

# **Rising Temperatures and an Aging Population:** **An Impending Tragedy**

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## **Introduction**

**Extreme heat is deadly, especially to older adults.** The Summer of 2019 was the hottest recorded summer in history, with July 2019 being the hottest month on record globally since temperature records began being recorded in the 19<sup>th</sup> century. The National Oceanic and Atmospheric Administration announced that worldwide, July was 1.71 degrees Fahrenheit warmer than the average July on record. The record-setting July follows the hottest June on record, rising .71 degrees Fahrenheit above the average temperature for that month<sup>1</sup>. This is particularly concerning since extreme heat often results in the highest number of annual deaths among all weather-related hazards. Elderly citizens are the most vulnerable population during these so called “heat waves”, experiencing significantly worse health outcomes than any other age group. Individuals older than 65 years old comprise most of the extra emergency room visits and deaths during heat waves. **The world is getting hotter, and Americans are getting older, compounding the problem and threatening more American lives every year.**

## **Climate Change**

Climate change and global warming are concepts with their fair share of political controversy, but **there is no denying the fact that over the past several decades, the average temperature of the earth has been steadily increasing.** The year 2018 was the fourth warmest on record and the past four years – 2015 to 2018 – were the top four warmest years in the global temperature record<sup>2</sup>. **Accompanying the rise in average**

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<sup>1</sup> Time Magazine, August 15, 2019

<sup>2</sup> WMO Statement on the State of the Global Climate in 2018

global temperatures is a rise in the frequency, duration, and severity of heat waves<sup>3</sup>.

## Aging Population

**America is getting older.** By 2030, 20% of Americans will be 65 years of age or older.

The median age of the U.S. population is expected to grow from age 38 today to age 43 by 2060. The number of people 80 years old and above is increasing at the rate of 3.8% per year, which makes them the fastest growing age group<sup>4</sup>. The increasing number of aged people increases health concerns during periods of elevated ambient temperatures.

**People over the age of 65 years old exhibit disproportionately larger increases in mortality during heat waves than those in younger individuals: sometimes up to 90%** of excess deaths during heat waves occur in the elderly<sup>5</sup>. With the rapidly growing number of older individuals worldwide and here in the United States, the number of people at risk of dying during a heat wave increases. With an expanded at-risk population, there exists the potential for a greater number of casualties during any single heat wave<sup>6</sup>.

### **KNOW THE SIGNS OF HEAT-RELATED ILLNESS AND HOW TO RESPOND:**

#### **HEAT CRAMPS**

Signs: Muscle pains or spasms in the stomach, arms, or legs

Actions: Go to a cooler location. Remove excess clothing. Take sips of cool sports drinks with salt and sugar. Get medical help if cramps last more than an hour.

#### **HEAT EXHAUSTION**

Signs: Heavy sweating, paleness, muscle cramps, tiredness, weakness, dizziness, headache, nausea or vomiting, or fainting

Actions: Go to an air-conditioned place and lie down. Loosen or remove clothing. Take a cool bath. Take sips of cool sports drinks with salt and sugar. Get medical help if symptoms get worse or last more than an hour.

#### **HEAT STROKE**

Signs: Extremely high body temperature (above 103 degrees) taken orally; red, hot, and dry skin with no sweat; rapid, strong pulse; dizziness; confusion; or unconsciousness

Actions: Call 911 or get the person to a hospital immediately. Cool down with whatever methods are available until medical help arrives.

[ready.gov/heat](https://ready.gov/heat)

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<sup>3</sup> Kenney, Craighead, and Alexander *Heat Waves, Aging, and Human Cardiovascular Health*

<sup>4</sup> Ibid

<sup>5</sup> Ibid

<sup>6</sup> Ibid

### Case Study: 1995 Chicago Heat Wave

On July 13, 1995, the temperature in Chicago hit 106 degrees. Over the next five days, the temperature barely dipped below 100 degrees, and the toll on the city was immense. Over that period, the scorching heat claimed more than 700 victims, mostly the poor and the elderly. As a northern city, many older homes did not have air conditioning units. Others had the units, but due to power failures in the city were unable to power them. In 1995, even Cook County Hospital didn't have simple window units in the open wards. "We had some patients with cardiovascular problems who literally developed heatstroke while they were in the hospital." Experts say that as heat waves become more common because of climate change, what will be an inconvenience for those with resources could prove dangerous for those without. Especially Americans above 60 years old, and even more so for the elderly with cardiovascular conditions. - Chicago Tribune, July 15, 2015

### Risk Factors

Direct and indirect heat-related fatalities, such as death from heat stroke, total more than any other individual environmental cause including death from cold, flooding, tornados, hurricanes, and lightning<sup>7</sup>. **The vast majority of fatalities during heat waves are due to an underlying cardiovascular cause<sup>8</sup>**. This also helps to explain why heat waves have a much deadlier effect on the elderly. Healthy older humans have an altered cardiovascular response to heat stress compared with that of their younger counterparts. Specifically, young subjects have significantly increased blood flow (more than double) than older subjects, when under extended periods of heat. This difficulty in redistributing blood, coupled with the decreased sweat rate and decreased sweat output per gland associated with aging, means **heat does not dissipate as easily from older individuals**

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<sup>7</sup> Kenney, Craighead, and Alexander *Heat Waves, Aging, and Human Cardiovascular Health*

<sup>8</sup> Ibid

and exacerbates the cardiovascular strain on the body<sup>9</sup>. This shows an increased mortality threat for older adults assuming good overall and cardiovascular health. Unfortunately, according to the American Heart Association, over two thirds of American adults over the age of 60 have a cardiovascular disease<sup>10</sup>. For these citizens, the danger from heat waves and subsequent prolonged heat exposure is even higher and deadlier.

### **Case Study: 2003 France Heat Wave**

In early August 2003, Europe saw temperatures rise to over 100 degrees and stay hot for weeks. Many European homes are not equipped with air conditioning; as extremely high temperatures are rare for many in that region. It is estimated that the European death toll for the 2003 heat wave was over 70,000 persons, 15,000 in France alone. Elderly citizens were especially vulnerable, as many lived alone in apartments or in “attic apartments”, with no air conditioning, and limited means and mobility. Not all nursing homes had air conditioning, and the concept of public cooling centers or neighborhood cooling rooms was unheard of in France at this time. Furthermore, many French families were on vacation, leaving their elderly loved ones at home alone in early August. The lack of proper infrastructure and architecturally outdated homes, combined with the isolation of the elderly population, caused such a high death toll in such a short period.

- Yale Climate Connections, August 27, 2015

- The Guardian, August 29, 2003

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<sup>9</sup> Kenney, Craighead, and Alexander *Heat Waves, Aging, and Human Cardiovascular Health*

<sup>10</sup> American Heart Association, Statistical Fact Sheet 2016 update

## Moving Forward

**The danger presented by the changing climate and the resulting heat waves is undeniably clear, and the threat to the elderly, both in the United States and around the world, grows every year.** However, both as a society and as individuals, there are things that we can do to help mitigate the potential fallout from the extreme heat. As a society, providing cooling centers such as at public libraries, police stations, or emergency shelters, can provide those without the means to keep cool a safe, free place to go during the heat waves. Many cities also provide “well-being checks”, where concerned citizens can ask local authorities to check on a loved one or a neighbor they feel may be vulnerable. **However, the unspoken indirect killer, especially among the elderly during a heat wave, is isolation.** The number one thing that we as individuals can do to avoid unnecessary deaths during heat waves is to check on our loved ones and neighbors. Before a heat wave, see that they have access to air conditioning, or are capable of going somewhere that has air conditioning. During a heat wave, if you know of elderly family or neighbors who live alone, call or visit to check on them during the heat wave to make sure they are healthy and hydrated and staying cool. In the aftermath of the tragic French death toll from the European heat wave of 2003, Dr. Bernard Kouchner, a former health minister and one of the founders of Doctors Without Borders, said that the main lesson to be learned from the tragedy was a social lesson, not a medical one. "We were all guilty, in a way," he said. **"You have to take care of your elderly<sup>11</sup>."**

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Aras S. Aziz, M.A.

Claude Pepper Center, FSU

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<sup>11</sup> New York Times, August 19, 2003