

## Older Adults' Vulnerability to Climate Change Annotated Bibliography

Adams, R. M., Evans, C. M., Mathews, M. C., Wolkin, A., & Peek, L. (2021). Mortality from forces of nature among older adults by race/ethnicity and gender. *Journal of Applied Gerontology*, 40(11), 1517–1526. <https://doi.org/10.1177/0733464820954676>

Older adults are especially vulnerable to disasters due to high rates of chronic illness, disability, and social isolation. Limited research examines how gender, race/ethnicity, and forces of nature intersect to shape older adults' disaster-related mortality risk. The authors compare mortality rates among older adults in the United States across gender, race/ethnicity, and hazard type using the CDC's Wonder database. Their results demonstrate that older adult males have higher mortality rates than females. American Indian/Alaska Native males have the highest mortality and are particularly impacted by excessive cold. Mortality is also high among Black males, especially due to cataclysmic storms. To address disparities, the authors suggest targeted messaging and programs.

Aldrich, N., & Benson, W. F. (2008). Disaster preparedness and the chronic disease needs of vulnerable older adults. *Preventing Chronic Disease*, 5(1), A27. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2248769/pdf/PCD51A27.pdf>

About 80% of older adults have at least one chronic condition that makes them more vulnerable than healthy people during a disaster. These chronic conditions – combined with the physiological, sensory, and cognitive changes experienced as part of aging – result in frail older adults having special needs during emergencies. Planning and coordination among public health and emergency preparedness professionals and professionals who provide services for the aging are essential to meet these special needs. Several tools and strategies already exist to help prepare these professionals to protect and assist older adults during a disaster. These include having professionals from diverse fields work and train in coalitions, ensuring that advocates for older adults participate in community-wide emergency preparedness, and using community mapping data to identify areas where many older adults live.

Antal, H., & Bhutani, S. (2022). Identifying linkages between climate change, urbanisation, and population ageing for understanding vulnerability and risk to older people: A review. *Ageing International*, 1–24. <https://doi.org/10.1007/s12126-022-09504-7>

The present century faces developmental fallout as vulnerability and risk mount on the global systems due to climate change, urbanisation, and population ageing. Population ageing is gaining a stronger hold in urban areas, and so are climate change and related shocks and stresses. In this context, the paper aims to understand the perilous predicament of older people due to the occurrence and interaction between climate change, urbanisation, and population ageing. This review investigates the underpinnings of the nature of the interaction and various climate change related shocks and stresses

affect older people in urban settings. These understandings highlight the need to ensure that urban environments remain age-friendly even in the face of climate change.

Ayalon, L., Keating, N., Pillemer, K., & Rabheru, K. (2021). Climate change and mental health of older persons: A human rights imperative. *American Journal of Geriatric Psychiatry*, 29(10), 1038–1040. <https://doi.org/10.1016/j.jagp.2021.06.015>

Climate change threatens the basic prerequisites for wellbeing, including clean air and water, food supply, and the adequacy and security of shelter. Climate change is a powerful and ongoing presence in the lives of older persons, both creating and exacerbating vulnerabilities. The absence of a legally binding international instrument specifically protecting the human rights of older persons and minimal references to older persons in key international climate instruments attest to the lack of attention to and visibility of older persons in national and international law. There is a need to integrate the areas of older people and environmental sustainability to ensure that the rights of older people are preserved especially now, as the effects of the climate change crisis become more pronounced.

Brown, L. M., & Frahm, K. A. (2016). The impact of disasters: Implications for the well-being of older adults. In L. George, & K. Ferraro (Eds.), *Handbook of Aging and the Social Sciences* (pp. 357–374). Academic Press. <https://doi.org/10.1016/B978-0-12-417235-7.00017-2>

Since 2000, there has been a notable increase in the number of major disasters. Disasters frequently occur, with older adults experiencing a disproportionate number of adverse effects. This increase has been accompanied by an upturn in the number of government and nonprofit organizations promulgating detailed instructions describing how to mitigate, prepare for disasters, obtain safe shelter, cope with adverse events, and initiate the recovery process. However, despite these efforts, government officials and researchers consistently report that older adults are at greatest risk for adverse outcomes, but are the least prepared subgroup of the population.

Burk-Leaver, E. (2021). Addressing the adverse effects of climate change on the human rights of older persons. *Innovation in Aging*, 5(Suppl 1), 589. <https://doi.org/10.1093/geroni/igab046.2260>

The common consequences of climate change events include: displacement, loss of sustainable shelter and housing, and limited access to medical care and other resources such as food, clean water, and sanitation services. These adverse effects coincide to an alarming degree with the human rights most essential to those in vulnerable or marginalized groups, including older populations. The stressors of climate change events greatly exacerbate older populations' vulnerability, especially when compounded by negative social determinants of health. Using the SDGs as a framework to develop policies around climate action and the use of improved industry, innovation, and infrastructure to create sustainable cities/communities, it is possible to establish reduced inequalities to promote overall good health and well-being in our older populations.

Bushong, L. C., & Welch, P. (2023). Critical healthcare for older adults post Hurricane Ian in Florida, United States. *Journal of Public Health Policy*, 44. <https://doi.org/10.1057/s41271-023-00444-3>

Older adults are disproportionately vulnerable during natural disasters and lack adequate healthcare in the weeks following disaster, resulting in excess mortality. This study examines fatality records from Hurricane Ian (2022), in which older adults comprised the majority of deaths, to identify actionable recommendations for future disaster preparedness. The authors highlight the need for sustaining critical public healthcare to prevent additional deaths following a disaster. Post-disaster mobile dialysis and readily available generators/fuel for medical machines can prevent many fatalities from loss of power. Additionally, enrolling in emergency special needs service should be taken on by someone's healthcare provider, not the individual in need. The findings underscore that many disaster-related deaths among older adults are preventable with adequate planning and systemic support.

Carnes, B. A., Staats, D., & Willcox, B. J. (2014). Impact of climate change on elder health. *Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences*, 69(9), 1087–1091. <https://doi.org/10.1093/gerona/glt159>

Demographers predict human life expectancy will continue to increase over the coming century. These forecasts are based on two critical assumptions: advances in medical technology will continue apace and the environment that sustains us will remain unchanged. The consensus of the scientific community is that human activity contributes to global climate change. That change will degrade air and water quality, and global temperature could rise 11.5°F by 2100. If nothing is done to alter this climatic trajectory, humans will be confronted by a broad spectrum of radical environmental challenges. Historically, children and elderly adults account for most of the death toll during times of severe environmental stress. This article makes an assessment from a geriatric viewpoint of the adverse health consequences that global climate change will bring to the older segments of future populations in the United States.

Choi, E., Wu, B., & Ailshire, J. (2023). Extreme weather and health among older populations: individual and contextual-level vulnerability and resilience. *Innovation in Aging*, 7(Supplement\_1), 1163. <https://doi.org/10.1093/geroni/igad104.3730>

Social and environmental factors shape older adults' vulnerability and resilience in extreme weather events but have remained underexplored. This study investigates individual and contextual determinants of health to better inform individual and state-level preparedness efforts. Logistic regression analysis showed that social factors such as living alone and living in a rural area increase vulnerability to mental and physical distress, while having community cohesion reduced associated distress. Findings identify socioeconomically disadvantaged older adults as particularly at risk, lacking the resources to bounce back from the impacts of natural disasters.

Cherniack, E. P. (2008). The impact of natural disasters on the elderly. *American Journal of Disaster Medicine*, 3, 133–139. <https://doi.org/10.5055/ajdm.2008.0018>

Many, but not all, studies have found that older individuals are more likely to suffer adverse physical consequences. This is not surprising considering the elderly are more likely to be in worse health before disasters and less able to seek assistance afterward. The lack of agreement between studies is not surprising either, considering heterogeneity in disasters, populations, and survey methods. This heterogeneity also precludes determination as to whether older individuals have a worse or more favorable psychological outcome than younger individuals. Several investigations, however, have noted that individuals may be more resilient to some of the psychological manifestations of disasters with more frequent exposure, often including the elderly. Many suggestions have been proposed to address the potential needs of older individuals. However, there are only anecdotal reports of the success of the application of such methods.

Cloyd, E., & Dyer, C. B. (2010). Catastrophic events and older adults. *Critical Care Nursing Clinics of North America*, 22(4), 501–513. <https://doi.org/10.1016/j.ccell.2010.10.003>

The plight of older adults during catastrophic events is a societal concern. Older persons have an increased prevalence of cognitive disorders, chronic illnesses, and mobility problems that limit their ability to cope. These disorders may result in a lack of mental capacity and the ability to discern when they should evacuate or resolve problems encountered during a catastrophe. Some older persons may have limited transportation options, and many of the elderly survivors are at increased risk for abuse, neglect, and exploitation. Recommendations for future catastrophic events include the development of a federal tracking system for elders, the designation of separate shelter areas for elders, and involvement of gerontological professionals in all aspects of emergency preparedness and care delivery, including training of frontline workers.

Cox, K., & Kim, B. (2018). Race and income disparities in disaster preparedness in old age. *Journal of Gerontological Social Work*, 61(7), 719–734. <https://doi.org/10.1080/01634372.2018.1489929>

This study investigated to what extent income status and race/ethnicity in old age interplayed with disaster preparedness. Data came from the 2010 Health and Retirement Study, a nationally representative panel survey of older Americans. OLS regression was used to examine the main and interaction effects of race/ethnicity and lower income status on disaster preparedness scores. The authors found that older adults in lower income status had lower preparedness level than those in higher income. Hispanics tended to be less prepared compared to White and Blacks. Preparedness of Black elders was not significantly different from that of Whites. However, interestingly, Black elders in lower income status were significantly less prepared for disaster than other groups. This study identified vulnerable subgroups of older adults for disaster preparedness and suggests that preparedness programs should target minority and low-income elders.

Filiberto, D., Wethington, E., Pillemer, K., Wells, N., Wysocki, M., & Parise, J. T. (2019). Older

people and climate change: Vulnerability and health effects. *Generations*, 33(4), 19–25.  
<https://www.jstor.org/stable/26555689>

Habitability, health, and environmental justice will be challenged as the adverse effects of climate change interact with factors that are characteristic of older people. This article describes the potential of climate change to affect the environment in a number of ways that place increased stress disproportionately on the most vulnerable populations, including the old, the young, and the poor. Older people are among the most at risk because of decreased mobility resulting from age, changes in physiology, and more restricted access to resources, all of which may limit adaptive capacity. The article details the challenges older people will face, the far-reaching implications for the health of individuals and the population as a whole, and strategies for coping.

Gamble, J. L., Hurley, B. J., Schultz, P. A., Jaglom, W. S., Krishnan, N., & Harris, M. (2012). Climate change and older Americans: State of the science. *Environmental Health Perspectives*, 121(1), 15–22. <https://doi.org/10.1289/ehp.1205223>

Older adults make up 13% of the U.S. population, but are projected to account for 20% by 2040. Coinciding with this demographic shift, the rate of climate change is accelerating, bringing rising temperatures; increased risk of floods, droughts, and wildfires; stronger tropical storms and hurricanes; rising sea levels; and other climate-related hazards. Older Americans are expected to be located in places that may be relatively more affected by climate change, including coastal zones and large metropolitan areas. The authors performed an extensive literature survey and summarized key findings related to demographics; climate stressors; factors contributing to exposure, sensitivity, adaptive capacity; and adaptation strategies. The objective was to assess the vulnerability of older Americans and to identify opportunities for adaptation.

Greenberg M. (2014). *Protecting Seniors Against Environmental Disasters: From Hazards and Vulnerability to Prevention and Resilience*. Routledge. <https://doi.org/10.4324/9780203763346>

This book connects the dots between the US baby boom generation and the marked increase in natural and human-caused disasters. It evaluates options available to seniors, their aids, for and not-for and for-profit organizations and government to reduce vulnerability to hazard events. These include coordinated planning, risk assessment, regulations and guidelines, education, and other risk management efforts. Using interviews with experts, cases studies, especially of Superstorm Sandy, and literature, it culls best practice and identify major gaps. It is original and successful in making the connection between the growing group of vulnerable US seniors, environmental events, and risk management practices in order to isolate the most effective lessons learned.

Gutman, G. M., & Yon, Y. (2014). Elder abuse and neglect in disasters: Types, prevalence, and research gaps. *International Journal of Disaster Risk Reduction*, 10, 38–47.  
<https://doi.org/10.1016/j.ijdrr.2014.06.002>

A systematic review of literature and of information from key organizations was conducted to provide an overview of what is known about elder mistreatment in disaster

situations, identify research gaps, and to discuss possible policy interventions. The types of abuse most commonly addressed in these articles were financial, neglect, and physical abuse. Research is needed to fill the substantial information gaps. Increase in use of services has been employed to document increases in child abuse and domestic violence during and after disasters, and the same methodology could be employed for elder abuse and neglect. Research on best practices is needed for end-of-life care patients and frail elders in institutional settings. Training and awareness programs for first responders are also needed so that they can better recognize seniors from abusive environments and to prevent abuse from occurring in emergency housing to which seniors are relocated.

Haq, G. (2017). Growing old in a changing climate. *Public Policy & Aging Report*, 27, 8–12. <https://doi.org/10.1093/ppar/prw027>

An aging society and a changing climate are two key policy challenges that need to be addressed to meet the United Nations Sustainable Development Goals and ensure a safe, secure, equitable, and sustainable future. Although many older people are healthy and socially and economically active, others are not, rendering them physically, financially, and/or emotionally less resilient in coping with a changing climate. Understanding the factors that contribute to older people's vulnerability and resilience can therefore strengthen the capacity of government to prevent and minimize climate-related impacts on this demographic group.

Haq, G., & Gutman, G. (2014). Climate gerontology: Meeting the challenge of population ageing and climate change. *Zeitschrift für Gerontologie und Geriatrie*, 47(6), 462–467. <https://doi.org/10.1007/s00391-014-0677-y>

The global population is ageing at a time when climate variability is increasing. It is argued that if we are to minimize the negative impact of environmental change on older people, interdisciplinary study of the convergence of the two trends, "climate gerontology", is needed. Climate gerontology can examine the unique challenges and needs of older people in coping with extreme weather events. It can contribute to our understanding of the everyday challenges of growing old in a changing climate and how we can achieve the "longevity dividend". It can lead the way to the development of effective policies to reduce their carbon footprint, protect older people from climate-related threats, and mobilize their wealth of knowledge and experience to address these.

Ji, H., Shin, S. H., Coronado, A., & Lee, H. Y. (2024). Extreme heat, functional disability, and social isolation: Risk disparity among older adults. *Journal of Applied Gerontology*, 44(4). <https://doi.org/10.1177/07334648241282904>

Older adults are particularly vulnerable to the impacts of extreme heat. This longitudinal study analyzed data from over 35,000 older adults to determine how extreme heat impacts functional disability over time. Findings indicate that more frequent exposure to extreme heat increases the number of instrumental activities of daily living (IADL) that older adults find difficulty with. Socially isolated older adults had a disproportionate risk of experiencing heat-related functional disability. Maintaining contact with children and

receiving peer support helped buffer against heat-related functional decline. Greater awareness of these disparities and targeted social support for older adults is needed as extreme heat events become more frequent.

Kaplan, M. A. (2021). The social effects of climate change on the health outcomes of vulnerable older adult populations in the global community. In Y. Bayer (Ed.), *Handbook of Research on Economic and Social Impacts of Population Aging* (pp. 1-16). IGI Global. <https://doi.org/10.4018/978-1-7998-7327-3.ch001>

As life expectancy rates continue to increase and fertility rates continue to decline globally in the 21st century, the demographics of aging populations are undergoing an unprecedented change that will have significant consequences for the health outcomes of older adults-at-risk. According to demographic data in a joint report authored by five federal agencies, 8.5% of the world's population is currently age 65 and older, a figure projected to double by 2050. This chapter presents an analysis of the impact of climate change on the health outcomes of aging populations worldwide. It examines how the collaborative efforts of the federal government and the public health system can be utilized to create policies and programs that can prepare aging communities to deal effectively with the health consequences of our changing environment.

Kriebel-Gasparro, A. (2022). Climate change: Effects on the older adult. *Journal for Nurse Practitioners*, 18(4), 372–376. <https://doi.org/10.1016/j.nurpra.2022.01.007>

The effects of climate change include floods, hurricanes, heat waves, and fires; these natural disasters can result in respiratory, cardiovascular, and psychological harm in older adults who experience the highest morbidity and mortality during heat waves. Advanced practice registered nurses need education on preparing, assessing, and treating older adults for climate-change disasters. This article will help them understand the effects of climate-change events on vulnerable older adults and advocates for the need to integrate health effects of climate change into curricula, practicums, policy, and research agendas.

Leyva, E. W. A., Beaman, A., & Davidson, P. M. (2017). Health impact of climate change in older people: An integrative review and implications for nursing. *Journal of Nursing Scholarship*, 49(6), 670–678. <https://doi.org/10.1111/jnu.12346>

Older people account for the highest proportion of mortality from extreme weather events associated with climate change. This article aims to describe the health impacts of climate change on older people. The findings suggest that heat, temperature variability, and air pollution increase mortality risk in older people, especially from cardiovascular and respiratory diseases. Floods are linked with increasing incidence of post-traumatic stress disorder, depression, and anxiety. Facing these adversities, older people exhibit both vulnerability and resilience. Research gaps exist in understanding the full spectrum of the resilience experience of older people. Recognizing the vulnerabilities of older people in the context of climate change is important. Identifying opportunities to promote resilience is an important focus for nurses to develop tailored and targeted nursing interventions.

Marchand, A. M. (2022). Climate and cultural vulnerabilities of Indigenous elders. *Generations*, 46(2), 1–7. <https://www.jstor.org/stable/48697104>

Indigenous peoples' diversity and intricate knowledge systems rooted in place-based ecologies have the potential to dismantle institutional barriers and structural disparities, finding relevant ways to reinforce climate justice in their communities. Climate vulnerabilities of some Indigenous communities are being offset by the strength of elder's knowledge, input, and decision-making into valuable adaptation and mitigation strategies. The wisdom of Indigenous elders provides a unique cultural perspective to the changing climate, which may better help characterize the effects of environmental shifts for a more relatable approach to communicating long-term impacts and initiating action.

McDermott-Levy, R., Kolanowski, A. M., Fick, D. M., & Mann, M. E. (2019). Addressing the health risks of climate change in older adults. *Journal of Gerontological Nursing*, 45(11), 21–29. <https://doi.org/10.3928/00989134-20191011-04>

Our climate is changing. These changes have an impact on health, especially in vulnerable populations such as older adults. Many older adults lack the physical, cognitive, social, and economic resources to avoid and/or mitigate the effects of exposure to extreme weather events. The purpose of the current article is to help nurses understand climate change and how that relates to the need for specific interventions to support climate adaptation for the older adult population. A model of exposure, contact to stressors, and adaptive capacity are used to address the health needs of older adults in the face of climate change. Gaps in nursing knowledge, resources for nurses, and a proposed agenda for research and practice in climate change are offered.

Merdjanof, A. A. (2021). Climate, disasters, and extreme weather events: Vulnerability, resources, and interventions for lower-income older adults. *Generations*, 45(2), 1–10. <https://www.jstor.org/stable/48663632>

Climate change and disasters present mounting health risks to the U.S. population, especially for older adults. Generally, across all age groups, older adults are the least prepared and the most at-risk during all phases of a disaster (e.g., mitigation; preparedness; response; recovery), and have the highest rate of disaster-related deaths. This article identifies vulnerabilities of older adults to climate change and disasters, including those related to chronic health conditions, disabilities, and depleted social networks. It then discusses two critical resources that can reduce older adult vulnerability, including individual/community emergency preparedness and increased social support.

Montoro-Ramírez, E. M., Parra-Anguila, L., Álvarez-Nieto, C., Parra, G., & López-Medina, I. (2022). Effects of climate change in the elderly's health: A scoping review protocol. *BMJ Open*, 12(4), e058063. <http://dx.doi.org/10.1136/bmjopen-2021-058063>

Climate change is a global problem that affects human health, especially the most vulnerable groups, including the elderly. However, no scope review includes the perspective of institutions specialized in climate change and health and whose reports are the basis for policies orientated on the environmental health. Therefore, this study aims to

identify these effects on older people health. The results will allow health professionals to have valuable information enabling them to provide quality care in meeting the demand that this situation is producing.

Ngo, E. B. (2001). When disasters and age collide: Reviewing vulnerability of the elderly. *Natural Hazards Review*, 2(1), 80–89. [https://doi.org/10.1061/\(ASCE\)1527-6988\(2001\)2:2\(80\)](https://doi.org/10.1061/(ASCE)1527-6988(2001)2:2(80))

Natural disasters are a growing threat to human populations, particularly the elderly. A review of the literature on how the elderly respond in disasters indicates there are patterns of vulnerability in the social, psychological, and physiological dimensions. Research studies from sociology, psychology, and medicine, examining disaster loss and harm as it relates to age, form the basis for the differential vulnerability reviewed within this paper. Differential vulnerability between elderly and nonelderly disaster victims is summarized and discussed. Minimizing the disaster vulnerability of the elderly requires a solid understanding of the specific needs and traits of the elderly population, and identification of the risk factors that lead to their vulnerability. Effective disaster policies and programs will specifically target this population, establish strong connections between them and available resources, and evaluate the efforts to ensure vulnerabilities are being modified.

Phillips, D. R., & Feng, Z. (2017). Global ageing. In M. Skinner, G. Andrews, & M. Cutchin (Eds.), *Geographical Gerontology: Perspectives, Concepts, Approaches* (pp. 93-109). Routledge. <https://doi.org/10.4324/9781315281216>

The chapter lays out global climate change issues and health of older people. It also discusses effects of selected contemporary socio-technological trends, such as increased mobility and interconnectedness for older people. The chapter further presents a necessarily selective view of some important issues for older persons, families and communities. As in emergencies, older persons' risks from climate change have physiological, psychological and social components, and some people may be exposed to multiple vulnerabilities from the overlapping of events. Overall, it is apparent that social and economic resources will strongly affect how well individuals and families can cope with climate change and weather-related events. Those with good economic resources and strong family networks are likely to do relatively well.

Pillemer, K., Cope, M. T., & Nolte, J. (2021). Older people and action on climate change: A powerful but underutilized resource. *HelpAge International*, 1–10. [https://www.unescap.org/sites/default/d8files/event-documents/KPillemer\\_paper.pdf](https://www.unescap.org/sites/default/d8files/event-documents/KPillemer_paper.pdf)

The threat of global climate change is increasing the incidence of disease, extreme weather events, rising sea levels, and shortages of water and food. If atmospheric concentrations of greenhouse gasses grow unabated, it is predicted that widespread ecosystem collapse will ensue. Older people are among those most at risk to climate change because some decreased mobility and changes in physiology, and often more limited access to resources. They are more vulnerable to the effects of temperature extremes and have a significantly higher mortality risk in extreme weather events. The changing climate further will increase vector-borne diseases, compromise agriculture,

reduce the availability of fresh water, and decrease habitability of human population centers. Thus, older vulnerable populations will face adaptive challenges to their new environments. Equally critical to efforts to address climate change is expanding and promoting opportunities for older people to act on their own behalf and that of others.

Prohaska, T. R., & Peters, K. E. (2019). Impact of natural disasters on health outcomes and cancer among older adults. *The Gerontologist*, 59(Suppl 1), S50–S56.  
<https://doi.org/10.1093/geront/gnz018>

There is growing evidence that older adults exposed to natural disasters are at disproportionate risk for adverse health events such as all-cause mortality, injury, hospital admissions, stroke, displacement, cardiopulmonary distress, stress-related mental health problems, and exacerbation of chronic illnesses. With few exceptions, the long-term effects of natural disasters on older adult health have not been examined. This article describes the potential consequences of exposure to natural disasters that contribute to cancer and disruption of cancer care treatment systems for older adults. The authors propose that these impacts should be examined not only from an emergency preparedness perspective during the event but also from a public health focus that prospectively assesses risks for cancer and other health disparities. Recommendations for comprehensive longitudinal risk assessment and emergency preparedness models that address the full impact of natural disasters on the health of older adults are offered.

Rhoades, J. L., Gruber, J. S., & Horton, B. (2018). Developing an in-depth understanding of elderly adult's vulnerability to climate change. *The Gerontologist*, 58(3), 567–577.  
<https://doi.org/10.1093/geront/gnw167>

Recent reports highlight the vulnerability of elderly adults to climate change, yet limited research has focused on this topic. The purpose of this study was to develop an in-depth understanding of elderly adult's vulnerability to climate change within the context of a specific community. This research identifies personal characteristics that interact with contextual factors to influence vulnerability to climate change. Personal characteristics include health, economic, and social considerations. Contextual factors include the adequacy of emergency preparedness measures, transportation resources, and coping and recovery resources. This research illustrates how climate change could overwhelm elderly adult's adaptive capacity and highlights the need for support services as safeguards.

Schwela, D. (2021). Climate change, vulnerability, and older people. In D. Gu, & M. E. Dupre, (Eds.), *Encyclopedia of Gerontology and Population Aging* (pp. 1022–1028). Springer, Cham. [https://doi.org/10.1007/978-3-030-22009-9\\_466](https://doi.org/10.1007/978-3-030-22009-9_466)

This article is a concise explanation of the vulnerability of older people to climate change. Climate change refers to a range of global phenomena created predominantly by burning fossil fuels, adding heat-trapping gases to the Earth's atmosphere. These phenomena include the increased global temperature trends that can lead to changes in rainfall, wind patterns, and the frequency of extreme weather events such as tropical cyclones, heatwaves, flooding, and drought, which impact both human health and

environment. Vulnerability is a propensity or predisposition to be either physically or emotionally adversely affected by these events.

Wang, C., Miller, J. G., Jackson, R. B., Carstensen, L. L. (2022). Combating climate change in an era of longevity. *Generations*, 46(2), 1–10. <https://www.jstor.org/stable/48697099>

As the number of older adults increases, disproportionate impacts of climate change pose great challenges to healthy longevity. These inequities will be compounded in future generations. Large-scale climate change mitigation and adaptation strategies require often unavailable institutional, financial, and technical support. We need to quickly develop and implement new behavioral and social solutions to help increase public engagement. This article outlines promising institutional, policy, and cultural changes that focus on leveraging the prosociality of older adults and strengthening intergenerational bonds to combat and build resilience to climate change.