Grant Proposal: Impact of Climate Change on People with Disabilities

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Summary, Background, and Original Data

Summary

Climate change is one of the most pressing issues of our time and is already impacting the lives of millions of people. One population that is disproportionately affected is people with disabilities. People with disabilities are more vulnerable to the effects of climate change due to various factors, including reduced access to resources, limited mobility, and a greater reliance on institutionalized support systems (United Nations, 2020). The impact of climate change on people with disabilities has received increased attention across several disciplines in recent years, including the public health field. How can the community and policymakers ensure this vulnerable population has access to healthcare, food, housing, water and sanitation, education, employment, and the community in the face of a changing climate?

The aim of this study was to develop a better understanding of how the social determinants of health can be used to support climate change adaptation and build resiliency for individuals with disabilities. This study evaluates how individuals within the disabled population respond to the effects of climate change. The findings are derived from secondary data and qualitative research with two reviews of reports and two reviews of primary research studies: one report on climate change and one on disabilities, and nine-point reviews on two primary research studies looking at climate change and its effects on people with disabilities.

Key Terms: Climate change, climate change adaptation, disability, extreme weather mental health, physical disability, public health, social determinants of health, social networks, social relationships, social support, well-being. *(Word Count 247, Maximum of 250 words)*

Background

Climate change has far-reaching consequences that affect everyone, but the effects are more severe for those with disabilities. Although overall deaths related to natural disasters have declined over the last 100 years, natural disasters have increased (Ritchie et al., 2021). As the climate changes and natural disasters increase, heat-related illnesses, respiratory problems, injuries, infectious diseases, mental health, well-being, and even fatalities caused by extreme weather will disproportionately impact those with disabilities like pre-existing health or mobility issues (US EPA, 2022).

People with disabilities are particularly vulnerable to the effects of climate change. The worldwide mortality rate for people with disabilities due to natural disasters is as much as four times higher than those without disabilities, as many lack access to necessary resources like reliable information, early warning systems, and transportation (Stein & Stein, 2021). In addition, negative attitudes from institutions and people can further increase their vulnerability.

One in 4 adults in the United States has a disability that makes them vulnerable to climate change (Centers for Disease Control and Prevention, 2020). In 2005, the year of Hurricane Katrina, there were 1451 deaths and 1834 injuries in the United States related to extreme weather conditions (National Weather Service, 2007). This data does not specify how many of these individuals had a disability. However, out of 986 deaths directly attributed to Hurricane Katrina,

103 were in nursing home facilities and were likely individuals with some disability (U.S. Global Change Research Program, 2016). *(Word Count 242, Maximum of 250 words)*

Definitions of Key Terms

Climate change: a long-term change or shift in weather patterns like increasing temperatures, droughts, fires, destructive storms, floods, and extreme weather (United Nations, 2022). Other deleterious effects include rising sea levels, melting glaciers, and reduced biodiversity.

Climate change adaptation: the process of adjusting to current or expected future climate conditions in a way that builds resiliency and reduces vulnerability to the negative impacts of climate change (US EPA, 2021).

Disability**:** defined by the Americans with Disabilities Act as "a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment," (ADA, 2022).

Extreme weather**:** unusual and severe weather conditions occur beyond the normal range of what is expected for the area and time of year (Institute of Medicine (US) Forum on Microbial Threats, 2011). This can include unusually strong storms, heavy snowfall, intense ice storms, flooding, powerful hurricanes, intense winds, and extreme heat waves.

Mental health**:** the state of one's psychological and emotional wellness.

Physical disability**:** a physical disability is someone who has a physical condition that significantly hinders their ability to do everyday activities, has documentation of such a condition, or is viewed as having such a condition (ADA, 2022).

Public health**:** the practice of maintaining population health by preventing disease, extending life expectancy, and promoting physical and mental well-being through healthy living habits, such as proper sanitation, personal hygiene, and the control of infectious diseases. (Bryant & Rhodes, 2018)

Social determinants of health**:** health determinants in the environment where people are born, live, work, grow, learn, socialize, and exist in any capacity that affects their health. The five main SDOH are economic stability, education access and quality, healthcare access and quality, neighborhood and environment, and social and community context (Office of Disease Prevention and Health Promotion, 2022).

Social networks: a system of people connected by personal relationships.

Social relationships: any relationship between a minimum of two people, superficial or profound.

Social support**:** physical and emotional assistance provided by a network of social relationships.

Well-being: a state of physical and emotional comfort and satisfaction.

(Word Count average of 30/term, Maximum of 100 words per term)

Review of a Report on Climate Change

https://health2016.globalchange.gov/low/ClimateHealth2016_FullReport_small.pdf

This report examines the impacts of climate change on human health. It finds that climate change has a wide range of adverse health outcomes on the human population, from the spread of infectious diseases to mental health issues, as well as an increased risk of mortality and morbidity due to extreme weather events and air pollution. It highlights that specific populations are more vulnerable to the health impacts of climate change.

One of the key findings of this report is that the social determinants of health influence health risks associated with climate change. Social factors, such as income, education, and access to health care, can have an essential role in how individuals and communities respond to climate-related health risks. The social determinants of health can amplify, reduce, or otherwise modify how climate factors influence health risks.

Review of a Report on People with Disabilities

https://www.cdc.gov/mmwr/volumes/67/wr/pdfs/mm6732a3-H.pdf

This report by the Centers for Disease Control and Prevention (CDC) on disabilities is an overview of the current state of disability in the United States as it relates to healthcare access and economic stability. It also provides information on the characteristics of people with disabilities, such as age, gender, and race/ethnicity. It offers data on various types of disabilities and the effects these disabilities have on people's health and access to healthcare. Overall, this report provides an in-depth look at the disparities between the disabled and non-disabled

populations in the United States and offers valuable information to determine what areas have the most significant inequalities.

Primary Source Article Review

https://cjds.uwaterloo.ca/index.php/cjds/article/view/58/79

1. What was the purpose of the study?	The goal of this study is to investigate how climate change, energy shortages, and water and sanitation insecurity affect people in different regions of the world, and how it affects people with disabilities.
2. Who did the author use in the study?	There were 242 survey respondents. Most were Canadians between 18 and 65 years. The majority were university students.
3. How did the study produce data for the research variables?	The study authors used a qualitative sampling technique called convenience snowball sampling where participants are identified by word-of-mouth referrals from initial participants (Simkus, 2022).
4. What were the major steps (sequential) in performing the study?	The major steps were to develop a survey, get ethics approval, recruit respondents, and analyze data.
5. What were the results?	Respondents felt that people with disabilities in high-income countries would be less impacted by climate change than indigenous people, ethnic minorities, and other social groups. Respondents felt that people with disabilities in low-income countries would be similarly impacted as other social groups.
6. What does the author conclude?	The authors conclude that although respondents recognized that climate change would impact the disabled community, public

	policy on climate change and research must be more inclusive for people with disabilities.
7. What cautions do you raise about the limits of this study?	Caution should be exercised when reviewing this study because only a few of the 43 survey questions were centered on people with disabilities. Hence, the data gathered about climate change and disability was a side effect rather than the focus.
8. What cautions does the researcher raise about interpreting the study?	Cautions brought up by the researchers are that only a few of the 43 survey questions were centered on people with disabilities, the authors did not define disability to the respondents, and people with disabilities were not sought out to participate in the study.
9. What particularly interesting/valuable things could a reader learn from this study?	A take-home message would be that respondents felt that those with disabilities were not going to be as impacted as other minority social groups. The reality is that even in high-income countries, people with disabilities are at risk of heat and water-related illness, mental health issues, injury, and death (US EPA, 2022).

Primary Source Article Review

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6858313/

1. What was the purpose of the study?	This research aimed to investigate rehabilitation professionals' knowledge and opinions on how natural disasters, climate change, and sustainability affects their clients with spinal cord injuries (SCI).
2. Who did the author use in the study?	The authors used rehabilitation professionals in the field of SCI to collect data for their research.

3. How did the study produce data for the research variables?	The study produced data for the research variable through an online survey distributed internationally.
4. What were the major steps (sequential) in performing the study?	The major steps to perform this study was for the authors to first develop the survey, distribute it to various international healthcare facilities with professionals who specialized in caring for patients with SCI, and then to analyze the data using descriptive statistics and a chi-square test for association.
5. What were the results?	Over half of respondents felt climate change impacted their patient's health and well-being with respondents from North American being less likely to report an impact on their clients due to climate change.
6. What does the author conclude?	The author concludes that further information and education is needed.
7. What cautions do you raise about the limits of this study?	The study was limited to SCI, and therefore did not consider the many other types of disabilities that affect how individuals respond to climate change.
8. What cautions does the researcher raise about interpreting the study?	The researchers reveal that one researcher has a conflict of interest. There is also a concern that because North American respondents were significantly less likely to feel climate change had impacted their client's health than European and Asian respondents there may be a sampling bias. This discrepancy could also be a result of differing perceptions of climate change.
9. What particularly interesting/valuable things could a reader learn from this study?	It is interesting that respondents from North America were significantly less likely to perceive that the climate change impacted

	their client's health than participants from Europe or Asia.

Conclusion

The evidence reviewed here seems to suggest that climate change increases mortality and morbidity and that health risks associated with climate change are influenced by the social determinants of health (U.S. Global Change Research Program, 2016). Another report shows significant disparities regarding the social determinants of health between those with and those without disabilities (Okoro et al., 2018). Overall, these reports illustrate how people with disabilities are at significant risk of the impacts of climate change. This review has also demonstrated the shortcomings of the perceptions of people in the community, including those working directly with people who have a disability. Many felt that climate change would not have a significant impact on the disabled community in the United States, which conflicts with the data from the reports and indicates a need for further community education and outreach.

(Word Count 982, Maximum of 1000 words)

Original Data Section

Statement of quantitative research question (RQ1)

This research seeks to address the following questions:

1. How has the increased frequency of extreme weather events and environmental injustices impacted individuals with disabilities and what actions can be taken to develop climate change adaptation and improve resiliency among this population?

Methods Used

To answer research question one, researchers determined how extreme weather affects individuals and their communities. Then they analyzed data on the disparities between individuals with disabilities and those without disabilities. Researchers collected and evaluated data sets on extreme weather events and the impact these events have on individuals and communities with a focus on the social determinants of health. Researchers also collected and analyzed data on the disparities in the social determinants of health between individuals who have a disability and individuals who do not have a disability. Researchers then extrapolated the impact of climate change on the social determinants of health for individuals and their communities to how those impacts affect vulnerable populations who experience disparities in the social determinants of health due to disabilities. With a thorough understanding of how climate change affects the social determinants of health for individuals coupled with in-depth knowledge of the educational, economic, health, housing, and social disparities between those with and without disabilities, researchers determined the impacts climate change has on the disabled population.

Introduction of Data Set One

https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf

This data set published by The United States Environmental Protection Agency evaluates how climate change impacts socially vulnerable populations by looking at income, race, age, and education level. According to the report, individuals in the lowest income bracket are 25% more likely to reside in areas that will experience the most significant decrease in labor hours due to climate change related rising temperatures. Minorities are 41% more likely to reside in areas with projected flooding due to rising sea levels. People who have not completed high school are more likely to inhabit areas where temperatures are predicted to rise to dangerous levels, potentially resulting in fatalities. Individuals 65 and older were not affected by the chosen parameters of this data set relative to their younger counterparts because they are not any more likely to live in an affected area.

The data includes information showing that minorities, low-income families, and people without a high school diploma are likelier to live in areas with higher climate-driven fine particulate matter. According to this paper, climate-driven fine particulate matter is expected to result in over 7000 annual asthma diagnoses. The paper notes that some areas will have a decline in fine particulate matter due to increased rainfall. Minorities, low-income families, and people without a high school diploma are the most likely to experience increased asthma diagnoses.

Introduction of Data Set Two

https://disabilitycompendium.org/sites/default/files/user-uploads/Events/2022ReleaseYear/Annual%20Report%20---%202021%20---%20WEB.pdf

This data set addresses critical data pertaining to the social determinants of health for individuals in the United States with disabilities compared to their non-disabled counterparts using key indicators such as housing, education, employment, income, and access to healthcare. According to the report, as of 2020, just over 13% of Americans have a disability. About 3.5% of the disabled population resides in an institutional group living home. More than 14% do not have a high school diploma, while just 6.6% of people without a disability have not graduated high school. Less than 40% of people with a disability are employed compared to almost 80% of those without a disability.

Additionally, those living with a disability have an annual income much less than their non-disabled counterparts. The education, employment, and income disparity mean that 25.2% of people with disabilities live in poverty, relative to 11.1% of those who do not have a disability. People with disabilities are slightly more likely to have health insurance than those who do not have a disability but are significantly more likely to have a publicly funded policy like Medicaid.

Original Findings Knowledge Contribution

When taken together, these data sets illustrate how people with disabilities are at significant risk of the impacts of climate change and that focusing on strengthening the social

determinants of health could mitigate the negative impacts. This research shows how individuals with disabilities are more prone to the consequences of climate change and that focusing on improving the social elements that shape health can reduce the harmful effects on vulnerable populations. Having a comprehensive knowledge of how climate change affects individuals and their communities, as well as a deep understanding of the needs of people with disabilities, will give the necessary insight to implement climate change adaptation strategies and enhance the resilience of disabled individuals.

Policymakers can use this information to inform decisions to build robust communities and social connections for those with disabilities. Public health officials and stakeholders will be better equipped to identify areas where additional resources are needed to reduce the vulnerability of disabled individuals to climate change, such as improved access to healthcare, transportation, housing, green spaces, and the community. Policymakers will be better equipped to allocate funding equitably in a way that supports disabled individuals and their communities in adapting to climate change. Finally, this study highlights the need for the voices of disabled individuals to be included in climate change mitigation and adaptation strategies. *(Word Count 887, Maximum of 1000 words)*

Conclusion of Background

As the climate continues to change, all populations will experience challenges, but certain groups will have greater difficulties adapting. It is know that the more the climate changes, the more the negative impacts are on human health (National Institute of Environmental Health Sciences, 2022). Extreme heat leads to more health-related deaths. The more the air quality

worsens, the more there will be premature death associated with cardiovascular and respiratory illnesses. More flooding means more drownings. Increases in vectorial capacity for deadly viruses and water-related pathogens mean more infections, illnesses, and deaths (Watts et al., 2018). Furthermore, this will lead to added mental health stressors and reduced well-being.

People with disabilities have challenges that affect their physical health, mental health, employment, income, education, housing, and social connection and access (Tough et al., 2017). These are issues that people without disabilities do not face as frequently. Individuals with disabilities are twice as likely to develop depression, asthma, diabetes, stroke, obesity, or reduced oral health than those without a disability (World Health Organization, 2023). Transportation is significantly more complicated, making accessing healthcare, finding employment, or emergency evacuations more difficult. The risks those without disabilities experience due to climate change are similar to those already faced by people with disabilities simply because of their condition.

(Word Count 216, Maximum of 300 words)

Qualitative Research Proposal

Introduction

Purpose of the Study

This qualitative study aims to explore how people with disabilities perceive their resilience and the support available to them from their community in the occurrence of an extreme weather event. The research will focus on understanding challenges faced by people

with disabilities and investigate potential strategies to improve the quality of life for people with disabilities related to climate change, including access to resources, assistive technologies, and supportive services. Finally, the study will seek to identify opportunities for collaboration between stakeholders such as governments, private entities, and non-profits to ensure the long-term resilience of people with disabilities confronting climate change.

Type of Study and Methods

This study will use a narrative approach to gain insight into the perspectives of the disabled community on climate change-related extreme weather. Through focus groups and surveys, researchers will explore the experiences of people with disabilities and their preparedness to manage their needs during a weather-related crisis. Open-ended questions will be posed in the focus groups to encourage meaningful conversations among participants. Online, mailed, or phone surveys will provide access to those unable to attend focus groups due to disability-related limitations.

Existing Knowledge

Results from this study can add to existing knowledge by providing awareness about the unique challenges people with disabilities and their communities face, their coping strategies, and the resources they need to navigate through a weather-related crisis successfully. This understanding could be used to develop and refine emergency response plans, policies, and services tailored to the needs of people with disabilities and their communities, including access

to shelter and transportation. It could also inform public awareness campaigns about the importance of disaster preparedness and help to ensure that people with disabilities are included in the conversation about climate change and emergency response.

(Word Count 294, Maximum of 300 words)

Research Question 2 (RQ2)

How do people with disabilities view their individual resiliency during an extreme weather event?

Research Question 3 (RQ3)

How do people with disabilities perceive their community's capacity to support them during an extreme weather event?

Statement of Purpose for Research Question Two and Research Question Three

The effects of climate change on individuals reach beyond the physical consequences of heat waves, droughts, floods, or weather-related disasters. Individuals who encounter severe climate-related events are more likely to experience mental health conditions (Padhy et al., 2015). Additionally, simple preparedness can support individual well-being by reducing fear and anxiety associated with climate change and its effects (Fleitas, 2019). Unfortunately, those with poorer health are less likely to be prepared. One study found that only 40.7% of individuals who

reported having poor health stocked disaster supplies, while 53.1% of those who rated their health as excellent had supplies on hand (Eisenman et al., 2009).

Research questions one and two examine how people with disabilities view their individual resiliency and perceive their community's capacity to support them during an extreme weather event. These questions will guide researchers to explore the need for additional resources that could help individuals with disabilities manage the risks of climate change and reach maximum preparedness. Public health officials will also better understand how these individuals cope with the stress of a severe weather occurrence and collect insight into the resources they depend on for support. The results of this research will be used to inform the development of strategies that aim to improve the resiliency of individuals with disabilities and the capacity of the community to support them. *(Word Count 270, Maximum of 300 words)*

Demographic Questions

1. Do you have a disability, or do you care for someone with a disability?
2. What is your disability or the disability of the person you care for?
3. How long have you/they had the disability?
4. What is your/their current living situation?
5. Do you believe that climate change is real and a legitimate concern to public health?

For researchers to know how people with disabilities feel about their resiliency and the level of support from their community regarding climate change, they must start by selecting the appropriate sample population (Jacobsen, 2020). The above demographic questions will help to establish someone as an experienced person in knowing how people with disabilities feel about

extreme weather events by providing insight into the person's individual involvement with a disability, whether that is as a caretaker or as someone who has the disability. By asking questions about the type and duration of the disability, the current living situation, and if they believe climate change is a real issue, the researchers can gain an understanding of the severity of the disability and whether they genuinely care about and believe in the impacts of climate change.

Knowing the severity of someone's disability and their available resources can help establish how much assistance they may need to cope with the effects of climate change. Factors such as limited mobility, inability to communicate, or a sensory disability can all affect how well someone can manage change, particularly during a crisis. In addition, the severity of the disability may also determine how much access to resources and assistance the individual may have. For example, someone with a more severe disability may require more specialized help to cope with climate change, while someone with a milder disability may be able to better manage. *(Word Count 298, Maximum of 300 words)*

Questions Designed to Answer Research Question Two

1. What strategies do you have in place to stay safe or keep your loved one safe during extreme weather events?
2. What concerns do you have about an extreme weather event and how it relates to your/their disability?
3. Is there anything that would make it easier for you to prepare yourself/them for extreme weather events?

4. What are the unique considerations that you take into account when preparing for extreme weather events?

5. What kind of impact has weather had on your/their access to resources??

The above questions will contribute to the knowledge of how climate change impacts people with disabilities through an in-depth assessment of their individual experiences and perspectives. The information gathered will uncover how people with disabilities and their caretakers view their resilience during and after an extreme weather event, enabling public health officials to understand better the strategies people with disabilities use to cope and how they access resources. Policymakers can use this information to develop policies and procedures to help the disabled community manage climate change and prepare for severe weather, including easier access to resources, easier preparation for disasters, and education about individual disaster preparedness strategies. The knowledge gained regarding how people with disabilities deal with climate change, their concerns around it, and if they feel prepared will help identify and bolster weaknesses to create a robust and resilient community.

(Word Count 235, Maximum of 300 words)

Questions Designed to Answer Research Question Three

1. How much and what kind of access do you have to support services and resources in your area?

2. What has your local community done to support people with disabilities during an extreme weather event?

3. What do you think could be done to make extreme weather events less intimidating for people with disabilities?

4. What has your community done to support your preparation for extreme weather events?

5. If you have experienced an extreme weather event, what resources were available to you during, and how did you access them?

The primary data obtained from these questions will inform decisions and policymaking in a way that positively impacts the target population and the communities in which they live. Even without severe weather events, people with disabilities are already at a significantly higher risk of injury (Shi et al., 2015). Society must make intentional and impactful changes to protect this vulnerable population regarding severe weather. By understanding how people with disabilities and those who care for them perceive their community's readiness to support them, local government can assess if the disabled population is aware of available resources and can access them. Unknown or inaccessible resources are not helpful to the population they intend to serve. Based on the literature reviews for this proposal, there is not much information from the specific perspective of people with disabilities and those who care for them. Understanding their viewpoint gives communities a unique look into the most critical issues for the disabled population and where they can direct their attention to strengthening their climate change response. *(Word Count 269, Maximum of 300 words)*

Methods Section

Study Population Selection Methods

It is vital to ensure that a sufficient source population is reached in order to obtain the necessary data to answer the research questions. This source population will be comprised of individuals who meet the criteria after answering the five demographic questions. Because researchers are looking for a specific population type to survey, purposeful, or purposive, sampling will be the sampling type of choice for this study. Researchers will select physician offices, rehabilitation centers, and facilities that cater to people with disabilities to advertise the study. Researchers will also create targeted social media ads to reach an even larger community.

Interviewing Methods

The primary method of interviewing the study population will be to conduct focus groups to gain insight into the experiences of people with disabilities and their ability to prepare for and manage a weather-related crisis. However, researchers recognize that individuals in the study population will have mobility and communication limitations. Online, mailed, and phone surveys will be available to ensure those with disability-related limitations are able to participate.

Coding and Theming of Data

Researchers will code by choosing words and phrases to categorize topics of interest. Below are some words and phrases researchers will use for coding. The list is not exhaustive and may change as the study develops.

- Brail accessible information

- Community resources
- Established evacuation plan
- Evacuation plan
- Food storage
- Hearing aids
- Mobility device
- Physically disabled
- Prepared
- Support network
- Supported
- Transportation
- Unprepared
- Vision impaired
- Visually accessible information and education
- Water storage
- Wheelchair accessible

The phrases will be categorized based on common themes of being or feeling prepared and supported or not being or feeling prepared and supported.

Knowledge Contribution

Qualitative research is a powerful tool for exploring and understanding how people experience and perceive climate change and the support network accessible to them. Researchers will gain insight into how people with disabilities are differently impacted by climate change, as well as how they cope and adapt to the changes. Data collected will reveal areas where support and resources are needed to best assist people with disabilities in adapting to the changing environment. This type of research can also be used to explore the social and economic impacts of climate change on people with disabilities and can help to inform policy and practice to address the needs of this vulnerable population. *(Word Count 387, Maximum of 500 words)*

Strategic Plan

Introduction: Mission, Vision, Goals, and Objectives

Mission and Vision

The findings derived from secondary data and qualitative research provide essential information for policymakers and other stakeholders in the disability sector to develop more effective strategies for protecting and supporting people with disabilities in response to climate change. This study aims to investigate the specific impact of climate change on people with disabilities and the potential policies and interventions that could be implemented to improve the resilience of people with disabilities in the face of extreme weather events and economic injustices. Specifically, the following issues will be addressed: access to healthcare, food, housing, water and sanitation, education, employment, and the community.

The impacts of climate change are vast and affect everyone, but the consequences are more significant for those with disabilities. Forced evacuations are harder for people with limited mobility and reduced economic resources. Heat-related illnesses, respiratory problems, injuries and fatalities due to extreme weather, and increased infectious diseases will drastically affect those whose health and mobility are already compromised (US EPA, 2022). The worldwide mortality rate of people with disabilities in natural disasters is much higher than those without disabilities, mainly due to a lack of special preparations, accessible information, early warning systems, transportation, and negative attitudes from institutions and people (Stein & Stein, 2021). To date, there is limited information on how each state is prepared to support individuals with disabilities through the challenges of climate change.

To date, there is limited information on how each state is prepared to support individuals with disabilities through the challenges of climate change. This study will provide valuable insight into the unique challenges people with disabilities face in adapting to climate change and how well the community is prepared to support them. This information can be used to inform public health professionals on how to best support people with disabilities in preparing for and responding to climate change. The researchers' vision is to improve the physical, mental, and financial health of people with disabilities in the face of climate change by equipping them with the resources to handle the impacts of future weather-related events.

The goal of this project is to answer the following questions:

Research Question 1 (RQ1)

1. How has the increased frequency of extreme weather events and environmental injustices impacted individuals with disabilities, and what actions can be taken to develop climate change adaptation and improve resiliency among this population?

Research Question 2 (RQ2)

2. How do people with disabilities view their individual resiliency during an extreme weather event?

Research Question 3 (RQ3)

3. How do people with disabilities perceive their community's capacity to support them during an extreme weather event?

Objectives

The first objective is to initiate the quantitative research once funding is approved. Researchers will study how extreme weather affects individuals and their communities by analyzing data on disparities between those with and without disabilities. Next, researchers will collect and evaluate data sets on extreme weather events and their impacts on social determinants of health. The impacts of climate change on the social determinants of health will then be extrapolated to vulnerable populations with disabilities. By analyzing educational, economic, health, housing, and social disparities between people with and without disabilities, researchers

can gain a comprehensive understanding of how climate change affects the social determinants of health for individuals with disabilities. Through this research, they will determine the impacts of climate change on the disabled population.

The second objective is to start the qualitative research after the data has been collected for the quantitative research. The qualitative study examines the resilience and access to resources of people with disabilities in the context of extreme weather events related to climate change. It seeks to understand the challenges this population faces, identify potential strategies to improve their quality of life, and explore opportunities for collaboration between governments, private entities, and non-profits to ensure their long-term resilience. Researchers will use a narrative approach for the qualitative study to gather the perspectives of people with disabilities on climate change-related extreme weather. Focus groups and surveys, accessible to people with disabilities, will be used to explore their experiences and preparedness during a weather-related crisis. The focus groups will feature open-ended questions to promote meaningful conversations. At the same time, surveys can be completed online, through the mail, or over the phone to accommodate people with different types and degrees of disability.

Strengths, Weaknesses, Opportunities, and Threats

Strengths

Secondary data will be obtained from the report titled, The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment, published by the U.S. Global Change Research Program (U.S. Global Change Research Program, 2016). This report examines

the far-reaching effects of climate change on human health. It finds that climate change poses a wide array of adverse health outcomes, ranging from the spread of infectious diseases to mental health issues, increased risk of mortality and morbidity due to extreme weather events, and air pollution. Furthermore, certain populations are particularly vulnerable to the health consequences of climate change. One of the key findings of this report is that the social determinants of health play an essential role in how individuals and communities respond to climate-related health risks. Such determinants as income, education, and access to health care can amplify, reduce, or otherwise modify how climate factors influence health risks.

A second report that will be analyzed is the CDC's Morbidity and Mortality Weekly Report. The specific report researchers will evaluate and collect data from is Prevalence of Disabilities and Health Care Access by Disability Status and Type Among Adults — United States (Okoro et al., 2018). This comprehensive report by the Centers for Disease Control and Prevention (CDC) provides an in-depth analysis of the current state of disability in the United States. It examines disparities between disabled and non-disabled populations in terms of healthcare access and economic stability, as well as offering detailed data on the characteristics of people with disabilities like age, gender, and race/ethnicity. Additionally, the report breaks down various types of disabilities and their effects on people's health and access to healthcare. An invaluable resource for understanding the scope of disability in the United States, this report offers insight into the areas with the most significant inequalities.

Weaknesses

The target population is people with disabilities, and the main question researchers are looking to answer is how the target population is affected by climate change. The most significant disadvantage to these secondary data sources is that they do not specifically address the effects of climate change on people with disabilities. Rather, they require researchers to fuse data on climate change with data on disabilities to determine how people with disabilities are affected by climate change. Additionally, the report on people with disabilities primarily evaluates access to healthcare, leaving out other helpful qualifiers. To answer Research Question One, data that included housing, financial, and mobility stats would have been better. Lastly, both secondary data sources are from 2016 and are seven years old; some information could have changed at this time.

Opportunities

A sample population of sufficient size must be reached to obtain the qualitative data needed to answer Research Questions One and Two. After responding to the five demographic questions, the source population will be composed of individuals who meet the criteria. Purposeful sampling will be employed for the study to target this specific population. To maximize outreach efforts, researchers will advertise the study in physician offices, rehabilitation centers, and other facilities that cater to people with disabilities. Additionally, researchers will create targeted social media ads to reach a more extensive and varied community.

With the intensive data analysis required for a qualitative study with open-ended questions, a smaller sample size is necessary (Anderson, 2010). Researchers are looking to evaluate data from 20 to 30 individuals in total. To ensure the appropriate sample population

selection, researchers will start by asking possible respondents five demographic questions to narrow the sample pool and establish experts on the research topic.

Threats

Possible threats to this study that require acknowledgment are accessibility issues, resource limitations, and political or social ideologies surrounding climate change and its actual impact. Given the nature of the study participants, accessibility of study sites is a concern. If research sites are not accessible to people with disabilities, it could limit the data. Availability of resources such as interpreters for people who are deaf or hard of hearing and consent forms in brail might be difficult and expensive to obtain. Finally, a subset of Americans do not believe climate change is real (Marlon et al., 2022). Political and social feelings surrounding climate change may interfere with qualitative data collection.

Grant Request Budget

Item	Qty in Months	Cost/month	Subtotal	Total
Payroll	1	$48,000.00	$48,000.00	$48,000.00
Software (one-time fee)	1	$2,552.00	$2,552.00	$2,552.00
Computers (one-time fee)	4	$1,100.00	$4,400.00	$4,400.00
Consumables (papers, pencils)	1	$750.00	$750.00	$750.00
Travel/Transportation	3	$150.00	$450.00	$450.00
Interpreters	1	$4,000.00	$4,000.00	$4,000.00
facility Rental	3	$1,000.00	$3,000.00	$3,000.00
Accessibility Modifications	1	$2,300.00	$2,300.00	$2,300.00
Phone	1	$1,000.00	$1,000.00	$1,000.00
Participant payments	1	$3,000.00	$3,000.00	$3,000.00
Marketing (one-time fee)	1	$2,785.00	$2,785.00	$2,785.00
Total Project Allowance	NA	NA	NA	**$72,237.00**
Administrative Fees	NA	NA	NA	$250.00
Sought from other sources	NA	NA	NA	($11,500.00)
Total Grant Request				**$60,987.00**

Payroll
This estimate is based on the average hourly cost of three focus group moderators and three phone surveyors working 8 hrs./per day for one month. These costs also include four researchers from

Software (one-time fee)
The fee is for software needed to categorize, organize, and analyze data. The cost is based off quotes from a few local software companies.

Computers (one-time fee)
This cost comes from the average cost of four computers: one for each researcher.

Consumables (papers, pencils)
This cost is calculated after contacting an office supply store and printing company to print questionnaires that can accommodate 30 research participants plus extras. This also includes the cost of pens.

Travel/Transportation:
This cost should be minimal as interstate traveling is unnecessary. This covers the costs of traveling from focus group locations and back. This estimate is based on the average cost of gas and public transportation for those on payroll.

Interpreters
This estimate is based on the national average cost of two sign language interpreters' monthly fees.

Facility Rental
This is based off the average cost of renting an office space locally for three months to hold focus groups. Although researchers do not anticipate the focus groups lasting more than one month, the three-month cost is due to an inability to find space that rents month to month.

Accessibility Modifications
This includes brail material, ramps, and anything else that might come up. A quote was obtained from the local Disability Resource Center.

Phone
This estimate includes the cost of a phones and phone lines for three phone surveyors and is based on the average telephone rates.

Participant Payments
Average cost of paying study participants based on $1/minute for up to 5 hours for 30 study participants.

Marketing (one-time fee)
This cost includes the fees for a local marketing company to develop a campaign to find an appropriate study population.

Project Timeline in Table Format

Research Design and Planning	Completed
Literature Review	Completed
Hiring Payroll Staff	June 2023 – July 2023
Quantitative Data Collection	August 2023 – October 2023
Develop Items for Survey	Completed
Qualitative Data Collection (including preparation of materials)	October 2023 – January 2024
Prepare Data for Analysis	February 2024 – March 2024
Data Analysis and Transcription	April 2024 – June 2024
Writing of Draft Chapters and Revisions	July 2024 – January 2025
Final Approval and Completion	February 2025

Project Timeline in Chart Format

	GY1												GY2											
	Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4		
Research Design and Planning																								
Literature Review																								
Hiring Payroll Staff																								
Quantitative Data Collection																								
Develop Items for Survey																								
Qual Data Collection																								
Prepare Data for Analysis																								
Data Analysis																								
Writing and Revisions																								
Final Approval and Completion																								

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