

**Examining the Role of Aging-in-Place Organizations in Building Older Adults' Disaster
Resilience: A King County, Washington Case Study**

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Abstract

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Purpose of the Study:

Older adults are more susceptible to adverse health outcomes during and after a disaster compared with their younger counterparts. Aging-in-place organizations such as senior centers and Villages provide social services and programming for older adults and may support older adults' resilience to disasters. This study examines the role of aging-in-place organizations in building disaster resilience for older adults, as well as perceived challenges and opportunities of incorporating disaster resilience activities into organizational programming.

Design and Methods:

Semi-structured interviews were conducted with a purposive sample of 14 aging-in-place organization leaders in King County, Washington. The sample included representatives of five government-run senior centers, seven non-profit senior centers, and two Villages. Interviews were audio-recorded and professionally transcribed. We used a combined inductive and deductive approach to code and thematically analyze the data.

Results:

Aging-in-place organization leadership recognize disasters as a threat to older adults' health and safety, and they see opportunities to provide disaster-related support for older adults, though the type and extent of participation in resilience-building activities reflected each organization's unique local context. Organizations participate in a variety of disaster-related planning and activities, though participants heavily emphasized the importance of collaborative and communication-focused efforts.

Implications:

Findings suggest that aging-in-place organizations should be included in local disaster planning efforts. They may be best equipped to support older adults' disaster resilience by serving as a trusted source of disaster-related information and providing input on the appropriateness of disaster plans and messages for the unique needs of older adults aging-in-place.

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LITERATURE REVIEW

Seventeen percent of the population of King County, Washington is age 60 and older, and this population is expected to grow to nearly 25 percent by 2040 (Aging And Disability Services, 2017). Public health, healthcare, housing, transportation, and many other sectors will experience increased demand for services as the population ages. Meeting the needs of an aging population will require considerable planning and resources regardless; in the event of a natural disaster, the challenge of providing timely, appropriate, and comprehensive services and support to older adults will become even more essential (Kwan & Walsh, 2017).

Impaired physical mobility, diminished sensory awareness, chronic health conditions, social isolation, and limited financial resources pose significant challenges for older adults' disaster preparedness, response, and recovery (Benson, 2009). In King County, risk assessments have identified earthquakes, severe weather, flood, landslides and wildfire as significant threats to public health and safety, and especially for at-risk populations such as older adults (King County Office of Emergency Management, 2015). The health risks of natural disasters for older adults also pose a threat to environmental justice, as historically low-income and minority older adults in the U.S. have experienced disproportionately greater losses than their wealthy and white counterparts (Eisenman, Cordasco, Asch, Golden, & Glik, 2007; Klinenberg, 2015).

The frequency and intensity of extreme weather events is expected to increase due to global climate change, presenting a significant public health threat for communities worldwide (Keim, 2008). Climate change will increase health risks for all age groups, but older adults are especially vulnerable to negative health effects from climate stressors such as heat waves, hurricanes, flooding, droughts, and wildfires ("Climate Change and the Health of Older Adults," n.d.; Haq, Whitelegg, & Kohler, 2008; Rhoades, Gruber, & Horton, 2018). Fifteen percent of the population

is currently over age 65, a number expected to grow to nearly 25% of the population by 2060, (Administration for Community Living, 2018). Coinciding with this demographic shift, the rate of climate change is accelerating, making the development and implementation of strategies to improve the disaster resilience of older adults and their communities a public health priority (Gamble et al., 2012).

While older adults have been identified as particularly at-risk in disasters, their role in developing and mobilizing informal networks in preparation for and in response to natural disasters goes unrecognized and is overlooked in planning strategies (Howard, Blakemore, & Bevis, 2017). Research suggests that older adults' previous experience with adversity and trauma builds psychological resilience and buffers against future disaster risk (Brockie & Miller, 2017). Seniors' disaster resilience reflects many complex individual and environmental factors, and additional study is needed to identify and implement resilience-building practices to reduce disproportionate disaster outcomes among older adults (Kwan & Walsh, 2017).

In recent years there has been a shift in focus from a top-down emergency management to a bottom-up approach to building resilient communities that are better able to become self-sufficient in disaster response and recovery and withstand future threats (Wulff, Donato, & Lurie, 2015). Community resilience, defined as the ability of communities to withstand and mitigate the stress of a disaster, has become a key policy issue (Chandra A, Acosta J, Howard S, Uscher-Pines L, Williams M, Yeung D, Garnett J, Meredith LS., 2011). However, the critical components that enable a community to build resilience are not well understood.

The RAND Levers of Resilience framework provides an initial model of options for building community resilience in key areas, including wellness, engagement, education, self-sufficiency, and partnership (Chandra A, Acosta J, Howard S, Uscher-Pines L, Williams M, Yeung

D, Garnett J, Meredith LS., 2011). The levers provide a framework for examining programs and practices focused on improving community resilience by identifying a breadth of actions that support preparedness while also addressing the underlying social determinants of health as “building disaster resilience”(Chandra A, Acosta J, Howard S, Uscher-Pines L, Williams M, Yeung D, Garnett J, Meredith LS., 2011; Wulff et al., 2015). However, further research is needed to fully operationalize the framework in community resilience research and practice (Chandra A, Acosta J, Howard S, Uscher-Pines L, Williams M, Yeung D, Garnett J, Meredith LS., 2011) Specific knowledge gaps exist around how to effectively partner with community-based organizations in resilience planning (Acosta et al., 2018) in order to engage at-risk populations such as older adults in individual and community preparedness efforts (Liesel Ritchie, 2010).

Disaster preparedness programs and policies specific to older adults have historically focused primarily on retirement communities, nursing homes, and home health aides (Brown, Hyer, & Polivka-West, 2007; Daugherty, Eiring, Blake, & Howard, 2012; Laditka, Laditka, Cornman, Davis, & Chandlee, 2008). While these efforts provide essential support for many older adults, they fail to reach the majority of older adults who remain in the community as they age and do not receive care from a home health agency (Peterson & Brown, 2014).

Older adults overwhelmingly prefer the option of aging in place as an alternative to institutional care. In the U.S., nearly 80 percent of adults age 65 and older want to remain in their current residence as long as possible (Farber, Shinkle, Lynott, Fox-Grage, & Harrell, 2011). In order for older adults to have this option, living environments and service arrangements must be accommodating (Farber et al., 2011). The World Health Organization Age Friendly Eight Domains of Livability framework aims to support local plans, infrastructure, programs and services to help seniors stay healthy and active into old age (Krawchenko et al., 2016). The framework identifies

housing, social participation, respect and social inclusion, communication and information, transportation, outdoor spaces and buildings, community support and health services, and civic participation and employment as essential to healthy aging in any community (Fitzgerald & Caro, 2014).

Aging-in-place organizations offer a diverse range of supports and services to older adults within a locally defined geographic area.(Greenfield, Scharlach, Lehning, Davitt, & Graham, 2013). There is a large and growing number of aging-in-place organizational models operating in communities around the country (“Community-Based Models for Aging in Place,” n.d.; Greenfield, 2012; Lehning, Scharlach, & Wolf, 2012; Siegler, Lama, Knight, Laureano, & Reid, 2015), two of the most prominent of which are Villages (Scharlach, Graham, & Lehning, 2012) and senior centers (Beisgen & Kraitchman, 2003; Pardasani & Thompson, 2010).

Senior centers are one of the most widely used services among America's older adults, with nearly 11,000 centers nationwide (National Council on Aging, 2015). Senior centers are designed to engage older adults in their communities and to promote health and well-being. They offer a diverse array of recreational, nutritional, health, and social service programs, and may range in design from recreational clubs or nutrition sites to large, multipurpose centers (Pardasani & Thompson, 2010). Despite the important role senior centers play in delivering services to older adults, academic research on centers is limited (Kadowaki & Mahmood, 2018). Though senior centers reportedly conduct some disaster-related programming (Ashida, Robinson, Gay, & Ramirez, 2016; Eisenman et al., 2011), there has been no in-depth examination of the senior center role in supporting older adults' disaster resilience.

Villages are innovative and volunteer-based grassroots organizations that have emerged in the past decade to support community-dwelling older adults. There are over 200 Villages open and

150 in development nationwide (“Home - Village to Village Network,” n.d.). Villages provide a variety of support services designed to help members age in place, meet service needs, and promote health and quality of life (Scharlach et al., 2012). Prior research has found that many Villages are engaged in programs directly relevant to disaster preparedness but identified a need for improved understanding of effective strategies for villages to play an effective role in disaster preparedness for their members.

Interest in integrating disaster resilience and age-friendly communities has led to several local programs focused on collaborations with senior services to support disaster resilience for older adults (Eisenman et al., 2011; Kiyota, Tanaka, Arnold, & Aldrich, 2015). A national qualitative study by RAND Corporation identified opportunities for local aging-in-place and public health programs to collaborate on efforts to bolster the disaster resilience of older adults (Shih et al., 2018), but pointed to a need for further research to identify barriers and facilitators for local organizations in implementing programs to improve preparedness and resilience among the older adults in their community (Shih et al., 2018). As senior centers already serve as a focal point for delivery of services to older adults, they represent a powerful but little understood opportunity for community-led efforts to build disaster resilience for older adults aging-in-place (Eisenman et al., 2011). This qualitative study aims to address this gap in the literature by examining current disaster-related activities supported by two prominent aging-in-place organizational models (senior centers and Villages), and identifying facilitators and barriers organizations face in implementing disaster resilience programming to support older adults in their community.

Conceptual Model

The conceptual model for this study integrates theoretical models related to disaster resilience, aging, and health communication to allow the researcher to explore the intersection of

these elements and capture stakeholder perspectives on operationalizing these frameworks through disaster resilience activities to support older adults (Figure 1). The model posits that organizational leadership perception of disaster threat and efficacy will influence motivation to implement disaster resilience activities. This draws on the Extended Parallel Process Model (EPPM), a health communication model that posits that individuals take action to control danger when they perceive that the severity and susceptibility are high and also perceive that they are competent to take mitigating action (Witte, 1992). The model also posits that disaster resilience activities, facilitators, and barriers may align with the WHO Age-Friendly Eight Domains of Livability and the RAND Levers of Resilience frameworks to develop a conceptual model to categorize disaster resilience activities and structure my data collection and analysis (Chandra et al., 2013; World Health Organization, 2007).

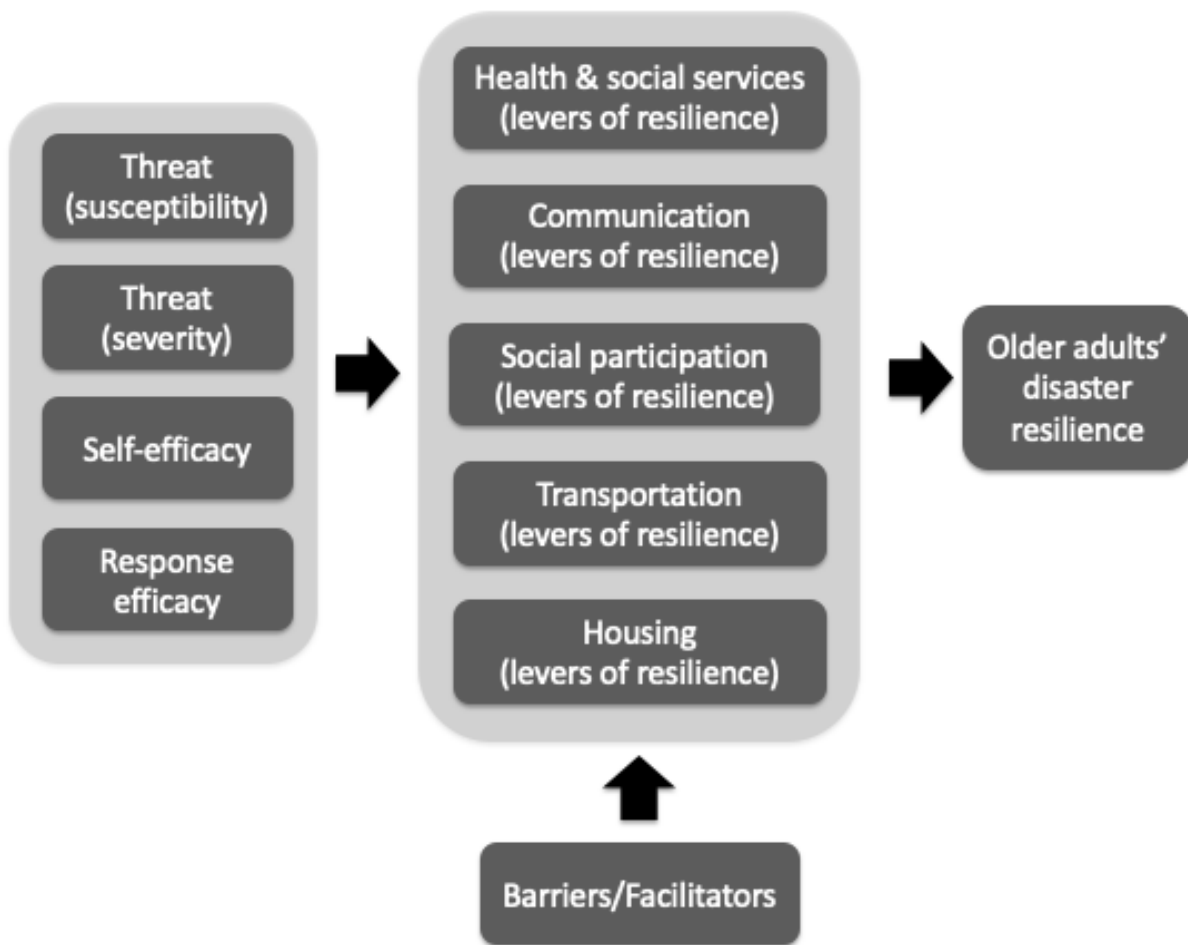


Figure 1. Study Conceptual Model

Rationale of Approach

Gathering rich, in-depth data through qualitative research methods such as interviews brings personal, social and cultural knowledge into the research domain (Rubin & Rubin, 2011). Interviews allow the researcher to examine factors that contribute to “how” and “why” organizations perceive natural disaster threats and response efficacy, resulting in greater and more comprehensive information to contribute to informing disaster resilience and aging policies and programs (Tuohy, Stephens, & Johnston, 2014).

Qualitative research methods allow the researcher to develop is a solid, deep understanding of what is being studied by going after context and dealing with the complexity of multiple, overlapping, and sometimes conflicting themes (Rubin & Rubin, 2011). The flexible research design and questioning of semi-structured interviewing will allow the researcher to accommodate new information and to adjust to unexpected situations in order to elicit detailed, vivid, nuanced, and rich data to understand the current and potential role of senior centers in promoting older adults' disaster resilience (Rubin & Rubin, 2011).

INTRODUCTION

Disasters pose a serious threat to older adults' health, safety, and well-being. Roughly 71 percent of people who died in Louisiana as a result of Hurricane Katrina were over age 60, most of whom died in their homes and communities (Gibson, 2006). Similarly, the Chicago 1995 heat wave disproportionately impacted community-dwelling older adults, especially those experiencing poverty and social isolation (Klinenberg, 2015). In addition to increased mortality risk, disasters may negatively impact older adults' health by exacerbating chronic health conditions, creating psychological strain, and disrupting access to care and social services (Aldrich & Benson, 2008; Malik et al., 2018; Sakauye et al., 2009). Older adults are also especially vulnerable to climate stressors such as heat waves, hurricanes, flooding, droughts, and wildfires (Gamble et al., 2012; Rhoades, Gruber, & Horton, 2018). Research shows that few older adults are adequately prepared for disasters; a 2014 study of U.S. older adults found that less than one quarter of older adults have a specific plan on what to do in case of an emergency or disaster, and that increasing age, physical disability, and lower educational attainment and income were associated with worse overall preparedness (Al-Rousan, Rubenstein, & Wallace, 2014).

As fifteen percent of the U.S. population is currently over age 65, a number expected to grow to nearly 25% of the population by 2060 (Administration for Community Living, 2018), and disasters become more frequent and severe in a changing climate, the development and implementation of strategies to improve the disaster resilience of older adults is an increasingly urgent public health priority (Gamble et al., 2012). The concept of community disaster resilience includes a focus on the needs of vulnerable populations such as older adults, and emphasizes the role of governmental, nongovernmental, and community-based organizations in providing social services and assistance to provide vital community needs each day and after a crisis (Wulff,

Donato, & Lurie, 2015). Research and policy activity focused on disaster resilience specifically for older adults is also growing, although a stronger research agenda is necessary to address this age group's disproportionate disaster outcomes (Brockie & Miller, 2017; Hartog, 2014; Kwan & Walsh, 2017; Liddell & Ferreira, 2018).

Nearly 80% of adults age 50 and older want to remain in their communities and homes as they age, or 'age-in-place' (Binette & Vasold, 2018). There is increasing interest nationally and globally from policy stakeholders and researchers in strategies that enable older adults to age-in-place to address this large and growing need (Scharlach, 2017; Vasunilashorn, Steinman, Liebig, & Pynoos, 2012). The World Health Organization has identified eight 'domains of livability' that influence the quality of life of older adults aging-in-place, including the built environment, transport, housing, social participation, respect and social inclusion, civic participation and employment, communication, and community support and health services (World Health Organization, 2007). In recent years, a growing number of initiatives and organizational models have been implemented across the country to create "Age-Friendly Communities" with social and physical environments to support older adults aging-in-place (Scharlach, 2012; Greenfield, 2012; Lehning, Scharlach, & Wolf, 2012; Siegler, Lama, Knight, Laureano, & Reid, 2015).

Two of the most prominent aging-in-place organizational models are senior centers and Villages. Senior centers are one of the most widely used services among America's older adults aging-in-place, providing recreational, nutritional, health, and social service programs at nearly 11,000 centers nationwide (National Council on Aging, 2015; Pardasani & Thompson, 2010). Villages are an increasingly popular volunteer-based organizational model that promotes health and quality of life for older adults aging-in-place through a number of services and programs (Scharlach et al., 2012, Scharlach, Graham, & Lehning, 2012).

Community-based organizations are increasingly recognized as critical partners in local disaster management (Chandra et al., 2013; Drennan & Morrissey, 2018; Ritchie et al., 2010; Shih et al., 2018; Sledge & Thomas, 2019). However, there has been little research examining the role of community-based organizations that support older adults aging-in-place in building disaster resilience. A recent RAND Health report examined perspectives of public health departments, Villages, and Age-Friendly Community leaders on disaster preparedness and found that many Villages are engaged in programs directly relevant to disaster preparedness, but noted a need for improved understanding of effective strategies for Villages and other aging-in-place organizations to play an effective role in disaster preparedness for their members (Shih et al., 2018). Similarly, though senior centers reportedly conduct some disaster-related programming (Ashida, Robinson, Gay, & Ramirez, 2016; Eisenman et al., 2011), there has been no in-depth examination of the senior center role in supporting older adults' disaster resilience.

Theories of disaster resilience, aging, and health communications (Chandra et al., 2013; Tannenbaum et al., 2015; WHO, 2007) together suggest a conceptual model of aging-in-place organizational implementation resilience-building activities reflecting organizational leadership perceptions of disaster threat, the type and scale of resilience-building activity, and challenges and opportunities aging-in-place organizations face in implementing resilience-building activities. Thus in this study we expand the literature by examining what disaster resilience-building activities King County, Washington senior centers and Villages currently support, and what challenges and opportunities these organizations face in building older adults' disaster resilience.

Case Study Description

King County, Washington is a county in western Washington State with a population of over two million (U.S. Census Bureau, 2018). Earthquakes, severe weather, winter weather,

floods, landslides, and wildfires are priority hazards for King County (King County Office of Emergency Management, 2015). Seventeen percent of the population is age 60 and older, and the 60+ population will near 25 percent of the total population by 2040. Among residents age 65 and older, 19 percent speak a language other than English at home and three percent do not speak any English (Aging and Disability Services, 2017). A diversity of organizations across King County, including 35 senior centers and five Villages, offer activities and services for older adults to support aging-in-place (Village to Village Network, 2019; Aging and Disability Services, 2017). King County, Washington was selected as a case study because of its rich network of aging-in-place organizations and its relatively high urban-rural, socio-economic, and racial and ethnic diversity (Public Health - Seattle & King County, 2016; Aging and Disability Services, 2017).

METHODS

Study Design

Semi-structured interviews were conducted with individuals in leadership roles in senior centers and Villages in King County, Washington from August to October 2018. We chose a qualitative study design to gain a rich contextual understanding of participants' perspectives on the subject of aging-in-place organizations' role in building older adults' disaster resilience. Study procedures were determined to qualify for exempt status by the University of Washington Human Subjects Division on July 25, 2018 (Category 2).

Participant Recruitment

Eligible study participants were in a leadership role at the time of the study, either as a staff member or board member, at a not-for-profit organization whose primary function is to provide services to community-dwelling adults age 65+ in King County, Washington. Eligible participants were initially sampled purposively to represent diversity in organization size, geographic location,

and structure; snowball sampling was used to recruit the rest of the sample. Interviews were conducted until saturation of themes was attained, meaning that subsequent interviews no longer provided new themes or insights (Corbin, Strauss, & Strauss, 2014).

Twenty-eight organizations were invited to participate in the study through email and phone outreach using contact information available through community partner organizations and through online directories of senior centers and Villages located in King County (Aging and Disability Services, 2016; Village to Village Network, 2019). Of the 28 organizations that were contacted, 14 agreed to participate in an interview. Of the non-respondents, ten failed to respond to multiple contact attempts; two expressed interest in participating in an interview but did not have the capacity to participate in an interview during the study time period; two indicated that their organization was not involved in disaster-related activities.

Data Collection

Interviews were conducted in person or by phone after respondents provided informed consent to participate. One author (CP) with masters-level training in qualitative research methods conducted all interviews. A semi-structured interview guide with open-ended prompts and follow-up questions was developed a priori based off of the study's conceptual model. The interview guide included questions on respondents' perspectives on disaster-related risks, organizational activities related to disaster resilience, and challenges and opportunities to increasing older adults' disaster resilience. Some examples of questions were: "How does your organization's work support members in preparing for, responding to, or recovering from disasters?", "How might disasters threaten your organization's operations and members?", "Do you currently partner with any other organizations to support disaster preparedness for your center's members?", and "In an ideal world, what do you think the role of [senior centers or villages] in promoting disaster

resilience would be?” Two authors developed the interview guide (CP and NE) and two authors reviewed and provided feedback on the guide (BB and AB). Three practitioners, including two local and county government staff and one senior center director, none of whom were interviewed for this study, also reviewed and provided feedback on the guide. All interviews were audio-recorded and transcribed verbatim. Demographic information on organizational size, location, and structure was collected from study respondents and from organization websites.

Data Analysis

A combined inductive and deductive approach was used to conduct a thematic analysis of the data (Braun & Clarke 2006). To develop a preliminary codebook, primary and sub-codes were identified *a priori* based on the research questions and the study’s conceptual model (Elo & Kyngäs, 2008). Transcripts were then reviewed for additional themes that warranted inclusion as codes. NVivo qualitative data analysis software; QSR International Pty Ltd. Version 12, 2018 was utilized to apply the codes to the data. Two transcripts were double-coded by CP and a researcher outside the study to increase the validity and reliability of code description and application. A consensus-building approach was utilized to adjudicate minor discrepancies, and modifications to the codebook were made as appropriate (Hill, Thompson, & Williams, 1997). One researcher (CP) then independently coded the remaining 12 transcripts. Analytic memos were developed by interview, by code, and by theme to summarize major themes that emerged. “Member checking” was conducted by sending respondents a summary of key points after the interview to increase the validity of subsequent findings (Yin, 2011). An axial coding framework was then developed to connect codes to broader themes, and to organize emerging themes around a central explanatory concept (Strauss & Corbin, 1998). Descriptive statistics were calculated for demographic

characteristics collected, including services available, organizational structure, and size of municipality.

Respondent characteristics

Semi-structured interviews were conducted with 15 individuals from 14 different aging-in-place organizations. In one case, the individual initially contacted for an interview requested that one additional individual be included in the interview. Table 1 presents the job titles of interviewees.

Number of interviewees	Job title
8	Senior Center Director/Executive Director/Manager/Supervisor/Program Coordinator
2	Recreation supervisor
2	Village Director
1	Director of Programs and Membership
1	President of Board of Directors
1	Social and Community Outreach Coordinator

Table 1. Participating individuals by job title

Interviews lasted between 27 and 74 minutes. Interviewees had been in their roles for time periods between less than one year and more than 30 years. Organizations represented included government senior centers, non-profit senior centers, and Villages, and were located in cities and towns with populations ranging from less than 10,000 to greater than 500,000 (Public Health - Seattle & King County, 2016). Organizations served between roughly 200 and 3500 individuals yearly and provided a variety of social services and programming to older adults aging-in-place (Table 2). The level of analysis for this study was the organization rather than the individual

interviewee; throughout this paper, “respondent” refers to the responding aging-in-place organization.

	Organization demographics	
	N	%
Organizational structure		
Government senior center	5	36
Non-profit senior center	7	50
Village	2	14
Size of city or town served		
<10,000	2	14
10,000 - 100,000	4	29
100,000 - 1,000,000	8	57
Type of services provided		
Community meals	11	79
Wellness programming	14	100
Social work services	6	43

Table 2. Aging-in-place organization demographics

RESULTS

Our analysis generated three major themes that influenced older adults' disaster resilience: organizational context, aging-in-place organization actions, and government responsibilities (Figure 1).

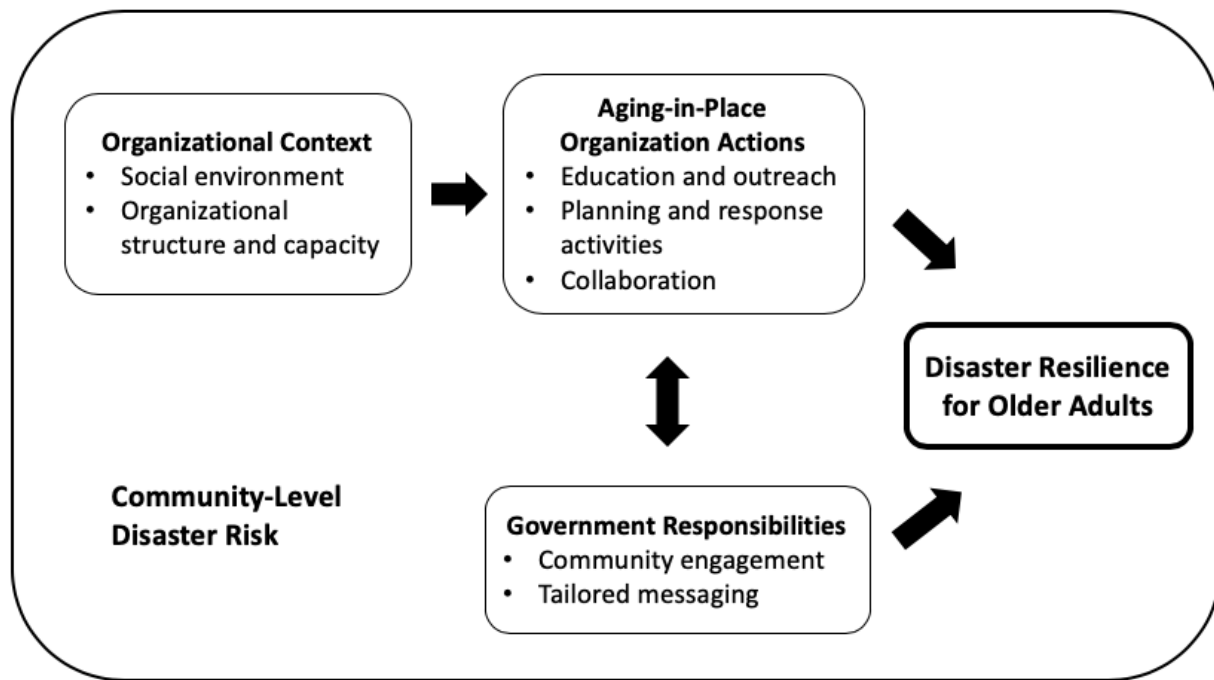


Figure 1. Major thematic categories found to influence aging-in-place organizations' participation in disaster resilience activities

Community-Level Disaster Risk

Respondents expressed concern around a wide range of hazards posing threats to their organization's operations and its members, including wildfire smoke, extreme heat, snow, flooding, pandemic flu, and earthquakes. Hazards that occurred frequently, could be forecast, and that caused minimal infrastructure damage were perceived as less dangerous and more manageable than rare and unpredictable hazards that would cause region-wide damage. Respondents expressed the greatest concern for seismic risks, given the region's vulnerability, the scale and severity of damage that could occur to buildings and transportation infrastructure, and the lack of feasible

guidance for earthquake preparedness and response strategies for older adults. Several respondents also expressed concern that climate change would worsen disaster-related risks.

Respondents felt that older adults are at risk in a disaster due to limited access to medication, power outages limiting use of electricity-dependent medical equipment, infrastructure damage preventing building evacuation or limiting transportation options, weather conditions increasing fall risks, and limited social services causing increased social isolation. Sources of increased vulnerability identified by respondents included very advanced age, limited mobility or frailty, social isolation, low income, homelessness, chronic medical conditions including mental illness, limited access to digital communication, and limited English proficiency/prior immigration status. Many respondents described having an informal understanding of which members were especially vulnerable and may need additional support in a disaster situation. However, they also emphasized that aging-in-place organizations do not serve every older adult in their community, and their disaster-related activities may not reach older adults who are socially isolated or homebound and especially vulnerable to disasters. However, several respondents also emphasized that while older adults may experience greater vulnerability to disasters, they are also resilient; as one respondent said: “Overall, knowing this cohort, this age group, they're a pretty resilient group of people, and they're going to do as well as anybody because they have lived through a lot. And they know what to do to get through and get by” (P7, government senior center).

Organizational Context

Respondents pointed to local contextual factors, including social environments and organizational structure and capacity, as influences on the aging-in-place organization’s capacity to support older adults’ disaster resilience.

Social environments

Respondents described rural-urban differences in organizational capacity to support disaster-resilience activities, noting that urban communities had less social isolation and more services available to support disaster response, including transportation, healthcare, and first responders. However, participants from smaller cities and towns (populations under 100,000) described close community connections in small communities as an asset to their organizations in providing flexible and appropriate services to support members in disaster situations. As one respondent explained: “The good news about a small town is that people know each other and it's about relationships, right? So I've got the mayor's cell phone number on my cell phone. And if something's really going wrong or whatever, I could be like, "Hey, I need help. Who do I talk to? How can we get this done?" (P3, non-profit senior center)

Many respondents felt that the social connections created through aging-in-place organizations would reduce older adults' disaster-related risks by connecting older adults with organization staff, volunteers, and members who could provide support in a personal emergency or a disaster situation. One respondent described their organization as “an extension of family for many, many people” (P1, government senior center). However, several respondents felt that groups of community-members, rather than aging-in-place organizations, should play a lead role in disaster planning, given the uncertainty that staff would be present or that the facility would be accessible in a disaster situation; as one respondent explained: “I feel like it has to be a neighborhood response, and yes, I do need to be involved, because if it did happen while I'm here, I would be part of the neighborhood right at that moment, but I don't think the lead can be us” (P9, non-profit senior center).

Organizational structure and capacity

While respondents recognized disasters as a risk to older adults' health and wellbeing, their organizations' ability to effectively reduce disaster risk for older adults reflected the realities of their organizational structure and the capacity of their physical facility and staff. Government-run senior centers, non-profit senior centers, and Villages each identified unique strengths and weaknesses in their capacity to support older adults' disaster resilience. Government senior centers described coordination, training opportunities, and resources from local Emergency Management departments as an asset, though most government senior centers described few opportunities to provide input on disaster plans or take part in disaster-related activities without direction from Emergency Management. Non-profit senior centers described greater autonomy in developing and implementing disaster-related plans and programs, but they referenced restrictive grant conditions and limited funds and staff capacity as barriers to supporting resilience-building plans and activities. Villages pointed to their organizations' large volunteer base who are equipped to provide in-home services as advantageous for providing disaster-related support in older adults' homes (e.g. storing water, installing air conditioning units). Organizations whose mission focused on serving older adults from specific ethnic and linguistic groups described the value of their organization's strong community ties and in-depth understanding of the unique social services needs of their members on an everyday basis and especially in a disaster. One respondent described their organization as uniquely equipped to coordinate with government partners on emergency planning and to provide a centralized location for their community to access resources and information in a disaster situation.

Respondents saw their organization's physical facility and staff as influential to their organization's capacity to support disaster resilience. While some organizations had their own

building, most operated in community centers or shared a building with other organizations; those that shared a space anticipated collaborating with their neighboring organizations on disaster planning and response. Most organizations' facilities were not seismically retrofitted, and several respondents felt their facility would be unsafe to access in a disaster, precluding participation in disaster response activities. Respondents also discussed the need for adequate staff capacity and expertise to support disaster-related activities. Many respondents emphasized that staff passion for the organization's mission of serving older adults motivated them to ensure members' needs were met on an everyday basis, and that that would continue in a disaster situation. As one respondent explained: "I think it's part of the philosophy of this senior center. And we are here to serve seniors. And certainly, we're here to serve them most when they're without electricity or closed in because of snow" (P10, government senior center).

Aging-in-Place Organization Actions

Respondents discussed education and outreach, planning and response activities, and collaborations as potential actions for aging-in-place organizations to support older adults' disaster resilience (Table 3).

Disaster-related activity	Specific examples
Education/outreach	Providing education for members (training, drills, info sessions, in-home preparedness education)
	Coordinating wellness checks/calls for vulnerable members
	Providing information to members and family or broader community
Planning and response activities	Providing staff training on disaster response protocols and first aid
	Storing disaster-related supplies on-site
	Developing and maintaining organizational written plans and protocols
	Providing in-home support to members (e.g. air conditioning, shoveling driveways)
	Continuing provision of case management-type support for members
	Reworking traditional operations to ensure meals continue to be served
	Cancelling operations or rescheduling programming
	Enlisting volunteers for disaster response needs (e.g. driving in snow)
	Serving as cooling center or warming center (for older adults and the broader community)
	Supporting sheltering operations (for older adults and the broader community)
	Providing support for community-level evacuation (e.g. lending vehicles)
Collaboration	Identifying older adults in need of additional support in a disaster situation to fire and police department partners
	Sharing disaster planning best practices with other aging-in-place organizations
	Coordinating with community organizations and government agencies and organizations on disaster preparedness and planning (provide input on specific needs of older adults)
	Coordinating with community organizations and government agencies and organizations during disaster response
	Operationalizing mutual aid agreements during disaster response and recovery

Table 3. Disaster-related activities currently supported or expected to be supported by aging-in-place organizations

Education and outreach

All respondents pointed to provision of disaster preparedness information or resources as an appropriate role for aging-in-place organizations in supporting older adults' disaster resilience. Education and wellness programming are strong components of their existing programming, so they saw incorporating disaster-related education and outreach into their work as highly feasible. Many respondents described a range of disaster risk communication activities, including seasonal messaging around weather-related hazards, posting and disseminating materials from state and local public health departments and emergency management departments, hosting disaster preparedness educational events, and answering questions and providing information on an individual basis. Several respondents discussed low attendance at previous disaster preparedness educational programs they had hosted. They noted that disaster preparedness information offered by aging-in-place organizations may not reach all members of the organization, but rather those who were already concerned about disaster risks and motivated to seek out resources and support. Respondents emphasized the importance of delivering disaster preparedness information in a format appropriate for an older adult audience; in-person delivery of large-font, hard-copy materials were preferred over online communication. As one respondent explained, "It probably also requires sort of boots on the ground and go and talk to people about this stuff. If it's on a website, it's just the fact that it's not going to get to everybody. Seniors necessarily aren't as savvy" (P12, nonprofit senior center). Respondents also encouraged positively framing disaster preparedness messages and ensuring messages come from a trusted messenger, such as aging-in-place organization staff, volunteers, or other members.

The lack of appropriate disaster messages tailored specifically for an older adult audience was frequently discussed as a challenge; respondents especially emphasized a need for more

appropriate messages for older adults with limited mobility, chronic health conditions, limited financial resources, or homeless older adults, as standard preparedness recommendations were not actionable for those groups. While respondents felt that disaster preparedness materials were readily available in appropriate translations, they emphasized that effective disaster risk communication for diverse communities also required building bi-directional relationships, cultural understanding, and trust were critical to effective disaster risk communication with diverse communities. As one respondent said: “The websites that have all this information, they put a lot of information online in every language possible. They try to be culturally responsive. But it's online, and it doesn't necessarily connect people. So your job's not done after you do that. It's like you have to be out there in the community. You have to be talking to seniors. You need culturally responsive right there in the community, people who speak the language” (P12, nonprofit senior center).

Planning and response activities

Nearly all respondents had a disaster or emergency plan in place, though the detail and formality of plans varied widely between organizations. Many respondents described plans specifically outlining procedures for their organization to evacuate the building, or policies around organizational closures during unsafe weather conditions. Especially sophisticated examples of disaster plans included a disaster recovery plan outlining mutual aid agreements, a disaster communication plan providing tailored messages for different audiences to ensure staff was consistent in its messaging, and hazard-specific plans including both protocols for both the organization and educational programming for members. Several respondents pointed to the uncertainties around the type, severity, and timing of a disaster as barriers to effective planning, emphasizing the need for flexibility in disaster planning and response. Respondents frequently

referenced the challenge of allocating staff time to the development and maintenance of disaster-related plans. As one respondent put it: “That's why these things need constant review, and revision, and updating and the reality is nobody has the time and the energy to establish any of that” (P9, nonprofit senior center). Similarly, while many participants discussed staff training in first aid, CPR, and the U.S. Federal Emergency Management Agency (FEMA) and American Red Cross (ARC) trainings as valuable, maintaining a trained staff was challenging as staff turned over.

Many organizations served as designated ‘warming centers’ or ‘cooling centers’ in extreme temperatures, but they described relatively low attendance during hot weather in spite of efforts to make cooling centers inviting by providing refreshments and entertainment. Most government senior centers’ facilities were designated as an ARC shelter site, and respondents described providing support to ARC volunteers who were unfamiliar with the facility. Respondents emphasized the importance of considering pets when considering older adults’ disaster preparedness and response needs, and several described incorporating pets into their organization’s cooling center and sheltering policies.

Many respondents saw maintaining a list or registry of older adults in need of additional support in a disaster as unfeasible; however, several described adding home meal delivery recipients to lists maintained by local fire and police departments to direct first responders to homebound older adults. While many respondents would not have the capacity to reach out to members in the event of a disaster, a few described coordinating or conducting home visits or wellness checks during disaster events. These efforts by staff and volunteers included checking in by phone, shoveling driveways, installing air conditioners, and coordinating pharmacy visits as in-home supports provided by organizational staff and volunteers.

Collaborations

Respondents discussed collaborations as essential to their organization's involvement in disaster-related activities. Many felt that partnering with local emergency management departments or the ARC was essential, given these organizations' expertise in disaster preparedness and aging-in-place organizations' the limited capacity to develop new programs; as one respondent described, "we are constantly doing cross-programming with them so that we can get the information out of whatever needs to be out" (P2, government senior center). Other collaborators discussed included food banks, neighborhood "hub" disaster volunteer groups, home care agencies, and religious organizations. Respondents described challenges in coordinating disaster planning with other community organizations due to staff and volunteer turnover. Urban organizations generally described fewer disaster-related collaborations than organizations in smaller communities. A respondent shared the collaborations that had occurred in a previous disaster: "In our community, because we're small enough, because we've been here a long time, I have other city departments that call and say, 'We can't do this and that today, so what can we do to help you?'" (P10, government senior center)

Aging-in-place organizations shared insights and disaster planning materials through personal connections and through a state-wide association of senior centers. Some respondents saw little need for collaboration with other aging-in-place organizations around disaster activities, but they felt that neighborhood-scale coordination between organizations was necessary; as one said, "seems like that's what would be needed in a disaster. You don't need a centralized something... because nobody could get to it. You would need to work with all the little partners that were inside trying to help serve people in a disaster" (P6, nonprofit senior center).

Government Responsibilities

Respondents looked to local government agencies and organizations to coordinate inclusive disaster planning and tailor disaster communications and policies specifically for an older adult audience. Many respondents also emphasized a desire for two-way collaborations with government planners, in which organizations have the opportunity to participate in disaster planning conversations to share their insight on older adults' specific needs and identify opportunities for their organization to contribute to disaster preparedness and response. A respondent shared: "I just think that whether it be the state or the county or cities, when they have disaster planning committees or meetings, to be sure and involve your senior centers. Because we are the focal point within the community. We know the seniors." (P10, government senior center)

While some respondents felt they were not equipped to contribute significantly to disaster response efforts, others felt that their organization had both physical resources and social connections that would be valuable in a disaster situation and should be included in government-led neighborhood and city-level disaster plans. As one respondent put it: "If there's a loose way that we would be connected to a bigger overall emergency response in the city, we would be glad to do that. But I can't plan what that would be. I would need somebody who is looking at the bigger picture to just talk to me about how we could fit in and help." (P6, non-profit senior center)

Respondents looked to government agencies and organizations to take a hands-on approach to developing educational materials and providing organizational policy recommendations that specifically addressed the heightened vulnerability and unique needs of older adults; as a participant emphasized: "We really need the local government to be here physically and tell us exactly how we can make this work together, collaborate with each other, and make sure that we are prepared...And I say this because our constituents are different. They're not the school-age

children. These are very vulnerable, and there should be a different program for that” (P5, non-profit senior center).

DISCUSSION

Our results indicate that aging-in-place organizations support a diversity of activities that may build older adults’ disaster resilience. Our analysis suggests that local physical and social context influence the role aging-in-place organizations play in disaster planning. Organizations saw their diverse approaches supporting older adults’ disaster resilience as complementary and closely connected to local government disaster planning and response activities.

Our research highlights the importance of considering local context when considering an organization’s capacity to support disaster-related activities. Our findings point to a need for community-engaged disaster planning efforts at the neighborhood, city, and county level to ensure that plans to support vulnerable populations will align with the realities of unique local physical and social context. Aging-in-place organizations have an in-depth knowledge of the detailed realities of serving older adults in their communities; soliciting their input throughout the disaster planning process could ensure that the unique needs of older adults are consistently considered and addressed.

Factors influencing disaster risk and resilience opportunities included both built environment and social environment factors, aligning with the World Health Organization’s Eight Domains of Livability framework (World Health Organization, 2007). While aging-in-place organizations recognized that built environment ‘domains’ such as housing, transportation, and buildings are relevant to disaster risk and resilience, aging-in-place organizations focus primarily on social services and are not well-equipped to lead interventions related to modifying built environment factors to support older adults’ disaster resilience. Future studies should examine the

perspectives of other organizations, such as senior housing, public transportation, and urban planning organizations, in creating built environments that support disaster resilience for older adults.

According to Chandra et al. (2013)'s Levers of Resilience framework, factors associated with community resilience include wellness, education, engagement, self-sufficiency, partnership, quality, and efficiency. Our findings that education and partnerships were central to aging-in-place organizations' disaster activities align closely with the Levers framework. Future research should examine the efficacy of specific communication and collaboration-focused activities to build a stronger evidence base for informing aging-in-place organizations' disaster-related programming.

Given limited budgets, staff capacity, and disaster-related expertise, aging-in-place organizations must prioritize effective and feasible resilience-building activities. Government agencies and organizations should support and incentivize aging-in-place organizations' participation in disaster preparedness educational activities and neighborhood-scale disaster planning efforts. Aging-in-place organizations need accessible tools and resources to enable their organization to make use of their unique assets and identify feasible opportunities to contribute to disaster planning and response. Organizations would benefit from successful examples of aging-in-place organizations contributing to local disaster activities and supporting older adults in preparing for and responding to disasters.

Leadership from local government agencies and organizations is essential in coordinating disaster planning and response for older adults. Providing tailored policy guidance for each aging-in-place organizational model may be valuable (Shih et al., 2018), given the unique challenges and opportunities faced by government senior centers, non-profit senior centers, and Villages. Similarly, aging-in-place organizations in smaller communities and large urban areas may benefit

for tailored support, although more research is needed to understand how best to support older adults' disaster resilience in rural communities (Ashida et al., 2016). Brief planning documents, draft program materials, and web-accessible trainings may enable aging-in-place organizations with limited resources or in rural environments to participate more easily in resilience-building activities. Local and state government agencies and organizations should develop such tools in collaboration with community partners, but may benefit from existing materials and guidance developed at the federal level (Gibson 2006; Acosta et al. 2018).

Our results show that aging-in-place organizations play a role in providing community-level supports to older adults aging-in-place and potentially increasing their resilience to disasters. However, older adults' disaster resilience reflects not only community-level factors discussed in this study, but also individual-level factors such as health and functional status, prior experiences, and personal beliefs and behaviors (Kwan & Walsh, 2017). Future studies should examine the role of aging-in-place organizations in increasing individual disaster resilience factors for older adults aging-in-place and explore the relative contribution of community-level and individual-level factors to older adults' overall resilience.

Limitations

The main goal of this qualitative research endeavor is to provide well-grounded rich description rather than objective and population-wide generalizable knowledge; findings may be limited in their relevance to aging-in-place stakeholders in other settings (Miles & Huberman 1994; Morse, 1999). This study was conducted in a large county in the Pacific Northwest, and findings are most directly relevant to other large metropolitan areas and areas with similar priority hazards to the study area. However, the King County area contains urban, rural, and suburban populations representing diverse populations, and many of the study's findings may be relevant to

any community's efforts to build disaster resilience for older adults. Interviewees volunteered to participate in the study, and the perspectives of organizations that did not elect to participate in the study are not reflected in these results, including organizations with very limited resources or those with no previous involvement in disaster-related activities. Our study population included only senior centers and Villages, and therefore our findings do not represent perspectives from other organizational types such as age-friendly communities, senior companionship programs, or faith-based organizations that may also support older adults' disaster resilience. Interviews were conducted with organizational leadership, whose perspectives may differ that of from other staff, volunteers, or organizational members. Our study also focused on organizations that serve a select group of older adults aging-in-place; older adults who are not connected to senior centers and Villages may be homebound or experiencing severe social isolation, factors that likely put them at great risk in disaster situations; future research should prioritize the identification and evaluation of resilience-building strategies for these high-risk groups.

Conclusion

Given the increasing frequency and severity of disasters and the aging of the U.S. population, there is an urgent need to identify and implement effective strategies to support older adults in preparing for, responding to, and recovering from disasters. Aging-in-place organizations recognize disasters as a threat to older adults' health and safety and see opportunities to contribute to disaster resilience for older adults in their communities, though the type and extent of participation in resilience-building activities reflects each organization's unique local context. Aging-in-place organizations have insights and resources to contribute to local disaster planning efforts. They are also uniquely equipped to serve as a trusted messenger of disaster-related information for a highly vulnerable population with specific risk communication needs. Local

government agencies and organizations can support aging-in-place organizations in building older adults' disaster resilience by including them in neighborhood and city-level planning conversations and by providing tailored disaster planning and messaging material for older adults and aging-in-place organizations.

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CONCLUSION

Disasters pose a serious risk to older adults' health and well-being, and traditional approaches to emergency management and disaster risk communication do not address the unique needs of this growing age group. Aging-in-place organizations in King County, Washington support a range of disaster-related activities and have a detailed understanding of the realities of providing social services and information to older adults in their communities. Local governments should include aging-in-place organizations in disaster planning conversations and provide tailored resources and support related to older adults' disaster preparedness and response. Future research should explore perspectives of aging-in-place organizations with different organizational structures and in areas with a diversity of hazard profiles. There is also a need for rigorous studies to evaluate the efficacy of aging-in-place organizations' disaster-related activities to build an evidence base in inform future efforts to build older adults' disaster resilience.

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APPENDIX A. Interview Guide

Thank you for agreeing to participate in my study. My thesis is exploring the role of community-based senior service organizations in supporting older adults' disaster resilience, or a community's capacity to rebound from a disaster. A 'disaster' is defined as a situation or event that overwhelms local capacity: a few examples of disasters that have previously been declared in Washington state are earthquakes, heat waves, wildfires, and severe storms. I am talking with senior center and Village leadership to 1) gather information on how [senior centers or Villages] in King County think about disasters and 2) identify key recommendations for emergency planning.

The interview will last about one hour. I will be taking notes and recording the interview so that I can refer to the discussion later. We may write up our findings in a report or for publication in a peer-reviewed journal. We will not refer to you by name in any report or publication without your prior explicit permission. We also will share de-identified results with Emergency Management partners and the Age-Friendly Seattle program.

Your participation in this interview is voluntary. You can refuse to answer any question, and you can leave the study at any time. You will not be penalized for not answering any question or for leaving the study at any time.

If you are interested in reviewing a summary of our conversation, I would be happy to share that with you. Please let me know if that's something you are interested in.

Do you have any questions before we begin?

Do you consent to participate in my study? [Ask for a verbal "yes."]

Q1: Tell me about how you think a disaster might affect your [senior center or Village]'s members.

Follow-up: what do you think might happen in a disaster?

Follow-up: have you dealt with any disasters during your time at the [senior center or Village]?

Response efficacy

Q2: What role, if any, do [senior center or Village] have to play in supporting older adults in preparing for, responding to, or recovering from a disaster?

Probe: Does your organization have a role in response or recovery from a disaster caused by a natural hazard?

Follow-up: What types of support could your organization offer to its members or the community in a disaster situation?

Follow-up: Are there things that you think your [senior center or Village] do that would not make a difference?

Self-efficacy

Q3: How is your [senior center or Village] equipped to support disaster resilience for older adults?

Probes: resources, skills, interest, staff knowledge

Follow-up: What types of efforts or preparations do you think should be in place at your [senior center or Village] but are beyond your organization's capacity?

Follow-up: How well prepared do you think your senior center is should a disaster strike? Do you feel your organization is ready for a disaster?

Q4: How does your [senior center or Village]'s work support members in preparing for, responding to, or recovering from disasters?

Follow-up: What opportunities do you see for your [senior center or Village] to make its operations and its members more resilient to disasters in the future?

Susceptibility

Q5: How might disasters threaten your organization's operations and members?

Follow-up: Tell me about the types of disaster that you worry most about.

Probe: *can you tell me anything more about that.*

Follow-up: How do you prioritize what hazards to plan for at your organization? Do you have a process for identifying priority hazards?

Severity

Q6: What type of disaster do you think would be the most dangerous for your organization's operations and members?

Probe: Can you tell me more about ____ (*whatever they mention*)?

Probe: specifics on wildfire smoke, extreme heat, severe weather, earthquakes

Follow-up: Which of your members do you think would be at greatest risk?

Q7: In a disaster, what would determine whether your [senior center or Village] could continue to operate?

Follow-up: How might a disaster impact your operations?

Q8: Does your [senior center or Village] communicate with its members about disasters?

Probe: answering personal questions? Providing written resources? Hosting events or trainings?

Probe: What is challenging about disaster communication? What support would be needed?

Q9: Does your [senior center or Village] coordinate or provide transportation services?

Follow-up: Would it be feasible for your senior center to provide transportation support or evacuation support?

Probe: What would be challenging? What support would be needed?

Q10: Would keeping a list of those in need of language or mobility assistance in a disaster be feasible for your organization?

Follow-up: what type of information would you be able to record about members in need of assistance?

Q11: Do you currently partner with any other organizations to support disaster preparedness for your center's members?

Follow-up: What kind of help would you expect from *other* organizations or entities in this kind of an event?

Q12: Does your organization serve as a cooling center or a warming center?

Follow-up (if yes): can you tell me about that experience?

Probe: any challenges? Did you receive resources or support? Did members or non-members attend?

Q13: Do you know if your [senior center or Village] building would be able to withstand an earthquake?

Q14: In an ideal world, what do you think the role of [senior centers or Villages] in promoting disaster resilience would be?

Q15: How do you think your senior center compares to other senior centers in King County in terms of resources and capacity to address disasters?

Follow-up: What do you think underlies differences between centers in regards to disaster preparedness? Does your center get the same amount of support from government programs compared with other senior centers? How about financial resources?

Q16: Do you have any suggestions for how city and government programs working to support disaster preparedness for older adults could better support your members?

Demographic questions:

Q17: How long have you worked at _____?

Q18: How many members does your [senior center or Village] serve?

Q19: What neighborhood(s) do most of your members live in?

Q20: We are interested in the living situation of your members. Of all your members, what percent do you think live alone, with family, in a retirement community, are homeless, or other?

Q21: We would also like to know about the financial situation of your members. Of all your members, what percent do you think are lower-income, middle-income, and upper-income?

Q22: Is there anything else you would like to tell me that might be important to this project on the topic of disaster resilience?

Snowball sampling:

Q23: Are there other [senior center or Village] directors that you recommend I talk to?

APPENDIX B. Codebook

Code	Definition	When to use/not use
Threat	Beliefs about the probability of experiencing disasters, or the magnitude or significance of the effects of disasters and the severity of consequences.	Discussion of reasons that specific individuals or groups are especially vulnerable in disasters. Discussion of hazards impacting older adults in disasters. Discussion of reasons that senior centers (as organizations/staff) would be negatively impacted by a disaster. Discussion of relative magnitude of threats to senior center organizations or to older adults.
Self-efficacy	Beliefs about an organization or individual's ability to take action to support older adults' disaster resilience.	Discussion of older adult' individual capacity to prepare for, respond to, or recover from disasters. Discussion of <i>feasibility</i> of activities for senior centers to support disaster resilience (not whether the activity would be effective, but whether it could be carried out at all). May prioritize challenges or explanation for lack of disaster activity.
Response efficacy	Beliefs about the effectiveness of an organization or individual's action in building older adults' disaster resilience.	Discussion of the <i>effectiveness</i> of senior center involvement in disaster-related activities. Discussion of the effectiveness of older adults' actions in building disaster resilience. May emphasize reasons why the senior center or older adult would be unable to promote disaster resilience, or how they are uniquely equipped to do so.
Health	Medical care, medication, injury prevention or treatment, health status, mental health or health/wellness programs, health education	Mention of health, health services, or health care for older adults. Includes discussion of disability and physical and mental limitations. Includes mention of very advanced age or frailty.

Communication	Information, education, training, language, communicator roles	Discussion of communication activities occurring at senior centers, not necessarily related to disasters; may be past, current, or potential. Messaging strategies, challenges to communication, roles and responsibilities around communication. May include training, educational materials or programming, one-on-one conversations, strategies for message framing and message delivery. Does not include communication among staff, e.g. staff training (which would be coded as policy).
Social connection	Older adults' social interactions or lack thereof	Presence of social isolation in older adults. Social isolation as a source of vulnerability. Discussion of the senior center's activities build social connections and facilitate disaster resilience. Includes discussion of older adults in community who are not connected to the senior center. Includes relationship/trust of older adults with senior center. Includes mention of pets in disaster planning. Includes reverse 911/registries and call lists for older adults. Includes discussion of living alone.
Housing	Housing, home design, and homelessness	Discussion of accessibility of seniors' home environment. Discussion of housing insecurity (homelessness, rental status, housing cost). Discussion of home upkeep. Discussion of staying at home during disaster events.
Transportation	Transportation services for older adults.	Type of transportation used by older adults. Senior centers' transportation services. Challenges to transportation in disaster events. Physically reaching older adults in disaster events. Limited mobility in older adults. Discussion of transportation to senior center.
Collaboration	Partnerships between organizations to disaster resilience	Discussion of senior center engagement with other organizations. Discussion of past and existing collaborations or identification of potential collaborations to support specific goals (not necessarily disaster-related).

Opportunity/Challenge	Describes factors that support or limit senior centers' involvement with disaster resilience activities or older adults' disaster resilience.	Discussion of factors that positively or negatively impact senior centers' capacity to provide services, meet goals, or support activities related to disaster resilience. Will likely be double coded to reflect the type of opportunities and challenges. Should also be used for "wish lists" or recommendations. Does not apply to individual seniors, but only organizational factors.
Geography	Rural, urban, or neighborhood context	Discussion of senior center's location. May discuss relevance of rural or urban status to center's activities and services, or the demographics of the older adults served. May discuss size or culture of geography as an influence on the type of services or activities provided in disasters. May discuss how physical geography influences vulnerability or resilience. Discussion of general neighborhood/community-level features influence senior services provision or disaster preparedness. May discuss experiences with disasters in other places.
SES/Race/Gender	Relevance of socio-economic status, race, and gender to older adults	Discussion of older adults' SES, race, and gender. Description of unique features of groups or individuals. May discuss SES, race and gender as explaining behaviors, needs, opportunities, challenges. May be double coded with communication when discussing need for linguistically appropriate materials. Will be double coded with geography when discussing gentrification
Policy + plans + supplies	Systematic discussion, planning, or action at the organization, neighborhood, or city level	Discussion of existing or potential plans or policies relating to disasters that influence senior center activities. Plans and policies may be for the senior center specifically or may be from other organizations or government partners that influence senior centers' disaster activities. Mention of government activities, systems, funding, trainings, specific to disasters. Mention of disaster kits, materials, sheds, and shelters.

<p>Organization structure</p>	<p>Discussion of senior center's organizational structure (non-profit, government, in-home services, part of larger organization, accountable to a board)</p>	<p>Discussion of how a senior center is set up, management, organizational, and funding structure. Unique features of the senior center, often mentioned in connection to capacity to respond to disasters. Discussion of changes to organizational structure that would increase capacity to respond to disasters.</p>
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APPENDIX C. Member Checking Email Template

Dear _____,

This is Claire Pendergrast, a Masters of Public Health student at the University of Washington interested in healthy aging and community resilience to disasters. Thank you for taking the time to support my masters thesis research last summer by participating in an interview to share your perspective on older adults' disaster resilience. Your perspectives were both salient and informative, and I appreciate the time that you took out of your busy schedule to contribute to this research.

As a way to ensure that my findings truly reflect our conversation, I am emailing you a summary of the key points that I took from our discussion. Asking you to verify that this summary reflects our conversation is a way to ensure that I am presenting a final report that accurately represents the perspectives of interview participants. If you are interested in reviewing this summary, please see the key points below. You can simply reply to this email to let me know that you believe these take-away points to be accurate based on our conversation, or to provide any revisions or comments. In order to conform to study timelines, I'm hoping to hear back from interested participants with confirmation, revisions, or comments by [date]. As I shared during the interview, this research will be written up in a report or publication in a peer-reviewed journal, but we will not refer to you or your organization by name in any report or publication.

Please contact me by email at [email] or by phone at [phone] with any questions or concerns. I will also be in touch by email with a write-up of my final report by late June. Thank you for your time and assistance in the completion of this research project!

Best,

[Signature]

Reducing Disaster Risk for Older Adults: A Guide for Senior Centers



What is your organization's role?

Interviews with senior center directors in King County, Washington found that senior centers are involved in a range of disaster-related activities. Every senior center is unique, and senior centers should prioritize activities that align with their organization's capacity, mission, and community needs. This factsheet includes guidance and resources to make it easy to your senior center to plan ahead and ensure your organization and the older adults you serve are ready for a disaster.

Why are disasters a concern for older adults?

Disasters threaten health and safety for people of all ages, but research shows that older adults face greater health risks during disasters than any other age group. Recent disasters like Hurricane Katrina, Hurricane Sandy, and the Paradise Wildfires have shown that older adults are especially vulnerable, and point to the importance of ensuring that disaster planning and response efforts specifically address the unique needs of older adults. In recent years, the U.S. has experienced a record-breaking number of disasters, from wildfires to hurricanes to winter storms. Older adults with mobility problems, chronic health conditions, limited financial resources, or limited social support may face challenges when preparing for, responding to, or recovering from disasters. Government agencies and organizations, community organizations, and friends, families, and neighbors can all play a role in ensuring older adults are safe and supported before, during, and after disasters.

How can this guide help?

See the back of this flyer for strategies that senior centers are already using to build disaster resilience for older adults. Senior center disaster resilience strategies focused on **disaster communication, preparedness and planning, and collaboration.**

You will also find links to online resources from trusted state and federal government agencies and non-profits. These resources included high-quality communications materials and detailed planning guidance specifically for older adults in disasters, which may be useful for senior centers developing or updating disaster plans and communications materials.

“ I just think that whether it be the state or the county or cities, when they have disaster planning committees or meetings, to be sure and involve your senior centers. Because we are the focal point within the community. We know the seniors.”

-King County, WA senior center

This guide was prepared by Claire Pendergrast, a graduate student at the University of Washington School of Public Health. Email clairebpende@gmail.com with questions or comments.

What disaster-related activities can my senior center support?

Every senior center is unique, and the realities of your organizations' mission, facility, staffing, and resources will influence the type and extent of disaster-related activities that make sense for your senior center. The following strategies have been used by King County, WA senior centers to support older adults' disaster resilience. Use this guide to identify which strategies sound appropriate for your center and to start conversations with staff and partner organizations on taking action to reduce disaster risk.

COMMUNICATION STRATEGIES

- Host educational programs, distribute printed materials, or include messages in your newsletter related to disaster preparedness and response.
- Engage your members to identify specific questions of topics of interest to them related to disaster preparedness.
- Call members before, during, or after disasters to ensure they have adequate supplies and support in a disaster situation.

PREPAREDNESS & PLANNING STRATEGIES

- Review and update your organization's disaster plan, and ensure staff and members have a clear understanding of what would happen in a disaster.
- Familiarize yourself with disaster plans for your city or neighborhood and, if appropriate, provide input on how plans could better accommodate older adults.
- Assist members to enroll in Smart911 or other registries to make emergency responders aware of members' needs.

COLLABORATION

Partnering with other organizations can reduce the time, resources, and expertise needed for senior centers to support disaster-related activities. Collaborations may support disaster communication, planning, and response efforts. Key collaborators identified by King County senior centers included local Emergency Management, state and local public health departments, police and fire departments, American Red Cross, and neighboring community-based organizations.

RESOURCES

Disaster Communications Resources for Older Adults

Emergency Preparedness for Older Adults (Centers for Disease Control)

<https://www.cdc.gov/features/older-adult-emergency/index.html>

Make a Plan: Seniors (ready.gov)

<https://www.ready.gov/seniors>

Disaster Preparedness Guide for Seniors and Caregivers (seniorliving.org)

<https://www.seniorliving.org/research/disaster-preparedness/>

Emergency Preparedness for Older Adults and People with Disabilities (Administration for Community Living)

<https://acl.gov/programs/emergency-preparedness>

Emergency Preparedness Resources for Specific Groups (Washington Department of Health)

-Includes deaf and hard of hearing, medical needs, mobility disability, pets and emergencies, psychological and emotional needs, and visual disabilities

<https://www.doh.wa.gov/Emergencies/BePreparedBeSafe/EmergencyInformationforSpecificGroups>

Disaster Planning Resources for Senior Centers

Emergency Preparedness Tools and Resources for Community-based and Faith-based Organizations (King County Community Resilience + Equity Program)

<https://kingcounty.gov/depts/health/emergency-preparedness/Community-Resilience-Equity/standards.aspx>

Capacity-Building Toolkit for including Aging & Disability Networks In Emergency Planning (NACCHO)

<https://www.naccho.org/uploads/downloadable-resources/Capacity-Building-Toolkit-for-Aging-and-Disability-Networks-2-5-19.pdf>

Building Older Adults' Resilience by Bridging Public Health and Aging in Place Efforts Toolkit (RAND)

<https://www.rand.org/pubs/tools/TL282.html>