

REPORT

WHAT HAPPENS IN VEGAS SHOULD INFORM THE REST OF THE COUNTRY:

LESSONS LEARNED FROM NEVADA'S HEAT COMPLAINTS DATABASE



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INTRODUCTION

Dangerous heat has long been a threat to the health and safety of working people in the United States.¹ More than half a century ago, the threat was so obvious that one of the National Institute for Occupational Safety and Health's first recommendations in 1972 to the newly minted Occupational Safety and Health Administration (OSHA) was to create a workplace heat standard—along with standards for asbestos, lead, and a handful of other serious hazards.²

Federal health experts wrote at that time that creating such a standard would “prevent acute or chronic heat disorders and illnesses and heat induced unsafe acts.” They recommended extending specific heat protections to “all places of employment, indoors and outdoors.”³

And yet, as of press time, only seven states have any kind of workplace heat standard on the books, and there is no federal standard.⁴ This lack of specific protections puts tens of millions of U.S. workers at risk of preventable harm every time the temperature soars. This is especially true for workers engaged in strenuous activities and those wearing heat-trapping protective gear.⁵

In the meantime, climate change has made workplace heat hazards more frequent and severe. The increasing intensity and duration of hot seasons across the country have moved many worker protection agencies to action.⁶ In just the last four years, OSHA has proposed a federal heat standard; California and Washington have strengthened heat protections for workers; and Nevada, Oregon, Colorado, and Maryland have adopted new standards.⁷

However, not all existing heat standards are created equal. Nevada's workplace heat standard in particular departs from evidence-based best practices in multiple ways.⁸ Most notably, the standard lacks specific temperature thresholds at which basic and enhanced heat protections begin (see table 1 and inset box), despite decades of experimental and observational evidence that such thresholds are a foundational component of an effective standard.⁹

Instead, Nevada's standard applies to “any working condition that creates the reasonable likelihood that heat illness could occur” and requires employers to prepare their own “one-time, written job hazard analysis to assess working conditions that may cause occupational exposure to heat illness.”¹⁰ This means that employers have sole discretion to decide at what point to provide heat protections for their workers. In practice, two construction crews performing the same task across the street from each other on the same day could be subject to different thresholds, depending on what their employers decide.¹¹ This approach leaves workers vulnerable to the whims of their employers.

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COMMON TEMPERATURE METRICS USED IN WORKPLACE HEAT STANDARDS

The current generation of U.S. workplace heat standards refer to one or more of the following metrics in their temperature thresholds (table 1).

Air temperature (otherwise known as “ambient” or “dry bulb” temperature) is the temperature of the air measured with a regular thermometer.

Heat index (sometimes known as “feels like” temperature) combines air temperature and humidity, as measured in the shade and under light winds.¹²

Wet bulb globe temperature (WBGT) combines air temperature, humidity, wind, and solar radiation.¹³

TABLE 1: TEMPERATURE THRESHOLDS IN EXISTING WORKPLACE HEAT STANDARDS

Clothing-related modifications and activity- or industry-based exemptions are not shown here. States use a combination of peer-reviewed research, local heat-health data, stakeholder engagement, and policy reviews to arrive at their specific temperature threshold.¹⁴

State	Covered Workers	Initial Threshold	Enhanced Protections
California, indoor ¹⁵	Indoor	Air temperature of 82°F	Air temperature or heat index of 87°F
California, outdoor ¹⁶	Outdoor	Air temperature of 80°F	Air temperature of 95°F
Colorado ¹⁷	Agricultural	Air temperature of 80°F	Air temperature of 95°F
Maryland ¹⁸	Outdoor and indoor	Heat index of 80°F	Heat index of 90°F
Minnesota ¹⁹	Indoor	Wet bulb globe temperature of 86°F for light work, 80°F for moderate work, and 77°F for heavy work	None
Nevada ²⁰	Outdoor and indoor	None	None
Oregon ²¹	Outdoor and indoor	Heat index of 80°F	Heat index of 90°F
Washington ²²	Outdoor	Air temperature of 80°F	Air temperature of 90°F

Temperature thresholds are unpopular among employers and industry groups nationwide, and Nevada OSHA has been clear that leaving out a threshold smoothed its path to a final rule.²³ As Victoria Carreon, the former administrator of Nevada’s Division of Industrial Relations, told KTNV Las Vegas: “Ultimately, what proved to be successful was instead of looking at a set temperature that would kick off any requirements, we found that it was more successful and we were able to get much better stakeholder buy-in by having just a requirement that every employer do a job hazard analysis.”²⁴

This employer-friendly approach has unfortunately become a rallying cry for industry groups opposed to new federal and state standards. During 2025 discussions about a proposed federal heat standard, industry groups pushed OSHA to ignore expert recommendations to include a clear temperature threshold, repeatedly invoked the need for “flexibility,” and specifically asked OSHA to follow Nevada’s lead.²⁵ In September 2026, the Small Business Administration (SBA) sent a letter to OSHA with several “review and reform” recommendations for an array of existing and proposed standards.²⁶ In that letter, SBA again pointed to Nevada as a model for OSHA to consider for its proposed federal heat standard.

But is Nevada actually a good model for protecting workers from heat? In this paper, we find not only that Nevada’s absence of threshold temperatures is potentially dangerous for workers, but that there are clear, data-driven thresholds that could be implemented. Industry arguments that threshold temperatures are unnecessary and infeasible are simply not supported.

We analyzed more than 10 years of heat complaints lodged with Nevada OSHA, and our results clearly show that workers and concerned observers in Nevada consistently start to lodge heat complaints when the air temperature is about 90°F and the heat index is 85°F. This was seen in almost all industries in the state. The consistency we found undercuts the premise that employers should be allowed to decide when to initiate heat protections for workers. Our results also broadly agree with the minimum temperature thresholds used in other state standards (table 1).

This small study adds to the body of evidence that the system of protections in workplace heat standards such as rest, water, shade, and acclimatization should be triggered by specific minimum temperature thresholds. Nevada should strengthen its existing standard to make it more specific. Additionally, states that are considering new heat standards, such as Virginia and New Mexico, should include clear thresholds, and federal standards should not use Nevada as a model.²⁷

METHODS IN BRIEF

Heat complaints offer a unique and underutilized source of data helpful in understanding the burden of heat-related harms. Although complaints are different from injuries and illnesses, they strongly signal that workers feel unsafe, are experiencing diminished productivity, and could be at risk of significant harm. We analyzed 2,561 records of heat complaints and referrals (“heat complaints”) logged by Nevada OSHA from January 2015 through November 2025.²⁸ The records include unscheduled inspections, follow-up inspections, and hazard evaluations without formal inspections in response to:

- complaints about hot conditions by current employees or their representatives (e.g., unions, family members, clergy); and
- allegations of heat hazards or violations by the media, a government agency, or other key stakeholders, otherwise known as “referrals.”²⁹

Official records almost always undercount heat-related injuries and deaths among workers.³⁰ The heat complaints data captures an even narrower slice of the problem, since it includes only hazards that come to Nevada OSHA’s attention.

Many workers, particularly those in small, nonunionized, or precarious workplaces or those who fear retaliation, may never report dangerous heat hazards. Furthermore, not all hazardous incidents generate a referral or inspection by Nevada OSHA.

We modeled the relationship between daily heat exposure and the odds of a heat complaint for both daily average air temperature and daily average heat index. This relationship was expressed in terms of “odds ratio,” which is the likelihood of an event happening in the presence of a specific exposure versus the absence of that same exposure.

We conducted this analysis for all cases together and by industry sector through the end of 2024. Cases from 2025 were excluded from the modeling due to the unavailability of temperature data at the time of the analysis.

Please see the Technical Appendix for the full methods and study limitations.

MAIN FINDINGS AND TAKEAWAYS

We found a consistent pattern of heat complaints across industries, undercutting the former Nevada OSHA administrator’s claim that there is “no real uniform [i.e., minimum] temperature threshold that really work[s] for all types of environments” in Nevada.³¹

HEAT COMPLAINTS ROSE SHARPLY AT SPECIFIC TEMPERATURE THRESHOLDS

Year-round, the daily average air temperature on complaint days averaged just over 89°F (table 2). The difference between average air temperature and average heat index was only a few degrees, which is expected in environments with low humidity.

The odds of a heat complaint rose steeply and nonlinearly with temperature (figure 1). The reference point, or “threshold,” is defined as the temperature at which the curve in the graph crosses an odds ratio of 1.0, marking where the odds of a complaint begin to rise above baseline.^a This threshold was 89.5°F (rounded to 90°F) for air temperature

and 85°F for heat index. **Because these temperature thresholds emerge directly from the observed data rather than being chosen arbitrarily, they lend themselves as policy-relevant thresholds for triggering protective action.** They are also strikingly consistent with existing standards in other states (table 1).

Every additional 5°F above the threshold (e.g., from 85°F to 90°F) approximately doubled the odds of heat complaints, essentially meaning that the cost of inaction rises sharply as temperatures climb.

Table 3 shows the odds ratio of heat complaints at specific temperatures that commonly serve as thresholds in existing and proposed heat standards. When considering air temperature, the odds of a heat complaint were roughly 7.5 times more likely on a 105°F day than on a 90°F day. When considering heat index, heat complaints were close to 9 times more likely on a 105°F day than on an 85°F day.

a Odds ratios were estimated using conditional logistic regression with a natural cubic spline (3 degrees of freedom) for temperature.

TABLE 2: Environmental conditions on the days that generated workplace heat complaints in Nevada, 2015 to 2024

Weather Metric [‡]	Year-Round Average ± Standard Deviation	June, July, August Average ± Standard Deviation
Daily Average Air Temperature (°F)	89.4 ± 11.9	92.2 ± 8.5
Daily Average Heat Index (°F)	86.2 ± 11.3	88.9 ± 7.9
Daily Average Dew Point (°F)	40.5 ± 12.2	41.8 ± 11.9
Daily Average Relative Humidity (%)	20.5 ± 11.3	19.4 ± 10.1

[‡] All weather metrics were measured at an 800 x 800-meter resolution at the worksite location on the day of the incident.

FIGURE 1: HEAT-RELATED WORKPLACE COMPLAINTS IN NEVADA (2015–2024)

Graphs express the exposure-response relationship between heat complaints and average air temperature (left) or heat index (right). The solid blue line represents the estimated odds ratio across the temperature distribution. The shaded bands are 95 percent confidence intervals, representing the likely range of uncertainty around the estimate. The wider the band, the less confident the central estimate; confidence bands are wider at higher temperatures, where data was sparser (because of a relatively small number of extremely hot days). The horizontal dashed line marks an odds ratio of 1.0, indicating no elevated odds relative to the reference temperature. The black arrow identifies the threshold at which the curve crosses an odds ratio of 1.0. *Source:* Nevada OSHA heat complaint records; NRDC analysis.

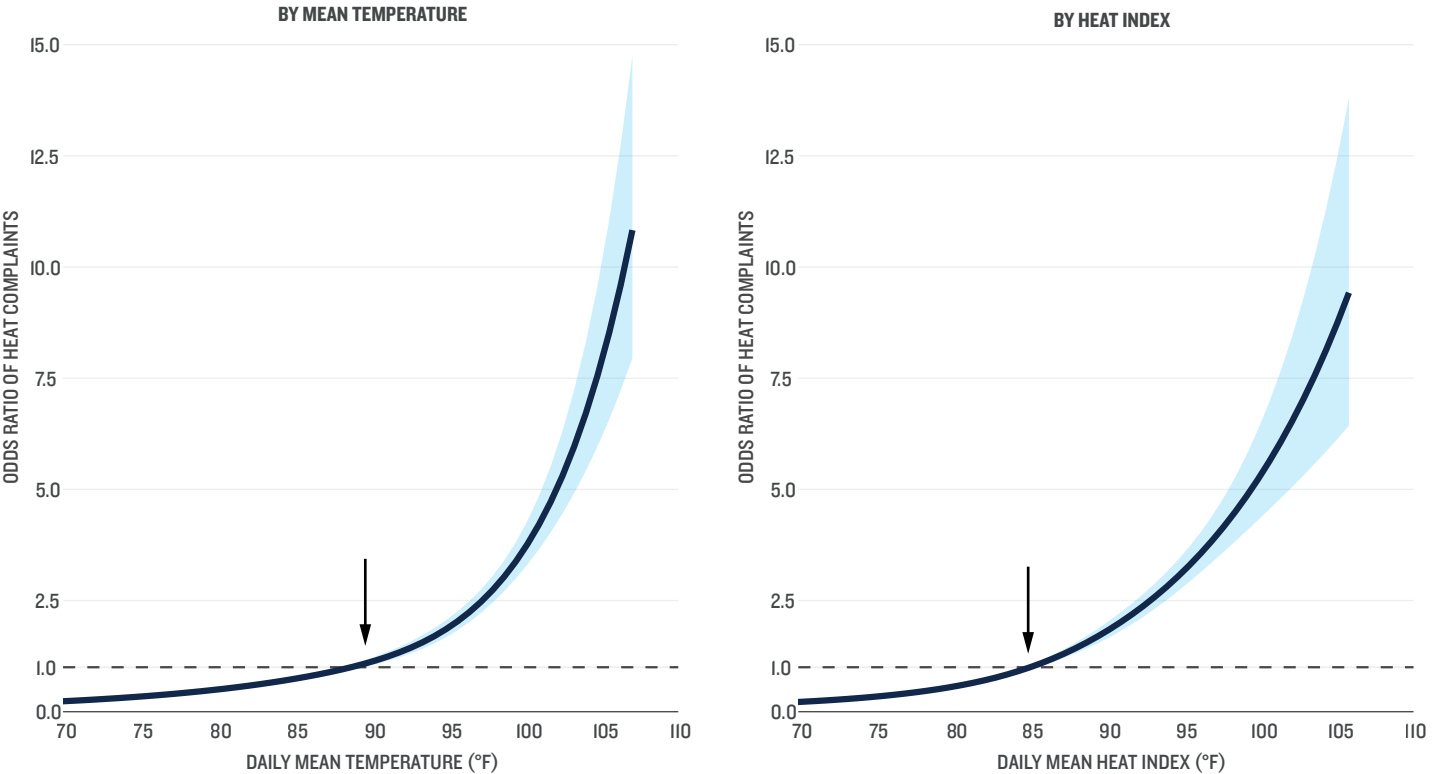


TABLE 3: ODDS RATIOS OF HEAT-RELATED WORKPLACE COMPLAINTS IN NEVADA, 2015 TO 2024

	Odds Ratios (95% Confidence Intervals) [†]	
	Air Temperature	Heat Index
85°F	0.64 (0.60, 0.69)	1.00 (ref*)
90°F	1.00 (ref*)	1.86 (1.68, 2.06)
95°F	1.61 (1.45, 1.78)	3.05 (2.72, 3.42)
100°F	3.27 (2.87, 3.72)	5.23 (4.32, 6.35)
105°F	7.55 (5.96, 9.57)	8.78 (6.16, 12.53)

[†] Estimated using conditional logistic regression with a natural cubic spline (3 degrees of freedom) for temperature.

*Estimated empirically from spline fit.

THE RELATIONSHIP BETWEEN TEMPERATURE AND COMPLAINTS WAS CONSISTENT ACROSS INDUSTRIES

Just three industry sectors made up about 45 percent of heat complaints:

- Accommodation and Food Services, which includes hotels, casinos, restaurants, and related businesses (23 percent);
- Retail Trade, which includes grocery stores, big box stores, and related businesses (14 percent); and
- Transportation and Warehousing, which includes warehouses, package delivery services, and related businesses (nearly 8 percent).

The concentration of heat complaints in these sectors is consistent with our finding that just over 80 percent of complaints came from Clark County, Nevada's most populous region and home to Las Vegas. Clark County's economy is dominated by hospitality, retail, and distribution.

Note that Unite Here and the Teamsters, which frequently represent hospitality and transportation workers, are two of the larger unions by revenue in the Las Vegas metro area.³² Unionized workers are more likely to lodge health and safety complaints with OSHA than nonunionized workers, likely because they have a better understanding of their rights on the job and are better protected from illegal retaliation by employers.³³ Heat has been a major issue for the Teamsters

nationwide, and indeed was central to the most recent National Master Agreement between the Teamsters and the United Parcel Service.³⁴

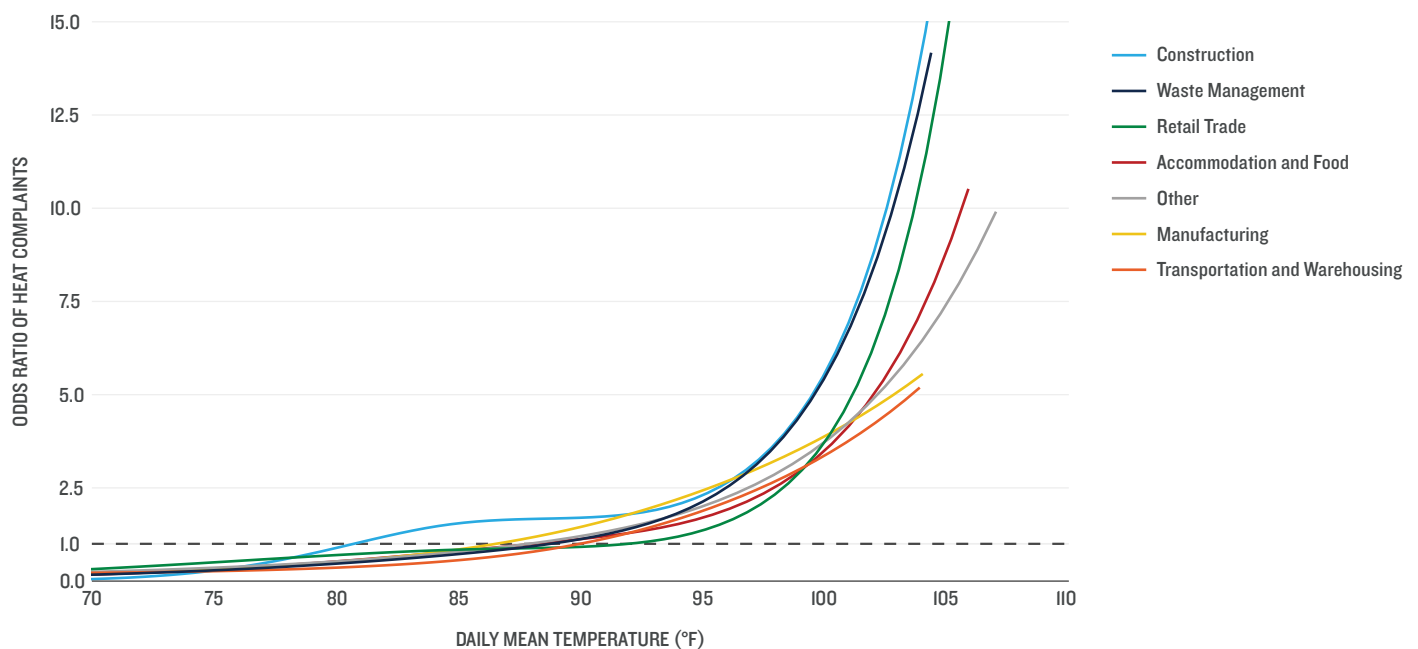
Despite differences in work duties, physical settings, and heat exposure pathways across sectors, heat complaints rose at around 90°F (figure 2). All sectors showed a similar nonlinear pattern: Complaint odds remained near or below 1.0 at moderate air temperatures, began rising at around 90°F (in some cases earlier, e.g., 80°F among construction workers), and then escalated steeply above 95°F. Construction and waste management showed the steepest associations at the highest temperatures, likely due to the strenuous and predominantly outdoor nature of work in those sectors.

Few complaints came from farmworkers despite the strenuous outdoor nature of their jobs. Much of Nevada's agricultural work takes place outside Clark County, where relatively few complaints in this dataset originated. Farmworkers can also face barriers to filing complaints, including fear of retaliation, language barriers, and limited access to information about their rights.³⁵

The overarching pattern across all sectors is consistency rather than exception. No sector appeared to be immune to the temperature-complaint relationship, and all crossed the odds ratio 1.0 threshold at a relatively narrow temperature range.

FIGURE 2: HEAT AND WORKPLACE COMPLAINTS BY INDUSTRY SECTOR IN NEVADA (2015–2024)

Each line represents the estimated odds ratio for a heat complaint across the air temperature distribution for a given industry sector. Sectors shown are those with sufficient case counts for stable model estimation. The "Other" category includes Other Services Except Public Administration (NAICS 81, N=773); Real Estate and Rental and Leasing (NAICS 53, N=28); Professional, Scientific, and Technical Services (NAICS 54, N=27); Wholesale Trade (NAICS 42, N=22); Finance and Insurance (NAICS 52, N=14); Utilities (NAICS 22, N=10); Agriculture, Forestry, Fishing and Hunting (NAICS 11, N=7); Information (NAICS 51, N=1); Management of Companies and Enterprises (NAICS 55, N=1); and Missing/Could Not Assign (N=6). *Source:* Nevada OSHA heat complaint records; NRDC analysis.



CONCLUSION

A heat index of 85°F can feel nice to someone lounging poolside but be unsafe to someone performing physical work for long periods. Workers generate substantial internal heat through metabolic activity, in addition to the external heat imposed by the environment, including clothing.³⁶ When the body cannot dissipate this combined internal plus external heat quickly enough, the risk of heat-related illness and injury rises.³⁷

We found a consistent pattern whether we used air temperature or heat index: The odds of a complaint were low at moderate temperatures, began rising at specific thresholds (approximately 90°F for air temperature and 85°F for heat index), and escalated sharply in extreme conditions. The odds roughly doubled for every additional 5°F to 10°F above the threshold, which shows the magnitude of the hazard and the value of setting protective thresholds at the points where risk first departs from baseline.

It is clear that state and federal workplace heat standards should have specific, data-driven temperature thresholds

that clearly communicate the need for action to employers and workers alike. At minimum, temperature thresholds that activate simple heat protection measures (such as provision of shade, water, and rest) can and should be applied universally across sectors and geographies. Additionally, more protective thresholds and dynamic work-rest ratios can then be layered on for workers, tasks, or environments at higher risk, such as construction workers doing strenuous labor in the direct sun or environmental remediation workers wearing chemical-resistant protective gear.³⁸

That said, these thresholds are only as helpful as the system of protections they trigger.³⁹ Before the temperature threshold is ever crossed, employers should have a comprehensive written heat illness and prevention plan in place, and workers and supervisors should be trained on heat hazards in a language and manner they understand. Once the temperature threshold is triggered, workers, safety managers, and employers need to be ready to implement that written plan in a way that minimizes preventable harm and effectively responds to unavoidable emergencies.

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TECHNICAL APPENDIX: FULL METHODS AND STUDY LIMITATIONS

HEAT COMPLAINTS DATA

The Nevada Occupational Safety and Health Administration (Nevada OSHA) maintains records of Unprogrammed Activities (UPAs), which are unscheduled inspections initiated in response to complaints, referrals, fatalities, or catastrophes (more than three hospitalizations from one incident). Unlike programmed inspections, which are scheduled on the basis of targeting criteria, UPAs are triggered by specific reported hazards or incidents. We obtained all available heat-specific UPA records for complaints and referrals from Nevada OSHA, which at the time spanned from January 2015 to November 2025.⁴⁰

Heat complaints and referrals document establishments where employees, their representatives (e.g., family members or union representatives), or concerned outside observers reported excessive heat conditions, inadequate cooling or ventilation, lack of access to drinking water, outdoor work in extreme temperatures, or other heat-related hazards. The dataset covers multiple industries across all counties in Nevada. Because these UPAs are complaint driven, they represent enforcement-triggered heat hazard events rather than a complete census of workplace heat conditions.

Each UPA record includes:

- A unique Unprogrammed Activity identification number
- Establishment name
- Street address of establishments
- Industry classification (missing in 77 percent of records; see below)
- UPA receipt and closure dates
- Inspection number
- Narrative hazard description, including the specific heat complaint
- Validation status of the complaint

For simplicity, these records are hereinafter referred to as “heat complaints.”

GEOCODING AND TEMPERATURE MATCHING

For every UPA recorded in Nevada in the study years, the establishment address was geocoded using the ArcGIS World Geocoding Service. Then, for each location, temperature and relative humidity were matched to the exact date of complaint using a predicted weather model from the Parameter-Elevation Regressions on Independent Slopes Model (PRISM) data at 800 x 800-meter resolution.⁴¹ Heat index values (in degrees Fahrenheit) were then computed using the “weathermetrics” package in R.⁴² Details of the geocoding and temperature matching are described in detail elsewhere.⁴³ Temperature data for the summer of 2025 were not available during the time of the analysis (missing = 443 UPAs in 2025).

EPIDEMIOLOGICAL DESIGN

We used a case-crossover study design in which each person submitting a complaint acts as their own control, eliminating the influence of individual and workplace confounding variables on our findings.⁴⁴ This method evaluates how changes in exposure, such as exposure to hot days, are associated with the probability of having a heat complaint. To do so, for every heat complaint (or UPA) on a given day, we matched three to four control days within the same month in the same year on which UPAs did not occur. We then compared the temperature across the case day versus control days. Case-crossover models are well suited for studying transient environmental exposures because they evaluate within-individual variation of exposure over time, which removes confounding from time-invariant characteristics of workplaces and workers.⁴⁵ The analysis also controls for the same geographic area, seasonal patterns, long-term trends, and day-of-week effects (weekend versus weekday).

STATISTICAL ANALYSIS

We used conditional logistic regression to estimate the association between temperature and the odds of a heat complaint. For day t in matched set i , a case ($Y = 1$) or control ($Y = 0$) were modeled as follows:

$$\log\left(\frac{P(Y_{it} = 1)}{P(Y_{it} = 0)}\right) = ns(Temp_{it}, \text{degrees of freedom} = 3) + strata(ID_i)$$

where $ns(Temp_{it})$ is a natural cubic spline with 3 degrees of freedom applied to the temperature exposure (air temperature or heat index) on day t , and $strata(ID_i)$ conditions the likelihood on each matched set, accounting for all time-invariant confounding within strata.

INDUSTRY ANALYSIS

Industry classification was missing in 77 percent of UPA records. We attempted to classify all missing workplace complaints using the North American Industry Classification System (NAICS). To do so, we used location information and establishment names to assign a two-digit sector classification using a crosswalk developed from the official U.S. Census Bureau NAICS classification structure. First, establishment names were matched to publicly available business information obtained from company websites, business directories, mapping services, and other online business listings to identify the primary business activity. Automated name-based classification rules were used for clearly identifiable employers, while ambiguous establishments were reviewed individually using additional contextual information, including business names, addresses, and publicly available descriptions. Once assigned, establishments were mapped to the corresponding two-digit NAICS industry sector categories defined in the NAICS crosswalk and linked back to all complaint records. Only six records (0.2 percent) could not be assigned. This approach maximized industry classification completeness while maintaining consistency with the standardized NAICS sector framework. Since this approach was not fully manual, there are likely residual inaccuracies in classification.

STUDY LIMITATIONS

This study was subject to several important limitations beyond those mentioned in the main text.

- *Linked outcome and exposure.* Complaints are inherently more likely to be filed on hot days since a worker is more likely to recognize and report a heat hazard when it is hot. This is partly the phenomenon we intended to capture (heat drives heat hazards), but it also means the association should not be interpreted identically to an injury study, where the outcome (e.g., a fall) is independent of whether heat is noticed. Our conclusion is that the steep rise in complaints with temperature is consistent with a true and escalating hazard, but the odds ratios should be read as the association between heat and the reporting of a heat hazard, rather than heat and an objectively measured clinical outcome.
- *Exposure measurement error.* Outdoor temperature and heat index from PRISM (800 x 800 m) do not capture workplace microclimates. Kitchens, steamy laundries, warehouses, and shaded versus unshaded outdoor sites can differ substantially from the gridded estimate. This error is likely non-differential, meaning that it is unrelated to whether a complaint was filed. Our conclusion is that if exposure were measured at the worksite, the effect estimates would likely be larger, not smaller. Additionally, PRISM temperature data for summer 2025 were unavailable at the time of analysis, so 443 complaints from 2025 were excluded from the modeling. The year 2025 was the first year of heat rule enforcement in Nevada, so it was also important to exclude the 2025 data from the modeling so that more noise in the heat-complaints relationship was not introduced.
- *No population denominator.* We observed where and when complaints occurred, but not the number of workers at risk in each county, sector, or period. The heavy concentration of complaints in Clark County and Las Vegas partly reflects the fact that this is where most of Nevada's workforce and businesses are located, not necessarily where per-worker risk is highest. Our conclusion is that the geographic and industry patterns should be interpreted as windows for burden/intervention, not strictly as risk rates per worker.
- *Imputed industry classification.* The NAICS code, which is not specifically requested on the complaint form, was missing in 77 percent of records and was assigned using establishment names and locations matched to external business listings.⁴⁶ Although this maximized completeness, the process was only semiautomated and residual misclassification was likely, particularly for ambiguous or multi-activity establishments. Our conclusion is that sector-level findings should be viewed as approximate, though the broad concentration in hospitality and retail is consistent with Clark County's economy.

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