

Community and Social Cohesion Pathway **MMC Heat Preparedness Plan Heat Health Research Brief**

Authors: Jeanette Pantoja, Tanaya Tonpay

Social determinants of health are the conditions in which people live that affect a wide range of health risks and outcomes. Our social context, economic situation, and built environment can buffer climate impacts by providing us a means to cope or adapt. They can also amplify climate impacts, especially among communities that have been subjected to structural racism and other inequities. MAPC identified six social determinant pathways through which people experience climate-driven extreme heat impacts. For each pathway, MAPC conducted a brief literature review and summarized the findings into a short memo.

Key Insights

- Social capital and community cohesion contribute to positive public health outcomes, including by facilitating access to information, social and physical support, and by facilitating group action to address societal problems.
- Extreme heat events may limit opportunities for interpersonal interactions, which poses a threat to individual and community wellbeing.
- Social isolation increases vulnerability to heat-related health impacts. People with less social connections have fewer interactions to rely on when they need help and/or they are not as able to obtain resources to prepare for extreme heat.
- Social isolation and extreme heat exposure can collectively worsen health risks such as depression, anxiety, and heart and respiratory dysfunction. People with pre-existing health issues, such as chronic and mental illness and substance use disorder are predisposed to experiencing social isolation.
- Adults over the age of 65 are the most susceptible population to adverse heat health outcomes related to social isolation. However, marginalized populations such as linguistically isolated groups, people experiencing homelessness, and people with mental and behavioral health issues are also at higher risk of social isolation mediated heat health impacts.

Recommendations

- Increase opportunities to build and maintain social connections leading up to and during periods of extreme heat. This adaptation strategy will be most effective if it is designed to accommodate the social needs of older adults, individuals living alone, and other socially and linguistically isolated populations.
- Involve communities in plans and measures designed to improve resilience, which in turn can help forge new connections and increase knowledge about heat risks and adaptation measures, that these social networks can deploy to address heat risks and impacts.
- Develop intergenerational heat risk communication and preparedness messaging that is tailored to both caregivers and the people to whom they provide care (e.g., children, older adults, people with disabilities). Identify and develop the capacity of other types of

trusted messengers and leaders within socially networked groups (e.g., religious leaders and volunteers).

- Increase capacity for research of impacts of extreme heat on marginalized populations (outside of the 65+ adult subgroup) in Metro Boston.

Research Summary

Connections Between Social Cohesion and Health

Social cohesion refers to the strength of relationships and the sense of solidarity among members of a community. There is relative consensus that positive public health outcomes are associated with social cohesion or social capital. A 2014 assessment of the influences of neighborhood and individual social capital on health revealed that both personal and place-based networks impact individual and group well-being.¹ At the micro-level, social capital refers to the shared resources, values, and benefits available to individual members of a network because of their connections. These shared group resources can take the form of information, such as knowledge about a job opening, public assistance program, or location of cooling space. Social networks can also be sources of support for individuals, which may be emotional (e.g., encouragement after a setback) or instrumental (e.g., ride to a doctor's appointment or cooling space).

At the community or neighborhood level, social capital is defined by those shared values and resources that stand to benefit the community such as social norms, mutual trust, and a sense of obligation toward one's community.¹ Communities with strong social capital are said to have high collective efficacy, or "ability to create change" and influence group behaviors through social norms. Collective efficacy is associated with better individual health, lower rates of community violence, and better access to health-supporting resources, such as places to buy healthy foods and exercise.² Collective efficacy is also an important mechanism facilitating communities' response to crisis, including weather-related disasters. Communities with strong social networks have been shown to respond to and recover better from emergencies. Families, religious institutions, and cultural organizations are common sources of group social capital.²

Social Cohesion, Isolation, and Heat Health Impacts

Researchers have observed a declining trend in social connectedness that preceded widespread social isolation experienced by people during the pandemic.³ Being isolated from others can have

¹ Mohnen, Sigrid M., Beate Völker, Henk Flap, S. V. Subramanian, and Peter P. Groenewegen. "The Influence of Social Capital on Individual Health: Is It the Neighbourhood or the Network?" *Social Indicators Research* 121, no. 1 (2015): 195-214. Accessed March 19, 2021. <http://www.jstor.org/stable/24721394>.

² Office of Disease Prevention and Health Promotion. (2021). *Social Cohesion*. US Department of Health and Human Services. <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/social-cohesion>

³ Bartolini, S., Bilancini, E. & Pugno, M. (2013). Did the Decline in Social Connections Depress Americans' Happiness?. *Soc Indic Res* 110, 1033–1059

detrimental consequences for people's health, including by increasing people's vulnerability to extreme heat related health risks. Extreme high temperatures are strongly associated with increased rates of heat-related morbidity and mortality.⁴ Most heat deaths happen in people's homes among people living alone with few social or community connections. 92% of people who died at home during the August 2003 Paris heat wave lived alone. Conversely, having any type of social contact was found to reduce the likelihood of death among people who experienced the 1995 Chicago heat wave. One possible explanation is that people living with others are more likely to adopt adaptive measures, such as drinking more liquids, using air conditioning, or seeking cooling shelters during heat waves.⁵ Social cohesion also significantly impacts heat risk perception. For example, living alone is associated with higher risk exposure and perception, but living with another person can also increase risk perception when an individual is concerned about risk to someone with whom they are living, such as a spouse, child, or older parent. People who are married or have other strong social ties are more likely to check in on others within their family or neighborhood and employ more adaptive behaviors.⁴ This finding is consistent with other social cohesion research, which has repeatedly supported the idea that people with stronger social ties are more likely to adopt health promoting behaviors.

Social isolation particularly impacts older adults' vulnerability to heat. According to the United States Census, as of 2010, the population of adults over the age of 65 is the fastest growing age group in the nation.⁶ Older adults are more susceptible to heat-related health risks in part because of their predisposition for chronic illness, diminished ability to thermoregulate, and their increased likelihood of living alone.³ Older adults typically have lower risk perception relative to their higher vulnerability to heat, in part because the ability to recognize symptoms of overheating is impaired by age.⁴ An Australian study on risks and behaviors associated with heat waves revealed that older adults are also more likely to remain indoors and limit outdoor activity during extreme heat events, which can contribute to their social isolation. Of all senior participants surveyed in the study, only 10% reported going outdoors (no more than two times) during the week prior to the heat wave (and survey) and fewer than 12% had contact with members of their network either via phone or in person during the same time.⁷ It is also worth noting that more than half of all survey participants reported taking regular medication for a chronic condition, namely high blood pressure, kidney conditions, heart problems, and mental-health-related conditions.⁴ Certain medications have the potential to undermine the body's ability

⁴ Kaferty A, Henderson SB, Lubik A, Kancir J, Kosatsky T, Schwandt M. Social connection as a public health adaptation to extreme heat events. *Can J Public Health*. 2020 Dec;111(6):876-879. doi: 10.17269/s41997-020-00309-2. Epub 2020 Mar 16. PMID: 32180181; PMCID: PMC7728955.

⁵ Hass, A. L., Runkle, J. D., and Sugg, M. M. (2021). The Driving Influences of Human Perception to Extreme Heat: A Scoping Review. *Environmental Research*. 197, 111173

⁶ Bureau, US Census. "65 And Older Population Grows Rapidly as Baby Boomers Age," June 25, 2020. <https://www.census.gov/newsroom/press-releases/2020/65-older-population-grows.html>.

⁷ Nitschke, Monika; Hansen, Alana; Bi, Peng; Pisaniello, Dino; Newbury, Jonathan; Kitson, Alison; Tucker, Graeme; Avery, Jodie; Dal Grande, Eleonora. (2013). "Risk Factors, Health Effects and Behaviour in Older People during Extreme Heat: A Survey in South Australia" *Int. J. Environ. Res. Public Health* 10, no. 12: 6721-6733. <https://doi.org/10.3390/ijerph10126721>

to regulate temperature. In senior households where health aids, household assistance, and transportation services are more commonly used, extreme heat conditions present the risk of impeding these services thus, further threatening the health of vulnerable and isolated populations. If services are providing for older vulnerable populations, it will reduce the risk they face of heat-related illnesses.

Another high-risk demographic is linguistically isolated groups, or predominantly non-English-speaking households. In the case of extreme heat events, language barriers have been identified as a hindrance to protective behaviors resulting from the lack of understanding or translation of extreme weather warnings.⁸ In Massachusetts roughly 10% of people report speaking English less than very well.⁹ People with certain existing mental health conditions are also considered high-risk in extreme heat conditions due to their limited mobility and control over environmental factors.⁷

Research Gaps

- Multiple sources, both peer-reviewed literature and others, supported the idea that social cohesion improves communities' ability to cope with and recover from weather-related disasters. However, most of these examples reflect people's experiences with flooding, storms, and other non-extreme temperature events. More research is needed to understand specifically how social cohesion influences individual and community experiences with extreme heat events.
- Additional research is needed to understand the specific mechanisms underlying social networks' influence on heat risk perception and adoption of adaptive behaviors, including research that explores the effectiveness of different types of communication pathways (e.g., types of trusted messengers) and messages.
- Additional research on extreme heat's impacts on marginalized populations outside the 65+ adult population would also make intervention strategy development more comprehensive.

⁸ Uejio, C. K., Wilhelmi, O. V., Golden, J. S., Mills, D. M., Gulino, S. P., & Samenow, J. P. (2011). Intra-urban societal vulnerability to extreme heat: The role of heat exposure and the built environment, socioeconomic, and neighborhood stability. *Health & Place*, 17(2), 498–507. <https://doi.org/10.1016/j.healthplace.2010.12.005>

⁹ Boston Planning and Development Agency. (2019). (publication). *Demographic Profile of Adult Limited English Speakers in Massachusetts* (pp. 1–18). Boston, MA.