addresses this issue, but we do not conduct any training on it
- 2 = We conduct training with these individuals responsible for patient movement in an evacuation, but we do not have a procedure/plan that addresses this issue
- 3 = We have a procedure/plan that addresses this issue, but we only conduct training with some of these individuals responsible for patient movement in an evacuation
- 4 = We have a procedure/plan that addresses this issue, and we conduct training with all of these individuals responsible for patient movement in an evacuation

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

16. In terms of patient care needs, does your hospital utilize your electronic medical record system to consistently track and report patients with no or limited English proficiency centrally to your command center?

- 0 = Not at all tracked or reported to the command center
- 1 = We utilize our electronic medical record system to track patients with no or limited English proficiency, but it is not centrally reported to our command center
- 2 = We inconsistently report patients with no or limited English proficiency to our command center, but they are not tracked through our electronic medical record system

- 3 = We consistently centrally report patients with no or limited English proficiency to our command center, but they are not tracked through our electronic medical record system
- 4 = We consistently utilize our electronic medical record system to track and report patients with no or limited English proficiency centrally to our command center

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)



## **EMERGENCY PLANS, POLICIES, AND PROCEDURES FOR POPULATIONS WITH SIGHT LIMITATIONS**

The following series of questions deals with your hospital's written Emergency Operations Plan, including any sections or annexes related to evacuation planning. The EOP describes how the organization will generally ensure effective response to disasters or emergencies affecting the environment of care. The plan should address four phases of emergency management activities: mitigation, preparedness, response, and recovery. The EOP may have a specific annex devoted to disasters or emergencies resulting in a partial or full evacuation of the hospital facility, or the hospital may have a completely separate Evacuation Plan.

Specifically, the questions ask for details about whether your plan includes specific information or annexes for **populations with sight limitations** in the following areas: communication, resources and assets, security, staff responsibilities, utilities management, and patient care needs. These populations can consist of any patients, staff, and visitors with sight limitations that may be in your hospital at any given time. According to CMS, the term hearing limitations can apply to the following individuals: (1) "those who are deaf: do not see themselves as part of the deaf community, but might identify themselves as hearing or view their hearing loss narrowly as a clinical or medical condition; (2) individuals who identify as Deaf: view deafness as a part of their identity rather than a disability; (3) individuals who are hard of hearing: refers to anyone with mild to moderate levels of hearing loss, as well as a deaf individual who does not identify as part of the Deaf community.

Please select the answer to the following questions that best describes your facility's emergency planning for **populations with sight limitations**.

17. Does your hospital make a specific mention of populations with sight limitations in your Emergency Operations Plan?

- 0 = Never
- 1 = Only once
- 2 = Two to three times
- 3 = Four to five times
- 4 = Over five times

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

18. Has any specific section regarding provisions made for populations with sight limitations in your Emergency Operations Plan been updated and/or reviewed within the last 12 months?
- 0 = No sections have been updated and/or reviewed within the last 12 months
  - 1 = Only some sections have been partially updated and/or reviewed within the last 12 months
  - 2 = Only some sections have been fully updated and/or reviewed within the last 12 months
  - 3 = All sections have been partially updated and/or reviewed within the last 12 months
  - 4 = All sections have been fully updated and/or reviewed within the last 12 months

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

19. Does your hospital make a specific mention of populations with sight limitations in your Evacuation Plan or Annex?
- 0 = Never
  - 1 = Only once
  - 2 = Two to three times
  - 3 = Four to five times
  - 4 = Over five times

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

20. Has any specific section regarding provisions made for populations with limited sight in your Evacuation Plan or Annex been updated and/or reviewed within the last 12 months?
- 0 = No sections have been updated and/or reviewed within the last 12 months
  - 1 = Only some sections have been partially updated and/or reviewed within the last 12 months
  - 2 = Only some sections have been fully updated and/or reviewed within the last 12 months

- 3 = All sections have been partially updated and/or reviewed within the last 12 months
- 4 = All sections have been fully updated and/or reviewed within the last 12 months

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

21. In terms of emergency communications, does your Evacuation Plan or Annex mention specific notification tools, methods, or procedures to alert populations with sight limitations of an evacuation or other actionable information pertaining to an evacuation?

- 0 = Never
- 1 = Only once
- 2 = Two to three times
- 3 = Four to five times
- 4 = Over five times

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

22. In terms of resources or assets, does your hospital have the appropriate visual, tactile, and/or Braille signage types in place for populations with sight limitations during an evacuation?

- 0 = No visual, tactile, and/or Braille signage at all in place for populations with sight limitations during an evacuation
- 1 = We have only one of the three signage types appropriately in place for populations with sight limitations during an evacuation
- 2 = We have two of the three signage types appropriately in place for populations with sight limitations during an evacuation
- 3 = We have all three of the signage types in place for populations with sight limitations during an evacuation, but they are not appropriately placed
- 4 = We have all three of the signage types appropriately in place for populations with sight limitations during an evacuation

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

23. In terms of resources or assets, does your hospital have a sufficient amount of pre-printed emergency evacuation signage in Braille to post for populations with sight limitations during an evacuation?

- 0 = No pre-printed signage at all for populations with sight limitations during an evacuation
- 1 = We have pre-printed emergency evacuation signage in Braille, but not enough to post at least one per each floor of our hospital
- 2 = We have enough pre-printed emergency evacuation signage in Braille to post at least one per each floor of our hospital
- 3 = We have enough pre-printed emergency evacuation signage in Braille to post two per each floor of our hospital
- 4 = We have enough pre-printed emergency evacuation signage in Braille to post more than two per each floor of our hospital

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

24. In terms of training and exercises, has your hospital conducted a drill or exercise that specifically addressed or included populations with sight limitations?

- 0 = Have not addressed or included populations with sight limitations in any drills or exercises within the past 5 years
- 1 = Have addressed or included populations with sight limitations in at least one drill or exercise within the past 2-5 years
- 2 = Have addressed or included populations with sight limitations in more than one drill or exercise within the past 2-5 years
- 3 = Have addressed or included populations with sight limitations in at least one drill or exercise within the past 12 months
- 4 = Have addressed or included populations with sight limitations in more than one drill or exercise within the past 12 months

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

25. In terms of staff responsibilities, does the hospital have one or more specific position(s) in the emergency organizational structure (e.g., Hospital Incident Command System) with duties assigned on their job action sheet specific to addressing the needs populations with sight limitations in the event of an evacuation?

- 0 = Not at all (no positions in the structure specifically address the needs of populations with sight limitations in the event of an evacuation)
- 1 = Only one position in the structure specifically addresses the needs of populations with sight limitations in the event of an evacuation
- 2 = Two to three positions in the structure specifically address the needs of populations with sight limitations in the event of an evacuation
- 3 = Four to five positions in the structure specifically address the needs of populations with sight limitations in the event of an evacuation
- 4 = Over five positions in the structure specifically address the needs of populations with sight limitations in the event of an evacuation

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

26. In terms of utilities, do your hospital's fire and emergency alarm systems have regularly tested directional sound capabilities (audible signals that lead people to safety in a way that conventional alarms cannot, by communicating the location of exits using broadband noise) or similar features to accommodate for populations with sight limitations?

- 0 = No, our system has none of these features
- 1 = Our system(s) has this feature, but it is never tested
- 2 = Our system(s) has this feature, and it is tested annually (at least once per year)
- 3 = Our system(s) has this feature, and it is tested bi-annually (at least twice per year)
- 4 = Our system(s) has this feature, and it is tested quarterly (at least four times per year)

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

27. In terms of patient care needs, does your hospital conduct any training on a written procedure/plan regarding how individuals responsible for patient movement in an evacuation will provide timely assistance to lead populations with sight limitations to an area of refuge?

- 0 = No procedure/plan or training at all that addresses this issue
- 1 = We have a procedure/plan that addresses this issue, but we do not conduct any training on it
- 2 = We conduct training with these individuals responsible for patient movement in an evacuation, but we do not have a procedure/plan that addresses this issue
- 3 = We have a procedure/plan that addresses this issue, but we only conduct training with some of these individuals responsible for patient movement in an evacuation
- 4 = We have a procedure/plan that addresses this issue, and we conduct training with all of these individuals responsible for patient movement in an evacuation

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

28. In terms of patient care needs, does your hospital utilize your electronic medical record system to consistently track and report patients with sight limitations centrally to your command center?

- 0 = Not at all tracked or reported to the command center
- 1 = We utilize our electronic medical record system to track patients with sight limitations, but it is not centrally reported to our command center
- 2 = We inconsistently report patients with sight limitations to our command center, but they are not tracked through our electronic medical record system
- 3 = We consistently report patients with sight limitations centrally to our command center, but they are not tracked through our electronic medical record system
- 4 = We consistently utilize our electronic medical record system to track and report patients with sight limitations centrally to our command center

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

## **EMERGENCY PLANS, POLICIES, AND PROCEDURES FOR POPULATIONS WITH HEARING LIMITATIONS**

The following series of questions deals with your hospital's written Emergency Operations Plan, including any sections or annexes related to evacuation planning. The EOP describes how the organization will generally ensure effective response to disasters or emergencies affecting the environment of care. The plan should address four phases of emergency management activities: mitigation, preparedness, response, and recovery. The EOP may have a specific annex devoted to disasters or emergencies resulting in a partial or full evacuation of the hospital facility, or the hospital may have a completely separate Evacuation Plan.

Specifically, the questions ask for details about whether your plan includes specific information or annexes for **populations with hearing limitations** in the following areas: communication, resources and assets, security, staff responsibilities, utilities management, and patient care needs. These populations can consist of any patients, staff, and visitors with hearing limitations that may be in your hospital at any given time. CMS defines populations with sight or visual impairments as individuals who are either: (1) "legally blind (having visual acuity [VA] of 20/200 or worse or a visual field of less than 20 degrees); (2) or are visually impaired (having VA of 20/40 or less)."

Please select the answer to the following questions that best describes your facility's emergency planning for **populations with hearing limitations**.

29. Does your hospital make a specific mention of populations with hearing limitations in your Emergency Operations Plan?
- 0 = Never
  - 1 = Only once
  - 2 = Two to three times
  - 3 = Four to five times
  - 4 = Over five times

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

30. Has any specific section regarding provisions made for populations with hearing limitations in your Emergency Operations Plan been updated and/or reviewed within the last 12 months?

- 0 = No sections have been updated and/or reviewed within the last 12 months
- 1 = Only some sections have been partially updated and/or reviewed within the last 12 months
- 2 = Only some sections have been fully updated and/or reviewed within the last 12 months
- 3 = All sections have been partially updated and/or reviewed within the last 12 months
- 4 = All sections have been fully updated and/or reviewed within the last 12 months

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

31. Does your hospital make a specific mention of populations with hearing limitations in your Evacuation Plan or Annex?

- 0 = Never
- 1 = Only once
- 2 = Two to three times
- 3 = Four to five times
- 4 = Over five times

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

32. Has any specific section regarding provisions made for populations with limited hearing in your Evacuation Plan or Annex been updated and/or reviewed within the last 12 months?

- 0 = No sections have been updated and/or reviewed within the last 12 months
- 1 = Only some sections have been partially updated and/or reviewed within the last 12 months
- 2 = Only some sections have been fully updated and/or reviewed within the last 12 months
- 3 = All sections have been partially updated and/or reviewed within the last 12 months



- 4 = All sections have been fully updated and/or reviewed within the last 12 months

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

33. In terms of emergency communications, does your Evacuation Plan or Annex mention specific visual notification tools, methods, or procedures to alert populations with hearing limitations of an evacuation or other actionable information pertaining to an evacuation?

- 0 = Never
- 1 = Only once
- 2 = Two to three times
- 3 = Four to five times
- 4 = Over five times

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

34. In terms of resources or assets, does your hospital regularly evaluate having additional illuminated exit and directional signage installed in areas of no- to low-light to assist populations with hearing limitations (i.e., are considerations made because their balance could be affected in no- to low-light areas without visual references)?

- 0 = We conduct no evaluation at all for installing illuminated signage in areas of no- to low-light
- 1 = We evaluate installing illuminated signage in areas of no- to low-light at least every 6-10 years
- 2 = We evaluate installing illuminated signage in areas of no- to low-light at least every 4-5 years
- 3 = We evaluate installing illuminated signage in areas of no- to low-light at least every 2-3 years
- 4 = We evaluate installing illuminated signage in areas of no- to low-light at least annually

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

35. In terms of resources or assets, does your hospital have a sufficient amount of visual signage in place for populations with hearing limitations during an evacuation (e.g., paper signage, visual reader boards, use of television screens in public waiting areas, etc.)?

- 0 = We have no visual signage in place at all
- 1 = We have less than one visual sign posted (or available to post) on each floor of our hospital
- 2 = We have at least one visual sign posted (or available to post) on each floor of our hospital
- 3 = We have at least two visual signs posted (or available to post) on each floor of our hospital
- 4 = We have at more than two visual signs posted (or available to post) on each floor of our hospital

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

36. In terms of training and exercises, has your hospital conducted a drill or exercise that specifically addressed or included populations with hearing limitations?

- 0 = Have not addressed or included populations with hearing limitations in any drills or exercises within the past 5 years
- 1 = Have addressed or included populations with hearing limitations in at least one drill or exercise within the past 2-5 years
- 2 = Have addressed or included populations with hearing limitations in more than one drill or exercise within the past 2-5 years
- 3 = Have addressed or included populations with hearing limitations in at least one drill or exercise within the past 12 months
- 4 = Have addressed or included populations with hearing limitations in more than one drill or exercise within the past 12 months

*Optional comment box to elaborate on answer:*

[Click here to enter text.](#)

37. In terms of staff responsibilities, does the hospital have one or more specific position(s) in the emergency organizational structure (e.g., Hospital Incident

Command System) with duties assigned on their job action sheet specific to addressing the needs populations with hearing limitations in the event of an evacuation?

- 0 = Not at all (no positions in the structure specifically address the needs of populations with hearing limitations in the event of an evacuation)
- 1 = Only one position in the structure specifically addresses the needs of populations with hearing limitations in the event of an evacuation
- 2 = Two to three positions in the structure specifically address the needs of populations with hearing limitations in the event of an evacuation
- 3 = Four to five positions in the structure specifically address the needs of populations with hearing limitations in the event of an evacuation
- 4 = Over five positions in the structure specifically address the needs of populations with hearing limitations in the event of an evacuation

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

38. In terms of utilities, do your hospital's elevators have both a telephone and an emergency signaling device to accommodate for populations with hearing limitations?

- 0 = No, our elevators have none of these features
- 1 = Only some of our elevators have one of these features
- 2 = Only some of our elevators have both of these features
- 3 = Our elevators all have at least one of these features
- 4 = All of our elevators have both of these features

***Optional comment box to elaborate on answer:***

[Click here to enter text.](#)

39. In terms of patient care needs, does your hospital conduct any training on a written procedure/plan regarding how individuals responsible for patient movement in an evacuation will provide timely assistance to lead populations with hearing limitations to an area of refuge?

- 0 = No procedure/plan or training at all that addresses this issue
- 1 = We have a procedure/plan that addresses this issue, but we do not conduct any training on it

- 2 = We conduct training with these individuals responsible for patient movement in an evacuation, but we do not have a procedure/plan that addresses this issue
- 3 = We have a procedure/plan that addresses this issue, but we only conduct training with some of these individuals responsible for patient movement in an evacuation
- 4 = We have a procedure/plan that addresses this issue, and we conduct training with all of these individuals responsible for patient movement in an evacuation

***Optional comment box to elaborate on answer:***

Click here to enter text.

40. In terms of patient care needs, does your hospital utilize your electronic medical record system to consistently track and report patients with hearing limitations centrally to your command center?

- 0 = Not at all tracked or reported to the command center
- 1 = We utilize our electronic medical record system to track patients with hearing limitations, but it is not centrally reported to our command center
- 2 = We inconsistently report patients with hearing limitations to our command center, but they are not tracked through our electronic medical record system
- 3 = We consistently report patients with hearing limitations to our command center, but they are not tracked through our electronic medical record system
- 4 = We consistently utilize our electronic medical record system to track and report patients with hearing limitations centrally to our command center

***Optional comment box to elaborate on answer:***

Click here to enter text.

41. *OPTIONAL: If you would like to be contacted by the researcher for an interview to further explain your answers, please type your name and contact information here:* \_\_\_\_\_

## SURVEY SELF-SCORING

### **Total Emergency Planning Sufficiency Score**

Questions #5-40 (36 questions total) will be used to determine the total Emergency Planning Sufficiency Score for each participant, as well as the Population-Specific Emergency Planning Sufficiency Score. For each question that the participant answered on a 5-point Likert scale, they were granted an equal number of points towards their score. For example, if a participant chose the answer “only once” for question #5, they were granted 1 point towards their Emergency Planning Sufficiency Score. The number to the left of their answer serves as the ‘points’ that they will earn for that question.

After completion of the survey, the score can be tabulated based on the answers, and the participant will fall into one of the categories below for their total Emergency Planning Sufficiency Score. The five-point Likert scale below will be used to codify total Emergency Planning Sufficiency Score findings (total equals the sum of the values gained from survey questions #5-40):

<b>Total Emergency Planning Sufficiency Score Likert Scale</b>
<b>1 = Excellent</b> Emergency Planning Sufficiency Score of <u>116-144</u> - Hospital has sufficient planning for vulnerable populations with communication barriers.
<b>2 = Good</b> Emergency Planning Sufficiency Score of <u>87-115</u> - Hospital is close to having sufficient planning for vulnerable populations with communication barriers, but there is room for improvement in some areas.
<b>3 = Acceptable</b> Emergency Planning Sufficiency Score of <u>58-86</u> - Hospital has a good foundation for sufficient planning for vulnerable populations with communication barriers, but there is room for improvement in many areas.
<b>4 = Poor</b> Emergency Planning Sufficiency Score of <u>29-57</u> - Hospital has a weak foundation for sufficient planning for vulnerable populations with communication barriers, and there is need to address the gaps in most critical areas.
<b>5 = Very Poor</b> Emergency Planning Sufficiency Score of <u>≤ 28</u> - Hospital does not have a foundation for sufficient planning for vulnerable populations with communication barriers, and there is a severe need to address the gaps in most critical areas.

## Population-Specific Emergency Planning Sufficiency Score

In order to evaluate and compare the survey scores for each individual populations of the three (populations with no or limited English proficiency, sight limitations, and/or hearing limitations), the three sections of each survey were separated and scored on a separate five-point Likert scale. There are three separate sections of the survey; one representing each of the three populations. Each section of the survey has an equal amount of twelve questions that measure the same areas in emergency planning sufficiency.

Depending on the population desired to calculate the Population-Specific Emergency Planning Sufficiency Score for, only the 12 questions in that section will be used to tabulate the score for each population separately. In order to calculate the Population-Specific Emergency Planning Sufficiency Scores for each separate group in the survey, a five-point Likert scale will codify Population-Specific Emergency Planning Sufficiency Score findings [total equals the sum of the values gained from twelve survey questions (questions from either #5-16; #17-28; or #29-40)]:

<b>Population-Specific Emergency Planning Sufficiency Score Likert Scale</b>
<p style="text-align: center;"><b>1 = Excellent</b> Emergency Planning Sufficiency Score of <u>39-48</u> - Hospital has sufficient planning for this specific vulnerable population with communication barriers.</p>
<p style="text-align: center;"><b>2 = Good</b> Emergency Planning Sufficiency Score of <u>29-38</u> - Hospital is close to having sufficient planning for this specific vulnerable population with communication barriers, but there is room for improvement in some areas.</p>
<p style="text-align: center;"><b>3 = Acceptable</b> Emergency Planning Sufficiency Score of <u>19-28</u> - Hospital has a good foundation for sufficient planning for this specific vulnerable population with communication barriers, but there is room for improvement in many areas.</p>
<p style="text-align: center;"><b>4 = Poor</b> Emergency Planning Sufficiency Score of <u>9-18</u> - Hospital has a weak foundation for sufficient planning for this specific vulnerable population with communication barriers, and there is need to address the gaps in most critical areas.</p>
<p style="text-align: center;"><b>5 = Very Poor</b> Emergency Planning Sufficiency Score of <u>≤ 9</u> - Hospital does not have a foundation for sufficient planning for this specific vulnerable population with communication barriers, and there is a severe need to address the gaps in most critical areas.</p>

## APPENDIX B: INTERVIEW INSTRUMENT

**Interview instrument title:** Hospital Emergency Planning for Vulnerable Populations with Communication Barriers Interview Questionnaire

1. Has your hospital experienced a real emergency event that assessed its capabilities to provide sufficient emergency response for populations with no or limited English proficiency, populations with sight limitations, and/or populations with hearing limitations?
  - a. (Probe question) Did the After-Action Report from this event reveal vulnerabilities in your planning for these vulnerable populations?
  - b. (Probe question) If so, how did you address or plan to address these vulnerabilities?
  
2. Has your hospital conducted a disaster drill or exercise that assessed its capabilities to provide sufficient emergency response for populations with no or limited English proficiency, populations with sight limitations, and/or populations with hearing limitations?
  - a. (Probe question) Did the After-Action Report from this drill or exercise reveal vulnerabilities in your planning for these vulnerable populations?
  - b. (Probe question) If so, how did you address or plan to address these vulnerabilities?
  
3. What stakeholders and/or departments need to be involved in the emergency planning efforts for populations with no or limited English proficiency, populations with sight limitations, and/or populations with hearing limitations?
  - a. (Probe question) How have you attempted to best engage these stakeholders and/or departments in planning efforts for these vulnerable populations?
  - b. (Probe question) How do you plan to best engage these stakeholders and/or departments in planning efforts for these vulnerable populations in the future?
  
4. Does your hospital have the appropriate communication tools or methods to provide timely notification to populations with no or limited English proficiency, populations with sight limitations, and/or populations with hearing limitations of an emergency that may immediately affect their life and/or safety?
  - a. (Probe question) If so, can you suggest any other communication tools or methods that may improve your current crisis communication and response efforts for these vulnerable populations?

- b. (Probe question) If not, can you suggest what communication tools or methods may improve your current crisis communication and response efforts for these vulnerable populations?
- 5. What training and/or education efforts does your hospital conduct that support emergency planning for populations with no or limited English proficiency, populations with sight limitations, and/or populations with hearing limitations?
  - a. (Probe question) Do you view these training and/or education efforts as sufficient?
  - b. (Probe question) If not, how do you plan to improve training and/or education efforts that support emergency planning for these vulnerable populations in the future?
- 6. Does your hospital have sufficient resources to provide satisfactory emergency planning for populations with no or limited English proficiency, populations with sight limitations, and/or populations with hearing limitations?
  - a. (Probe question) If so, please describe the types and amounts of resources that support emergency planning for these vulnerable populations?
  - b. (Probe question) If not, how do you plan to improve resource procurement efforts that support emergency planning for these vulnerable populations in the future?
- 7. What are common barriers and/or challenges when planning for populations with no or limited English proficiency, populations with sight limitations, and/or populations with hearing limitations in emergencies?
  - a. (Probe question) How have you attempted to overcome these barriers and/or challenges to emergency planning these vulnerable populations?
  - b. (Probe question) How do you plan to overcome these barriers and/or challenges to emergency planning these vulnerable populations in the future?
- 8. Are you familiar with guidance from regulatory agencies (such as The Joint Commission, CMS, etc.) regarding emergency planning requirements for vulnerable populations?
  - a. (Probe question) If so, do you view this guidance as sufficient/enough in terms of specificity and overall adequacy?
  - b. (Probe question) If not, how do you suggest that these regulatory agencies improve their regulations regarding emergency planning requirements for vulnerable populations?



**APPENDIX C: SURVEY VALIDATION RUBRIC**

Criteria	Operational Definitions	Score				Questions NOT meeting standard (List page <u>and</u> question number) and need to be revised.  <i>Please use the comments and suggestions section to recommend revisions.</i>
		1=Not Acceptable (major modifications needed)	2=Below Expectations (some modifications needed)	3=Meets Expectations (no modifications needed, but could be improved with minor changes)	4=Exceeds Expectations (no modifications needed)	
		1	2	3	4	
<b>Clarity</b>	<ul style="list-style-type: none"> <li>• These questions are complete questions.</li> <li>• Only one question is asked at a time.</li> <li>• The participants can understand what is being asked.</li> </ul>					
<b>Wordiness</b>	<ul style="list-style-type: none"> <li>• Questions are concise and understandable.</li> <li>• There are no unnecessary words.</li> </ul>					
<b>Negative Wording</b>	<ul style="list-style-type: none"> <li>• Questions are asked using the affirmative (e.g., Instead of asking, “Which methods are</li> </ul>					

	used?”, the researcher asks, “Which methods <i>are</i> used?”).					
<b>Overlapping Responses</b>	<ul style="list-style-type: none"> <li>No responses cover more than one choice.</li> </ul>					
<b>Balance</b>	<ul style="list-style-type: none"> <li>The questions are unbiased and do not lead the participants to a response. The questions are asked using a neutral tone.</li> </ul>					
<b>Use of Jargon</b>	<ul style="list-style-type: none"> <li>The terms used are understandable by the target population.</li> </ul>					
<b>Appropriateness of Responses Listed</b>	<ul style="list-style-type: none"> <li>The choices listed allow participants to respond appropriately. The responses apply to all situation or offer a way for those to respond with unique situations.</li> </ul>					
<b>Use of Technical Language</b>	<ul style="list-style-type: none"> <li>The use of technical language is minimal and appropriate.</li> </ul>					
<b>Application to Praxis</b>	<ul style="list-style-type: none"> <li>The questions asked relate to the daily practices or expertise of the participants.</li> </ul>					

<p><b>Relationship to Problem</b></p>	<ul style="list-style-type: none"> <li>The questions are sufficient to resolve the problem in the study, answer the research questions, and obtain the purpose of the study.</li> </ul>					
<p><b>Measure of Construct: Planning for Vulnerable Populations</b></p>	<ul style="list-style-type: none"> <li>The survey adequately measures the construct of the sufficient of planning in hospital facilities to address the needs of vulnerable populations during emergencies that warrant a partial or full hospital evacuation.</li> </ul>					

**Comments and Suggestions:**

**Note: Modified from the Survey/Interview Validation Rubric for Expert Panel – VREP by Marilyn K. Simon and Jacquelyn White (2016). Accessed from [https://research.phoenix.edu/search/search\\_combine/VREP](https://research.phoenix.edu/search/search_combine/VREP).**

## APPENDIX D: ZOOM INTERVIEW CONSENT FORM



### **CONSENT TO ZOOM AUDIO AND VIDEO RECORDING & TRANSCRIPTION**

An Examination of the Sufficiency of Emergency Planning in New York City Hospitals  
for Vulnerable Populations Needing Communication or Language Assistance  
*Rosemary McDonnell, St. John's University*  
[mcdonner@stjohns.edu](mailto:mcdonner@stjohns.edu)

This study involves the audio or video recording of your Zoom interview with the researcher. Neither your name nor any other identifying information will be associated with the audio or audio recording or the transcript. Only the research team will be able to listen (view) to the recordings.

The tapes will be transcribed by the researcher and erased once the transcriptions are checked for accuracy. Transcripts of your interview may be reproduced in whole or in part for use in presentations or written products that result from this study. Neither your name nor any other identifying information (such as your voice or picture) will be used in presentations or in written products resulting from the study.

By signing this form, I am allowing the researcher to audio or video tape me as part of this research. I also understand that this consent for recording is effective until the following date: (insert date). On or before that date, the tapes will be destroyed.

*Dissertation Study Chairperson:* Dr. Brian Harte, [harte@stjohns.edu](mailto:harte@stjohns.edu)  
*St. John's University IRB:* [irb@stjohns.edu](mailto:irb@stjohns.edu)

Participant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## APPENDIX E: Survey E-Mail Communication

Dear NYC Hospital Emergency Preparedness Coordinators:

I am writing this communication to you in order to elicit your participation in a survey of EPC's for New York City hospital facilities. As a doctoral student in the Homeland Security program at St. John's University, I will use data collected in this survey to form my dissertation study regarding the sufficiency of emergency planning in New York City hospitals for vulnerable populations with communication barriers.

**Your participation in this survey is completely confidential, and your identity and specific hospital facility that you represent will not be requested.** This survey will collect information about the emergency planning at your individual facility for three sub-groups of vulnerable populations with communication barriers: populations with no or limited English proficiency, populations with sight limitations, and populations with hearing limitations. It will take approximately 20-30 minutes to complete.

**You can access the survey via the following link:**

<https://www.surveymonkey.com/r/59P62H9>

I have attached a list of each NYC hospital included in this study, as well as the corresponding EPC. Some individuals may represent more than one hospital as their EPC. **IMPORTANT: Please fill out a separate survey instrument for each hospital under your purview that you serve as the Emergency Preparedness Coordinator for.** Feel free to forward this link to your hospital's backup EPC or a health system representative to fill out the survey on your behalf if you feel that they can more accurately answer the survey questions.

Results from this survey will be used to shape the regulatory requirements for providing sufficient emergency planning for vulnerable populations with communication barriers, and they may even be used to influence future HPP deliverables. Your completion of this survey is completely voluntary. Your responses to the questionnaire indicate your consent to participate (please read the "Introduction" in the survey link for more information).

I appreciate your time and effort as I work to support NYC's preparedness and response planning for vulnerable populations with communication barriers. Please reach out to me at [mcdonner@stjohns.edu](mailto:mcdonner@stjohns.edu) or (718) 990-8025 with any questions.

Best regards,  
Rosemary McDonnell  
Adjunct Professor and Doctoral Candidate  
College of Professional Studies  
St. John's University  
(718) 990-8025

## **APPENDIX F: Survey Follow-Up E-Mail Communication**

Dear NYC Hospital Emergency Preparedness Coordinators:

Please see the e-mail below regarding the request from Rosemary McDonnell (Adjunct Professor and Doctoral Candidate at St. John's University) for you to complete the survey link below:

<https://www.surveymonkey.com/r/59P62H9>

We would appreciate your time and effort to fill out this voluntary survey as Rosemary works to support NYC's preparedness and response planning for vulnerable populations with communication barriers. Please reach out to Rosemary directly at [mcdonner@stjohns.edu](mailto:mcdonner@stjohns.edu) with any questions.

## APPENDIX G: Interview E-Mail Communication

Dear (*insert EPC name*),

I am contacting you today to request your participation in an interview with me regarding the emergency preparedness and response planning at your hospital facility (*insert hospital facility name*). As a doctoral student in the Homeland Security program at St. John's University, I will use data collected in this interview to form my dissertation study regarding the sufficiency of emergency preparedness and response planning that vulnerable populations with communication barriers receive in New York City hospitals.

**Your participation in this interview is completely confidential, and your identity and specific hospital facility that you represent will not be requested.** This interview will collect information about the emergency preparedness and response planning at your individual hospital facility for three sub-groups of vulnerable populations: populations with no or limited English proficiency, sight limitations, and/or hearing limitations.

**Please respond to this email confirming your willingness to participate in this interview.**

Transcripts and results from this interview will be used to improve the regulatory requirements for providing sufficient emergency planning for vulnerable populations with communication barriers, and may even be used to influence future HPP deliverables. Your participation of this interview is completely voluntary. Your response to this e-mail indicates your consent to participate. The interview will be conducted via Zoom, and will last approximately 45 minutes to one hour.

I appreciate your time and consideration as I work to support NYC's preparedness and response planning for vulnerable populations with communication barriers. Please reach out to me at [mcdonner@stjohns.edu](mailto:mcdonner@stjohns.edu) with any questions.

Best regards,

Rosemary McDonnell  
Adjunct Professor and Doctoral Candidate  
College of Professional Studies  
St. John's University  
(718) 990-8025

## APPENDIX H: Interview Follow-Up E-Mail Communication

Dear (*insert EPC name*),

I am contacting you today as a follow-up to the request in the email below, requesting your participation in an interview with me regarding the emergency preparedness and response planning at your hospital facility (*insert hospital facility name*). As a doctoral student in the Homeland Security program at St. John's University, I will use data collected in this interview to form my dissertation study regarding the sufficiency of emergency preparedness and response planning that vulnerable populations with communication barriers receive in New York City hospitals.

**Your participation in this interview is completely confidential, and your identity and specific hospital facility that you represent will not be requested.** This interview will collect information about the emergency preparedness and response planning at your individual facility for three sub-groups of vulnerable populations: populations with no or limited English proficiency, sight limitations, and/or hearing limitations.

**Please respond to this email confirming your willingness to participate in this interview.**

Transcripts and results from this interview will be used to improve the regulatory requirements for providing sufficient emergency planning for vulnerable populations with communication barriers, and may even be used to influence future HPP deliverables. Your participation of this interview is completely voluntary. Your response to this e-mail indicates your consent to participate. The interview will be conducted via Zoom, and will last approximately 45 minutes to one hour.

I appreciate your time and consideration as I work to support NYC's preparedness and response planning for vulnerable populations with communication barriers. Please reach out to me at [mcdonner@stjohns.edu](mailto:mcdonner@stjohns.edu) with any questions.

Best regards,

Rosemary McDonnell  
Adjunct Professor and Doctoral Candidate  
College of Professional Studies  
St. John's University  
(718) 990-8025



## APPENDIX I: Interview Coding Scheme

Zoom video/audio interviews were recorded and transcribed. In addition, notes were taken during the interview to highlight key points. Data from interviews were summarized into narrative form. Qualitative data were then analyzed manually to identify key themes within each domain across interviews. Domain-level codes were derived a priori using the eight main domains in which questions were categorized, e.g., general questions about emergency planning for vulnerable populations with communication barriers, barriers to this planning process, etc. Within each of these domains, responses were summarized.

Code	Code Description	Frequency
STEG	(1) Stakeholder Engagement	36
RESP	(2) Responsibility	26
EXP	(3) Experience	38
CCOM	(4) Crisis Communication	46
INCL	(5) Inclusivity	4
TRED	(6) Training and/or Education	25
LAK	(7) Lack of Accessibility Knowledge	21
CPSP	(8) Capacity for Sufficient Planning	40
REG	(9) Regulations	31
BRCL	(10) Barriers/Challenges	21
SPRS	(11) Spontaneous Response	17
PTTR	(12) Patient Tracking	16
LPG	(13) Lack of Planning/Guidance	18
PDEM	(14) Patient Demographics	26
PFED	(15) Patient Feedback	4

## **Code Explanations**

### **1. Stakeholder Engagement (STEG)**

The involvement of internal and/or external partners in efforts to enhance emergency planning for vulnerable populations with communication barriers. Examples included internal hospital departments, Health System offices, and/or community partners.

### **2. Responsibility (RESP)**

Mention of who owns the process of planning for vulnerable populations with communication barriers within the hospital (e.g., hospital EPC, ADA Office, Language Access Services, Deaf Health Services, etc.).

### **3. Experience (EXP)**

Either the presence of or lack of any real experience interacting with vulnerable populations with communication barriers within the hospital, in the scope of emergency planning (e.g., emergency occurrences, interactions in planning efforts, lived experience with a similar vulnerability, etc.).

### **4. Crisis Communication (CCOM)**

The tools, methods, and/or plans that hospitals may or may not use to send timely, accurate, and consistent messages to vulnerable populations with communication barriers within the hospital.

### **5. Inclusivity (INCL)**

EPC's mentioned that they (personally) and/or their hospital places a high level of importance on inclusivity in their emergency planning efforts and/or everyday practices/culture.

### **6. Training and/or Education (TRED)**

Any mention of either specifically formed training and/or education given to hospital staff regarding interacting with vulnerable populations with communication barriers in an emergency or any incorporation of this topic into existing emergency training and/or education given to hospital staff.

### **7. Lack of Accessibility Knowledge (LAK)**

Missing the proper insight or knowledge into the unique needs vulnerable populations with communication barriers have in an emergency, which could inhibit the ability to sufficiently plan for them.

### **8. Capacity for Sufficient Planning (CPSP)**

The ability of the EPC to sufficiently emergency plan for vulnerable populations with communication barriers may be dependent on other external factors such as a lack of resources, time, staff, etc.

**9. Regulations (REG)**

The guidance and/or standards published by regulatory agencies (e.g., The Joint Commission, CMS, etc.) regarding sufficient emergency planning for vulnerable populations with communication barriers.

**10. Barriers/Challenges (BRCL)**

Any conditions which EPC's mentioned that they believe inhibit their ability to sufficiently emergency plan for vulnerable populations with communication barriers.

**11. Spontaneous Response (SPRS)**

The concept of not pre-planning, but rather, relying on emergency response leaders in the hospital to figure out ways to address the needs vulnerable populations in the moment that an emergency occurs, as necessary.

**12. Patient Tracking (PTTR)**

The ability or process already in place to record and track the patients admitted to the hospital who have communication barriers.

**13. Lack of Planning/Guidance (LPG)**

Either the confirmation that the hospital does not currently have an emergency plan for vulnerable populations with communication barriers, does not incorporate vulnerable populations with communication barriers into existing emergency plans and/or annexes, or does not see a need to create such plans or guidance for the hospital and its staff.

**14. Patient Demographics (PDEM)**

Some EPC's mentioned the need for or current practice of collecting demographic information regarding the percentage of vulnerable patient populations with communication barriers that visit their hospitals.

**15. Patient Feedback (PFED)**

Any mention of solicited or unsolicited feedback received and/or suggestions to elicit feedback from vulnerable patient populations with communication barriers regarding their unique considerations during an emergency while in the hospital.

## REFERENCES

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