2025
Lincoln-Lancaster County Heat Response Plan

LINCOLN

Lincoln-Lancaster County
Health Department

LANCASTER
NEBRASKA
COUNTY
EST. 1859

Lead Organization:	Lincoln-Lancaster County Health Department (LLCHD)
Supporting Organizations:	Lincoln-Lancaster County Emergency Management National Weather Service (NWS) Omaha Valley Office American Red Cross
Government Organizations:	Aging Partners City of Hickman City of Lincoln Attorney's Office City of Lincoln Building and Safety City of Lincoln Communications City of Lincoln Mayor's Office City of Lincoln Urban Development City of Lincoln/Lancaster County Human Resources Lancaster County Administration Lancaster County Engineer Lancaster County Sheriff's Office (LSO) Lincoln City Libraries (LCL) Lincoln Fire and Rescue (LFR) Lincoln Parks and Recreation Lincoln Police Department (LPD) Lincoln Transportation and Utilities (LTU) Lincoln/Lancaster County Planning Department Ponca Tribe of Nebraska
Critical Infrastructure Organizations:	Black Hills Energy Bryan Health CHI St. Elizabeth Hospital Lincoln Electric System (LES) Lincoln Public Schools (LPS) University of Nebraska-Lincoln (UNL) Emergency Management
Community Organizations:	Asian Community and Cultural Center (ACCC) Catholic Social Services (CSS) Center for People CenterPointe Community Action Partnership of Lancaster and Saunders Counties Family Service Lincoln Food Bank of Lincoln Good Neighbor Community Center (GNCC) Indian Center Lincoln Littles Malone Center Matt Talbot Kitchen and Outreach (MTKO) People's City Mission (PCM) Salvation Army The Bridge Behavioral Health UNL Center on Children, Families, and the Law – Continuum of Care

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I. PURPOSE

The purpose of the Lincoln-Lancaster County Heat Response Plan (hereby referred to as the heat response plan) is to reduce the adverse public health impacts of heat events by providing City and County departments and community partners with a framework that includes clearly defined terms, thresholds, and coordinated and individual response actions. This plan aims to enhance preparedness, improve access to services, and ensure resource assistance during heat events.

Heat events *are defined as a period of abnormally hot weather generally lasting more than two days. Typically, if there is a heat event there would be a heat product (watch, warning, or advisory) issued by the National Weather Service.*

II. SCOPE

The Heat Response Plan addresses the coordinated preparation for and response to heat events in Lancaster County, Nebraska. The groups involved in this plan include the local health department and other local government agencies, utilities, healthcare providers, and community aid organizations. Objectives include:

- Help organizations identify and define their individual and mutual preparedness and response activities for heat events based on their resources and capabilities, refining these collectively through lessons learned and evolving best practices.
- Clearly define the activation thresholds for heat events.
- A whole community approach to communications, including addressing hard-to-reach at-risk populations with alert messaging, collaborative social marketing, and public awareness campaigns.

III. SITUATION OVERVIEW

The Environmental Protection Agency (EPA) states that, because of climate change, we can expect heat events to become longer, more intense, and more frequent.[1] Based on projected greenhouse gas (GHG) concentrations from the Intergovernmental Panel on Climate Change (IPCC), temperatures could reach the following by 2050 if GHG emissions continue on the path of 'business as usual' (Representative Concentration Pathway 8.5): [2]

- **The average temperature in Lincoln is likely to increase by 5˚F.**
- **There will be 44 days per year with a heat index greater than 100˚F. Of those days, 26 will have a heat index greater than 105˚F.**

[1] EPA. Climate Adaptation Extreme Heat and Health.(12/27/22) https://www.epa.gov/arc-x/climate-adaptation-extreme-heat-and-health

[2] Hegewisch & Abatzoglou. Future Climate Dashboard web tool. (n.d.) The Climate Toolbox. https://climatetoolbox.org/

Heat index *is how hot it really feels when relative humidity is factored in with actual air temperature. These values are devised for shady, light wind conditions, exposure to full sunshine can increase values up to 15 ˚F.*[3]

We must be prepared for changes that climatologists anticipate in the future, and those that are already happening. The increased number of days with high temperatures and high heat indices is likely to increase the incidence and severity of heat-related illnesses.

Heat-related illnesses *are a range of illnesses resulting from the inability to regulate internal body temperature in people exposed to high environmental heat.*[4] *This includes heat rash, sunburn, heat cramps, heat exhaustion, and heat stroke.*

Everyone is at risk of heat-related illness and death; however, some groups face a greater risk than others. Groups most at risk to heat include, but are not limited to:

- Infants, young children, pregnant people, and older adults (age 65+) whose bodies are less able to adapt to heat.
- People with disabilities or certain health conditions (heart disease, asthma, diabetes, obesity, and mental health conditions), and those taking certain medications.
- People who work outdoors (or indoors with limited to no air conditioning) – especially new workers, temporary workers, or those returning to work after a week or more off.
- People who exercise or do strenuous activities outdoors during the heat of the day.
- People without a reliable source of cooling and/or hydration, including people experiencing homelessness.
- People not acclimated to the level of heat expected – especially those who are new to a much warmer climate.
- Pets, service animals, support animals, and livestock.

Some additional factors that might increase the risk of developing a heat-related illness include:

- High levels of humidity
- Poor air quality
- Fever
- Dehydration
- Poor circulation
- Sunburn
- Alcohol use

[3] NWS / NOAA. Heat Forecast Tools. (n.d.) https://www.weather.gov/safety/heat-index

[4] Gauer & Meyers. Heat-Related Illnesses. (4/15/19) American Family Physician 99(8):482-489 https://www.aafp.org/pubs/afp/issues/2019/0415/p482.html

IV. ASSUMPTIONS AND PLANNING FACTORS

This plan is based on the following assumptions:

A. This plan will be utilized in response to heat-related emergencies requiring a combined, coordinated, and countywide response. The Health Department Director (or designee) will determine when this threshold is met.
B. This plan is intended to address foreseeable heat-related emergencies and will be adapted as necessary to address unforeseen scenarios.
C. In the event that the Emergency Operations Center (EOC) is activated to manage heat-related emergencies, all operations will be managed in accordance with the National Incident Management System (NIMS) and the Incident Command System (ICS).
D. Under most circumstances, the physical EOC may not be activated. However, primary and support agencies may operate virtually for situational awareness, collaboration, and resource management.

V. LEGAL AUTHORITIES

Nebraska Law

NEB. REV. STAT. § 81-829.36
Emergency Management Act

NEB. REV. STAT. § 1630(4)(c)(ii)(A)(II)
Local boards of health; membership; terms; vacancies; duties.

NEB. REV. STAT. § 1630(4)(ii)(B)(IV)
Local boards of health; membership; terms; vacancies; duties.

Lincoln Municipal Code

TITLE 2 OFFICERS, DEPARTMENTS AND PERSONEL; Chapter 2.06 Mayor
State of Emergency; Declaration; Lincoln Municipal Code § 2.06.040

TITLE 2 OFFICERS, DEPARTMENTS AND PERSONEL; Chapter 2.06 Mayor
Emergency Powers; Mayor; Lincoln Municipal Code § 2.06.050 (f)

TITLE 8 HEALTH AND SANITATION; Chapter 8.02 Health and Safety Hazards -- Generally
Health and Safety Hazards Prohibited; Lincoln Municipal Code § 8.02.030 (10)

TITLE 8 HEALTH AND SANITATION; Chapter 8.02 Health and Safety Hazards -- Generally

Enforcement; Lincoln Municipal Code § 8.02.040

TITLE 12 PARKS; Chapter 12.08 General Rules and Regulations
Lincoln Municipal Code § 12.08.330

VI. HEAT ACTIVATION THRESHOLDS

The Heat Response Plan includes a preparation phase and a post-season phase. The preparation phase begins around March, prior to the heat season, and the post-season phase begins around October, after the heat season concludes.

*In Lancaster County, Nebraska, the **heat season** refers to when the temperatures become hotter, usually May through September. This can also refer to the summer season, which is the warmest season of the year and lasts from June to August in the northern hemisphere.*

The heat response plan includes specific actions that occur based on the issuance of an extreme heat warning, watch, or advisory from the National Weather Service (NWS) Omaha Valley office, which are based on the heat index. The criteria for heat alerts vary throughout the country based upon the region. The following action levels are used by the National Weather Service for Lancaster County (central region criteria). They may not occur in this specific order.

A. Heat Advisory
A heat advisory is issued by the National Weather Service within 12 hours of the onset of the following conditions: heat index of at least 105˚F.

B. Extreme Heat Watch
An extreme heat watch is issued by the National Weather Service 1-3 days (24-72 hours) prior to an anticipated heat event (50% reasonable confidence). A watch is used when the risk of a heat event has increased but its occurrence and timing is still uncertain.

C. Extreme Heat Warning
An extreme heat warning is issued by the National Weather Service within 12 hours of the onset of the following conditions: heat index of at least 110˚F with a nighttime heat index of 75˚F or warmer for at least 48-hours. Or, when a heat index of 105˚F or higher is expected for 4 or more consecutive days.

**It is important to note that these are guidelines, and the local National Weather Service forecaster can use their own discretion to issue an alert based on anticipated impacts. Forecasters have a range of +/- two degrees on either side of base criteria to allow flexibility.*

The **Wet Bulb Globe Temperature** (WBGT) is a measure of heat stress in direct sunlight, which is based on temperature, humidity, wind speed, sun angle, and cloud cover (solar radiation). This differs from the heat index, which is based only on temperature and humidity and is calculated for shady areas. This is a supplemental indicator that can be used for specific populations, such as athletes or outdoor workers. This is because it is location-specific and is best measured on-site using a WBGT device. It is the responsibility of organizations to determine if (and how) they will use the WBGT to supplement their internal heat planning efforts. For more information, see attachment 2.

VII. COOLING CENTER OPERATIONS

*A **cooling center** refers to a location, typically an air-conditioned or cooled building that has been designated as a site to provide respite and safety for community members during extreme heat.*

Standard Operating Procedures

Throughout the summer, during regular business hours, all Lincoln City Libraries and Lincoln Parks and Recreation Centers are available as cooling centers. Aging Partner Senior Centers will also be available. Go to lincoln.ne.gov/AgingPartners for days/hours or call 402-441-7070.

Extended Hours of Operation

During an **Extreme Heat Warning**, the following cooling center locations will be open until 8 p.m. daily:

- **Anderson Branch Public Library** located in Havelock area (3635 Touzalin Avenue, Lincoln, NE 68507)
- **Bennett Martin Public Library** located in Downtown area (136 S 14th Street, Lincoln, NE 68508)
- **F Street Community Center** located in Everett area (1225 F Street, Lincoln, NE 68508)

Victory Park Senior Center (600 S. 70th Street) will also extend its **weekday hours until 4:30 p.m.** during an extreme heat warning.

Heat Safety Education and Resources

It is recommended that all cooling center locations have a "***Stay Safe in Extreme Heat***" one-pager available which provides important heat safety information. These should be displayed in a central area where individuals can easily see and access them. This document will be available in English, Spanish, Vietnamese, Karen, Burmese, Arabic, Farsi, Dari, Pashto, and Ukrainian.

Find the one-pager in the resources section on lincoln.ne.gov/heat

Each of the four primary cooling center locations listed above will have a limited amount of **Heat Relief Kits** available that may include items such as a reusable water bottle, electrolyte packet, lip balm, sunscreen, aloe vera, and bug spray. These kits will be distributed during a Heat Advisory, Extreme Heat Watch, or Extreme Heat Warning (while supplies last).

Power Outages

Lincoln Electric System (LES) has worked with the City of Lincoln to identify these 4 primary locations and will consider them when determining actions that are required to maintain system stability. While power outages are still possible at these facilities, this designation highlights these locations as essential for heat response and recovery efforts.

VIII. GENERAL OPERATIONS SUMMARY

Below are possible or suggested preparation, response, and post-season tasks that participating organizations of various types may choose to adopt. The tasks are written in general terms and purposely do not tell how to do the task. Each organization should develop standard operating procedures for their specific operations during a heat event. The tasks listed below may not be all-inclusive, and all activities may not need to be applied in every heat event.

Preparation	
Activation Threshold	Annually by May 1
Actions	
Review and update Heat Response Plan.	
Review and update internal protocols for heat events.	
Annual pre-season meeting to be held around April.	

Obtain, prepare, or update public information materials (pamphlets, fact sheets, social media graphics, press release templates, etc.)
Education on symptoms of heat-related illnesses and appropriate treatment.
Ensure communication plans are coordinated across the City of Lincoln, Lancaster County, and community partners.
Plan and coordinate an extreme heat tabletop exercise prior to the heat season, as needed.

Baseline	
Activation Threshold	Approximately May 1 through October
Actions	
During regular business hours, all Lincoln City Libraries and Lincoln Parks and Recreation Centers are available as cooling centers. Aging Partners Senior Centers will also be available. Go to lincoln.ne.gov/AgingPartners for days/hours or call 402-441-7070.	
General messaging on heat safety and symptoms/treatment of heat-related illnesses.	
Share and relay information on resources available to the community, as needed.	

Heat Advisory or Extreme Heat Watch	
Activation Threshold	National Weather Service Omaha Valley issues a heat advisory or extreme heat watch for Lancaster County.
Response Actions	
During regular business hours, all Lincoln City Libraries and Lincoln Parks and Recreation Centers are available as cooling centers. Aging Partners Senior Centers will also be available. Go to lincoln.ne.gov/AgingPartners for days/hours or call 402-441-7070.	
Share messaging on active heat alerts and available resources to help the community stay informed.	
Open or extend hours of operation to give community members a place to cool off, if within the scope of your organization.	
Initiate transport services to identified cooling locations, if within the scope of your organization.	

Enhanced messaging on heat safety, symptoms/treatment of heat-related illnesses, and available resources.
Limit or revise work schedules for staff working in non-air-conditioned spaces, as necessary. Ensure access to appropriate hydration and safety equipment.
Limit, reschedule, or relocate outdoor events as necessary.
Check in on at-risk clients and community members.

Extreme Heat Warning	
Activation Threshold	National Weather Service Omaha Valley issues an extreme heat warning for Lancaster County.
Response Actions	
Hours of operation will be extended until 8:00pm at Anderson Branch Library, Bennett Martin Public Library, and F Street Community Center for the public to utilize as cooling centers. Victory Park Senior Center will also extend its weekday hours until 4:30 p.m.	
During regular business hours, all Lincoln City Libraries and Lincoln Parks and Recreation Centers are available as cooling centers. Aging Partners Senior Centers will also be available. Go to lincoln.ne.gov/AgingPartners for days/hours or call 402-441-7070.	
Share messaging on active heat alerts and available resources to help the community stay informed.	
Monitor for community impacts and determine if additional support is needed	
Open or extend hours of operation to give community members a place to cool off, if within the scope of your organization.	
Initiate transport services to identified cooling locations, if within the scope of your organization.	
Enhanced messaging on heat safety, symptoms/treatment of heat-related illnesses, and available resources (including cooling centers).	
Limit or revise work schedules for staff working in non-air-conditioned spaces, if possible. Ensure access to appropriate hydration and safety equipment.	
Limit, reschedule, or relocate outdoor events if possible.	
Check in on at-risk clients and community members.	

Post-Season	
Activation Threshold	Approximately October - November
Actions	
Conduct an After-Action Review that includes all partner organizations to discuss strengths and areas of improvement for next season.	
Convene an internal post-season debrief.	
Update Heat Response Plan to accurately reflect what occurred during the heat season, as needed.	
Compile a report summarizing the final statistics on heat-related deaths and illnesses.	

IX. PLAN MAINTENANCE

This plan will be reviewed and revised annually by all partner organizations (page 2). This process will coincide with the annual pre-season meeting. The Lincoln-Lancaster County Health Department (LLCHD) will be responsible for coordinating the maintenance and distribution process outlined below.

The plan will be distributed to partners at least a month before the annual pre-season meeting. Each partner agency and organization will update, as needed, their section based on their applicable personnel and/or protocol changes. These updates should be provided to the LLCHD by the time of the annual pre-season meeting. The updates, and any approved best practices, new initiatives, and lessons-learned identified at the annual pre-season meeting, will then be integrated into the revised version of the plan and distributed no more than 30 days following the annual pre-season meeting.

As a result of frequent, annual activations of the plan, a tabletop exercise is generally not necessary. However, during the first couple years of implementation, an exercise should be conducted to improve initial implementation of the plan. After that, if two summer seasons pass without meeting the thresholds for plan activation, a tabletop exercise should be conducted. The LLCHD and the Lincoln-Lancaster County Emergency Management Agency will coordinate the development and planning of the tabletop exercise.

Attachments

1. Health Recommendations

Preparation Prior to the Heat Season: Around March or April

- Clean and trim around outdoor HVAC units so air can flow freely. Wash dust and dirt from cooling coils.
- Have a contractor do annual, pre-season check-ups.
- Check that ceiling or tabletop fans are in good working order. Clean fan blades so the motor can work efficiently and move air better.
- If you are unable to afford your cooling costs, weatherization, or energy-related home repairs, contact the Low-Income Home Energy Assistance Program (LIHEAP) for help.
- Talk to your doctor about how to prepare if you have a medical condition or are taking medications.
- Prepare emergency supplies. Gather food, water, and medicine. Organize supplies into a Go-Kit and a Stay-at-Home Kit. In the event of a power outage, you may lose access to clean drinking water. Set aside at least one gallon of water per person per day. Consider adding drinks with electrolytes. Include sunscreen and wide-brimmed hats.
    - Go-Kit: at least three days of supplies that you can carry with you. Include backup batteries and chargers for your devices (cell phone, CPAP, wheelchair, etc.).
    - Stay-at-Home Kit: at least two weeks of supplies.
    - Have a 1-month supply of medication in a child-proof container and medical supplies or equipment.
    - Have at least 1 gallon of water per person per day for at least 3 days.
    - Keep personal, financial, and medical records safe and easy to access (hard copies or securely backed up).
    - Consider keeping a list of your medications and dosages on a small card to carry with you.
    - For more information on what to include in your kit, visit the Red Cross website.
- Learn how to recognize and respond to heat illnesses.
- Learn First Aid and CPR.

Recommended Actions Prior to Heat Event:

- Gather food, water, and medications in advance in case of store closures or having to relocate to a cooler location.
- Identify those in your neighborhood who, due to age, health or medical condition, are at higher risk and may need help during extreme heat events.

- Install temporary window reflectors (for use between windows and drapes), such as aluminum foil-covered cardboard, to reflect heat back outside.
- Weather-strip doors and sills to keep cool air in.
- Cover windows that receive morning or afternoon sun with drapes, shades, awnings, or louvers. (Outdoor awnings or louvers can reduce the heat that enters a home by up to 80 percent.)
- Look up the location of your nearest cooling center in case you need to go there. Be sure to call beforehand to check the hours of operation. If you need transportation or pet care, make a plan before the heat event occurs.
- Know the symptoms of heat-related illnesses and the appropriate responses.
- Additional recommendations for older adults:
    - Make sure a trusted friend or relative has an extra key to your home, knows where you keep your emergency supplies, and can use lifesaving equipment or administer medicine.
- Additional recommendations for people with chronic health conditions:
    - Read the side effects of medications and talk with your doctor about how heat exposure will interact with them.
    - Know the phone numbers and locations for local medical facilities, such as hospitals or nursing homes, to create contingency plans if you cannot access a cooling center, lose power, or need more help.

Recommended Actions During a Heat Event:

- Check in with and notify family, friends, and neighbors who may need assistance (older adults, those with access and functional needs, those with pre-existing medical conditions, pregnant people).
- Check the local news and government outlets for health and safety updates.
- NEVER leave children alone in closed vehicles, even with the windows open. Touch a child's safety seat and safety belt before using it to ensure it's not too hot before securing a child.
- Drink plenty of water throughout the day, even if you do not feel thirsty. Drink beverages low in added sugar such as infused water and smoothies. Limit intake of alcoholic beverages and caffeinated beverages.
    - You can check that you are getting enough water by noting your urine color. Dark yellow may indicate you are not drinking enough water.
    - People who have epilepsy or heart, kidney, or liver disease; or are on fluid-restricted diets; or have a problem with fluid retention should consult a doctor before increasing liquid intake.
- Eat light, cool, and easy-to-digest foods such as fruit or salads. Try to avoid using the stove or oven to cook – it will make you and your house hotter.
- Take the weather into consideration when planning and scheduling outdoor activities and have modified backup plans in case of extreme heat.

    - Postpone or modify outdoor games/activities if they occur during the hottest part of the day (4-6pm). Ensure there is plenty of shade and water available.
- If possible, try to complete strenuous work early in the morning when it is cooler. If you must work during the hottest part of the day (4-6pm), use a buddy system and take frequent water breaks in the shade.
- Pace yourself. Cut down on exercise during the heat, if you're not accustomed to working or exercising in a hot environment, start slowly and pick up the pace gradually. If exertion in the heat makes your heart pound and leaves you gasping for breath, STOP all activity. Get into a cool area or into the shade, and rest, especially if you become lightheaded, confused, weak, or faint.
- Dress in loose-fitting, lightweight, and light-colored clothes that cover as much skin as possible. Avoid dark colors because they absorb the sun's rays.
- Wear sunscreen. Sunburn affects your body's ability to cool down and can make you dehydrated. Protect the face and head by wearing a wide-brimmed hat.
- Take a cool shower or bath to help cool off.
- Save energy - reduce your home power use to help reduce brownouts or blackouts and smog/air pollution. Turn off nonessential lights, televisions, games, and computers, and unplug chargers.
- Maximize time in air-conditioned areas and limit sun exposure whenever feasible.
- If you do not have AC or if the AC in your home is off due to a power outage or other cause, consider spending the warmest part of the day in public buildings such as libraries, movie theaters, shopping malls, and other community facilities.
- Go to a cooling center if your home loses power during periods of extreme heat. Stay on the lowest floor out of the sunshine if air conditioning is not available.
- If you lose power and plan to use a generator that runs on gas, kerosene, or propane, ALWAYS put generators outside well away from doors, windows, and vents. Never use a generator inside homes, garages, crawlspaces, sheds, or similar areas. Carbon monoxide (CO) is deadly, can build up quickly, and linger for hours.
- Check the air quality – hot weather can worsen ozone levels and other types of air pollutants. Air pollution can worsen respiratory and heart conditions.
- If you are unable to afford your cooling costs, contact the Low-Income Home Energy Assistance Program (LIHEAP) for help.
- Seek medical care immediately if you have, or someone you know has, symptoms of heat-related illness like muscle cramps, headaches, nausea, or vomiting.
    - For heat cramps, get the individual to a cooler location and remove excess clothing. Lightly stretch and gently massage affected muscles to relieve spasms. Give cool sports drinks containing salt and sugar, such as Gatorade. Discontinue liquids if the victim is nauseated.

    - For heat exhaustion, get the individual to lie down in a cool place. Loosen or remove clothing. Apply cool, wet cloths. Fan or move victim to air-conditioned place. Give sips of water or cool sports drinks containing salt and sugar. Discontinue liquids if the victim is nauseated. Seek immediate medical attention if there is no improvement, the victim is unable to take fluids, or if vomiting occurs
    - If you get sunburned, take a cool shower and moisturize the affected area with lotion or aloe vera. Cover the sunburn with a tightly woven fabric if you must go outside in the sun. Sunburns draw fluid to the skin's surface (and away from the rest of the body) so drink extra water to remain hydrated. Apply dry, sterile dressings to any blisters, and take ibuprofen to help reduce inflammation. Seek medical attention if a blistering burn covers 20% or more of the body (e.g., a child's whole back), or if you experience fever or chills.
- Additional recommendations for older adults:
    - If possible, avoid being home alone during a summer power outage or heat event. If you are able, attend a social event in an air-conditioned space.
    - Make sure a trusted friend or relative has an extra key to your home, knows where you keep your emergency supplies, and can use lifesaving equipment or administer medicine.
    - Drink fluids regularly to avoid getting dehydrated and overheated. Talk to your doctor about whether you need fluids with extra electrolytes in the heat.
    - Have a friend or relative call to check on you twice a day during a heat wave. If you know someone in this age group, check on them at least twice a day.
- Additional recommendations for people with chronic health conditions:
    - Work with your support network if you have one – caregivers, neighbors, friends, and family – to monitor and address your heat–related needs. Have them check in with you regularly to ensure you are safe and healthy.
    - Keep a cooler and cold packs nearby to help keep refrigerated medicine, like insulin, cool during a power outage. Don't put insulin directly on ice or gel pack.
- Additional recommendations for pet-owners:
    - NEVER leave pets alone in closed vehicles, even with the windows open.
    - Check on your animals frequently to ensure that they are not suffering from the heat. Provide plenty of fresh water for your pets. If they are outside, ensure they have access to a shady area and water.
    - If you have a dog, walk them early in the morning or later in the evening. Asphalt and dark pavement can be very hot to your pet's feet.

2. Wet-Bulb Globe Temperature (WBGT)

The Wet-Bulb Globe Temperature (WBGT) is a measure of heat stress in direct sunlight, which is based on temperature, humidity, wind speed, sun angle, and cloud cover (solar radiation). This differs from the heat index, which is based only on temperature and humidity and is calculated for shady areas. This is a supplemental indicator that can be used for specific populations, such as athletes or outdoor workers. This is because it is location-specific and is best measured on-site using a WBGT device.

The military uses the WBGT to gauge the potential for heat related stresses to this day. OSHA and many nations also use the WBGT as a guide to manage workload in direct sunlight, as do athletic departments (college and high school) and events. If you work or exercise in direct sunlight, this is a good element to monitor.

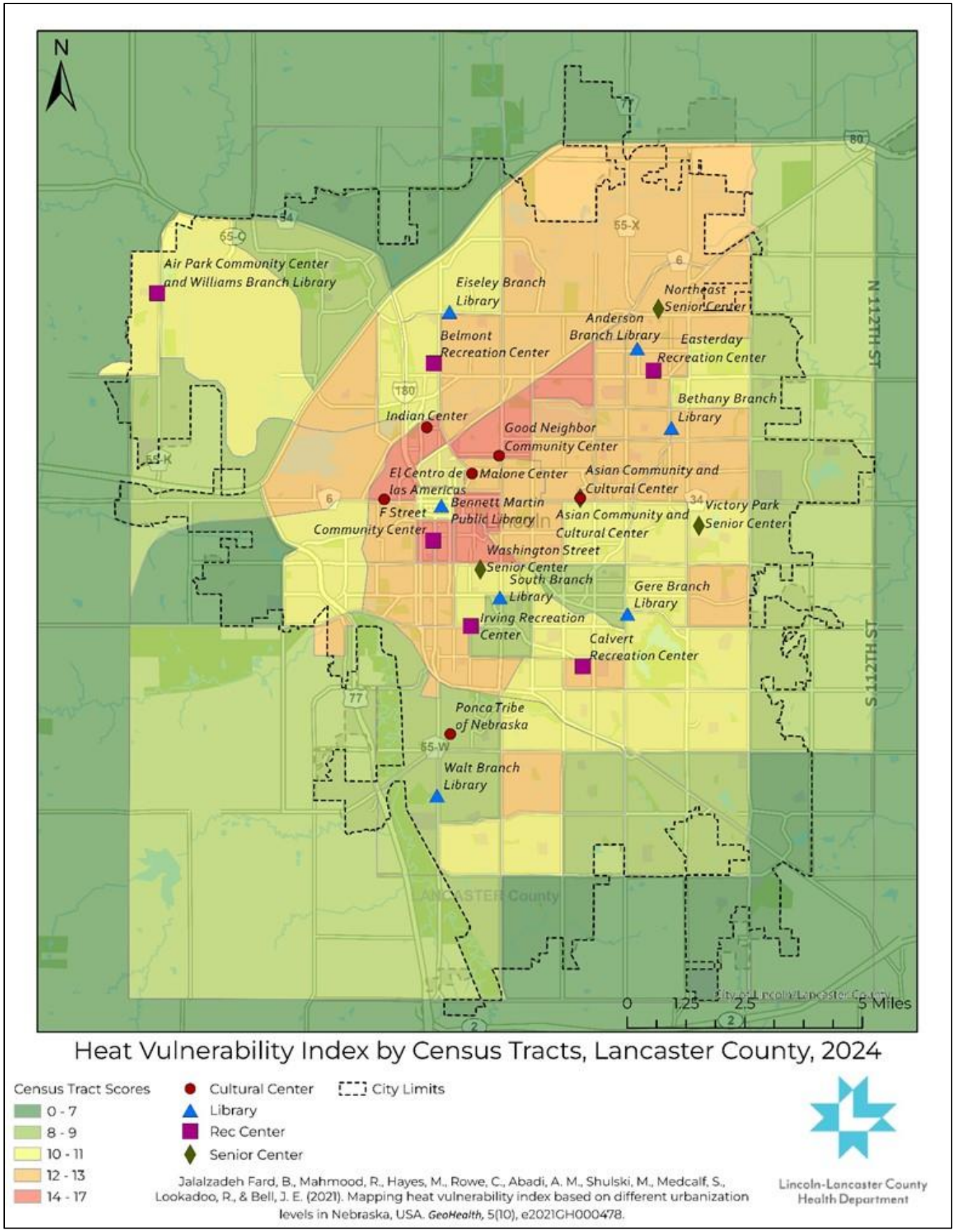
The Nebraska School Activities Association (NSAA) Board of Directors approved the Wet Bulb Globe Temperature (WBGT) as the recommended measurement practice and device for measuring acceptable heat/humidity levels for practices and contests. The use of WBGT is recommended throughout the calendar year when the ambient temperature is above 80°. These guidelines are currently utilized by Lincoln Public Schools for athletic events.

Region 2	Activity Guidelines
<79.7	Normal activities 3 separate - 3 to 5 minute rest / water breaks per hour
79.8-84.6	Use discretion for intense / prolonged practice 3 separate - 4 to 6 minute rest / water breaks per hour Monitor at risk athletes closely Cold water immersion available
84.7-87.6	Maximum practice time is 2 hours Helmets and shoulder pads only Remove helmets and shoulder pads if conditioning 4 separate - 4 to 6 minute rest /water breaks per hour Monitor at risk athletes closely Cold water immersion available Contests: Per NFHS rules, implement additional/extended timeouts for rest / water breaks
87.7-89.7	Maximum practice time is 1 hour Helmets and shoulder pads prohibited No conditioning 4 separate - 5 to 7 minute rest / water breaks per hour Monitor at risk athletes closely Cold water immersion available Contests: Per NFHS rules, implement additional/extended timeouts for rest / water breaks Contests: Consider delaying / postponing start times
>89.7	No outdoor activities Cancel or delay outdoor practices / contests until lower WBGT is observed.

3. Heat Vulnerability Index (HVI)

The map below provides a general idea of the risk potential for certain areas of Lancaster County. This is done by creating an index using seven demographic variables including age over 60, age over 60 living alone, below poverty line, race other than white, English language barrier, between 18-64 with disability, and education of less than high school diploma. In addition, it includes data from the National Land Cover Database which distinguishes between developed land and natural land types to simulate the urban heat island effect. To better understand environmental and social vulnerabilities, the study classifies Lancaster County census tracts into "small metro" and "medium metro" categories based on the Rural-Urban Commuting Area (RUCA) codes for urbanization levels. The study found that heat vulnerability patterns vary with urbanization levels. In urban areas, disability was a significant factor in heat vulnerability, whereas in rural areas, lower education and non-white race were more critical. Environmental factors also differed, with urban areas experiencing significant heat intensification due to developed land types, while rural areas showed varied heat intensification based on land cover. Heat vulnerability mapping revealed that high and low vulnerabilities clustered in highly urbanized areas, while less urbanized areas lacked such spatial clustering.

This map was developed by Babak Fard and other researchers from the University of Nebraska Medical Center in Omaha. The epidemiology team at LLCHD added the location of recreation centers, senior centers, libraries, and the cultural centers involved in the Cultural Centers Collaborative. This map may help identify certain areas of Lancaster County where individuals are potentially at higher risk of heat-related illnesses to help inform interventions. More information can be found here: Mapping Heat Vulnerability Index Based on Different Urbanization Levels in Nebraska


N
Air Park Community Center and Williams Branch Library
Eiseley Branch Library
Northeast Senior Center
Anderson Branch Library
Belmont Recreation Center
Easterday Recreation Center
Bethany Branch Library
Indian Center
Good Neighbor Community Center
El Centro de las Americas
Malone Center
Asian Community and Cultural Center
F Street Community Center
Bennett Martin Public Library
Asian Community and Cultural Center
Victory Park Senior Center
Washington Street Senior Center
South Branch Library
Gere Branch Library
Irving Recreation Center
Calvert Recreation Center
Ponca Tribe of Nebraska
Walt Branch Library
LANCASTER County
N 112TH ST
S 112TH ST
0 1.25 2.5 5 Miles
Heat Vulnerability Index by Census Tracts, Lancaster County, 2024
Census Tract Scores
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8 - 9
10 - 11
12 - 13
14 - 17
Cultural Center
Library
Rec Center
Senior Center
City Limits
Jalalzadeh Fard, B., Mahmood, R., Hayes, M., Rowe, C., Abadi, A. M., Shulski, M., Medcalf, S., Lookadoo, R., & Bell, J. E. (2021). Mapping heat vulnerability index based on different urbanization levels in Nebraska, USA. GeoHealth, 5(10), e2021GH000478.
Lincoln-Lancaster County Health Department