

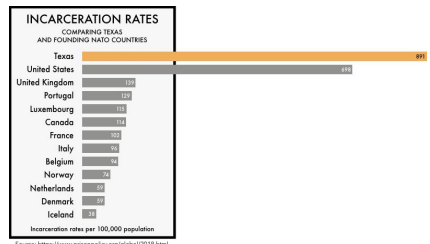
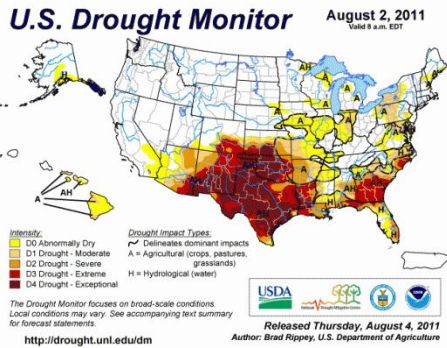
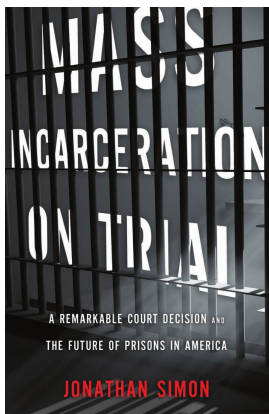
# The Heat Exposure of Texas Prisoners

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Inmates shuffle past new fans in the Darrington prison's main hallway on a hot July day. Jolie McCullough / The Texas Tribune

May 2011

## Brown v. Plata, a Supreme Court Decision on prison overcrowding

Prison overcrowding is a violation of prisoners' rights to no cruel and unusual punishment

July 2011

## Texas experiences a record breaking heat wave, at least 23 prisoners die in one unit

The deaths of the prisoners housed in Rosharon especially would become a catalytic legal point

June 2014

## Prisoners from the Wallace Pack Unit bring a lawsuit, Cole v. Collier, against TDCJ

Failure to provide safe housing violates rights secured by the American Disabilities Act, the Rehabilitation Act, and Eighth and Fourteenth Amendment

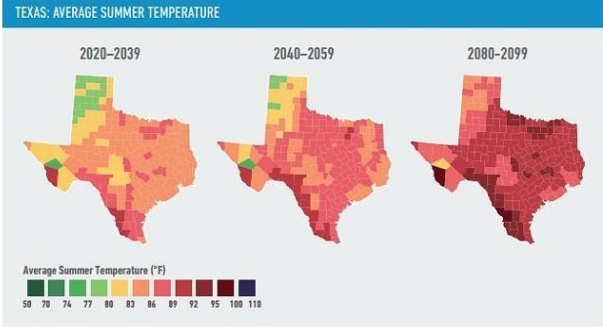
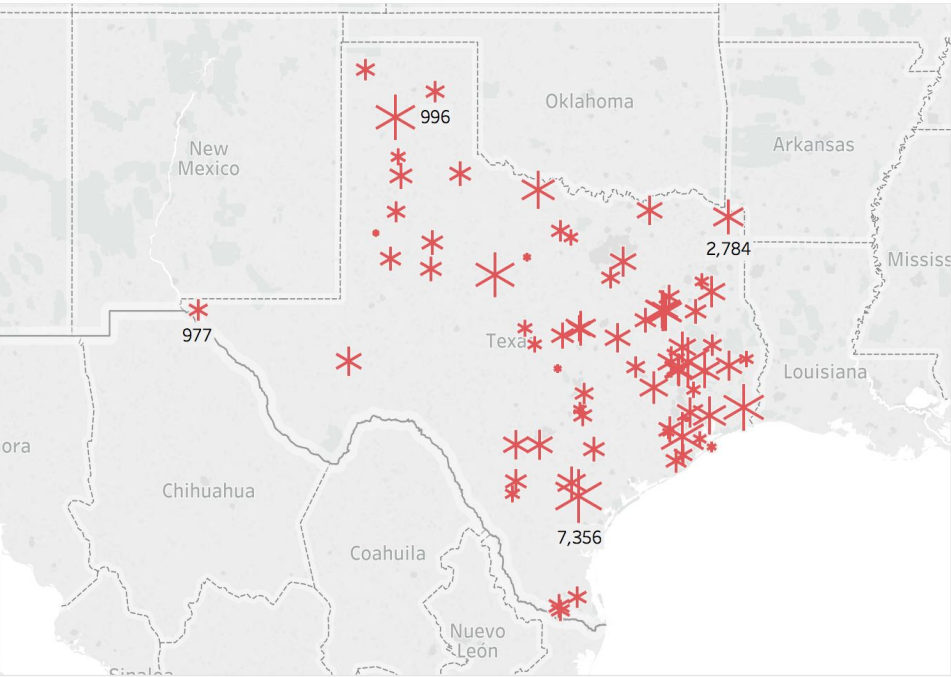
July 2017

## Judge Keith Ellison mandates AC and relocation of vulnerable population

Judge Ellison certified the plaintiffs in 2016 and ordered an injunction in summer 2017



# Distribution of 141,504 Prisoners in Texas



Source: American Climate Prospectus

**NWS Heat Index**

		Temperature (°F)															
		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
Relative Humidity (%)	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

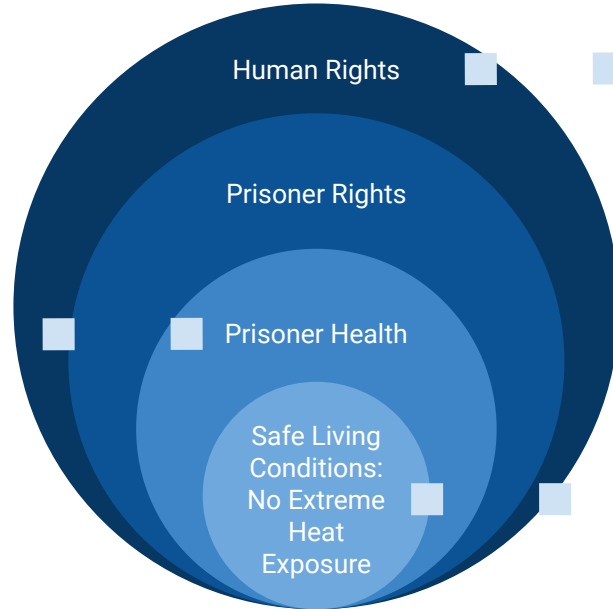
- Caution
- Extreme Caution
- Danger
- Extreme Danger

Prisoner density in Texas is highest in the Southeast.

This is the same region projected to have the hottest summers and average yearly temperatures in the next part of the 21st Century

Based on data from the Texas Tribune (<https://www.texastribune.org/library/data/texas-prisons/>)

Prisoner health should be, but is not, a major field of inquiry in public, especially environmental, health



The core ideal of public health essentially requires the securing of basic human rights for all people, including prisoners

Environmental public health aims to secure, at the bare minimum, safe living conditions for all people

**Objective**

Establish a framework to study Heat Related Mortality in prisons

estimate the burden of Heat Related Mortality in Texas prisoners



analysis of death records between 2005 and 2015



develop potential points of intervention



review current efforts and offered prisoner programming

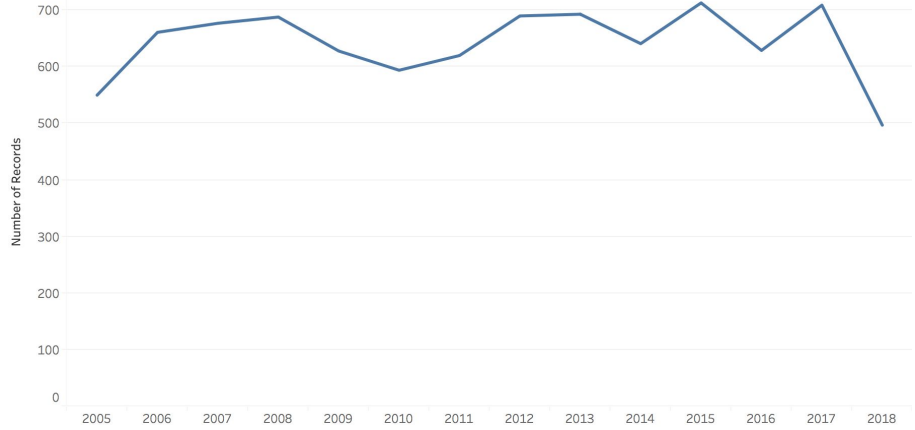


understand specific risk factors for prisoner heat susceptibility

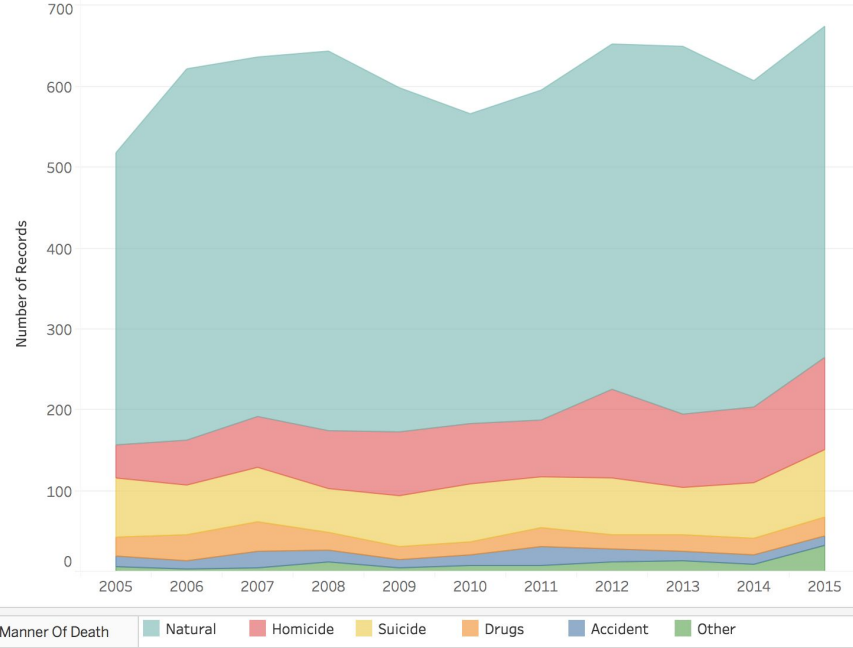


review public health literature on heat exposure

Obtained 8990 Death Records from Texas Justice Initiative



Mortality Causes For Male Prisoners Between 2005 and 2015



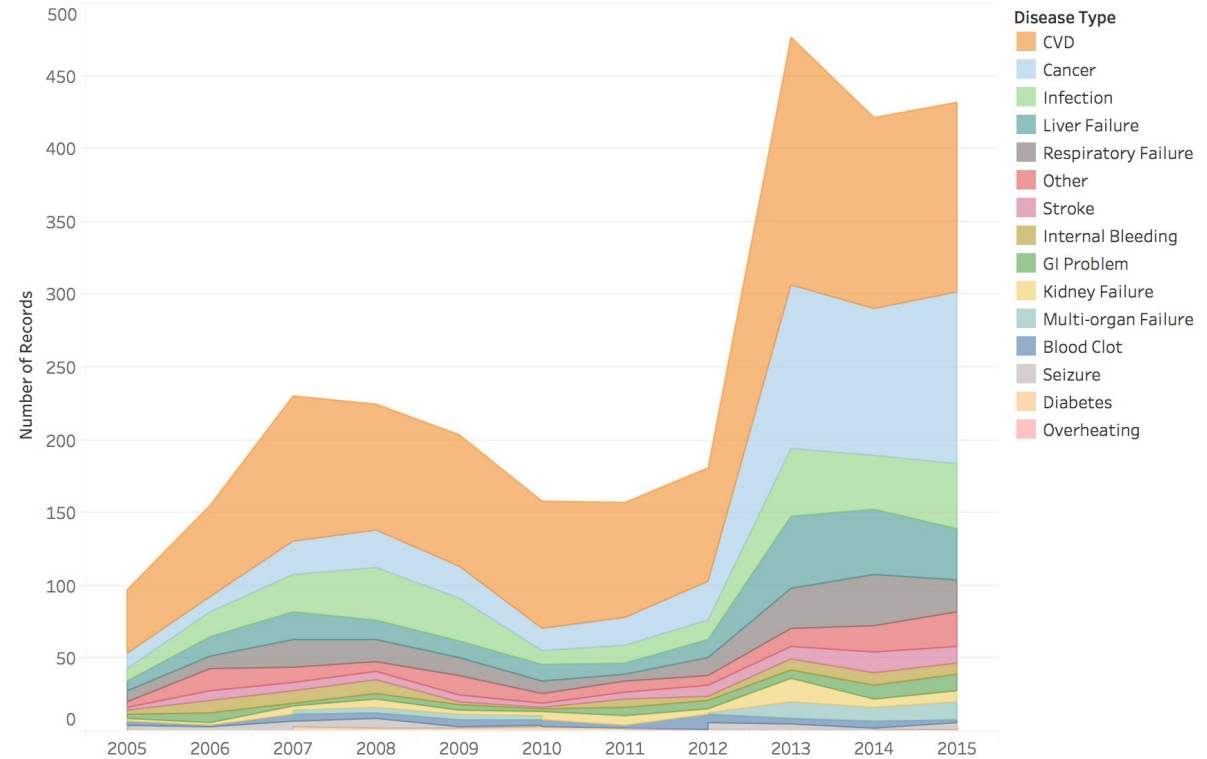
I decided to analyze causes of death for male prisoners between 2005 and 2015 based on what was available from the Texas Justice Initiative

Here the primary “resolution” issue presents itself - “natural illness” deaths and their rates and causes in prison are not well understood

Using the Merck Medical Manual, Google, and Wikipedia, I sorted 2734 of the 4648 Natural Cause Deaths remaining. These categories' mortality rates were then visualized over time.

Cardiovascular disease (CVD) is used as a proxy for heat related illness in many environmental health studies, and is the mortality cause with the most analyzable cases - this mortality will be the outcome of interest

"Natural Illness" Death Causes Sorted and Visualized Over Time





## Review Order

Step 1: Choose Options

Step 2: Review Order

Step 3: Order Complete

Please review these selected items from your request: dataset, date ranges, output format, data types, and selected stations/locations.

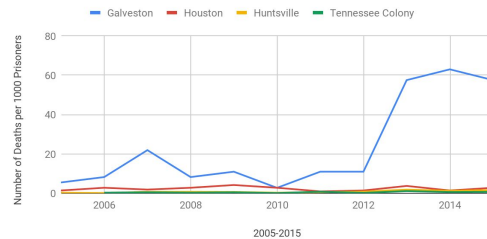
Once your order is checked, enter a valid email address and click the "SUBMIT ORDER" button to finalize the order. No actual data will be emailed directly. Only the links to access your ordered data from an FTP site will be sent.

By submitting this request, you agree with both the [disclaimer](#) and the [privacy policy](#).

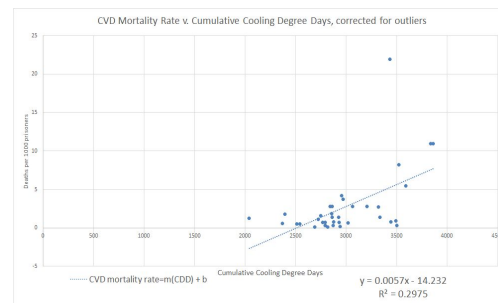
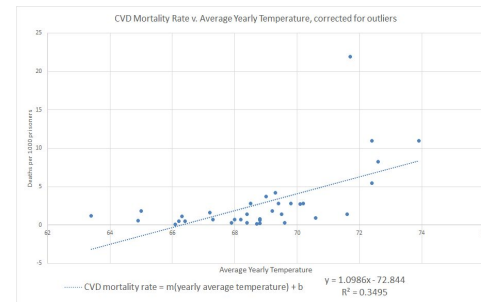
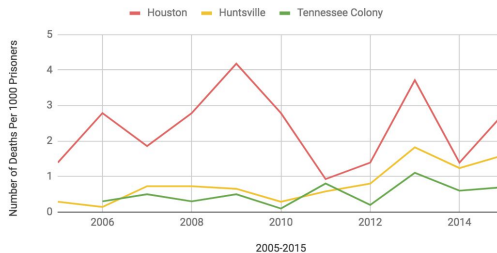
### REQUESTED DATA REVIEW

Dataset	Global Summary of the Year
Order Start Date	2015-01-01 00:00
Order End Date	2015-12-31 23:59
Output Format	Custom Global Summary of The Year CSV
Data Types	CLDD, TAVG, TMAX

Mortality Rates Due to Cardiovascular Disease in Galveston, Houston, Huntsville and Tennessee Colony between 2005 and 2015



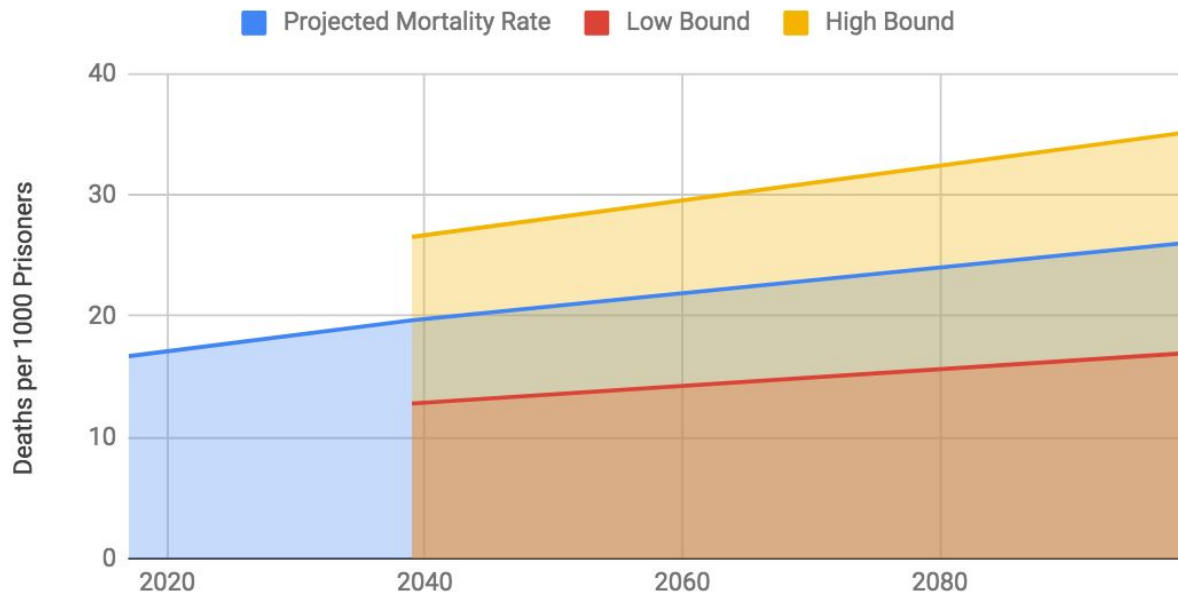
Mortality Rates Due to Cardiovascular Disease in Houston, Huntsville and Tennessee Colony between 2005 and 2015



Using the NOAA data toolkit, I pulled average yearly temperature for the 4 cities with the most CVD death cases (Galveston, Huntsville, Houston, Tennessee Colony).



## Projected Increase in CVD Mortality Based on Projected Increase in Average Yearly Temperature



Projected Deaths between 2039 and 2099:  $(60 \text{ years} * 2099 \text{ rate}) - 0.5 * (60 \text{ years} * (2099 \text{ rate} - 2039 \text{ rate})) * 246 * 0.35$

The current mortality due to heat is 16 deaths per 1000 Texas prisoners per year.

Using the regression of temperature against this mortality rate, prisoner mortality due to heat was projected using American Climate Prospectus temperature predictions for Texas.

Total mortality over these 60 years equals the area of the trapezoid to the right adjusted for the whole Texas prison population and  $R^2$  value from the regression.

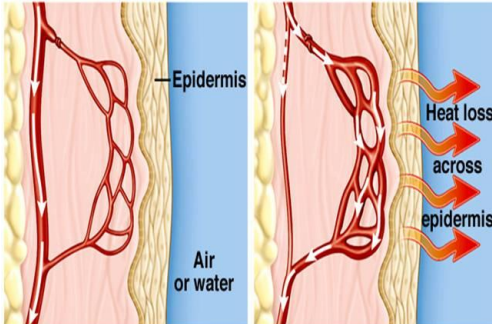
Projected Deaths: **116,331**  
**prisoners (95% confidence interval 75,670, 156,992)**



**Buildup of  
core body  
temperature  
to above 105°F**



**Sweat, reliant on humidity**



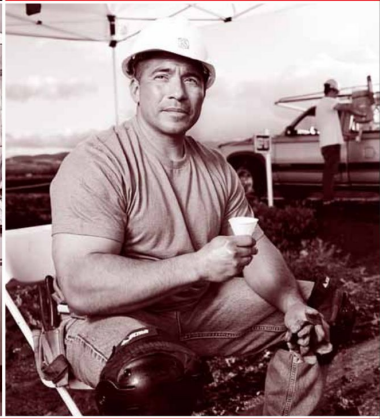
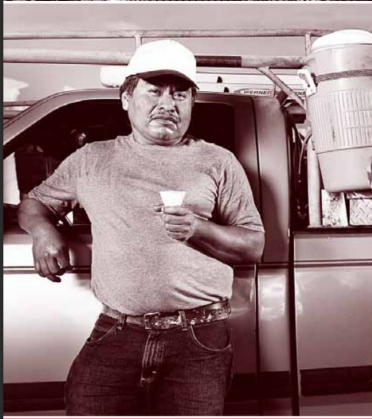
**Anticholinergics,  
diuretics, and some  
antipsychotics  
tamper with CNS  
response to heat and  
can lead to  
dehydration**

**The impact of certain medications on  
heat response makes prisoners with  
chronic physical or mental illnesses  
more heat susceptible**



**WATER.  
REST.  
SHADE.**

*The work can't get done without them.*



Prisoners are an often forgotten **worker** population

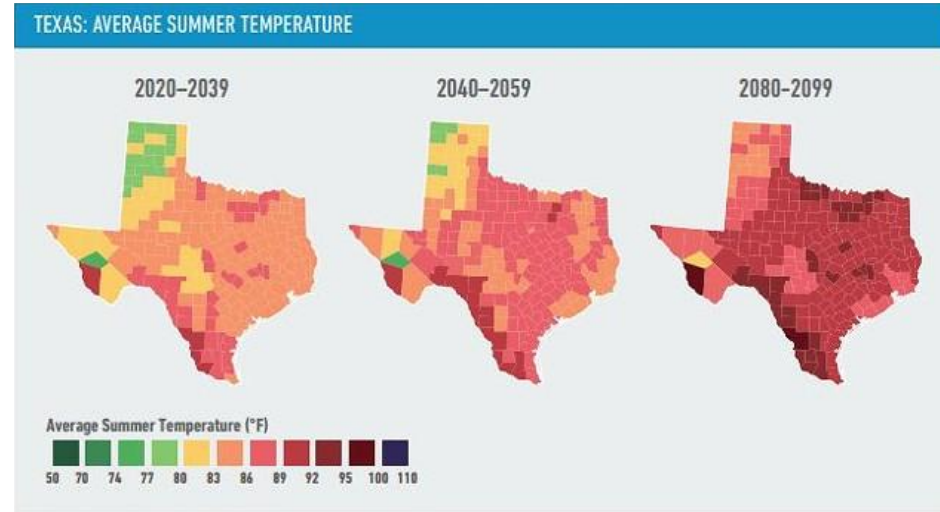
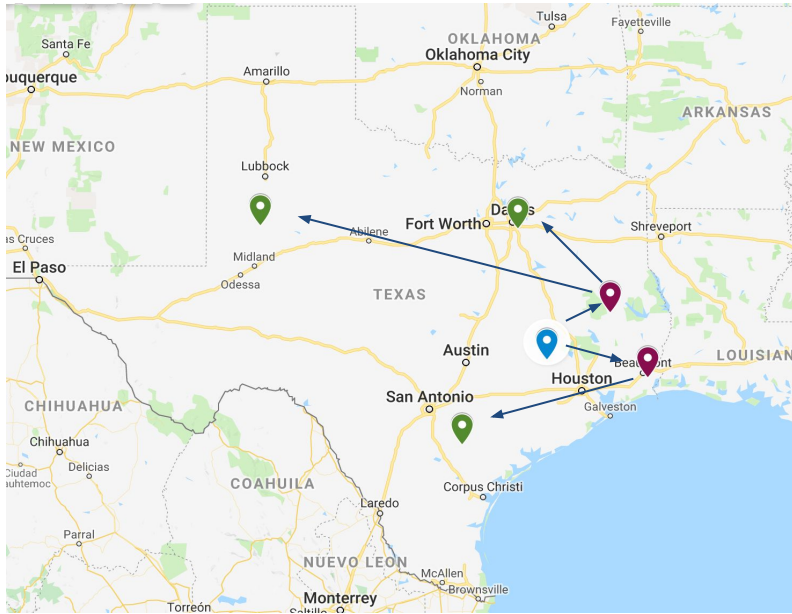
In Texas alone, their labor generates **\$90million** a year for Texas Correctional Industries (HR arm of Texas Department of Criminal Justice - budget of **\$3.3billion** a year)







# TDCJ was mandated to shuffle prisoners around by the District Court, but this is not a viable long term solution



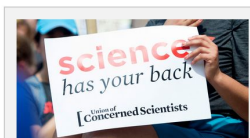
Source: American Climate Prospectus

## We Need Better Data about What Is Killing American Prisoners. It's Probably the Heat.

ANYUN CHATTERJEE, UCS SCIENCE NETWORK, UCS | SEPTEMBER 6, 2018, 10:02 AM EST

DC is in the middle of a swampy heat wave right now, with temperatures exceeding 90°F regularly. My peers and I can joke about getting drenched in sweat from the walk from the metro to school because we have an air-conditioned building to look forward to. Any heat-related discomfort is temporary for us. Prisoners in our country don't have this luxury, and it may be killing more of them than we realize.

If you go to the [Bureau of Justice Statistics \(BJS\) website](#), you can download datasets showing the reasons inmates died over the last few years. As part of my studies, I accessed this data and found a shocking lack of resolution.



This post is a part of a series on  
[Science For Justice](#)

Earlier this semester I published a critique of the federal data collection schedule for prisoner health, specifically with the concern that mortality due to heat is already a large, systematic, and underreported issue.



## Union of Concerned Scientist Blog

2 messages

Watkins, Tannyr M. (OJP) <Tannyr.M.Watkins@usdoj.gov>

Fri, Sep 7, 2018 at 4:28 PM

To: "anyunc@gwu.edu" <anyunc@gwu.edu>

Dear Mr. Chatterjee,

BJS statisticians read with interest your post for the Union of Concerned Scientists regarding the data collected on deaths in state and federal prisons. They would like me to share the following information to help you access the more detailed data BJS has on deaths in prisons and jails, and explain why it seems so onerous to obtain these data.

As a federal statistical agency, we are bound by statute (34 USC § 10231) to use data for statistical purposes only, and to prevent the identification of individuals through our release of statistical products and data sets. This includes deceased individuals. In reality, it means that we have to either suppress counts in reports if they are low enough to allow for identification (for example, the number of deaths disaggregated by single year, state, and cause of death – some states may only have one or two homicides/suicides/accidents, and therefore presenting the “1” would allow for identification), or in the case of data sets made available to the public, we go through a disclosure review process and remove variables that might show personally identifiable information from the data set before release. For data collections that collect individual-level records (like the Mortality in Correctional Institutions (MCI) collection – you can see the data collection form here: [https://www.bjs.gov/content/pub/pdf/NPS4A\\_2018.pdf](https://www.bjs.gov/content/pub/pdf/NPS4A_2018.pdf)), this can mean that a lot of the data of interest to researchers has to get suppressed.

We do have a work-around for this collection (as well as a few of the inmate surveys we conduct in support of the Prison Rape Elimination Act, where very sensitive information on sexual assault is gathered): we make the raw data available through an enclave on-site at the National Archives of Criminal Justice Data (NACJD) at the University of Michigan (<https://www.icpsr.umich.edu/icpsrweb/NACJD/studies/36435>, more recent data available soon). To ensure that only aggregate summary information is removed (as opposed to information that could identify an individual), researchers unfortunately must travel to Michigan, perform their analysis on a web-disabled computer in a locked room, and all results must be reviewed by NACJD staff for disclosure protection prior to the researcher receiving them. It is an onerous process, but these data could be used to look at heat-related deaths much as one of BJS’s visiting fellows did for smoking attributable deaths (<https://www.bmj.com/content/349/bmj.g4542>) – you would identify the ICD-10 codes of relevance to heat-related deaths, and then see their distribution in the MCI records.

My critique elicited a response which I found a bit unusual since prisoner deaths are a matter of public record, but I learned of an opportunity in Ann Arbor to further my research beyond the work done for the Culminating Experience

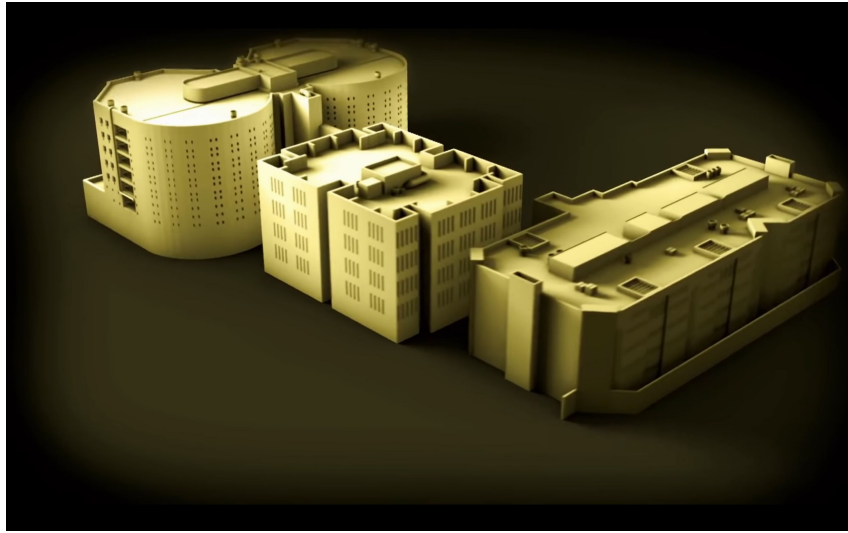
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**The standard prison architecture (Model of Dallas County Jail)**  
note the heavy concrete columns with no natural shade, not designed to let much out - including heat

**We need to look for new ideas for better architecture wherever we can find them. Images from a South African prison and a Australian apartment building**



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