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CLIMATE CHANGE and EXTREME HEAT

What You Can Do to Prepare

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EPA United States Environmental Protection Agency

CDC Centers for Disease Control and Prevention

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Extreme heat events in the United States are already occurring and expected to become more common, more severe, and longer-lasting as our climate changes. The U.S. Environmental Protection Agency (EPA) and the Centers for Disease Control and Prevention (CDC) developed this booklet to identify steps that you can take now to prepare for an extreme heat event—and to help your families, friends, and neighbors, too.

This booklet answers some of the key questions about extreme heat in a changing climate: why extreme heat is on the rise, how it might affect you, and what you can do before and during an extreme heat event to reduce your health risk.

Scientific information used in this document is derived from peer-reviewed synthesis and assessment products, including those published by the United States Global Change Research Program and the Intergovernmental Panel on Climate Change, as well as other peer-reviewed sources and federal agency resources.

For more information, contact EPA at ccdweb@epa.gov and CDC at climateandhealth@cdc.gov.

Contents

What Is Extreme Heat?....3

Why Is Extreme Heat on the Rise?....4

What Might I Experience in the Future?....6

How Can Extreme Heat Affect Me?....9

How Common Are Heat-Related Illnesses and Deaths?....11

Who Is Most at Risk from Extreme Heat?....12

What Is the Urban Heat Island Effect?....14

What Should I Do During an Extreme Heat Event?....15

What Can I Do to Reduce My Risk Before an Extreme Heat Event? 16

For More Information....18

References....19

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What Is Extreme Heat?

We all expect it to be warm in the summer, but sometimes the heat can be severe or even dangerous. A series of unusually hot days is referred to as an *extreme heat event*.

Extreme heat conditions are defined as weather that is much hotter than average for a particular time and place—and sometimes more humid, too. Extreme heat is not just a nuisance; it kills hundreds of Americans every year and causes many more to become seriously ill.

The heat index is a measure of how hot it feels when relative humidity is factored in with the actual air temperature. Relative humidity is the percentage of moisture in the air compared with the maximum amount of moisture the air can hold. Humidity is an important factor in how hot it feels because when humidity is high, water doesn't evaporate as easily, so it's harder for your body to cool off by sweating.

NOAA's National Weather Service Heat Index

Temperature (°F)

Relative humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of heat disorders with prolonged exposure or strenuous activity

Caution | Extreme caution | Danger | Extreme danger

This chart shows that as the temperature (horizontal axis) and relative humidity (vertical axis) each increase, they combine to create a heat index (colored values) that feels hotter than the actual temperature. For example, when the temperature is 96°F, with 65 percent humidity, it actually feels like 121°F (indicated by the blue lines in the chart above). Source: NOAA National Weather Service, 2016[1]

DID YOU KNOW?

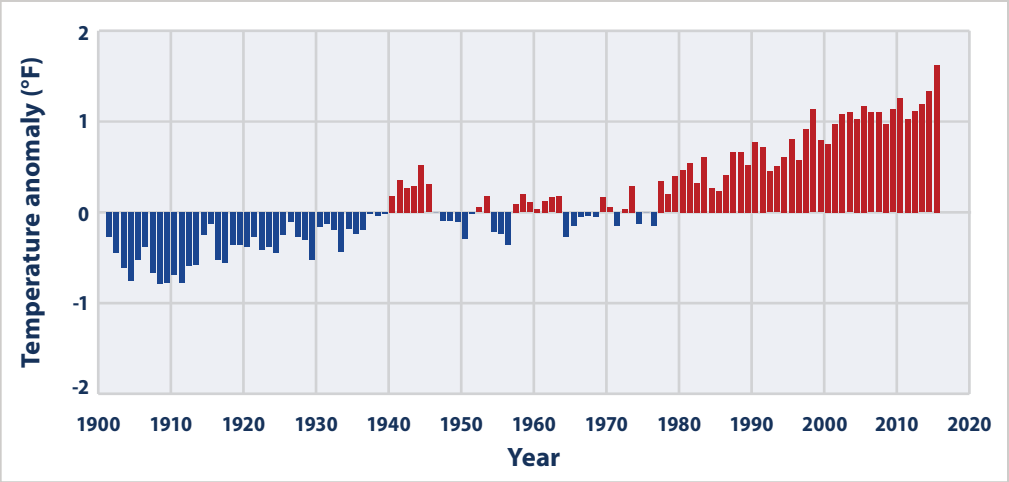
The definition of extreme heat varies based on many different factors, such as location, weather conditions (such as temperature, humidity, and cloud cover), and the time of year. For example, a May temperature of 92°F in Boston is extreme heat, whereas a May temperature in Phoenix would have to reach more than 100°F to be considered extreme. Check out the figure on this page to see how combinations of two key weather conditions—temperature and humidity—can change how hot it actually feels outside.

Why Is Extreme Heat on the Rise?

The chances are increasing that an extreme heat event could happen where you live. That's because average temperatures are rising, both in the United States and around the world:

- Globally, the annual average temperature has been rising since the beginning of the 20th century, and temperatures are expected to continue to rise through the end of this century.
- Worldwide, 15 of the 16 warmest years on record have occurred since 2000, with the exception of 1998.[2]

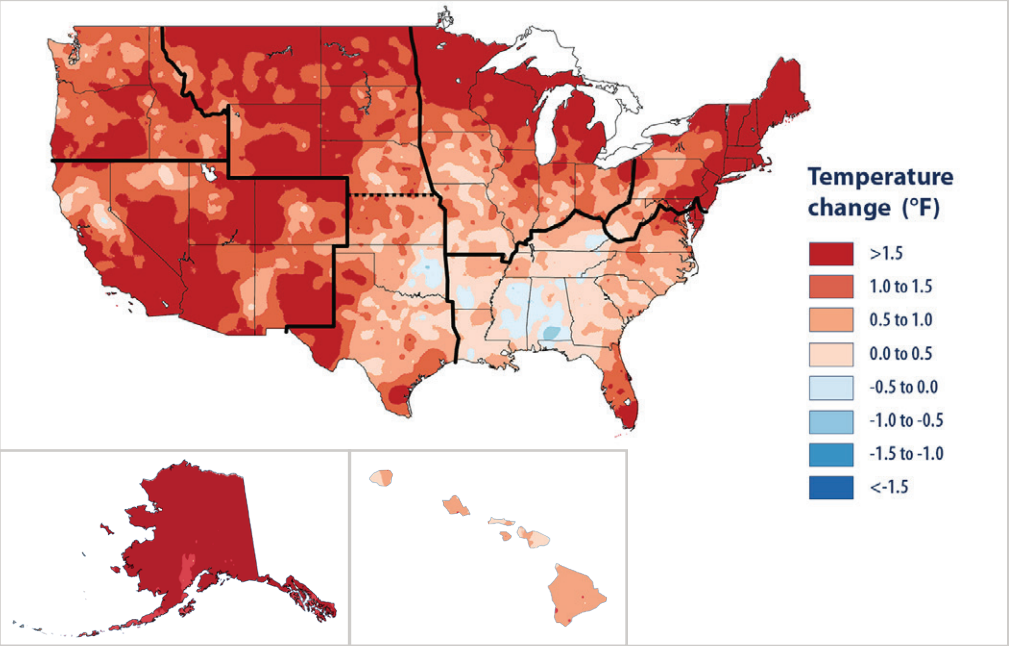
Temperatures Worldwide, 1901–2015



This graph shows global annual average temperatures, compared with the 1901–2000 average. These data come from land-based weather stations and sea surface temperature measurements. The red bars indicate above-average surface temperatures and the blue bars indicate below-average temperatures (averaged across land and ocean). Source: U.S. EPA, 2016[2]

The United States is warming too, but some parts of the United States have experienced more warming than others. The North, the West, and Alaska have seen temperatures increase the most, while some parts of the Southeast have experienced little change.[2]

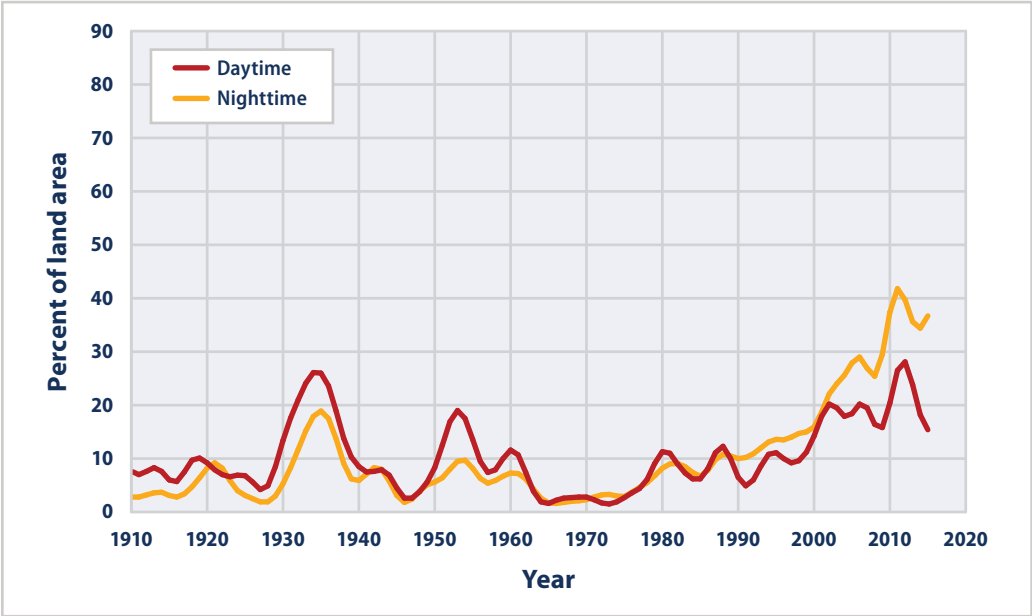
Observed U.S. Temperature Change



The colors on this map show temperature changes over the past 22 years (1991–2012) compared with the 1901–1960 average for the contiguous United States. Temperature changes for Alaska and Hawaii were compared with the 1951–1980 average for those states.Thick borders represent National Climate Assessment regions. Source: Melillo et al., 2014[3]

Along with this overall warming, the United States is experiencing more extreme heat events. While you can expect to have an unusually hot day or night every so often because of the normal, day-to-day variation in weather, hotter-than-usual days and nights are becoming more common. Heat waves, which are prolonged periods of extreme heat, are also occurring more frequently in major U.S. cities since the mid-20th century. In addition to becoming more common, heat waves are also lasting longer and becoming more severe.[2]

Area of the Contiguous 48 States With Unusually Hot Summer Temperatures, 1910–2015



This graph shows how larger parts of the contiguous 48 states are experiencing unusually hot temperatures during the months of June, July, and August. Unusually hot summer days (red line) have become more common over the last few decades, while unusually hot daily low temperatures (orange line), usually at night, are occurring in an even larger area of the United States. Source: Adapted from U.S. EPA, 2016[2]

A changing climate is driving these warming trends. Recent changes in climate have been caused by carbon dioxide and other heat-trapping greenhouse gases that people have added to the atmosphere through activities that use fossil fuels like oil, gasoline, diesel, propane, coal, and natural gas. While natural variations continue to play an important role in extreme heat events, climate change has shifted the odds, increasing the likelihood that these events will occur.

What Is Climate Change?

Although there is a relationship between climate and weather, the terms are in fact different. Weather is a specific event or condition that happens over a period of hours or days. For example, a thunderstorm, a snowstorm, and today's temperature all describe the weather. Climate refers to the average weather conditions in a certain place over many years (usually at least 30 years).

Climate change is a pattern of change in average weather that's happening over many years, such as warming temperatures. A rise in the average global temperature has led to other changes around the world—in the atmosphere, on the land, in the oceans—such as changing rain and snow patterns, more extreme weather events, melting glaciers, and warmer seas.

DID YOU KNOW

Temperatures are usually cooler at night, giving your body some relief from hot daytime temperatures. But during an extreme heat event, which typically lasts more than one day, nighttime temperatures may stay too warm to allow your body to cool down, especially if you live in an urban heat island (see "What Is an Urban Heat Island?" for more information). This places a strain on your body, as your heart increases circulation to try to regulate your body temperature. The strain is even worse if you are dehydrated.

DID YOU KNOW

An increase in hot summer nights means less "cooling off" occurs at night. This trend is of particular concern because people can face serious health risks if they cannot recover from exposure to daytime heat.

DID YOU KNOW

With climate change, extreme heat events are on the rise. More areas will likely be affected by extreme heat more often, more severely, and for longer periods of time.

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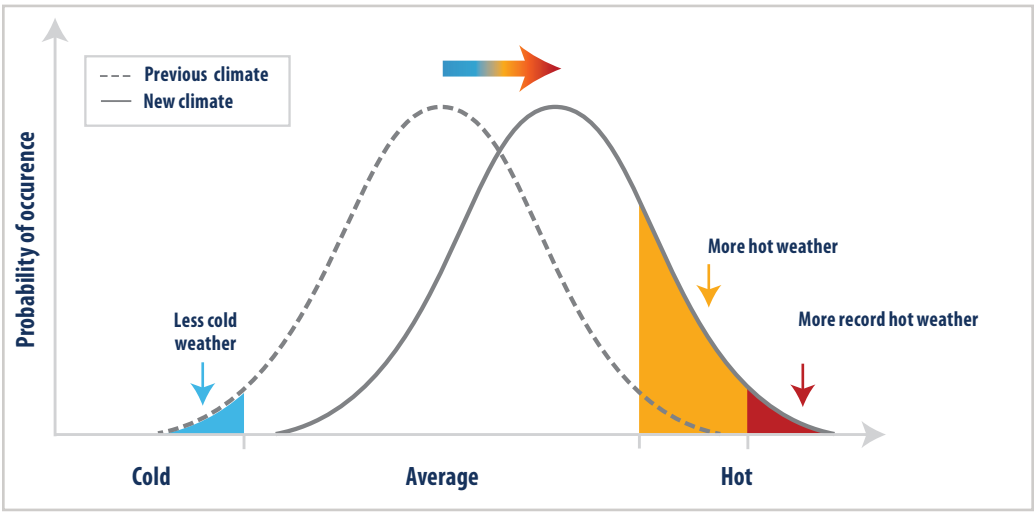
What Might I Experience in the Future?

Temperatures will continue to rise as people add more heat-trapping greenhouse gases to the atmosphere. As a result, scientists expect heat waves to become more common, more severe, and longer-lasting.[3,4] More extreme heat will likely lead to an increase in heat-related illnesses and deaths, especially if people and communities don't take steps to adapt and protect themselves. Even small increases in extreme heat can result in increased deaths and illnesses.[5]

Without big steps to reduce greenhouse gas emissions, the average number of extremely hot days in the United States is projected to more than triple from the year 2050 to 2100.[6] This means the potential *heat wave season* will be longer, and extreme heat could catch communities off-guard if it happens earlier or later than expected in a particular area.

Increase in Average Temperature



When average temperatures increase, the average temperature of "hot weather" and "record hot weather" will become even hotter. Source: IPCC, 2001[7]

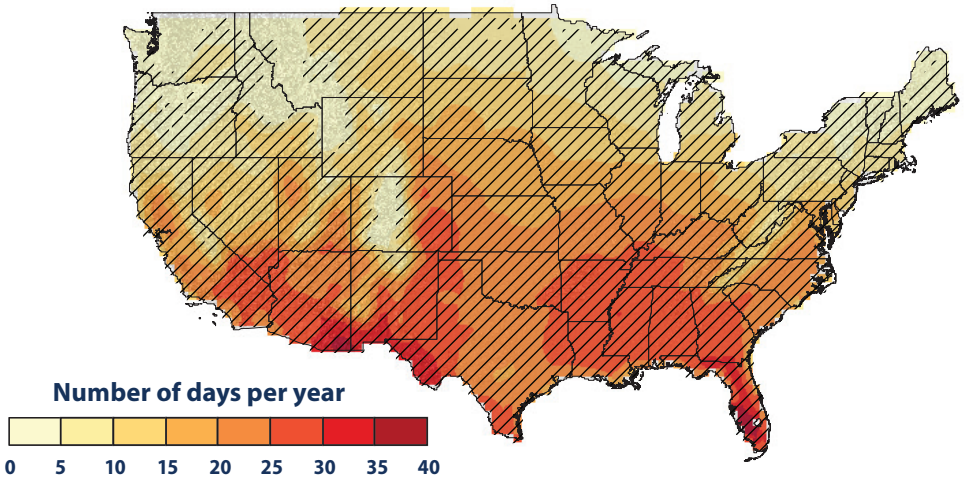
Extreme Heat Events Will...

These maps compare the differences in extreme heat between the recent past (1980–2000) and the mid-21st century (2041–2070) in a projected scenario with high greenhouse gas emissions. Hatched areas indicate confidence that the projected changes are significant and consistent among models. Source: USGCRP, 2016[8]

Become More Common

As climate change continues, there will be more hot days each year. For instance, someone in Tampa, Florida, may experience up to 40 more days a year where the temperature is over 95°F.

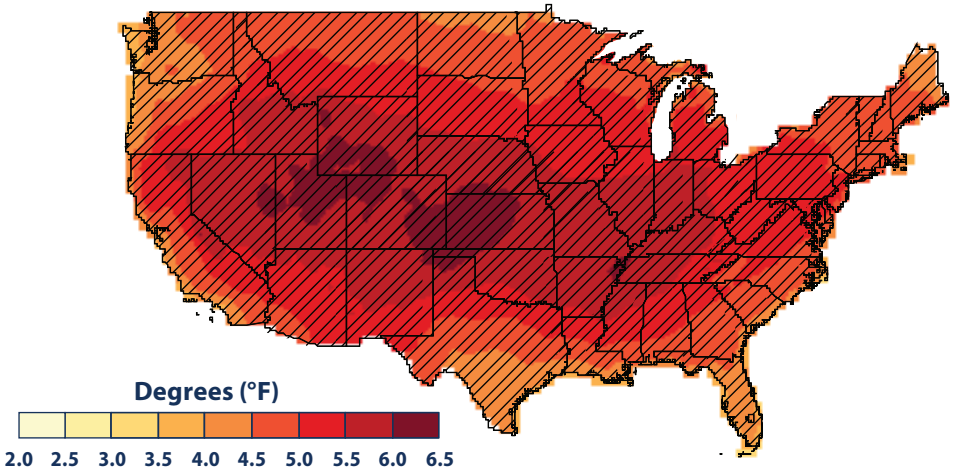
Change in Number of Days Above 95°F



Become More Severe

Rising average summer temperatures will make the hottest days even hotter than they used to be, especially in the central United States. For example, someone in Wichita, Kansas, may experience summers that are 6°F hotter than in the recent past.

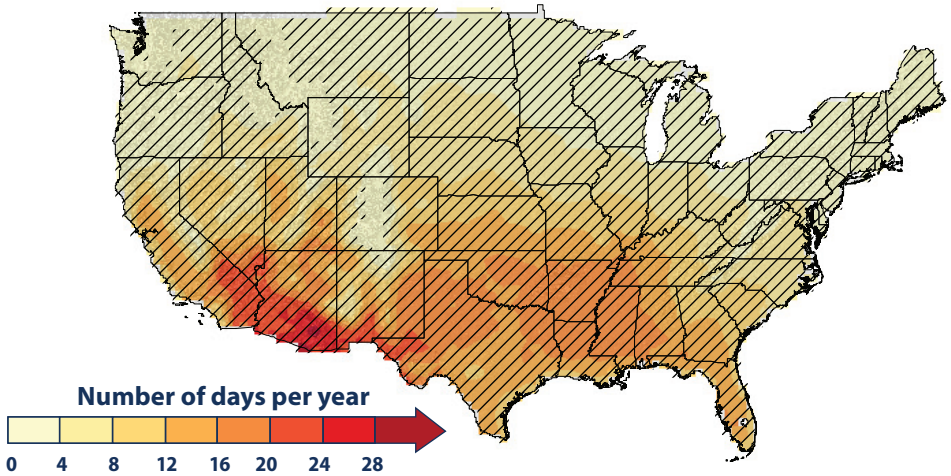
Change in Summer Temperatures



Last Longer

Consecutive days of extreme heat are projected to last even longer in the future. For example, someone in Tucson, Arizona, may experience a stretch of days with temperatures above 95°F that is 28 days longer than the longest stretch of such days in the recent past.

Change in Longest Stretch of Days Above 95°F



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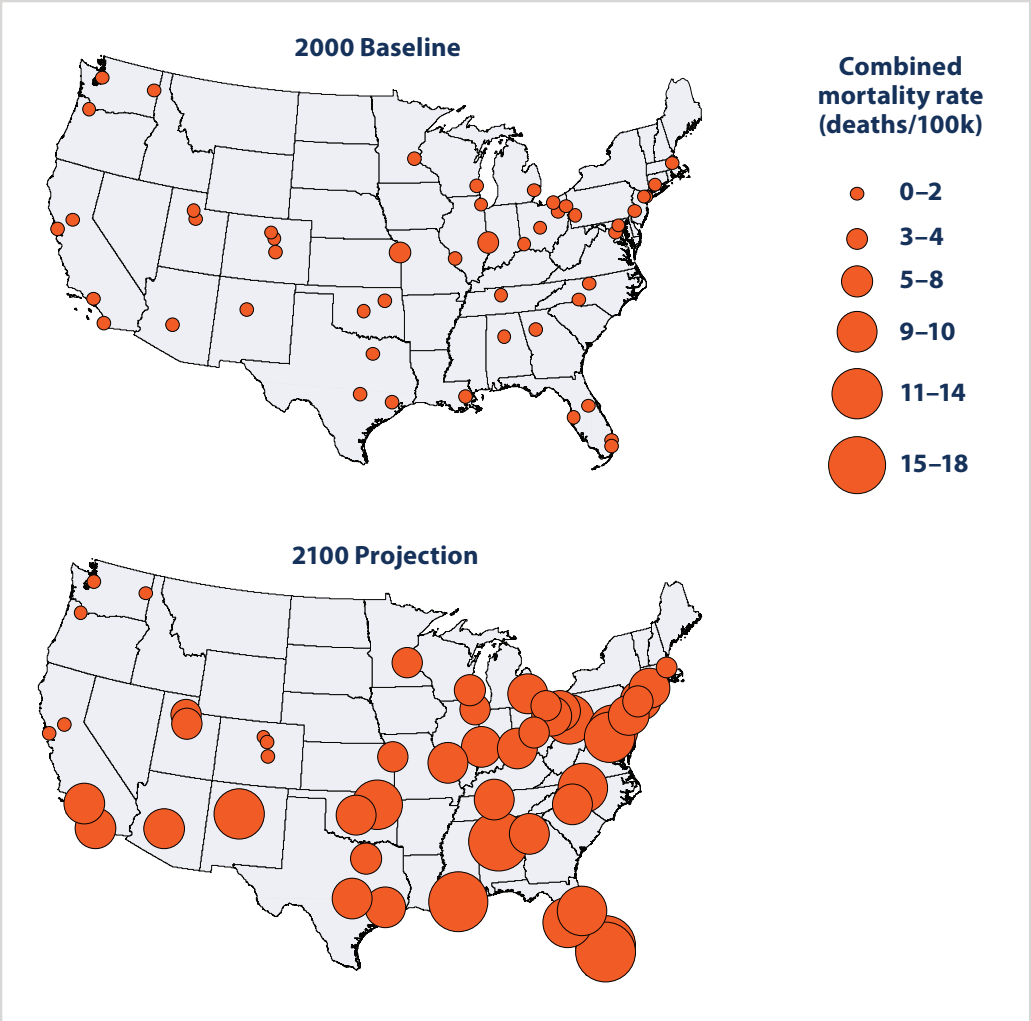
More Extreme Heat Events Are Likely to Cause More Illnesses and Deaths

As extreme heat events become more common, more severe, and longer-lasting, scientists expect to see an increase in deaths and illnesses from heat, particularly among vulnerable populations, such as children, the elderly, economically disadvantaged groups, and those with chronic health conditions made worse by heat exposure.[5]

Projected Deaths Due to Extreme Temperatures



The map on the top shows actual deaths in 49 major U.S. cities in 2000 from extreme heat and extreme cold combined, for every 100,000 people. The map on the bottom shows an increase in estimated deaths for 2100. The increase in heat-related deaths is expected to far outweigh the decrease in cold-related deaths. These results assume no significant reductions of greenhouse gas emissions ("business as usual"), and they also assume that people have not substantially adapted or acclimated to more extreme temperatures. (If a city does not have a circle, it does not mean the city has no extreme temperature impact; it just means that city was not included in this study.) Source: U.S. EPA, 2015[6]

DID YOU? KNOW

While deaths from extreme heat are expected to increase, the number of deaths caused by extremely cold temperatures might drop in certain areas as the climate gets warmer.[9,10] However, any decrease in cold-related deaths will very likely be substantially less than the increase in summertime heat-related deaths overall.[5]

How Can Extreme Heat Affect Me?

Heat affects everybody! A normal body temperature for adults is around 98.6°F. When you are sick, you may get a fever with symptoms such as headache, sweating, or fatigue. Much like a fever, extreme heat stresses your body's ability to maintain its normal temperature and can result in similar symptoms.

The most common health effects (or symptoms) caused by extreme heat include the following:

Heat cramps are muscle spasms, often in the abdomen, arms, or calves, caused by a large loss of salt and water in the body. Heat cramps can occur from prolonged exposure to extreme heat combined with dehydration, and they commonly happen while participating in strenuous outdoor activities such as physical labor or sports.

Heat exhaustion is a severe illness requiring emergency medical treatment. It can occur from exposure to extreme heat over an extended period of time (usually several days), especially when combined with dehydration.

Heat stroke is the most serious medical condition caused by extreme heat, requiring emergency treatment. Heat stroke (or *hyper*thermia) occurs when the body can no longer regulate its temperature, and its temperature rises rapidly—up to 106°F or higher. Heat stroke usually occurs as a progression from other heat-related illnesses, such as heat cramps or heat exhaustion. It can also strike suddenly without prior symptoms, however, and it can result in death without immediate medical attention.

Extreme heat is especially dangerous because people might not recognize their symptoms as signs of a more serious condition. For example, symptoms like sweating or fatigue may just appear to be normal reactions to a hot day. People may be in more danger if they experience symptoms that alter their decision-making, limit their ability to care for themselves, or make them more prone to accidents. If untreated, heat-related illnesses can worsen and eventually lead to death.

Heat can also contribute to premature death from health impacts other than those listed above. This is because extreme heat can worsen chronic conditions such as cardiovascular disease, respiratory disease, and diabetes.

DID YOU KNOW?

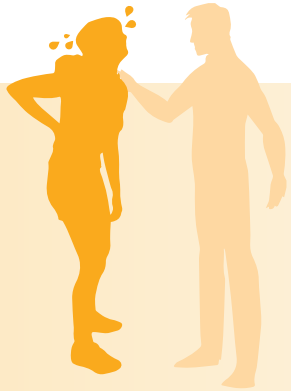
People have different normal body temperatures depending on their age, the time of day, and other factors. What's *your* average temperature? Log your temperature over the course of a few weeks in the morning, afternoon, and evening. Does your temperature change depending on whether you are sitting outside or inside? Chart your results!

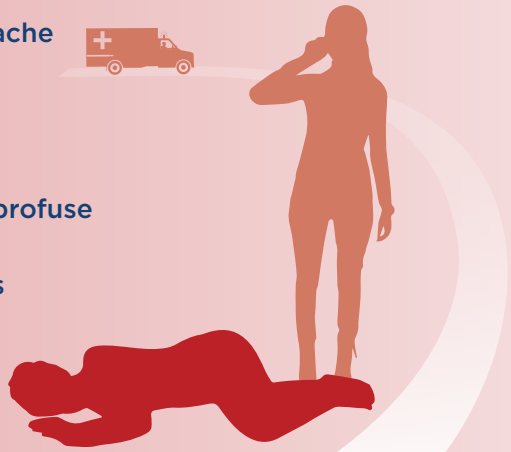
DID YOU KNOW?

Extreme heat, particularly in urban areas, is often associated with very poor air quality. Why? Heat waves are often accompanied by periods of stagnant air, which increases air pollution such as ground-level ozone. The combination of heat stress and poor air quality can pose a major health risk to vulnerable groups: young children, the elderly, outdoor workers, and those with pre-existing health conditions, including asthma.[3]

Know the Symptoms of Heat-Related Illnesses

	SYMPTOMS	TREATMENT
HEAT CRAMPS	• Heavy sweating • Painful muscle cramps or spasms	• Stop activity for a few hours. • Move to a cooler location. • Drink water, clear juice, or a sports beverage. • Seek medical attention if cramps do not subside within one hour.
HEAT EXHAUSTION	• Heavy sweating • Weakness • Fatigue • Headache • Dizziness • Nausea or vomiting • Fainting • Irritability • Thirst • Decreased urine output	• Move to an air-conditioned environment. • Lie down. • Loosen clothing or change into lightweight clothing. • Sip cool, non-alcoholic beverages. • Take a cool shower or bath, or apply cool, wet cloths to as much of the body as possible. • Seek medical attention if symptoms worsen or last longer than one hour, or if the victim has heart problems or high blood pressure.
HEAT STROKE	• Very high body temperature • Altered mental state • Throbbing headache • Confusion • Nausea • Dizziness • Hot, dry skin or profuse sweating • Unconsciousness	• Call 911 immediately and follow the operator's directions—**this is a medical emergency.** • Reduce the person's body temperature with whatever methods you can: wrap the person in cool cloths, immerse them in a cool bath, or spray them with cool hose water. • After administering cooling methods, move the person to a cooler place. • Do NOT give liquids. • If there is uncontrollable muscle twitching, keep the victim safe, but do not place any objects in his or her mouth. • If there is vomiting, turn the victim on his or her side to keep the airway open.





Source: CDC, 2012[11]

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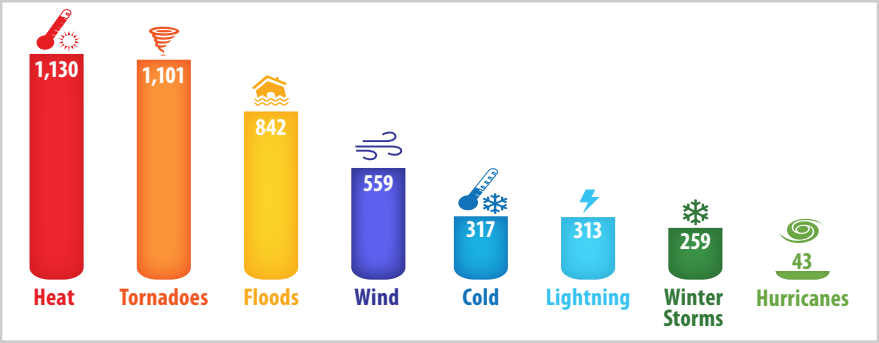
How Common Are Heat-Related Illnesses and Deaths?

Extreme heat causes more deaths than any other weather-related hazard—more than hurricanes, tornadoes, or flooding. In addition, thousands of people who are exposed to extreme heat seek medical treatment each year. In fact, each summer more than 65,000 Americans on average visit an emergency room for acute heat illness.[5]

Fatalities by Hazard, 2006–2015

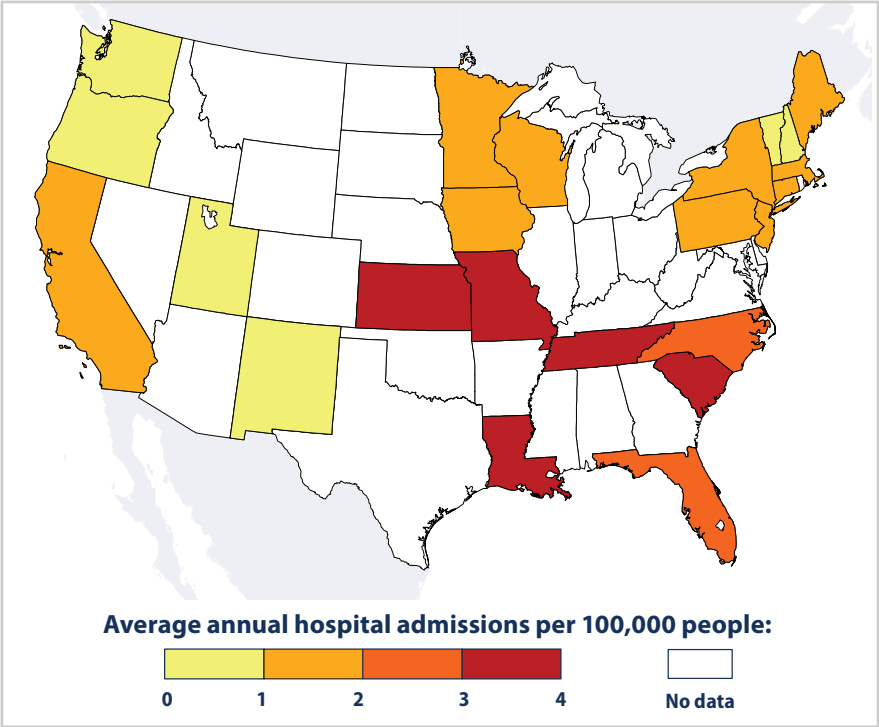


Numbers in each bar represent the total number of fatalities by hazard. Source: NOAA National Weather Service, 2016[12]

The numbers shown here do not capture the full extent of heat-related deaths. Many deaths associated with extreme heat are not identified as such by the medical examiner (or coroners) and may not be correctly recorded on a death certificate. For example, of the estimated 700 deaths that occurred during the 1995 heat wave in Chicago, only 465 were recorded and attributed to the extreme heat event.

Even small temperature increases above seasonal normal levels can result in illnesses and deaths, though the temperature may not be considered "extreme." A series of consecutive days with warmer-than-average temperatures often results in more hospital admissions for respiratory, cardiovascular, and kidney-related diseases. This can especially occur in spring and early summer, before people are accustomed to warm summer temperatures.[5]

Hospital Admissions Due to Heat, 2001–2010, CDC National Environmental Public Health Tracking Network



This map shows the number of hospital admissions for heat-related illnesses per 100,000 people in 23 states that participate in a national hospital data tracking program. States shaded red have three to four cases per 100,000 people in a typical year. States without shading do not participate in the data tracking program.
Source: U.S. EPA, 2016[2]

A Nationwide Challenge

Although you might expect heat-related illnesses and deaths to be more common in hotter, more humid regions like the Southeast, extreme heat affects every part of the country to some degree. In fact, some of the deadliest heat waves in the last few decades have occurred in northern cities like Chicago, where people are less accustomed to extreme heat, and many houses and apartments lack air conditioning.

Who Is Most at Risk from Extreme Heat?

Extreme heat can affect everyone. However, three key factors put some people at a higher risk than others:

- **Exposure:** Some people are more exposed to high temperatures than others, such as those who spend long hours working or exercising outside, those who are homeless, or those who live in buildings without air conditioning.
- **Sensitivity:** Some people are less tolerant of heat than others, such as infants, young children, pregnant women, older adults, and those with certain health conditions made worse by heat exposure. Certain medications can also affect the body's ability to regulate temperature. People can be more sensitive to heat if they are under the influence of alcohol or drugs that affect their ability to stay hydrated. Elderly individuals are also less likely to perceive being overheated, even though they are physiologically at greater risk.[13]
- **Ability to respond and prepare:** Some people are less able to avoid heat than others, such as those with limited incomes who cannot afford air conditioning or the electricity to use it, people with mobility issues that prevent them from seeking health care or going to a cooling center during a heat wave, or those with outdoor jobs. Some people are less motivated to leave their homes for cooler places due to unwillingness to leave pets, fear of crime, or concerns about being a burden to others.

DID YOU KNOW?

Hospitals report more cases of kidney stones during extreme heat events. Why? Dehydration leads to a buildup of salt in the body, which can sometimes lead to kidney stones.[5] Drink plenty of water throughout the day when it's hot!

DID YOU KNOW?

Heat can also increase the risk of workers getting injured, as it may result in sweaty palms, fogged-up safety glasses, dizziness, difficulty staying focused, or burns from accidental contact with hot surfaces.[5,14]

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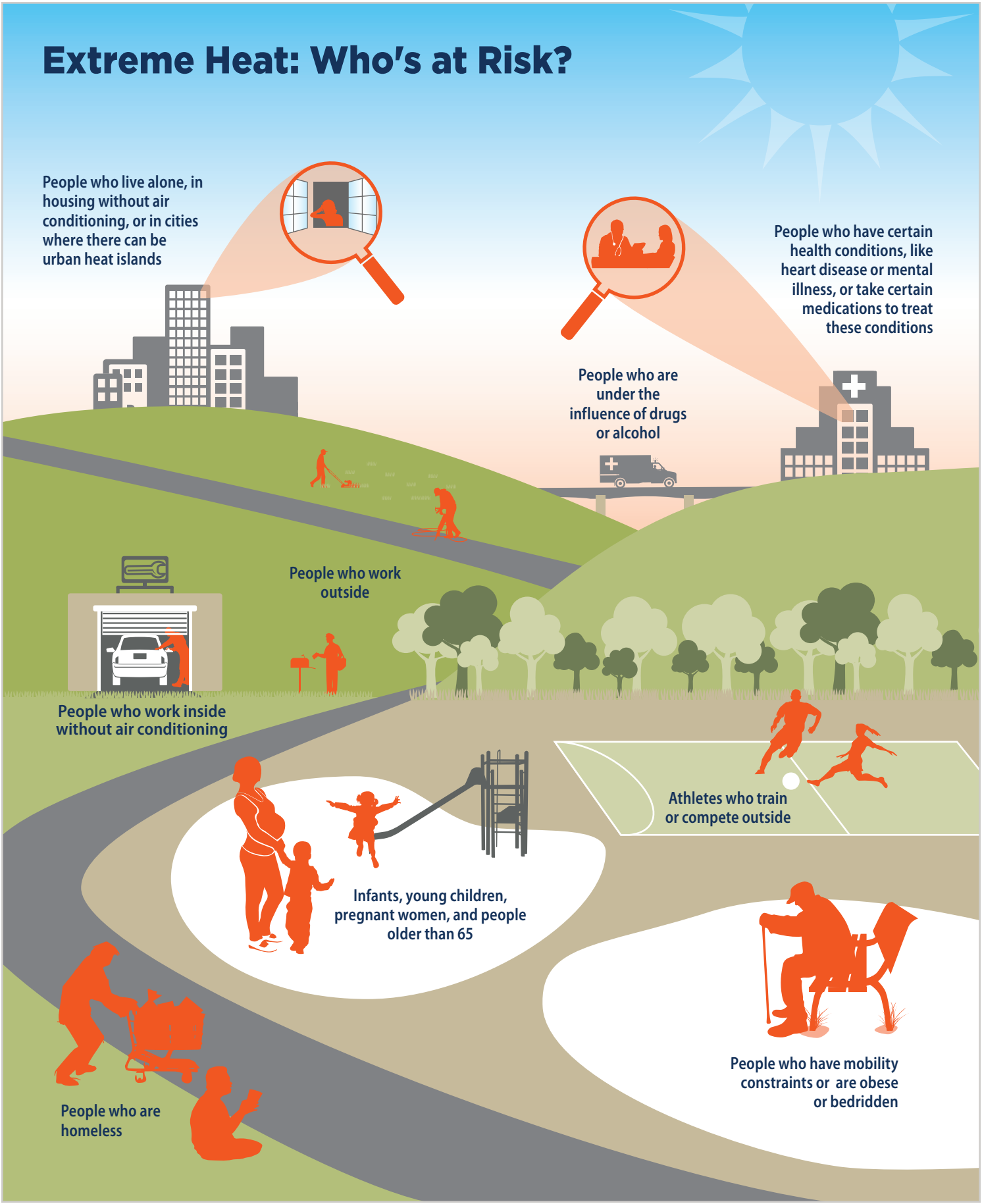
Extreme Heat: Who's at Risk?



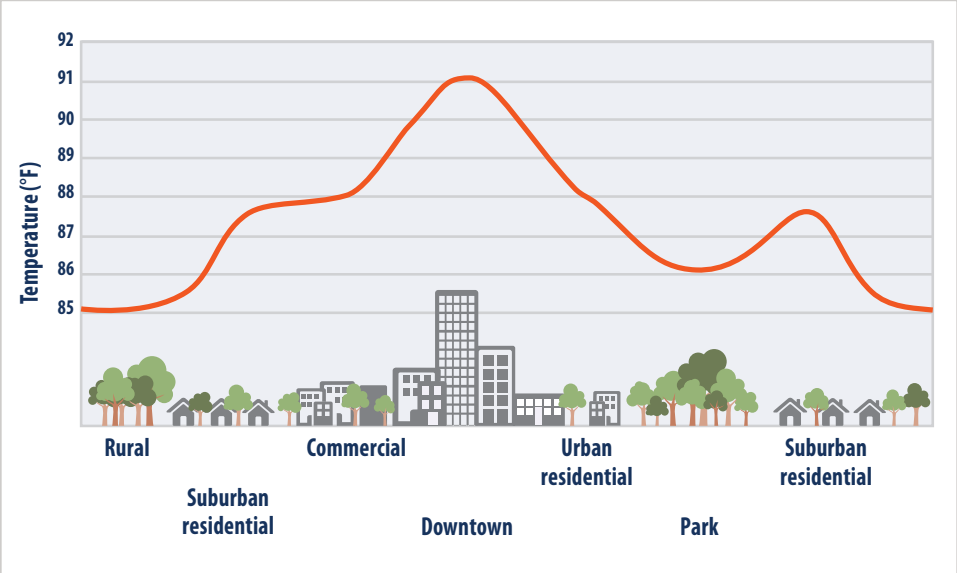
What Is the Urban Heat Island Effect?

If you live in an urban area, you could be at even greater risk from the effects of extreme heat. Urban areas, including big cities and smaller ones, are usually warmer than their rural surroundings because of the "urban heat island" effect.

As cities develop, vegetation is often lost and more surfaces are paved or covered with buildings. Less vegetation means less shade and moisture to keep urban areas cool. Conventional roofs and pavement reflect less and absorb more of the sun's energy, which leads to higher temperatures near these structures. Additionally, tall buildings and narrow streets can reduce air flow, further trapping the heat that gets absorbed during the day, as well as heat generated by vehicles, factories, and air conditioning vents. All these factors contribute to urban heat islands, which can worsen the impacts of climate change, particularly as more extreme heat events occur.

Compared with surrounding rural areas, urban heat islands have higher daytime maximum temperatures and less nighttime cooling. Temperatures in urban areas can be 1.8–5.4°F warmer than their surroundings during the day. In the evening, this difference can be as high as 22°F because the built environment retains heat absorbed during the day.[15]

Urban Heat Island Profile



This diagram represents how an urban heat island can increase local air temperatures by several degrees. Source: U.S. EPA, 2006[16]

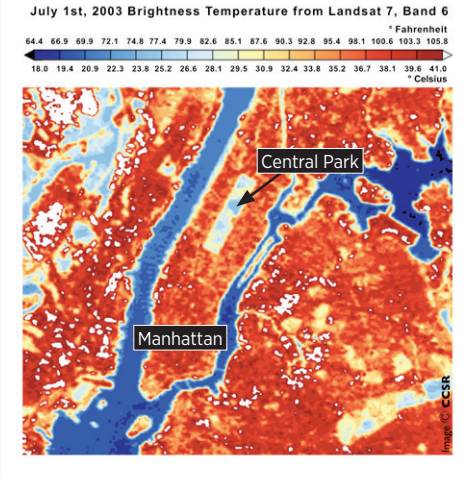
Urban heat islands don't just affect big cities. They can occur in small cities and suburban areas, too.

DID YOU KNOW

Heat affects all of us! Living in a city may increase your risk of experiencing extreme heat from an urban heat island, but living in a rural area, far away from cooling centers and hospitals, poses a potential risk to your health in an extreme heat event as well.

DID YOU KNOW

Urban Heat Island



The urban heat island effect is clearly visible in this heat map of New York City on a summer day. Temperatures are about 10°F higher in built-up areas than in the forested parts of Central Park. The dark blue areas show the cooler waters of the Hudson and East Rivers. Source: Center for Climate Systems Research, Columbia University, 2014[17]

What Should I Do During an Extreme Heat Event?

Do

- Use air conditioners or spend time in air-conditioned places, such as cooling centers, malls, or libraries.
- Use electric fans to provide comfort when the temperature is below 95°F.[18] Fans can make sweat evaporate more quickly from your body. More evaporation means more heat can leave your body.
- Take a cool shower or bath to help cool off.
- Minimize direct exposure to the sun.
- Stay hydrated—drink water or beverages **without** caffeine, sugar, or alcohol throughout the day.
- Eat light, cool, and easy-to-digest foods such as fruit or salads.
- Wear loose-fitting, light-colored clothes.
- Know the symptoms of heat-related illnesses and the appropriate responses.
- Check the local news for health and safety updates.[13]

Don't

- Leave children, pets, or persons with mobility problems alone in cars for **any amount of time**.
- Drink alcohol to try to stay cool.
- Use the stove or oven to cook—it will make you and your house hotter.[13]
- Eat heavy, hot, or hard-to-digest foods.
- Wear heavy, dark clothing, which absorbs heat from the sun.
- Exercise outdoors during the hottest hours of the day (usually 10 a.m. to 5 p.m.).
- Use an electric fan when the temperature is over 95°F. When the temperature is in the mid-90s or higher, electric fans will not prevent heat-related illness.

Help Others Cope with Extreme Heat

- Check on **older, sick, or disabled people**, including neighbors, family members, or friends who may need help responding to the heat. Be sure to check on those who live alone to ensure that they stay hydrated and cool. Some chronic conditions, such as diabetes or kidney disorders, can be made worse by heat exposure, and individuals affected by those conditions should be closely monitored in an extreme heat event.[5]
- Call your local public officials if you see **homeless people** in need of help. In some places, the non-emergency services hotline is 311, but check your local availability. Homeless people can be at great risk during extreme heat events,[19] especially if they are elderly or disabled, struggle with alcohol or drug addiction, or suffer from medical conditions such as diabetes, high blood pressure, or mental illness.
- Limit strenuous outdoor activity for **young children**, and make sure they take regular water breaks when playing outside. If possible, bring outdoor activities inside.
- Schedule workouts for **athletes** earlier or later in the day when the temperature is cooler. If possible, limit outdoor activity or bring outdoor events inside.
- If you are an **athlete or work outside**, monitor your teammates or co-workers, and watch for symptoms of heat-related illnesses.

What Can I Do to Reduce My Risk Before an Extreme Heat Event?

Extreme heat events are on the rise, but there are things you can do now—in your own home, workplace, or neighborhood—to reduce your current and future risks. Here are some ideas (also see "For More Information" below):

- **Be prepared at home.** The best time to prepare for an extreme heat event is before it happens. Each spring, check your household's fans, air conditioners, and other cooling equipment to make sure they are in good working order. Write down a list of family, friends, and neighbors who might need assistance in an extreme heat event, and make sure you have their phone numbers. Look up the location of your nearest cooling center(s) in case you need to go there.
- **Be prepared in your community.** If you work outdoors or in a physically demanding job without air conditioning, work with your employer to establish a committee at your workplace to develop a heat response plan. Get involved in children's school and athletic organizations to ensure that proper measures are in place for extreme heat days and outdoor athletic practices take place during the coolest part of the day.
- **Plant a green roof.**[20] Green roofs are gardens planted on rooftops that provide shade and reduce the temperature of the roof surface, as well as the surrounding air. On hot summer days, green roofs can actually be cooler than the air. Many kinds of buildings—commercial, residential, and industrial—can support green roofs, and green roofs can be especially useful in cities to counter the urban heat island effect. Consider building your own at home, work, or school!
- **Install a cool roof.**[21] A cool roof is made of materials or coatings that reflect sunlight and heat away from your home, reducing roof temperatures. This makes your home cooler, increasing your comfort and reducing the amount of air conditioning needed during hot days.
- **Plant trees or erect shade structures in strategic locations.**[22] Trees and vegetation that directly shade your home can lower surrounding temperatures; this can decrease the need for air conditioning, make your home more comfortable, and reduce your energy bill. Trees also protect your family's health by improving air quality, providing cooling shade for outdoor activities, and reducing your exposure to the sun.
- **Use cool paving materials in your driveway.**[23] If you've ever walked barefoot on hot pavement, you know it can heat up quickly in the sun. Hot pavement also transfers heat to the surrounding air, adding to the urban heat island effect. Cool pavement stays cooler in the sun than traditional pavement by reflecting more solar energy or enhancing water evaporation. Cool pavement can be created from asphalt and concrete, as well as through the use of coatings or grass paving.
- **Replace your old air conditioner.**[24] Old or damaged window-unit air conditioners are inefficient, meaning you're paying more money for less actual cooling ability. Don't wait until the next heat wave—when supplies are likely to be low and prices high—to replace an inefficient or broken air conditioner; purchase an efficient unit *before* you need it.

What Is a Cooling Center?

Cooling centers are public buildings (e.g., libraries, shelters, community buildings) or specific private buildings (e.g., shopping malls, movie theaters) with air conditioning that are designated as a safe location during extreme heat. During extreme heat events, some communities may offer free public transportation to these locations. Check online or call your local officials to find out where your cooling centers are and if your community provides free transportation.

- **Contribute to a community-wide heat response plan.** Many state and local governments have already developed plans that identify locations, infrastructure, and people that are vulnerable to climate change and extreme heat. These plans also describe actions a community can take to improve resilience. Check online or call your local representatives to see if your community has a plan. If you are interested in heat response planning efforts in your community, your town or city hall is a great place to start. Ask how you can get involved!
- **Find out about local heat alert systems and subscribe to them.** Local governments, weather stations, medical providers, or others may have systems for issuing heat alerts through the television, radio, newspapers, phone calls, social media, texts, emails, or the internet. Find out what systems are in place for your community, and sign up to receive alerts.
- **Determine whether there are resources for support in your community.** Some agencies can provide air conditioners to those who cannot afford them or subsidies for purchases. In some areas, utility companies are not permitted to suspend power for non-payment during heat events. Some groups may provide support for paying utility bills or transportation to cooling centers. Check online or ask your local representatives whether these services are available in your community.

The Heat Is On... Get Ready, Get Set, Go!

As the climate warms in the United States and around the world, extreme heat is on the rise. You will very likely experience more frequent, more severe, and longer heat waves in the years ahead. Exposure to elevated heat levels can be a hazard to your health—whether you live in a city, town, or rural area.

The best defense against extreme heat is to be prepared, and remember:

- **Get ready:** Take steps now to prepare your home, workplace, and community for future heat events.
- **Get set:** Know the symptoms of heat-related illnesses and what to do in an emergency.
- **Go:** Check on those who may need help during an extreme heat event, like children, elderly family members, homebound neighbors, or outdoor workers.

DID YOU KNOW?

Many communities have already taken steps to decrease their risk of heat-related illness and death. Has yours? Here are some examples:

The Arizona Department of Health Services implemented a heat emergency response plan to help protect the health of Arizona residents during heat waves. The plan sends heat warnings and safety tips to health department staff, school personnel, and the general public using email and social media. The plan includes heat safety toolkits for schools, outdoor workers, and older adults to educate them on preventing, recognizing, and treating heat-related illness.

The New York City Department of Health and Mental Hygiene's Climate and Health Program works with the government, the community, and health care providers to increase communities' ability to prepare for and respond to extreme heat events. The program releases health and safety information, alerts, and social media posts on how to stay safe during very hot weather.

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For More Information

Understanding the Health Risks of Extreme Heat Events

- See CDC's website for resources on extreme heat emergency preparedness and response, as well as tips on how to protect yourself and others from heat-related illness. CDC also provides free online training on recognizing, preventing, and treating heat-related illness. This training is designed especially for coaches, school nurses, parents, and others who train or provide athletic training in the heat.
- The National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service website contains information and resources on preparing for extreme heat events.
- See the National Institute for Occupational Safety and Health's website for resources on heat stress in the workplace.

The Impact of Climate Change on Extreme Heat Events and Human Health

- See the U.S. Global Change Research Program's 2016 *Climate and Health Assessment* for more information on the impacts of climate change on human health.
- See EPA's climate change website for information and other resources, including fact sheets illustrating the threats that climate change poses to human health, especially in populations of concern.
- See EPA's *Climate Change Indicators in the United States* report to learn more about how changes in the Earth's climate are affecting trends in extreme temperatures in the United States and how this may lead to human health impacts.

Resources for Developing Extreme Heat Programs

- See EPA's "Heat Island Effect" website for information on how to keep cool in an urban heat island.
- CDC's Building Resilience Against Climate Effects (BRACE) framework helps health officials develop strategies and programs for communities to prepare for the health effects of climate change.
- The U.S. Climate Resilience Toolkit provides a framework and tools to understand and address climate issues that impact people and their communities.
- The World Health Organization's guidance on heat-health action plans provides examples from European countries that have begun to implement and evaluate heat-health action plans.
- EPA's 2006 *Excessive Heat Events Guidebook* provides useful perspectives for local health officials on planning for extreme heat events. This document builds on that 2006 publication.

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