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Disadvantaged Response: How to Improve Disaster Resiliency for Low-Income Families

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Low-Income Families

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Abstract

Disadvantaged Response: How to Improve Disaster Resiliency for Low-Income Families

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Disaster resiliency is the ability of individuals and communities to anticipate, cope with, and deal with disasters through specific resources and awareness. However, at-risk populations, or those who have certain social disabilities, often lack the same level of resiliency to disasters as those who do not exhibit the same social vulnerabilities. Specifically, low-income families do not exhibit the same level of resiliency as other populations compared to other families and populations. Low-income families are often marginalized in disaster management, which plays a role in their lack of resiliency.

The following report provides a general understanding of disaster resiliency and what actions communities take to enhance their community's resiliency. Specifically, it explores the reasons for how and why low-income families exhibit a lack of resiliency and are marginalized in disaster management. It does so through the lens of a case study about Hurricane Katrina and its' effects on the New Orleans community, particularly those who were classified as low income. Additionally, it explores improvements for communities to consider in order to strengthen at-risk populations disaster resiliency for the future.

Key Words: resiliency, low-income, disaster management

Table of Contents

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Disadvantaged response: How to improve disaster resiliency for low-income families

Grace Crosthwaite

Dr. Chad Foster, Homeland Security Associate Professor

Disasters: Hurricanes, flooding, tornadoes, wildfires, earthquakes, severe thunderstorms, and droughts. These different types of disasters, along with many other types, have all occurred within the United States and around the world. Americans have become extremely aware of their risk to such disasters and how often they may occur in their communities. The Department of Homeland Security (DHS) has taken a key role in the fight to protect our way of life and our properties against the devasting impacts that these events bring. Through the years, natural disasters have become an important aspect in protecting the homeland and has grown in importance since the creation of DHS in 2001 and the formation of the Federal Emergency Management Agency in 1979. Specifically, after the devasting Hurricane Katrina hit New Orleans in 2005, DHS, along with 21 other agencies under their leadership, has improved their disaster management capabilities to prevent another mass causality event and become more prepared to deal with such a large event as was Hurricane Katrina. This disaster was the turning point for many individuals in homeland security, along with the rest of the country, to turn their focus not only on terrorism, but also on other hazards such as natural disasters at the local, state, and federal levels, while involving tribal and territorial governments, the private sector, and

non-governmental organizations (NGOs), to better protect, respond to and recover from major disasters to all populations.

However, despite the increase in awareness to disaster management, there have been areas that have lacked the same awareness and care as the rest of the country. Socially vulnerable populations in communities suffer much greater effects after a disaster occurs due to the lack of resilience that exists for them as a result from their income status and lack of help from the federal government. As such, it is important to gain a better understanding of the role of the federal government in either supporting or, worst, exacerbating these inequalities following disasters. NGO's have attempted to assist these populations in the response and help them to recover from the effects of the disaster. Low-income populations may be marginalized against in disaster resiliency efforts by the federal government and non-governmental organizations and, as a result, experience severe impacts after a disaster occurs. By identifying these gaps in response and resiliency, critiquing the issues that exist, and making improvements to the assistance given, low-income populations will be able to effectively recover from disasters.

Definition of Resiliency

Resiliency is one of the main ideas that has a significant impact on how disasters will and have affected communities and their populations. Resiliency in communities is often taught to individuals through education and disaster management has a strong focus on enhancing the resiliency through the provision of specific resources. Resiliency is defined as "the ability to withstand an extreme event without suffering from severe damages, diminished

productivity, damage, or loss of quality of life and without a substantial amount of help from outside the community" (Fothergill et al., 2013). In other words, disaster resiliency is "the ability to prepare for, respond to, recover from, and adapt to disasters and their potentially adverse effects" (National Academies Press of Sciences, Engineering and Medicine [NAP], 2012, p. 1). Resiliency is one of the most important aspects of disaster management that can help a community and individuals protect themselves and their property from extreme ramifications (NAP, 2012). Additionally, the emphasis on resiliency will ultimately help to reduce the impacts of the disaster and mitigate against severe damages (NAP, 2012). There are various strategies in which communities can enhance their disaster resiliency, which include, but is not limited to, creating new frameworks, and improving current ones, enhancing engagement practices, and educational services (Office of the Assistant Secretary for Preparedness and Response [OASPR], 2014). Community leaders, emergency management agencies, and government officials can implement various strategies that work to strengthen the access to health care and social services, educate and assist in preparedness actions such as emergency kits, education about disasters, and strengthening infrastructure, expanding communication between individuals, and engage the whole community in practices, exercises, and trainings (OASPR, 2014). Enhancing resiliency is one of the most important aspects for communities to enhance their capabilities to cope with and anticipate disasters and their effects; however, it is also one of the most forgotten aspects for low-income people and at-risk populations which results in severe consequences for these families. The following report will examine how these populations exhibit a

lack of resilience, and why this occurs and how community leaders, government officials, and emergency managers can work to make improvements for the future.

How are these families marginalized?

To understand the reasons behind why lower-income populations experience a lower level of resiliency towards disasters, it is important to ask the question of "how?". The following section will identify the reasons how lower income families experience a lack of resiliency and the various factors that play into the reasoning of how. This will include an in-depth case study of the effects of Hurricane Katrina on low-income families, identifying the evolution of various frameworks and approaches that lack resiliency, and how these low-income families suffer severe physical and mental health effects.

Hurricane Katrina Case Study

One of the strongest case studies demonstrating the severe impacts that low socioeconomic status individuals suffer from due to a lack of resilience is Hurricane Katrina. In August of 2005, Hurricane Katrina hit Florida, Louisiana, Alabama, and Mississippi, starting as a strong tropical depression over the Bahamas; however, days later it was strengthened to a category four hurricane (Britannica, 2005). The storm exhibited winds of over 115 miles per over and a storm surge of more than 25 feet high (Britannica, 2005). Approximately 62 tornadoes were recorded as a result from the storm in eight states (Britannica, 2005). An estimated 1,830 lives were lost due to the storm, both during the initial landfall and after the hurricane died down. As seen in the aftermath, New Orleans was the hardest hit of all cities in Katrina's path (Britannica, 2005). The

levee system in New Orleans was overwhelmed completely by the storm surge and rapid rainfall and the structures failed (Britannica, 2005). An astounding 80 percent of the city was underwater due to the damaged levee and rainfall (Britannica, 2005). The whole community of New Orleans suffered tremendously from Hurricane Katrina, costing the city billions of dollars in damages and years of repair (Britannica, 2005).

Yet, one population seemed to suffer the greatest during and after Katrina: low socioeconomic families. The lower ninth ward, located in northern parts of New Orleans bordering Lake Pontchartrain, was one of the hardest hit areas by Hurricane Katrina (Mwendo & Plyer, 2005). This area also has many low-income families, many of whom were severely impacted by Katrina. Research indicates that 36.4% of the citizens living in the lower ninth ward fall under the poverty line; this number is well above the 37.9% number of individuals in the Orleans parish living under the poverty line (Mwendo & Plyer, 2005). These families, who were recorded to be mainly of African American descent who already lived in damaged homes that were unable to withstand the effects of the extreme destruction that Katrina brought to the area. After Katrina, these homes became inhabitable and were deemed "condemned" in the eyes of officials surveying the damage (Fussell & Harris, 2014). This, in turn, made low-income families unable to return to their homes and begin the search for new living quarters (Fussell et al., 2010). This resulted in a mass migration of low-income families out of New Orleans to surrounding cities and states to find housing situations that would accommodate to them and their income status (Fussell et al., 2010). This mass migration was also experienced in families who were in middle to high classes, as

they were anticipating their homes to be recovered and rebuilt (Fussell et al., 2010). Those families of middle to high income status experienced a return migration to the area as their homes were rebuilt and fixed to withstand future damage from disasters; this was not the case for low-income families however (Fussell et al., 2010). A year after the hurricane, 42% of the New Orleans population who classified as below the poverty line did not return to the area due to the destruction of their homes and the lack of resources that were available to them through their local and state governments (Fussell et al., 2010). Many of these neighborhoods stood vacant years after the hurricane due to this mass migration and many of these families experienced significant troubles outside of the affected areas because of the sudden and permanent move from their homes (Fussell et al., 2010).

The areas and families affected by hurricane Katrina were still experiencing displacement decades after the hurricane hit. A decade after Katrina hit the southern United States, only 60% of the lower income populations and wards were repaired and were at the same structural level, or better, than before the hurricane (Un-Habitat, 2007). Further, just 11 years after the hurricane only 80% of the neighborhoods were repaired (Un-Habitat, 2007). As seen through a variety of data sets and studies of the consequences that were felt by lower income individuals after Hurricane Katrina, those living under the poverty line suffered tremendously compared to those who lived above the line. The research then begets the question of how do these families experience a lack of resiliency?

Evolution of the lack of resilience for low-income populations

When Hurricane Katrina hit New Orleans in 2005, the United States began to wake up to the idea that communities need to become more prepared for disaster and make the effort to become more resilient against major disasters (Bea, 2007). The federal government began to implement new changes in frameworks, at the local, state, and federal levels, and began to make the effort to have a whole community resiliency plan (Bea, 2007). The federal government's own issues were highlighted through the response to Hurricane Katrina and forced them, along with other levels of government, to make changes that would enhance their ability to prepare for, respond to, and recover from disasters in the future (Bea, 2007). At this time, the Bush administration focused heavily on expanding the Federal Emergency Management Agency's (FEMA) capabilities and attempted to enhance disaster management, specifically at the federal level, to prevent another mass casualty event from occurring that resulted in various long-term effects (Bea, 2007). One of the major issues that was seen in the response to Hurricane Katrina was the lack of organizational structure and responsibilities given to FEMA (Bea, 2007). FEMA was unable to provide a clear and consistent response to the areas affected by Hurricane Katrina because of the lack of guidance that was provided to them by the federal government (Bea, 2007). The lack of guidance was due to the Department of Homeland Security being focused on the threat of terrorism rather than the threat of natural disasters (Bea, 2007). There was little effort and focus put on FEMA before Hurricane Katrina, which caused officials to suffer in their response efforts. The lack of guidance provided and overall confusion on when the federal government was needed or how many federal resources were needed caused the response to

Katrina to be insufficient and to be dubbed a failure on the federal government's part (Jenkins, 2008). President Bush made it his goal in the aftermath of Katrina to enhance the country's emergency management efforts (Jenkins, 2008). In 2006, Congress passed the Post-Katrina Emergency Management Reform Act (PKEMRA) to address the various issues that were presented in the preparation, response, and recovery to the disaster (Jenkins, 2008). It enhanced FEMA's responsibilities and roles within homeland security and emergency management and provided clearer guidelines that were to be followed in the preparation of and response to a natural disaster (Jenkins, 2008). The act also clarified the organizational structure of FEMA and identified ways to improve the organization's management structure (Jenkins, 2008). PKEMRA tasked FEMA to be the lead organization during emergency management situations, when federal government assistance is needed (Jenkins, 2008). The act also defined the five areas in which all communities, including the federal government and FEMA, need to strengthen to have a successful response to a disaster (Jenkins, 2008). The five areas are as follows: preparedness, protection, response, recovery, and mitigation (Federal Emergency Management Agency [FEMA], 2011a).

Whole Community Approach

The aftermath of Hurricane Katrina also seemed to enhance the idea of the "whole community". As stated by FEMA, the concept of whole community describes the coordination of all levels of government, private and public sector organizations, communities, and their leaders to better understand their needs and organize their assets to improve their ability to respond to, recover from, and mitigate against disasters (FEMA, 2011a). In 2011, a report was released by

FEMA outlining the principles and foundations of the whole community approach to guide communities and the federal government's actions before, during, and after a disaster to help create an effective response.

However, despite the evolutions in emergency management, it is unclear if the low-income populations in communities have seen any of these improvements materialize for them. At-risk populations are those who are at the highest risk to experience severe impacts after a disaster occurs due to their lack of resilience; low-income populations make up a large majority of the at-risk populations in communities. Many of these emergency management evolutions are not conducive to low socioeconomic individuals and families and often unknowingly fail to recognize the unique needs of this population. One may believe that the idea of whole community approach or an act to broaden and clear up the abilities of the national emergency management agency may help to broaden their horizons to assist at-risk populations, specifically low-income populations.

However, research has indicated that despite the goals of the approach to include the "whole" community, many individuals and populations within the community are not incorporated into these practices and the implementation of such approach (Grimes and Serino, 2016). Grimes and Serino state that the whole community approach often ignores the needs of certain individuals who may not be a part of the top level of society (2016). This includes, but is not limited to, those of higher income status, affluent neighborhoods, non-disabled individuals, and those with higher levels of education (Grimes and Serino, 2016). This leaves those who are identified to have socially vulnerable factors, such as low education

levels, varying races, disabled people, and, in relation to this thesis, low socioeconomic status, to be on a lower level in society and be ignored by local and state government officials when it comes to the integration of the whole community approach (Grimes and Serino, 2016).

Furthermore, at-risk populations often have exhibited? a lower level of trust to government officials and other agencies who plan to integrate the whole community approach and other efforts in disaster management (Grimes and Serino, 2016). Socially vulnerable populations, specifically those who live under the poverty line, often do not trust their local and state governments or various organizations attempting to help these populations because the help that is supposedly being given does not meet all the needs for these families (Grogan et al., 2018). Individuals of lower income often do not trust higher organizations because they feel as though they have not been given the same number of opportunities as those as higher income individuals and families; this begins to affect the relationship between these populations and government agencies (Grimes and Serino, 2016). This lack of trust affects the overall relationship between certain populations and the government; officials then, either subconsciously or consciously, ignore the needs of those who are socially vulnerable (Bálint and Boda, 2014). As a result, the whole community begins to ignore the "whole" community and only include those at the tops level of society, which results in a failure of the approach that aims at involving all populations in a community (Bálint and Boda, 2014). In summary, questions remain regarding how well the "whole community" approach truly helps those most in need.

Robert T. Stafford Act of 1988

Moreover, the Robert T Stafford Act of 1988 initiated major changes in disaster management. This act provides the president the ability to declare an emergency declaration or a major disaster after request from the governor of that affected state (FEMA, 2021). Firstly, local government officials and first responders must assess the damage done to their communities, while elected officials activate the Emergency Operations Center (EOC), in which all actors relating to the disaster gather to spread information and discuss emergency operations for response and recovery (FEMA, 2021). The localities will then notify the state officials and governor for further assistance and further activation of the state EOC (FEMA, 2021). Only then can the governor request the president to declare an emergency declaration or major disaster and for the use of federal resources, if their resources are insufficient to deal with the scope of the disaster (FEMA, 2021). The Stafford Act does require FEMA regional agents and the administrator to evaluate the damage that the governor has described and determine if the request is valid; the administrator than recommends, through the Department of Homeland Security Secretary that the president declare an emergency (FEMA, 2021). Federal resources and response teams will then be deployed to the affected area to help in the response (FEMA, 2021). The Stafford Act broadened the abilities of local and state governments to respond to disasters on their own until their resources are deemed inadequate to deal with the effects of the emergency (FEMA, 2021). This is also reflected in the Tenth Amendment, which states that powers are delegated to the states and not to the United States (Cornell Law School, n.d.).

Despite the rather reactive approach that the federal government is expected to take during disasters to allow local and state officials coordinate the response efficiently, there are gaps in the Stafford Act that challenge local and state governments and their constituents. Often, local and state governments are unable to fulfill the needs of low-income families after a disaster and struggle to provide them the resources that are needed for the to recover (FEMA, 2021). Despite local and state government officials having the accessibility to request federal assistance, low-income families are often further ignored when federal government agencies step in (FEMA, 2021). These families, along with various other at-risk populations, are sometimes overlooked by federal government officials in disaster response as they are more concerned with the general response and recover for the whole community rather than individual populations or families (FEMA, 2021).

Physical Effects on Low Income Families

Furthermore, there are various other effects that low-income families experience after a disaster occurs due to their lack of resilience. One of the major effects that low-income families experience is high stress levels. Studies have shown that low-income households experience a much higher percentage of stress related to the lack of access to certain resources needed during disasters (Substance Abuse and Mental Health Services Administration [SAMHSA], 2017). Often, these stressors occur before the disaster occurs and are enhanced during emergency situations (SAMHSA, 2017). Examples of these stressors include, but are not limited to, housing structure, food, medical care, evacuation, communication and technology, and financial assistance (SAMHSA, 2017). After

Hurricane Sandy hit the east coast in 2012, low income and low socioeconomic families reported significantly more stress related to food access than high income households; lower income households were 4.5 times more likely to leave their area to get food than were higher income households (SAMHSA, 2017). These stressors and the lengths at which individuals will go to find resources also leads to an increased risk of depression and distress. The Substance Abuse and Mental Health Services site research conducted after Hurricane Ike in 2008 found enhanced levels of depression among low socioeconomic families (2017). In a study of 658 adults living in affected areas who exhibited lower levels of household income, researchers found that these individuals were more likely to be depressed than their higher income counterparts (SAMHSA, 2017). The authors attribute these higher levels of depression to the stressors identified above and to the underlying vulnerabilities that low socioeconomic families experience before, during, and after a disaster (SAMHSA, 2017).

Individuals living under the poverty line were also seen to have higher rates of depression compared to higher income individuals. Ahern and Galea conducted a study in New York City to determine the rates of depression among low-income families and high-income families after a natural disaster occurred (2006). They wanted to determine whether individuals who lived under the poverty line experienced a similar, higher, or lower rate of depression in the aftermath of a disaster due to the experiences they witnessed after the 9/11 attacks (Ahern and Galea, 2006). They surveyed the two groups six months apart to determine if the depression rates would change with change time. In both instances, the lower income families and individuals reported to have

significantly higher levels of depression compared to higher income families and individuals (Ahern and Galea, 2006). The researchers attributed these higher depression levels to the generally low-income level that were experienced, along with the lack of security and resources available to them in the aftermath of the disaster (2006). Lower income families felt significantly insecure in the aftermath of a disaster and felt as though they were depleted of resources that would assist them in the response and recovery of disasters (Ahern and Galea, 2006). Ultimately, these families felt unable to withstand the effects and properly recover because they were unable to receive or obtain key resources that would have assisted them in the response; the families stress levels are then significantly increased causing their depression levels to increase as well (Ahern and Galea, 2006).

Why is this?

There are various reasons for why low income-families experience such a severe impact due to disasters that have been identified. These reasons involve many approaches that explain why low-income families experience such a low level of disaster resiliency and struggle to restore their livelihoods after a disaster. Following the identification of the reasons why discrepancies exist in disaster resiliency, improvements can be made to develop resiliency capabilities for low socioeconomic families.

Social Vulnerability

One of the main reasons for why low-income communities suffer more than the rest of their communities before, during, and after a disaster is explained by the concept of social vulnerability. Despite the federal government

focusing on enhancing resilience and response for all individuals in their respective communities through various frameworks, procedures, and guidelines, there lacks an emphasis on tailoring their resiliency efforts towards those who exhibit a higher vulnerability to severe impacts to a disaster (Phillips et al., 2017). Identifying and mapping social vulnerabilities in communities is one of the most forgotten and ignored pieces by federal government organizations in the enhancement of their community's resilience (Phillips et al., 2017). The concept of social vulnerability can be defined as the characteristics of an individual, group of individuals, or a whole community, in regard to their capacity to anticipate, cope with, and recover from the effects of a disaster (Phillips et al., 2017). Social vulnerability considers various factors that may play a role in how individuals are able to respond to, recover from, and cope with the effects of a disaster at every level (Phillips et al., 2017). These factors are as follows: gender, education, household composition, race and ethnicity, housing tenure, age, and poverty (Phillips et al., 2017). One of the more debilitating social vulnerabilities that inhibit individuals from being resilient from disasters is poverty or level of income (Phillips et al., 2017).

Specifically for low socioeconomic families, it helps to explain the stratified conditions in which they experience disproportionate effects. Flanagan et al. explain that because the poor families in communities do not have a comfortable income or availability to assets, they are more likely to suffer severe effects during a disaster (2011). These areas with less income are more likely to experience an increased rate of injuries, household and property damage, and other various consequences that may result from disasters that the higher income

individuals in the community are more able to cope with (Flanagan et al., 2011).

Moreover, low-income families' financial instability makes them much more

susceptible to severe property damage due to the lack of homeowner's insurance

or renter's insurance that they possess (Flanagan et al., 2011). According to

Flanagan et al., despite these lower income households representing a larger

proportion of total household assets, these properties are much more expensive

to replace and repair leaving these homes damaged or destroyed for months or

years (2011).

The concept of social vulnerability helps to explain the disparities in

response for these at-risk populations. Masterson et al. describes the varying

social factors that influence the resilience and response efforts to disasters for at-

risk populations and specifically for low-income families (2014). The authors

state that certain factors of society, or social vulnerabilities, such as race and

ethnicity, income and poverty, education, and age, lead to differences in capacity,

information, power/control, and resources, which all result in differences in

warning, damage, preparedness, evacuation, and recovery (2014). All of these

factors play into the overall resiliency of individuals (Masterson et al., 2014).

Additionally, social vulnerability helps to explain the stratified conditions in

which these at-risk populations and those considered not at-risk compete for

limited resources that will increase their resiliency (Masterson et al., 2014).

However, the individuals and families who present to be not at-risk have more

opportunities to gain these resources, leaving little for the families and

individuals classified as at-risk (Masterson et al., 2014). The disempowered

populations are then left with little to no resources to mitigate against, respond to, and recover from disasters (Masterson et al., 2014).

Educational disparities

Further, on the most compelling reasons for why low socioeconomic families lack a strong resilience towards disasters is due to the lack of education and access technology for these families. General education is key in understanding disasters, their effects, and what actions need to be taken to prepare individuals for such an emergency. A basic understanding of disasters and their effects can empower individuals with the knowledge that enables them with the ability to cope with, anticipate, and recover from disasters. General knowledge up to an advanced understanding of disaster management all begins in the classroom and can include individuals having a bachelor's degree, master's degree, and further training. However, low-income families experience major disparities in education that play a role in their resiliency. The readiness of poverty-stricken children in school requires various factors that these children often lack, due to the absence of finances that enable them to meet these factors (Bovaird et al., 2007). These factors include physical well-being, appropriate motor skills, social knowledge and competence, age-appropriate skills, and cognitive skills (Bovaird et al., 2007). These factors often have correlation with the knowledge and the understanding of disaster management. When individuals lack the general social and cognitive skills, they will be less likely to have the knowledge that will empower them to take action that will reduce their vulnerability to hazards (Dowlati et al., 2019). Dowlati et al. (2019) explains that disaster education and information sharing of necessary preparedness,

prevention, and recovery actions is key in reducing individuals' vulnerability to disasters and their effects . Specifically for the most vulnerable populations, such as low-income families, disaster education is key in improving their resiliency and providing them with the comprehensive knowledge protect themselves and their property (Dowlati et al., 2019). However, as stated previously, these individuals often lack the educational resources and skills to obtain basic level knowledge of disasters (Dowlati et al., 2019). Low-income students aged 16-24 are seven times more likely to drop out of high school and/or college than students who classify as medium to high income (DoSomething.org, 2015). These individuals are then at higher rate of not having a basic level of key developmental and educational skills that enable them to understand disasters, their effects, understanding the language of what officials are saying, or being able to participate in the trainings because of a lack of understanding.

Furthermore, low-income families are less likely to have the technological resources that provides them with key disaster management information. Through the years, as technology has become more advanced, so has the spread of disaster information through these channels (Sakuraia and Murayamab, 2019). Social media is an effective way to spread information about what is occurring during disasters and what resources are available for individuals to learn during the response and recovery phase (Sakuraia and Murayamab, 2019). During Hurricane Sandy, it was reported that approximately 800,000 photos and details about resources were shared through social media outlets, such as Instagram, Twitter, and Facebook (Sakuraia and Murayamab, 2019). However, low-income families do not have the opportunities to receive such information and details

due to their lack of availability to technology (Sakuraia and Murayamab, 2019). The Pew Research Center found that low-income families have a significantly harder time obtaining technology, such as phones, computers, and tablets with WiFi, than higher income individuals and have lower levels of technology adoption (2021). In a survey of adults with various income levels, it was determined that only 23% of adults who had an annual income of less than $30,000 had access or owned smartphones, desktop or laptop, home broadband WiFi, and tablet computer, compared to 63% of adults earning $100,000 or more having access to all the above (Vogels, 2021). Conversely, the number of adults who rely on smartphones to get information and go online has doubled since early 2013 (Vogels, 2021). However, many of these adults cannot get information, such as disaster information or other key information, because they cannot afford or do not have access to these channels. The divide between household income levels and the availability of technological channels greatly effects their resiliency towards disasters and the knowledge that can receive about disaster management efforts and resources. Low-income families will be unable to receive key disaster information being sent through social media, emails, texts, and calls if they do not have the proper technology. The absence of knowledge about impending disasters or resources to assist individuals in the response and recovery phase for low-income individuals put them significantly more at risk than individuals who have more access to such technologies and decreases their resiliency towards disasters and their effects.

Poor quality housing

Poor quality housing is one of the main issues that negatively effects low-income family's resiliency towards disasters. A large majority of low-income families live in older homes that have weak structures and various structural issues affecting the quality and safety of the house (Ross, 2013). The reason behind this is due to the affordability that older, weaker homes bring to families who cannot afford newly manufactured homes (Ross, 2013). This type of housing puts low-income families at a significant risk for severe damages from natural disasters (Ross, 2013). Ross explains that by lower income families living in structurally weak homes and with prices for repairment services becoming more expensive due to inflation, these families will be less likely to have access to certain resources that will protect their property and infrastructures along with protecting themselves in the event of a disaster (2013). The Center for the Study of Traumatic Stress also notes that low-income families are more likely to live in environmentally vulnerable areas, such as floodplains, due to the low cost of living which puts them at a greater risk for severe effects (n.d.) Despite housing being one of the largest issues for why low-income families experience a lack of disaster resiliency, addressing this issue is extremely difficult for government officials. Ross explains that there is a shortage of affordable housing units by the federal government (2013). Additionally, there is only a small percentage of low-income families who qualify for federal housing and who also received these resources; it is projected that only one and four families who receive federal housing assistance (Ross, 2013). As the housing issues continue to grow and shortages continue to occur on the federal government side, more low-income families well be forced to live in their same rundown homes or must live in homes

that are not equipped to deal with disasters (Ross, 2013). More and more families will resort to living in manufactured homes or mobile homes; however, these homes are extremely vulnerable to experiencing severe damage and destruction during disasters (Ross, 2013). Many of the deaths during tornadoes comes from mobile homes which, if federal housing assistance becomes more difficult through the years call mom more low-income families will have to live in these types of homes.

In regard to long-term recovery, there are other various issues that affect low-income disaster victims. After a disaster occurs, low-income families struggle to receive assistance from the federal government to repair their homes or to move to a different living situation until a permanent situation can be attained (Ross, 2013). Furthermore, low-income families are at a lower rate of homeownership compared to high income households (Ross, 2013). It is estimated that low-income people make up 44% of the national homeownership rates while higher income individuals make up the other 56% of home ownership rates (Ross, 2013). The other individuals of low-income status are often renters of homes which creates more issues with obtaining federal assistance if they do not have renters' insurance or if they do not have the ability to make certain changes to their homes if they are not given permission by the renters themselves (Masterson et al, 2014). Oftentimes, funding that goes to homeowners and renters are undervalued in federal assistance funding, so for the low-income individuals who rent their homes, they are less likely to receive funding to recover their homes and protect from future disasters (Ross, 2013). There are also issues with affordable housing in general for low-income families. When poor quality

homes are repaired to minimal safety standards, the price begins to climb and proves to be much more than what low-income families can afford (Ross, 2013). As such, low-income families are then unable to find affordable housing that is also safe and will protect them during a disaster (Ross, 2013).

Ross states that researchers have called the housing issues during the recovery phase of a disaster the second disaster because lower income individuals who are particularly renters have little to no opportunities to federal housing assistance in which they can live in permanently or temporarily (2013). If the homes of families are structurally weak and cannot be protected towards natural disasters, the likelihood of injuries, death, and hundreds of thousands of dollars of damages increases significantly (Ross, 2013). Housing assistance has been seen to favor middle- to high-class victims who are particularly homeowners and have more access to receive federal funding and assistance to repair and further protect their homes (Ross, 2013).

Lack of Access to Funding Post-Disaster

Finally, the lack of funding for low-income families, along with other at-risk populations significantly affects their resiliency towards disasters. FEMA has various programs that are put into place that for individuals to apply for before and after a disaster occurs. These include, but are not limited to, individual assistance, individuals and households' program, disaster unemployment assistance, and the mass care and emergency assistance (FEMA, n.d.). While there are various programs that are available for individuals to receive to enhance their capacity to cope with disasters, many of these are extremely difficult for low-income families to obtain. While investigating the links to the funding

opportunities, many of them had a checklist and lists of who exactly qualifies for these grants or loans. However, many of these are difficult to navigate and hard to identify. As stated previously, individuals of low socioeconomic class are uneducated or do not have access to technologies (see section "Educational Disparities"). Because low-income families are more uneducated than most populations and struggle to have access to technology, it is difficult for them to go on these websites and apply for these funds.

Furthermore, despite these funds being marketed towards those who struggle during disasters, these families struggle to receive this assistance. An op-ed piece published in the National Public Radio (NPR) discussed the difficulties that low-income families experienced when trying to obtain FEMA assistance funds. The publication noted that FEMA conducted their own analysis of the aid submissions between 2014 and 2018 (2021). The findings concluded that low-income families did in fact struggle to obtain FEMA assistance funds to enhance their resiliency (Hersher & Kellman, 2021). One of the findings in the report was that the poorest home renters were approximately 23% less likely to receive housing help before and after a disaster occurs that would improve their housing structures and protect their property from devasting impacts (Hersher & Kellman, 2021). Furthermore, poor homeowners received half as much assistance from FEMA to rebuild their homes as compared to medium to high income homeowners (Hersher & Kellman, 2021). FEMA was also twice as likely to deny housing aid to low-income families because the FEMA agents who would assess the damage in the aftermath of a disaster deemed the damage to these homes inadequate (Hersher & Kellman, 2021). Many FEMA agents deem the damage of

homes to low-income families inadequate because they believe the homes will not be able to be effectively repaired or that the damage was not due to the disaster that just occurred (Hersher & Kellman, 2021). Unfortunately, FEMA has not discussed these findings further or give an answer as to why this occurs (Hersher & Kellman, 2021). Low-income families clearly struggle to receive funding from FEMA despite it being marketed towards these families which greatly affects their ability to increase their resiliency towards disasters.

Improvement for the Future

Despite the various issues that surround resilience and response for low-income communities, there are areas that can be improved for the future to help low-income communities overcome societal and organizational issues that affect their ability to be resilient towards disasters. Many of the following improvements have already been integrated into communities and have been successful. However, they should continue to be researched and initiated in more communities to improve the resiliency of all communities.

Enhancement to Whole community approach

Firstly, local, state, and federal governments need to enhance the whole community approach to include all populations and families that are in their respective communities. As discussed previously, the federal government, in cooperation with local and state governments, have worked to enhance the application of the whole community concept in disaster management, specifically disaster resiliency for the whole community. However, it has been clear that low socioeconomic populations have not been accounted for in this concept. As stated previously, the whole community approach is when community leaders, citizens,

emergency managers, and government officials all recognize and assess the needs of all community members to understand what actions are needed to strengthen their capabilities during a disaster (FEMA, 2011b). However, the whole community approach often ignores the lower-income families and other at-risk populations which results in major gaps in their capabilities to deal with disasters and their effects. While this approach has lacked the full effectiveness in its' implementation, with improved understanding and implementation, there are various benefits that can occur if the approach encompasses the whole community, as it states. These benefits include, but are not limited to, empowerment and integration of resources throughout the community, shared understanding of community needs, enhancement of community relationships, and, most importantly, greater resiliency at the local, state, and federal levels (FEMA, 2011b). In order to create these benefits that include at-risk populations, particularly those of lower income, FEMA in conjunction with other agencies must strengthen their practice of the themes that are identified in the Whole Community Approach framework (2011b). The themes identified are as follows: understand community complexity, recognize community capabilities and needs, foster relationships with community leaders, build and maintain partnerships, empower local action, and leverage and strengthen social infrastructure, networks, and assets (FEMA, 2011b).

Based off the research presented, there are two main themes that need to be addressed and implemented to improve the resiliency of low-income families. Firstly, FEMA and other corresponding agencies must recognize community capabilities and needs (FEMA, 2011b). This is key in supporting and enabling

local and state government and NGO actions to enhance the whole community's resiliency (FEMA, 2011b). FEMA's report on the whole community explains the premise for which community's need will be identified and addressed:

> A community's needs should be defined on the basis of what the community requires without being limited to what traditional emergency management capabilities can address … The community should also be encouraged to define what it believes its need and capabilities are in order to fully participate in planning and actions (pg. 8).

Local officials need to ask each population and individual in their community about what their need the most to protect themselves in disasters and what the government and other organizations can do for them in order to strengthen the whole communities' resilience towards disasters (FEMA, 2011b). Officials should engage each individual, specifically at-risk populations, in discussions about what the actual needs are of the individuals in the community rather than simply estimating what the needs are of the community (FEMA, 2011b). By engaging in discussions and communications between the entire community and emergency management practitioners, officials will be able to identify the actual needs and capabilities of the populations within their communities and plan actions that will address the needs of the whole community to enhance their resiliency (FEMA, 2011b).

Engaging in Partnerships

Furthermore, a key action that should be taken by government officials to enhance the whole community approach that incorporates all families and populations in engaging and building partnerships between various organizations

and businesses. Local and state governments agencies should build relationships with organizations in the communities that have shared interests and strong relationships with their constituents to reach every individual in their community (FEMA, 2011b). Governments agencies and organizations should maintain strong public-private partnerships to enhance their actions for the preparedness, response and recovery phases of disaster management (FEMA, 2011b). Many of these partnerships would include organizations and businesses that have resources that would provide the government with specific resources that they may not have or have difficulty obtaining to assist individuals during disaster times (FEMA, 2011b). An example of a partnership that could be built and maintained would be with building companies and contractors to develop building standards for houses in the communities, specifically for the houses that are weak or already damaged, in order to enhance housing and protect individuals during hazard (FEMA, 2011b). Other partnerships may include faith-based organizations, hardware stores, supply chain components, animal control agencies, chambers of commerce, non-profit organizations, and advocacy groups (FEMA, 2011b). Many of these organizations and partnerships also have strong relationships with individuals in the communities and would better understand the needs and capabilities better than governments may be due to their close proximity and experience with people in these areas (FEMA, 2011b). Maintaining current relationships and building new relationships will help to improve new relationships and enhance the resiliency for all individuals (FEMA, 2011b).

Needs-Based Approach

This is similar to the needs-based approach that can be applied to disaster management for low-income communities and families. The needs-based approach is when community organizations and government agencies specifically identify the needs of low-income families through interviews, communications, and engagements (Adu et al., 2015). These could include any needs that would help improve the capacity of these individual to manage the effects of hazards (Adu et al., 2015). Adu et al. explains that these needs will most likely fall under one or more of the five needs as explained by Maslow's theory of human motivation, which are survival needs, safety or security needs, empathic needs, esteem needs, and self-actualization (2015). In order to become mor resilient towards disasters, low-income families must have their needs met in all five categories; the needs-based approach aims at doing so (Adu et al., 2015). This approach has been successful in its implementation thus far (Adu et al., 2015). This approach also helps to enhance the identification of social vulnerabilities, as officials will be able to map those who have a larger amount of needs compared to the rest of the community which will allow for them to target resources to areas with more needs and enhance their capacities to deal with disasters (Adu et al., 2015).

Grassroots Community Engagement Approach

Another improvement that needs to be made to enhance resiliency for low-income populations and families is the enhancement and integration of the grassroots community engagement approach. A main factor that can be attributed to at-risk populations' vulnerability to disasters is the lack of risk communication (Barber et al., 2012). These types of communications are integral

in informing people of the risks of disasters, health, safety, and the environment and information about actions that should be taken during emergency situations (Barber et al., 2012). However, many low-income families struggle to receive this information; the lack of communication for low-income families decreases the resiliency of families and makes them extremely vulnerable to experience severe effects (Barber et al., 2012). In order to improve resiliency for these families, the grassroots engagement approach needs to be implemented (Barber et al., 2012). A grassroots system is a partnership between organizations such as faith-based, community-based, and other various business organizations who serve the community and low-income populations that work with emergency management practitioners to enhance risk activities during disaster situations (Barber et al., 2012). This approach provides grassroots organizations with the ability to deliver guidance to low-income families about disaster information, support services, and resources are available to these families during disaster times and engage these at-risk families in disaster preparedness, response, and recovery (Barber et al., 2012). Many of these organizations often have strong relationship with at-risk populations due to the services and care that these types of organizations provide to populations such as low-income families (Acosta et al., 2011). At-risk populations trust the grassroots organizations much more than they trust governmental organizations which enables faith-based organizations, community-based organizations, and other businesses serving low-income families to effectively spread risk communications to low-income families (Barber et al., 2012). Because of this, low socioeconomic families will be far more likely to follow the instructions and information being communicated to them about

necessary actions that should be taken during a disaster and what resources are available for them in the preparedness, response, and recovery phases of disaster (Barber et al., 2012). Local and state government officials and emergency management practitioners will gather key disaster information regarding the risks and available resources which will then be communicated to grassroots organizations who will spread this information and instructions to low-income families who will follow such instructions to protect themselves and their properties (Barber et al., 2012). With improved risk communication between grassroots organizations and at-risk populations, low-income populations will be able to obtain key information about the phases of disasters that will enhance either resiliency (Barber et al., 2012).

Pre-event planning

Finally, pre-event preparedness is key in enhancing the resiliency of low-income families towards disasters. The improvement of the preparedness capabilities is one of the key improvements that can be made for low-income families and other at-risk populations who may lack the knowledge or resources that is needed to be resilient towards disasters. Local and state governments must be able to identify the needs and capabilities of these communities and families before the disaster strikes so these families will not be as affected by the impacts of a disaster in the aftermath. Enhance preparedness methods will ultimately increase individual's ability to cope with and anticipate disaster more effectively which will enhance their overall disaster resiliency. This can be done through integrating all the approaches identified above. Identifying the needs of the community, improving information sharing and education about disasters,

and improving preparedness (along with other aspects of the disaster management cycle) will all help to improve the preparedness of low-income families. Through the enhancement of pre-event planning and actions, there will be an overall enhancement of resiliency in other aspects of the disasters and will protect low-income families from experiencing severe impacts.

Final Conclusions

As I began my research into why and how low-income families experience a lack of resiliency towards disasters and what improvements could be made for the future, I came to the determination that was little research on the plights that are felt by low-income families during disasters. The troubles and reasons behind these issues has not been well documented by researchers or emergency managers. Much of the research that has been conducted has been in countries outside of the United States or is decades old, making the data found in the studies outdated and unreliable. Through the completion of this thesis, it was concluded that in order to improve disaster resiliency for all communities, at-risk populations and specifically low socioeconomic families' struggles must be accounted for. Disasters and their impacts will only continue to cause significant physical and mental damage to individuals and communities and resiliency will never be achieved.

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