Extreme heat is killing American workers

The US needs a national standard to protect workers from heat.

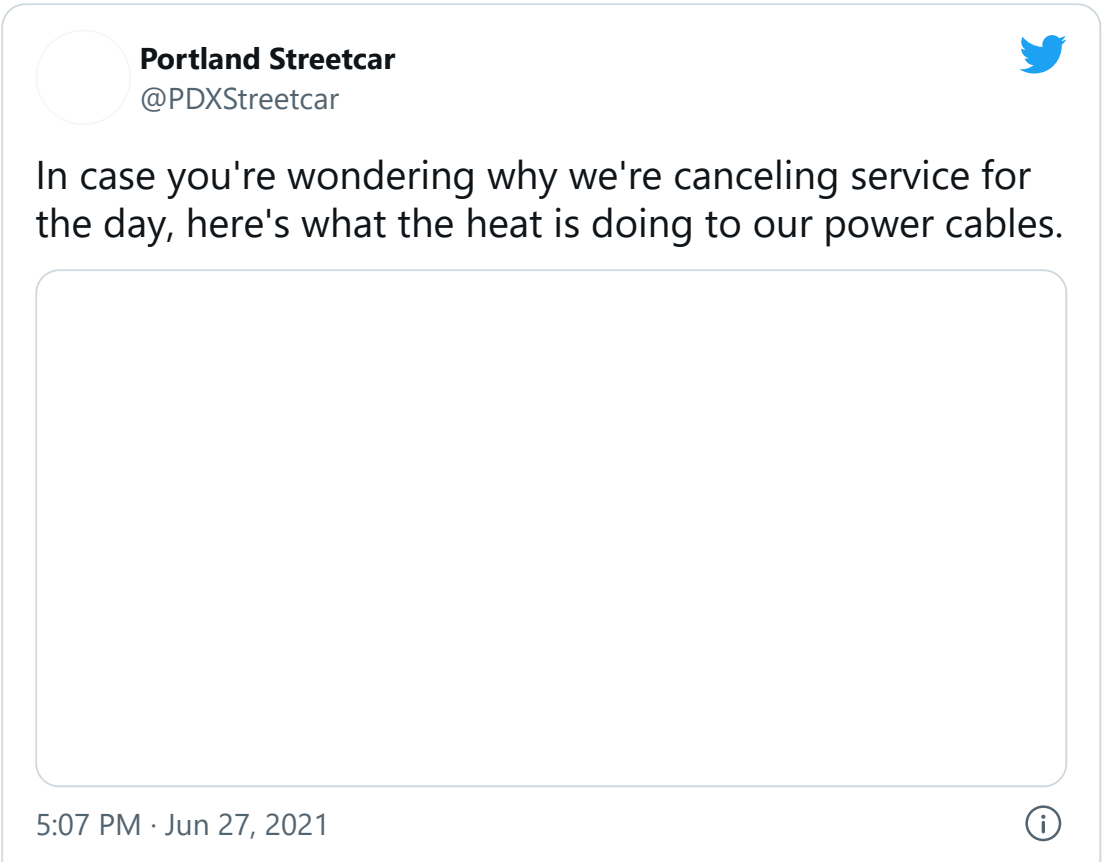
By Umair Irfan | Jul 21, 2021, 9:00am EDT

Farmworkers face some of the highest risks from extreme heat, but there are few regulations to protect them. | David Paul Morris/Bloomberg via Getty Images

Abe Carlin held up an instant-read thermometer in the Portland, Oregon, pizzeria where they worked. It showed 103.2 degrees Fahrenheit. Even with half the ovens off and the air conditioning cranked up, the kitchen was desperately hot on June 27, when a **heat dome** capped the region.

Outside, temperatures were breaking records as a searing late-June heat wave settled across the Pacific Northwest. Portland reached a record high of **112 degrees Fahrenheit**, only to be **broken the next day**. Portlanders, who have rarely felt such heat, didn't want to turn on the ovens in their own homes.

So as temperatures started rising, more orders came into the pizzeria. The kitchen staff struggled to keep up with the demand using their limited oven space. And staffers who would have helped out couldn't make it in as cables melted in Portland's light rail system and left commuters stranded.



Conditions in Carlin's pizza restaurant were actually better than many in the food industry. Employees were rotated between the cooler dining room and the warmer kitchen. The break room was stocked with cold Gatorade. Workers were told to take frequent breaks and even spend a few minutes in the cooler if needed.

Finally, the owners decided to close the restaurant early.

"Fundamentally, the way that our space was set up was not able to deal with heat," Carlin said. "Our HVAC system is not meant to handle this."

Workers at **other Portland restaurants** were not so lucky. Some closed early while others tried to stay open as long as possible. The heat triggered **power outages** that shut down air conditioners and coolers in several restaurants, and employees reported symptoms of heat exhaustion. Workers at Voodoo Doughnuts in Portland's Old Town went on strike because of the heat. The striking **workers were then fired**.

And in other jobs across the state, some fared even worse. One farmworker, 38-year-old **Sebastian Francisco Perez**, was found dead at the farm where he worked in Oregon. **Kenton Scott Krupp**, 51, was found dead last month at an Oregon Walmart warehouse where he worked. Investigators are still trying to determine whether this was due to extreme heat, but temperatures reached 97 degrees Fahrenheit the day he died, and his coworkers saw him stumbling and struggling to speak.

It's clear that extreme heat is a hazard to lives and livelihoods, even indoors, but job sites have haphazard rules, if any, to deal with it. That's due in part to the fact that there is no national workplace safety standard for heat. States like California, Minnesota, and Washington do have heat some regulations in place, but advocates say they are not enough to limit the growing dangers.

With average temperatures rising and heat waves becoming more frequent and intense due to climate change, the threat from heat is growing, as the recent heat waves illustrate. "Not to be too dramatic about it, but the data suggests that this is a harbinger of what's to come," said **R. Jisung Park**, an assistant professor of public policy at the University of

California Los Angeles and associate director of economic research at the Luskin Center for Innovation. That heat, in turn, is poised to exact a huge toll in terms of health and the economy.

However, after more than a year of shutdowns and isolation due to the Covid-19 pandemic, people are desperate to get back to work. Many workers — in kitchens, factories, warehouses, delivery trucks, farms — have no choice but to face the heat, and as a consequence, they may suffer. It highlights the difficulties of working in a climate-changed world and portends another divide in the economy.

Extreme heat has far-reaching effects on workers and the economy

Just about any kind of work gets harder when it's hot. Some of the most visible risks are for people who work outdoors, for instance, on construction sites. More than 15 million people in the United States have jobs that require them to be outdoors at some point, according to the **Bureau of Labor Statistics**.

Extreme heat can impair safety and productivity, even indoors. Factories, warehouses, foundries, and kitchens can get dangerously hot in normal weather, and during a heat wave, it only gets harder to stay cool. And as Carlin experienced, heat can be harmful even in places that are air-conditioned and otherwise thoughtfully managed.

Such high temperatures in turn lead to injuries. In a **working paper released this week**, Park and his colleagues examined worker injury claims across all sectors in California from 2001 to 2018. They found that heat led to 20,000 additional injuries per year in the state, with a social cost of $1 billion.

Outdoor workers like this construction crew near Shaver Lake, California, on July 15, 2021, face some of the most acute dangers from extreme heat. | David McNew/Getty Images

These injuries include expected problems like heat exhaustion, which can cause nausea, dizziness, and fainting. In extreme cases, the heat can lead to a life-threatening spike in body temperature. But higher temperatures were also linked to more injuries overall, including falls from scaffolding, wounds from machinery, and collisions with industrial vehicles. Compared to days with outdoor temperatures in the 60s, days with temperatures between 85 and 90 degrees Fahrenheit caused a 5 to 7 percent increase in same-day injury risk, while days above 100 degrees Fahrenheit led to a 10 to 15 percent increase.

The effect was persistent across indoor and outdoor jobs, though the worst effects tended to be in professions that involved physical labor. “The health consequences of making mistakes or cognitive lapses on the job, the stakes are that much higher in many of these occupations,” Park said. “And when it’s hot, there is a lot of evidence that our cognitive ability declines considerably, in addition to increased fatigue.” That makes dangerous mistakes much more likely.

These risks are not spread equally across demographics, in part due to who is filling many of these jobs: Men are more vulnerable than women, younger workers are at higher risk than older workers, and low-income employees face greater dangers from heat than higher-income employees.

Park said the results highlight that the impacts of climate change don't just create inequalities between countries or locations but are also widening divides within employment sectors. A supervisor in an air-conditioned office may face less heat than a nearby worker on an assembly line, for example — and the supervisor might be in charge of the working conditions of other employees.

Though injuries and heat exhaustion are the most dire consequences of heat, rising temperatures can start to impact workers and the economy well before they reach danger levels. One study looking at garment workers in India found that **worker productivity fell by 4 percent** for every degree above 27 degrees Celsius (80.6 degrees Fahrenheit) in the workplace. High temperatures also increased absenteeism.

Even in office jobs, studies have found that productivity declines with heat in the work environment. In one study, researchers saw **office worker performance decline by 2 percent** for every degree above 25 degrees Celsius (77 degrees Fahrenheit). Though offices can be air-conditioned, some buildings allow temperatures to rise indoors during summers to save energy. Cooling is not always distributed evenly, so a desk in a sunbeam can get much hotter than a desk under a cooling vent. And in some markets, if temperatures get too hot and there is too much strain on the grid, utilities can tell building operators to dial back their cooling.

Frequent breaks, water, and shade can help reduce heat risks for workers, but most of the US doesn't have any rule requiring them for workers facing extreme temperatures. | Frederic J. Brown/AFP via Getty Images

These productivity declines are poised to ripple throughout the global economy. The United Nations' **International Labor Organization** said in 2019 that more than 2 percent of working hours worldwide will be lost every year by 2030 due to heat slowing down or stopping work. That's the equivalent of each full-time worker in the world missing about an extra week of work each year.

In warmer regions like Western Africa and South Asia, work hours could fall by 5 percent in the next nine years. Even if the world were to get on course to limit warming this century to below 1.5 degrees Celsius — the more ambitious target of the Paris climate agreement — the heat from the changes to the climate that are already baked in are projected to lead to $2.4 trillion in financial losses by 2030.

However, the complete effects of heat in the workplace are hard to track. Many of the workers most affected by heat are in low-wage jobs; they may only work part time, seasonally, or on a contract basis; and some are undocumented. That makes it harder to keep tabs on who is facing the highest risks and getting hurt most often. And heat-related injuries and illnesses can be hard to tease out in population statistics, since high temperatures aren't always the listed cause. Instead, heat can worsen underlying health conditions and environmental hazards.

"We don't know and we will never know the full extent," said Kate Suisman, an attorney and director of the Safe Jobs Oregon program at the Northwest Workers' Justice Project.

Workplace heat regulations are weak or nonexistent

So how can workers stay safe in the heat? Park's study showed heat-related injuries in California gradually fell in the time span he and his team studied. It demonstrates that even with rising temperatures and more extreme heat, it is possible to adapt.

"I can tell you that in our data, we find that a lot of these injuries are preventable," Park said. "The question will be what combination of free market-based solutions versus policy interventions are going to be necessary to reduce heat-related injury risks."

While some employers have taken steps on their own to mitigate the effects of heat for their employees, government regulations help workers establish a minimum for the precautions that are needed, like frequent breaks and access to cooling. "It's harder to demand something that's just your interpretation of what's safe," Suisman said.

In 2005, after a rash of **heat-related deaths among farmworkers**, California became the first state to implement a **workplace safety standard for heat**. The standard mandates access to shade, cooling, and water, as well as mandatory breaks and training for dealing with heat-related health problems. It has likely contributed to the decline in heat-related injuries, but California's rule is targeted only at outdoor workers — and even after the standard was in place, several more California farmworkers died on hot days.

Other states are starting to look at workplace heat standards as well. Last year, Oregon began the process of putting together regulations for **heat and wildfire smoke exposure** for workers. But the process is tedious and is already facing opposition from some employers. "It's really long, not too exciting, and makes you want to scratch your eyes out," said Suisman. "It's a lot of words, and a lot of industry folks saying, 'We don't need this, it's onerous, it's expensive.'" So it may take months before any heat regulation goes into effect in Oregon, despite record temperatures this summer.

Even indoor workplaces with air conditioning can warm up during a heat wave, contributing to a rise in accidents and injuries. | Bloomberg via Getty Images

Meanwhile, there is still no national standard for heat in the workplace. Advocates say the federal government has known about the dangers of heat for workers for decades and has failed to do much about it. The National Institute for Occupational Safety and Health (NIOSH), a sub-agency of the Centers for Disease Control and Prevention, studied the

problem of heat injuries in the workplace and **issued its first recommendations in 1972**, with periodic revisions since then. But nearly 50 years on, nothing has been put into place.

Groups like Public Citizen have also for years been **petitioning the federal government** to develop a heat standard for workplaces, both indoors and outdoors. Finally, in June, the Biden administration directed the Occupational Safety and Health Administration at the US Department of Labor to start the rulemaking process.

A spokesperson for the Labor Department said that while the agency doesn't have an explicit heat standard at the moment, the agency does have a **General Duty Clause** that directs employers to keep workplaces "free from recognized hazards," which should include extreme heat.

"OSHA continues strong enforcement related to heat illness using the General Duty Clause and updates its compliance assistance resources, including educational material for both employers and workers," said a spokesperson in an email. "In addition to the enforcement of employers' responsibility to protect their workers from heat hazards under the General Duty Clause, we are currently updating our materials and website on the **heat illness prevention campaign** to recognize indoor and outdoor heat hazards and heat stress."

But the federal rulemaking process for extreme heat is poised to be a drawn-out affair, despite the fact that other federal agencies like NIOSH have already studied the matter and come up with guidelines.

"The blueprint is just sitting there," said **Juley Fulcher**, a worker health and safety advocate at Public Citizen, noting that the process for devising a heat regulation shouldn't have to take months or start from scratch.

Extreme heat will force people to rethink work

Jobs still need to get done, even during heat waves — and pandemics — so the challenge is to keep people safe while they work in a dangerous environment. In places like Phoenix, Arizona, construction workers have adapted to extreme heat by **starting work well before dawn**, or even **working at night**.

Yet there is only so much that regulations, technology, and adaptation can offer as heat reaches dangerous levels more often. The power grid, for example, is already showing strain, and utilities have had to ask their customers to reduce their air conditioning during

the hottest parts of the day. When workplaces lose access to cooling, more people face hazardous heat exposure.

There is also an upper limit to how much heat and humidity a person can physically tolerate over time. So even with frequent breaks, water access, and cooling, restaurants, shipping depots, and farms may simply have to shut down when a searing heat wave settles in.

Portland, Oregon, reached a record temperature of 116 degrees Fahrenheit in June. Climate change is making extreme heat events more frequent and intense. | Maranie Staab/Bloomberg via Getty Images

On the margins, the risk of dangerous heat waves might create opportunities for creative solutions. Carlin suggested that restaurants could offer menu items that require little or no heating during hot weather, for example.

Part of Carlin's frustration during the recent heat wave was that some customers didn't seem to appreciate that they were outsourcing their misery to restaurant workers. While many left tips and thank-yous, "a lot of customers ordering didn't fully recognize what they were asking for," Carlin said.

So one part of protecting workers is increasing their visibility to customers — helping consumers realize that even if they can afford a service during a heat wave, it has a human cost.

The Covid-19 pandemic has also forced a reimagining of work. It's proven, for example, that many jobs can be completed remotely. Ideas ranging from less in-office time to a **shorter workweek** could alter exposure to extreme heat.

But social changes like these are slow, and the extremes of climate change are not. It will take sustained pressure and thoughtful regulations to keep essential workers safe in a world of climate change-driven inequality and risk. Until then, more and more people will sweat and suffer to earn a living.
