

Heat-Related Mortality in U.S. Jails, 2008–2019

Eric Reinhart, MD,¹ Viknesh Nagarathinam, MS,² Daniel L. Chen, JD, PhD^{3,4}

¹ Independent scholar. s.ericreinhart@gmail.com

² Independent scholar

³ Toulouse School of Economics

⁴ Centre National de la Recherche Scientifique, France

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Abstract

This study analyzes the relationship between temperature shocks and mortality in U.S. jails. Due to low-quality housing conditions, nutrition, and medical surveillance and treatment alongside high age-adjusted rates of chronic disease and inadequate government regulation to ensure legal rights to safe conditions, individuals detained in U.S. jails are particularly vulnerable to harm from extreme weather conditions. Because the frequency and severity of extreme weather events is increasing in association with climate change and lack of sufficient regulatory responses to curtail it, this vulnerability to temperature-related injury and death is likely growing. To examine it, we use data from 2008–2019 on daily mortality (including reported cause of death) and temperature at 467 jail facilities across the U.S. to construct time-series regression models. Jails in our sample include those for which data was collected by Reuters, including the 10 largest jail facilities by population in each state, and for which data from a nearby weather station were available. This sample represents approximately 9% of the nation's jails and spans all 50 states and Washington, DC. Our results show a clear positive association between heat exposure and mortality in jails. We find an average 1.5 percent increase in the mean likelihood of death per one degree Fahrenheit increase in daily maximum temperature, suggesting that regulation and enforcement of climate control inside jails is required to protect the health and legal rights of those incarcerated inside.

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Introduction

Climate change is of mounting concern for human health around the globe. In addition to effects on ecosystems, food supplies, and emergent pathogens and epidemic risk, increasing frequencies and intensities of heat waves and cold snaps can pose direct threats to human health if appropriate cooling and heating resources are not made available to individuals and communities. In the U.S., an analysis of heat-related deaths from 1999–2023 among the general population found an average increase of 3.6% per year in age-adjusted mortality rates for heat-related deaths over this period, with a marked increase to 16.8% per year since 2016.¹ Temperature-related threats to human health—ranging from hypo- and hyperthermia, dehydration, renal injury, and cardiovascular events to frostbite, infection, and death—are particularly pronounced for individuals confined in U.S. carceral facilities, where the age-adjusted burden of chronic and infectious disease is considerably higher than among free populations,² rendering these individuals especially vulnerable to temperature-related injury.

Furthermore, because a number of psychiatric medications – from antidepressants to antipsychotics – are disruptive to thermoregulation and put individuals at greater risk of hypo- and hyperthermia,^{3–5} the disproportionately high rate of psychiatric diagnoses and associated medication prescribing in U.S. carceral facilities likely further exacerbates the temperature-related risks to the health of incarcerated people.⁶ And these risks are compounded by the poor housing conditions and nutrition, poor quality healthcare for incarcerated people, and minimal regulatory oversight that characterize most U.S. carceral facilities, where inadequately insulated and ventilated buildings along with minimal access to resources for bodily temperature regulation (eg, variable types of clothing, blankets, hydration, hot and cold showers, etc.) are common.^{7–13}

Several studies have documented a positive association between heat and mortality in U.S. prisons,^{14–16} and a recent important study documented increasing exposure to hazardous heat in U.S. jails and prisons,¹⁷ but little research exists on the association between temperature and mortality in U.S. jails. Jails are governed by different administrative and regulatory systems, are intended for relatively shorter stays than prisons, and often feature differing demographic profiles relative to the populations incarcerated in prisons, such that risks of temperature-related injury in jails may be substantially different than seen in prisons.

Jails differ from prisons in several key respects. While prisons are run by state or federal governments, jails are typically administered at a local level by counties with few accountability structures beyond local government. They are primarily used to confine individuals incarcerated pretrial, who constitute approximately 75–80% of the U.S. jail population.¹⁸ Furthermore, due to the frequent circulation of individuals via arrests and releases that entails over 7 million separate entries into US jails each year¹⁸, a much larger number of US residents are exposed to the jail systems than to prisons. In the vast majority of cases, these individuals are confined simply because they cannot afford to pay cash bail. People living in poverty and with serious mental illness are therefore disproportionately represented in jails.¹⁹ This is, in turn, associated with various pre-incarceration health disadvantages that may leave these individuals at higher risk for heat-related morbidity and mortality. The remaining 20–25% of the individuals incarcerated in jails are serving sentences of less than one year for convictions on misdemeanor or otherwise minor criminal charges.¹⁸ Furthermore, widespread delays in the U.S. criminal-legal system in which individuals are ostensibly entitled by right to swift trial result in frequent

prolonged stays and increased jail populations, exacerbating the scarcity and low quality of essential services for those incarcerated inside.

Studies have also shown that humans in general are more prone to violent behavior, including via suicide, under extreme heat conditions.²⁰⁻²¹ A recent study of violence among people in Mississippi, for example, found that unsafe heat index levels elevated daily violent interactions by 20% and increased the likelihood of any violence occurring by 18%.²² Relatedly, a recent analysis of prisons showed that extreme heat exposure is associated with increased suicidality and suicide-watch incidents.²³ Given that a substantial cause of injury and death inside jails and prisons is attributable to violence, either between inmates, by suicide, or inflicted by guards, increased temperatures may also increase mortality via violence.²⁴⁻²⁵

Prior studies have concluded that risk of death during incarceration, particularly by suicide, is highest in the initial period of incarceration and that risk of death during incarceration tends to decline over time for individuals serving longer sentences.²⁶⁻²⁷ Because jails are typically the first site of incarceration for individuals prior to possible transfer to a prison, and are often less well-equipped than prisons to ensure the safety of those in their custody, they are an important and relatively under-examined setting in which to study the effects of extreme weather shocks on mortality rates among incarcerated individuals.

By studying this question, we hope to contribute to motivating more effective preventive measures against temperature-related health hazards for incarcerated individuals. In addition, this study may provide further evidence for concerted policy efforts to reduce reliance on incarceration as a public health imperative by characterizing the harms of incarceration so as to encourage further investments in non-carceral community safety infrastructures.²⁸

Data and Methodology

This study aims to investigate the relationship between increase in temperatures and mortality rates of incarcerated individuals in US jails. By leveraging data on temperature trends and mortality rates in jails, we analyze the correlation between the two phenomena while controlling for possible confounders.

We use data on the deaths in U.S jails from 2008 through 2019 as documented by Reuters.²⁹ These data have been compiled by aggregation of media reports and manual investigation by the Reuters investigative team and are of considerable value in the absence of inadequate government-generated public records of data on deaths occurring in U.S jails. (While there is comprehensive data on mortality in U.S prisons provided by the Bureau of Justice System, there are no reliable sources for this data for the jails in the U.S.) Reuters selected the 10 largest jails in each state, and also every additional jail nationwide that confines over 750 incarcerated people, to compile the database spanning 523 jails or jail systems, documenting over 7500 cases of mortality during 2008-2019. Of these, we used 467 jails in our analytical sample for which a suitable merge for data from a nearby weather station was available.

We also use the ‘Daily Summaries’ dataset, containing minimum and maximum temperatures for each day, made available for public use by the National Oceanic and Atmospheric Administration (NOAA).³⁰ We use NOAA data over other sources, such as PRISM and NALDAS, because it does not use interpolations and instead merely reports actual measured temperatures directly from the weather stations.

After accounting for availability of location data to merge with the nearest weather station and dates of mortality, our analytical dataset contains 467 jail facilities reporting 7,002 deaths from 2008–2019.

We employ a daily time series data to study the effects of maximum temperature, across lagged daily intervals, on the incidents of mortality reported in the jail facilities. To control for acclimatization, seasonality and other local phenomena, we use facility, year and month fixed effects.

The empirical specification for our model is given by

$$Y_{jt} = \beta_1(Temp_{j(t-1)}) + \alpha_j + \mu + c + \varepsilon_{jt}$$

where Y_{jt} is a binary variable indicating the occurrence of at least one death and carries the value of 1 if a death is reported in the jail facility 'j' on the day 't', and 0 otherwise. $Temp_{j(t-1)}$ refers to the Temperature extreme of interest the daily maximum temperature (measured in units of no. of tenths of a degree celsius) observed in the jail facility 'j' on the previous day 't-1'. α_j refers to facility fixed effects and μ refers to year and month fixed effects. c is the constant term and ε_{jt} is the error term.

Standard errors are clustered at the jail facility level to account for potential correlation within the same facility. Serial days of high temperatures can lead to serial correlation in the data, meaning that health outcomes on one day are not independent of previous days, especially during heat waves. We address this issue by clustering standard errors, ensuring that estimated standard errors are robust to such dependence. Without clustering, because it would be assumed that each observation is independent of prior and subsequent days, standard errors might be underestimated. This could result in inflated t-statistics and potentially spurious conclusions about the significance of temperature effects on health outcomes. Clustering captures the true variability in health outcomes due to consecutive high-temperature days, leading to more accurate confidence intervals and hypothesis tests. By controlling for jail facility, year and month fixed effects we capture the effect of temperature spikes over the mean for that facility and time period.

We choose a binary outcome specification over the actual number of deaths as outcome variable since over 99.9% of our days in our data reported no more than one death and the rest of the days reported only two deaths at most. We analyze a lag period up to four days to study the effects of temperature on mortality, as prior studies have shown that the effects of heat on mortality are most pronounced within the first few days of a heat event.³¹⁻³⁴

Results

Figure 1 shows the general trend between daily maximum temperature and jail deaths controlling for jail fixed effects. The upward slope of the data points indicates a positive association.

Table 1 shows the results from our specification described in the previous section, using the daily maximum temperature (in Fahrenheit) as the predictor variable. Columns (1) through (4) suggest a positive association between temperature spikes and deaths occurring up to 4 days later in jail facilities. This effect appears on the very next day of the heat event and gradually increases until 4 days later where it is observed to have the strongest association with the likelihood of death in jails. ($\beta = 0.000018$). Summing up the effects across the lags yields an average 1.5 percent increase in the mean likelihood of death per one degree Fahrenheit increase in daily maximum temperature. According to the regression analysis, a 1 degree Fahrenheit rise in the daily maximum temperature across all 467 jails in our sample for one month correlates with at least one extra death per month.

Texas, due to frequent high temperatures in its jails, implemented policies in 1994 that effectively required installation of air conditioning in order to maintain temperatures in all occupied areas within jails between 65–85 degrees Fahrenheit. Given this regulation (while also acknowledging that enforcement is

variable and may not be effective), we should expect to see a subdued or absent association between daily temperatures and jail mortality. We therefore use Texas, where 23 (5%) of the 452 jails in our sample are located, as a placebo specification in order to provide a robustness check for our analysis.

Table 2 columns (1) through (4) show no significant association between daily maximum temperatures and likelihood of deaths in Texas jails up to 4 days later. The effects are much weaker and relatively negligible for Texas jails, indicating the temperature effects on jail mortality are likely effectively mitigated by regulations requiring installation of air conditioning inside jails.

Figure 2 showcases a deep dive into the cause of death. Of the total 7,002 deaths, 553 are reportedly due to unknown causes, 3,570 to medical causes, 1,962 to suicide, 575 to drug-related causes, 197 to homicide, and 145 to accidents. We ran regressions for each category of death and presented the results in side-by-side plots. All the categories except accidents, suicides and unknown causes are correlated with preceding days' maximum temperatures.

Changes in rate of death due to each cause show different lags to day of death following heat exposure. Drug-related deaths show up as statistically significant on the very next day (ie, day 1 after heat spike) and continue to be significant through day 4, decreasing in magnitude of association with each passing day. Increases in deaths due to homicide peak on day 3; medical deaths on days 3 and 4; death by accidents on day 4. Suicide deaths are not found to be significant across any of the 4 individual days after heat shock.

Table A1 and A2 are robustness checks for the main specification in Table 1, using the actual number of deaths in jails and an IHS transformation of the number of deaths as outcome variables, respectively, instead of the binary outcome of mortality as seen in Table 1. There were no discernable differences in terms of the effect size.

Table A3 shows another robustness check using Distributed Lag Models (DLMs) to observe association trends with lag temperatures simultaneously. The results coincide with our earlier observation that the effects are strongest 4 days later.

Tables A4 and A5 are robustness checks for Table 1 using Probit and Logit regression models instead of ordinary least squares (OLS). We get similar results with a strong positive association of daily maximum temperature with mortality in jails two days later.

Table A6 is another robustness check using a quadratic regression model to observe non-linear effects of temperature. We see that the effect persists with a positive and significant coefficient for the quadratic term for days 3 and 4

Limitations

We have taken measures to ensure robustness and causal inference to the best possible extent in our analyses and findings. Unlike the data on mortality in prisons, which is comprehensively collected and made available for public use by the Bureau of Justice Statistics, there is no official data on mortality in jails. Our data on jail mortality is therefore sourced from Reuters, whose staff manually filed public records requests to compile this database. Because Reuters' data is based on compliance by jail administrators with public records requests that are not subject to official audit that might discourage underreporting of bad outcomes that could provoke scrutiny, it is possible that deaths in jails are underreported in the Reuters database.

Additionally, approximately 18% of our observations lack daily weather data. Days without weather data were therefore excluded from the regressions, however these excluded jail days account for

only about 7% of the recorded mortality in jails. This limitation may introduce selection bias related to the specific jails and days included, potentially influencing the external validity of our measurements.

Secondly, even though we control for geographical and temporal differences using fixed effects, we don't have sufficient data on individual characteristics to control for differences that might be causing certain individuals to be more vulnerable to temperature shocks.

Finally, our study does not account for any non-temperature weather phenomena, such as humidity, that might be aggravating or ameliorating the effects of temperature. Inclusion of such data in our analysis would not only help us isolate and measure the effects due to temperature more accurately but also make better recommendations regarding ideal regulatory measures to be taken in order to mitigate climate-related risks to incarcerated people.

Conclusion

In a global context of accelerating climate change conjoined with a national context of rapidly increasing heat-related deaths both among both free populations and incarcerated populations in prisons, our analysis suggests that people subjected to incarceration in U.S. jails also appear to be suffering from increased heat-related mortality. Our analysis also suggests that imposing regulatory requirements, with proper enforcement and accountability mechanisms, to ensure incarcerated people are provided air conditioning may mitigate this increased risk of death, although studies that are expressly designed to examine this question are required to prove whether this step alone is adequate. Unfortunately, such regulatory protections are lacking in many U.S. jurisdictions, resulting in thousands of individuals being confined in unsafe conditions and the ongoing infliction of jail-caused deaths.

Legal scholars have observed worsening climate-related conditions in jails and prisons may violate the Eighth Amendment to the United States Constitution, which ostensibly protects individuals from cruel and unusual punishment. But, in part due to obstructions enacted through the Prison Litigation Reform Act, incarcerated individuals have heretofore been prevented from obtaining legal redress for the climate-related violation of their supposed rights,³⁵ underscoring the inadequacy of relying on a systematically discriminatory U.S. legal system to correct the harms for which it is responsible and the importance of building mass political movements to confront forms of legal violence that are undercutting public health and safety.

Given the high cost of retrofitting all jails with proper climate-control systems; time required to do so while currently incarcerated people continue to be subjected to unsafe conditions; and evidence of the widespread inappropriate and counterproductive use of jailing across the U.S. as a means of managing intertwined problems of poverty, addiction, healthcare exclusion, unmet mental health needs, and homelessness, this study adds to a growing body of evidence that supports decarceration as public health and safety policy.³⁶

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Tables and Figures

Table 1: Effect of Daily Maximum Temperature on the Likelihood of Jail Mortality

dependent Variable: Mortality (Y/N)				
Lags of Daily Maximum Temperature	(1)	(2)	(3)	(4)
Lag 1	0.00000755+ (0.00000449)			
Lag 2		0.0000111* (0.00000472)		
Lag 3			0.0000161** (0.00000523)	
Lag 4				0.0000182*** (0.00000521)
Jail FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Lag Tmax	1 day	2 days	3 days	4 days
N	1667182	1667180	1666804	1666428
Adj. R-sq	0.00751	0.00781	0.00778	0.00781

Table 1 shows the effect of daily maximum temperature on the likelihood of deaths in jail facilities. The predictor variables Lag 1, Lag 2,...etc. are lags on the daily maximum temperature. The dependent variable is a dummy variable which has the value of 1 if there are any deaths reported in a jail on a given day and 0 otherwise.. Columns (1) through (4) capture the effects of lags (by units of day) of daily maximum temperature, from one day ago all the way until 4 days ago respectively, while controlling for jail, year and month fixed effects. The standard errors are clustered at the jail facility level.+ , * , ** and *** indicate significance at the 10%, 5%, 1% and 0.01% levels, respectively.

Table 2: Effect of Daily Maximum Temperature in Texas Jails (Placebo)

dependent Variable: Mortality (Y/N)				
Lags of Daily Maximum Temperature	(1)	(2)	(3)	(4)
Lag 1	-0.0000168 (0.0000283)			
Lag 2		-0.0000367 (0.0000253)		
Lag 3			0.00000828 (0.0000267)	
Lag 4				0.0000351 (0.0000316)
Jail FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Lag Tmax	1 day	2 days	3 days	4 days
N	67664	67664	67650	67636
Adj. R-sq	0.00614	0.00550	0.00507	0.00515

Table 2 shows the effect of daily maximum temperature on jail mortality within Texas jails only.. The specifications are the same as in Table 1 but with the data restricted to Texas jails only. The standard errors are clustered at the jail facility level.+, *, ** and *** indicate significance at the 10%, 5%, 1% and 0.01% levels, respectively.

Figure 1: Binscatter plot - Daily Maximum Temperature vs Jail Mortality

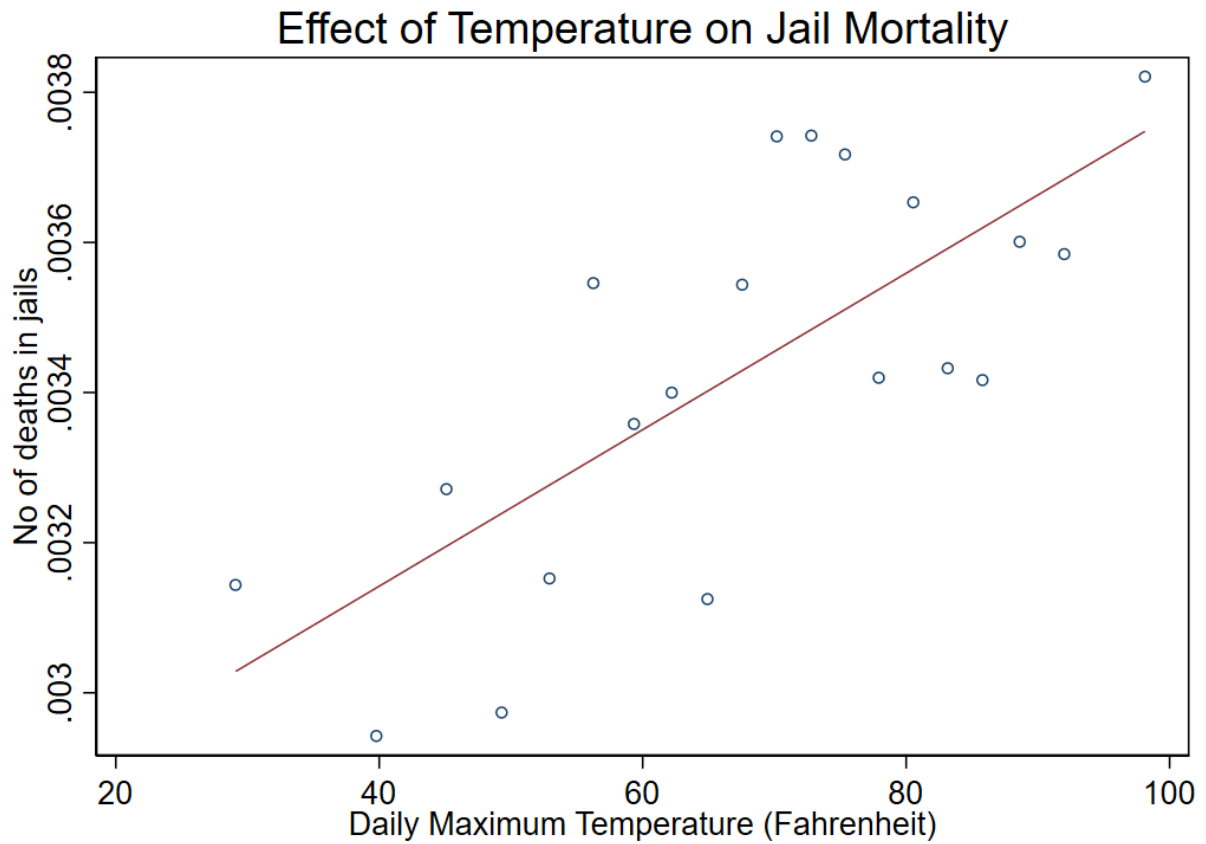


Figure 1 shows a simple binscatter plot with jail fixed effects. The plot outlines the general relationship between the daily temperature maximum and deaths in jails. The temperature is displayed in units of degree Fahrenheit.

Figure 2: Associations of the Daily Maximum Temperature with the causes of death in jails

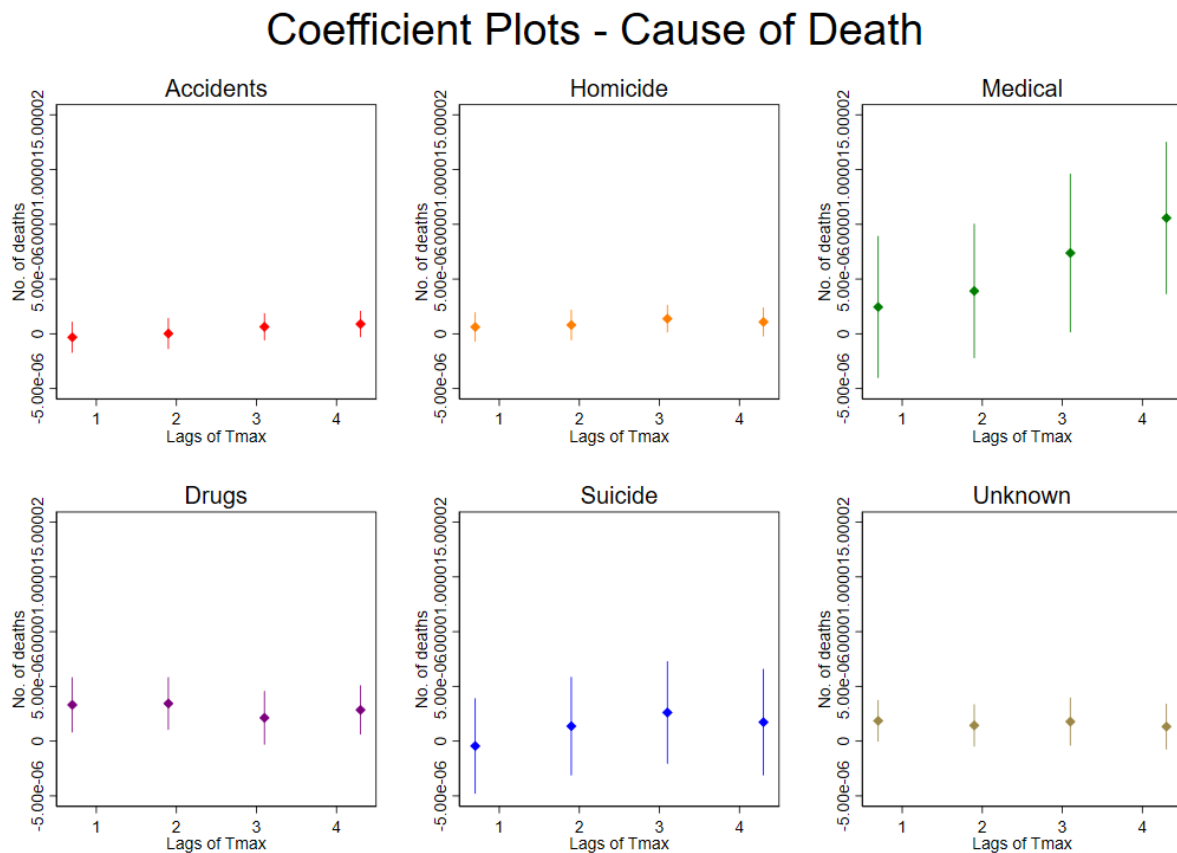


Figure 2 showcases the trends in the relationship between daily maximum temperatures and causes of deaths in jails. The listed causes of death in the data are accidents, suicides, homicides, drug-related deaths, and medical reasons. The rest of the deaths where the causes were unknown or undocumented are classified under the ‘unknown’ category. The y-axis represents the likelihood of death for each category, while the x-axis indicates the daily maximum temperatures in Fahrenheit for days before the death (lags). The coefficient values are obtained from regression specifications similar to columns (1) through (4) from Table 1 for each of the above categories for the cause of death in jails.

APPENDIX

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Table A1: Effect of Daily Maximum Temperature on Mortality Rates in Jails:

Dependent Variable: No. of Deaths				
Lags of Daily Maximum Temperature	(1)	(2)	(3)	(4)
Lag 1	0.00000738+ (0.00000445)			
Lag 2		0.0000113* (0.00000477)		
Lag 3			0.0000158** (0.00000520)	
Lag 4				0.0000184*** (0.00000520)
Jail FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Lag Tmax	1 day	2 days	3 days	4 days
N	1667182	1667180	1666804	1666428
Adj. R-sq	0.00801	0.00797	0.00793	0.00796

Table A1 shows the relationship between the daily maximum temperature and no. of jail mortalities. The dependent variable is the actual number of deaths recorded in a jail on a given day. The rest of the specifications are the same as described in Table 1. The standard errors are clustered at the jail facility level.+, *, ** and *** indicate significance at the 10%, 5%, 1% and 0.01% levels, respectively.

Table A2: Robustness check - IHS Transformation on no. of deaths in jails

Dependent Variable: IHS of No. of Deaths in jails				
Lags of Daily Maximum Temperature	(1)	(2)	(3)	(4)
Lag 1	0.00000656+			
	(0.00000393)			
Lag 2		0.00000990*		
		(0.00000418)		
Lag 3			0.0000140**	
			(0.00000459)	
Lag 4				0.0000162***
				(0.00000459)
Jail FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Lag Tmax	1 day	2 days	3 days	4 days
N	1667182	1667180	1666804	1666428
Adj. R-sq	0.00797	0.00793	0.00789	0.00792

Table A2 shows the relationship between the daily maximum temperature and IHS-transformed no. of jail mortalities.. The dependent variable is an inverse hyperbolic sine transformation of the actual number of deaths recorded in a jail on a given day. . The rest of the specification is the same as described in Table 1. The standard errors are clustered at the jail facility level.+, *, ** and *** indicate significance at the 10%, 5%, 1% and 0.01% levels, respectively.

Table A3: Distributed Lag Models

	Dependent Variable: Mortality (Y/N)
Lags of Daily Maximum Temperature	(1)
Lag 1	-0.00000156 (0.00000627)
Lag 2	0.00000182 (0.00000786)
Lag 3	0.00000374 (0.00000776)
Lag 4	0.0000153* (0.00000629)
Jail FE	Yes
Year FE	Yes
Month FE	Yes
N	1620658
Adj. R-sq	0.00787

Table A3 shows a distributed lag model specification to study the association between daily maximum temperature and jail mortality over time. In this specification, the dependent variable is a binary variable indicating whether there was a death in the jail on a given day (same as Table 1). The predictor variables are lags of daily maximum temperatures from day 1 to day 4 prior to the death. The specification controls for jail, year and month fixed effects. The standard errors are clustered at the jail facility level.+, *, ** and *** indicate significance at the 10%, 5%, 1% and 0.01% levels, respectively.

Table A4: Probit model for effects of maximum temperature on mortality in jails

Dependent Variable : Mortality (Y/N)				
Lags of Daily Maximum Temperature	(1)	(2)	(3)	(4)
Lag 1	0.000513 (0.000449)			
Lag 2		0.00145** (0.000474)		
Lag 3			0.00201*** (0.000521)	
Lag 4				0.00225*** (0.000523)
Jail FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
N	1661483	1641661	1645653	1645345
Pseudo R-sq	0.0843	0.0895	0.0896	0.0900

Table A4 shows a probit model specification to study the association between daily maximum temperature and jail mortality over time. In this specification, the dependent variable is a binary variable indicating whether there was a death in the jail on a given day (same as Table 1). The predictor variables are lags of daily maximum temperatures from day 1 to day 4 prior to the death. The specification controls for jail, year and month fixed effects. The standard errors are clustered at the jail facility level.+, *, ** and *** indicate significance at the 10%, 5%, 1% and 0.01% levels, respectively.

Table A5: Logit model for effects of maximum temperature on mortality in jails

Dependent Variable : Mortality (Y/N)				
Lags of Daily Maximum Temperature	(1)	(2)	(3)	(4)
Lag 1	0.00125 (0.00125)			
Lag 2		0.00447*** (0.00136)		
Lag 3			0.00609*** (0.00147)	
Lag 4				0.00678*** (0.00147)
Jail FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
N	1661483	1641661	1645653	1645345
Pseudo R-sq	0.0838	0.0894	0.0896	0.0900

Table A5 shows a logit model specification to study the association between daily maximum temperature and jail mortality over time. In this specification the dependent variable is a binary variable indicating whether there was a death in the jail on a given day (same as Table 1). The predictor variables are lags of daily maximum temperatures from day 1 to day 4 prior to the death. The specification controls for jail, year and month fixed effects. The standard errors are clustered at the jail facility level.+, *, ** and *** indicate significance at the 10%, 5%, 1% and 0.01% levels, respectively.

Table A6: Quadratic Specification for temperature effects on jail mortality

Dependent Variable : Mortality (Y/N)				
Lags of Daily Maximum Temperature	(1)	(2)	(3)	(4)
Lag 1	0.00000291 (0.0000120)			
Lag 2		-0.00000557 (0.0000115)		
Lag 3			-0.00000796 (0.0000118)	
Lag 4				-0.00000200 (0.0000116)
Lag 1 sq.	4.45e-08 (9.85e-08)			
Lag 2 sq.		0.000000147 (0.000000103)		
Lag 3 sq.			0.000000211* (0.000000106)	
Lag 4 sq.				0.000000178+ (0.000000101)
Jail FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
N	1667556	1667180	1666804	1666428
Adj. R-sq	0.00751	0.00782	0.00778	0.00781

Table A6 shows a quadratic model specification to study the association between daily maximum temperature and jail mortality over time. In this specification the dependent variable is a binary variable indicating whether there was a death in the jail on a given day (same as Table 1). The predictor variables are lags of daily maximum temperatures (squared) from day 1 to day 4 prior to the death. The specification controls for jail, year and month fixed effects. The standard errors are clustered at the jail facility level. +, *, ** and *** indicate significance at the 10%, 5%, 1% and 0.01% levels, respectively

Table A6: Summary Statistics

Variable	count	mean	sd	min	max
Year of Death	6953	2014	3.394719	2008	2019
No. of Deaths	2247204	.0031163	.0561347	0	2
Deaths binary	2247204	.0926614	.2899574	0	1
Daily Maximum Temp.	1813479	67.46182	19.94348	-25.96	132.98
Accident	2247204	.0000645	.0080877	0	2
Drug related	2247204	.0002559	.0160218	0	2
Homicide	2247204	.0000881	.0093863	0	1
Medical causes	2247204	.0015886	.0399933	0	2
Unknown cause	2247204	.0002461	.0158544	0	2
Suicide	2247204	.0008731	.0296104	0	2

Figure A1: State-wise trends of the temperature effects on jail mortality

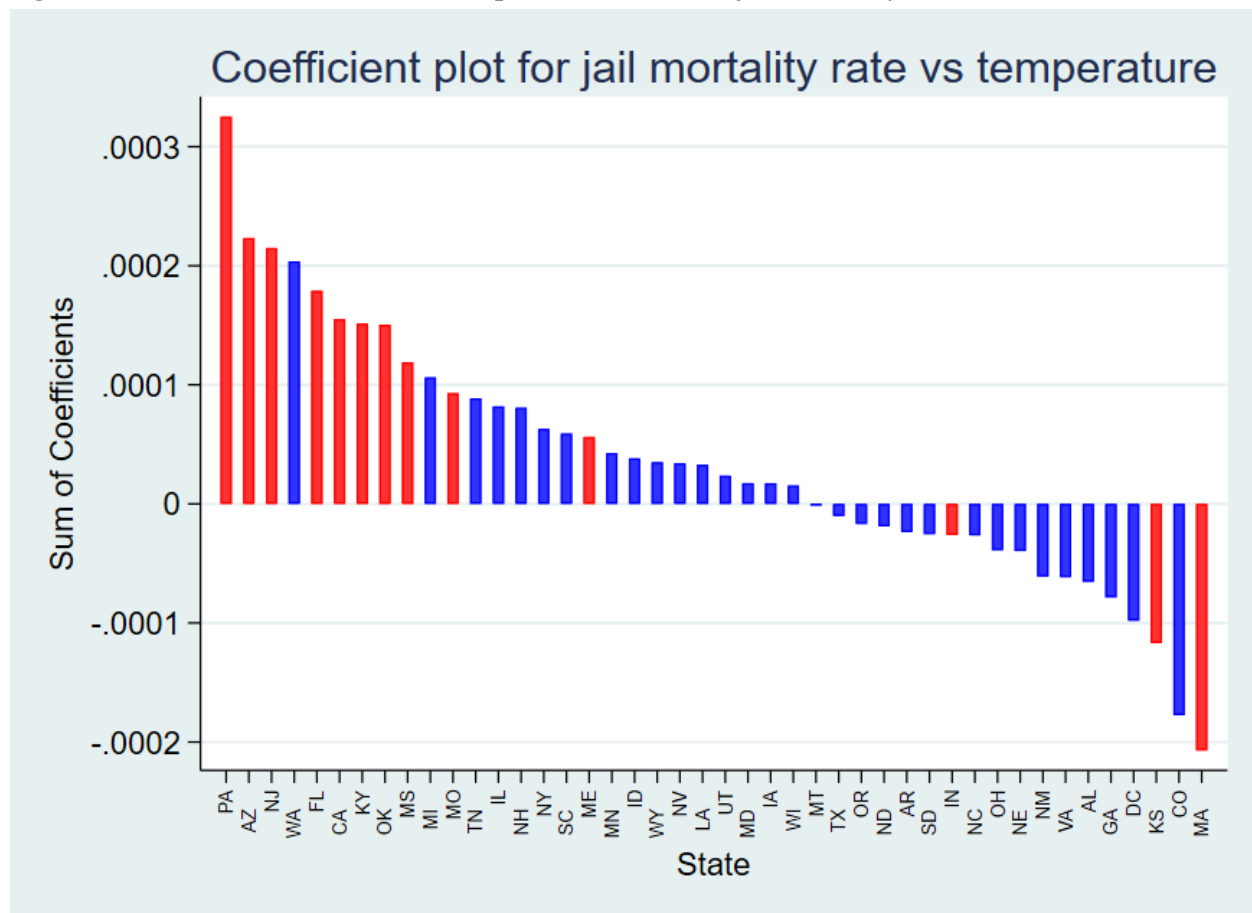


Figure A1 shows the statewise coefficients for temperature effects on jail mortality. The red bars indicate statistical significance at 10% level.

Figure A2: Effect size of temperature on jail mortality

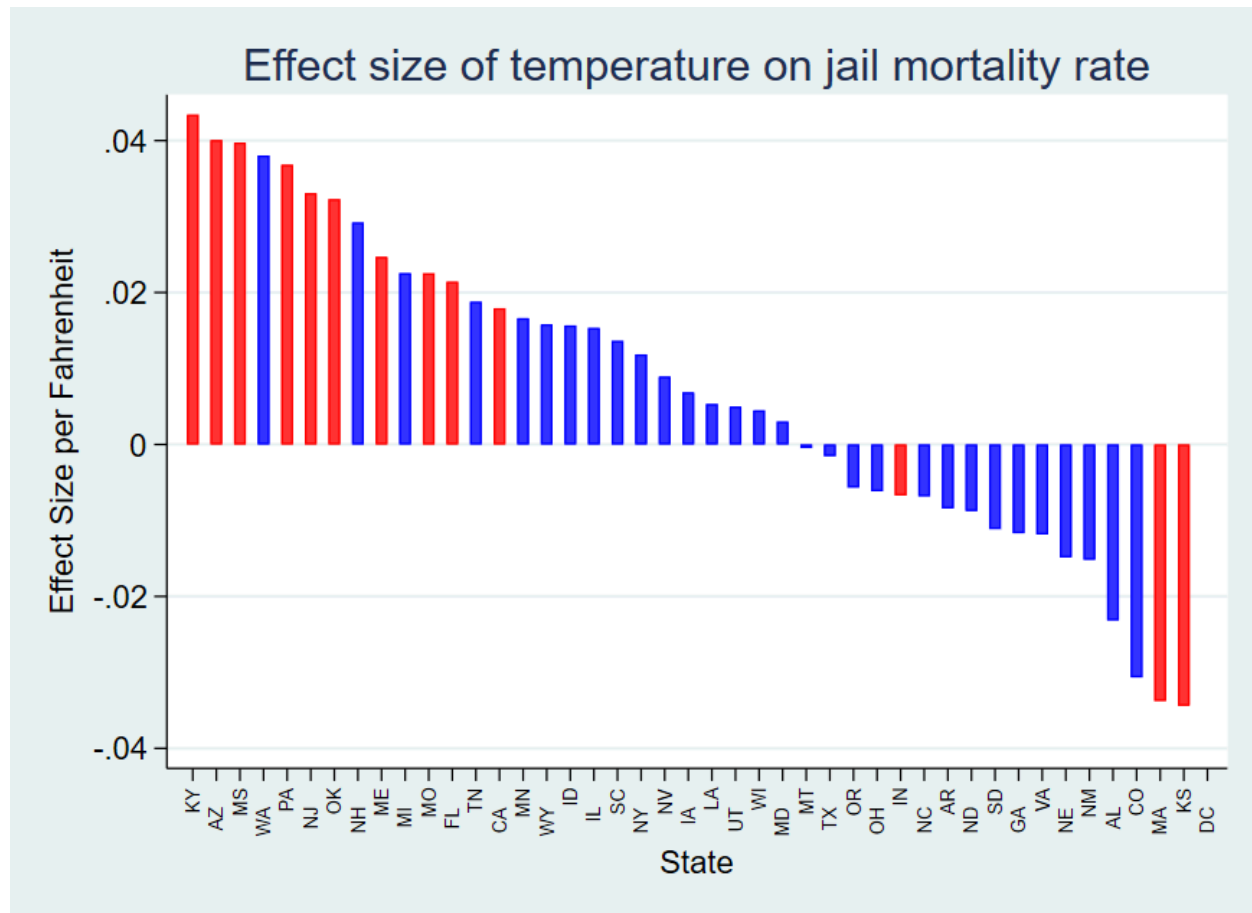


Figure A2 shows the state-wise effect sizes for temperature effects on jail mortality. The red bars indicate statistical significance at 10% level. Outlier state of Washington DC has been dropped from the graph and only accounts for 3 jails. The effect sizes are calculated taking into account the mean mortality rate in the data sample.