



Climate Control for Extreme Temperatures in Corrections

Position Statement

Extreme indoor and outdoor temperatures adversely affect the health of people residing and working in carceral settings. Every carceral facility should implement standards to minimize extreme temperature exposure indoors and outdoors and adopt steps for prevention and mitigation.

Discussion

Climate scientists forecast rising ambient temperatures and days with extreme heat in addition to greater variation in weather, including cold spells.

In major cities across the United States, heat waves are occurring more frequently than they have in the past, increasing from an average of two per year during the 1960s to six per year during the 2010s and 2020s.¹ Notably, the average heat wave season across 50 cities included in an Environmental Protection Agency study is roughly 46 days longer now than it was in the 1960s.¹ By middle of this century, the annual numbers of days with heat indices exceeding 100 °F and 105 °F are projected to double and triple, respectively, compared to a 1971–2000 baseline.²

There is robust evidence that high temperatures in carceral facilities are associated with morbidity and mortality.^{3,4} Certain areas of the facility may be more prone to extreme high temperatures, such as kitchen or laundry areas, if there is insufficient cooling and ventilation in those areas. Extreme cold also poses risk from inadequate and/or uneven indoor heating and unmitigated outdoor exposures for incarcerated people and carceral employees.⁵

High temperatures impose physiological stress on the human body, putting older people, those with mental disorders, those who take medications that affect body temperature regulation, and those who have certain comorbidities at risk for hospitalization or death.⁶⁻⁹ High temperatures also impair sleep quality and exacerbate sleep apnea,¹⁰ and are associated with occupational safety.¹¹⁻¹³ Air conditioning and appropriate heating in carceral facilities is protective.¹⁴ For those who work outside, access to water/hydration and sun protection is also protective.

There is some, albeit mixed, evidence of the impact of heat on judicial, police, and other decision-making.¹⁵⁻²⁰ Numerous studies, including systematic reviews and meta-analyses, show high temperatures are associated with worse mental health, aggressive behavior, and, importantly, higher rates of suicide and violence.²¹⁻³³ Adverse heat-related effects on mental health and violence have been shown in corrections^{34,35} and appear causal.³⁶ Temperature control policies are lacking in many state prisons³⁷ and, to date, court cases have been the main recourse.⁴ A recent national survey of jail leaders found high levels of support for adequate air conditioning in jails.³⁸ A review of 100 legal cases related to carceral temperature exposures found 61 cases related to cold exposure, 32 related to heat exposure, and seven related to both.⁵

In summary, there is compelling evidence that exposure to extreme temperatures has adverse physical, mental, and behavioral effects, including increasing mortality. These exposures in carceral environments, whether





indoors or outdoors, undermine the principle of proportionality in terms of retribution and the principle of rehabilitation based on worsening mental effects and violence. Given the absence of policies and transparency surrounding this issue, NCCHC exhorts all carceral facilities to implement standards to minimize extreme temperature exposures and adopt prevention and mitigation steps by incorporating these considerations as a component of the facility's safety plan and housing plan.

August 2024 – adopted by the National Commission on Correctional Health Care Governance Board

References

- 1. Environmental Protection Agency. (2024). *Climate change indicators: Heat waves.* Available at https://www.epa.gov/climate-indicators/climate-change-indicators-heat-waves
- 2. Dahl, K., Licker, R., Abatzoglou, J. T., & Declet-Barreto, J. (2019). Increased frequency of and population exposure to extreme heat index days in the United States during the 21st century. *Environmental Research Communications*, 1(7), 075002. https://doi.org/10.1088/2515-7620/ab27cf
- Skarha, J., Spangler, K., Dosa, D., Rich, J. D., Savitz, D. A., & Zanobetti, A. (2023). Heat-related mortality in U.S. state and private prisons: A case-crossover analysis. *PloS One*, *18*(3), e0281389. https://doi.org/10.1371/journal.pone.0281389
- 4. Palacios, J. E., & Vaughn, M. S. (2023). Inmates with heat-sensitive health conditions: Surveying prisoner litigation in the age of climate change. *Criminal Justice Review*, 07340168231166748. https://doi.org/10.1177/07340168231166748
- Skarha, J., Peterson, M., Rich, J. D., & Dosa, D. (2020). An overlooked crisis: Extreme temperature exposures in incarceration settings. *American Journal of Public Health*, *110*(S1), S41-s42. https://doi.org/10.2105/ajph.2019.305453
- Williams, S., Nitschke, M., Weinstein, P., Pisaniello, D. L., Parton, K. A., & Bi, P. (2012). The impact of summer temperatures and heatwaves on mortality and morbidity in Perth, Australia 1994-2008. *Environment International, 40,* 33-38. https://doi.org/10.1016/j.envint.2011.11.011
- Bunker, A., Wildenhain, J., Vandenbergh, A., Henschke, N., Rocklöv, J., Hajat, S., & Sauerborn, R. (2016). Effects of air temperature on climate-sensitive mortality and morbidity outcomes in the elderly; a systematic review and meta-analysis of epidemiological evidence. *EBioMedicine*, *6*, 258-268. https://doi.org/10.1016/j.ebiom.2016.02.034
- Burke, M., González, F., Baylis, P., Heft-Neal, S., Baysan, C., Basu, S., & Hsiang, S. (2018). Higher temperatures increase suicide rates in the United States and Mexico. *Nature Climate Change*, *8*, 723-729. https://doi.org/10.1038/s41558-018-0222-x
- Liu, J., Varghese, B. M., Hansen, A., Borg, M., Zhang, Y., Driscoll, T., Morgan, G., Dear, K., Gourley, M., Capon, A., & Bi, P. (2021). Hot weather as a risk factor for kidney disease outcomes: A systematic review and metaanalysis of epidemiological evidence. *Science of the Total Environment, 801*, 149806. https://doi.org/10.1016/j.scitotenv.2021.149806
- 10. Rifkin, D. I., Long, M. W., & Perry, M. J. (2018). Climate change and sleep: A systematic review of the literature and conceptual framework. *Sleep Medicine Reviews, 42,* 3-9.



https://doi.org/10.1016/j.smrv.2018.07.007

- 11. Park, R. J., Pankratz, N., & Behrer, A. P. (2021). *Temperature, workplace safety, and labor market inequality* (Working paper series). Washington Center for Equitable Growth. https://equitablegrowth.org/working-papers/temperature-workplace-safety-and-labor-market-inequality
- 12. Lai, W., Qiu, Y., Tang, Q., Xi, C., & Zhang, P. (2023). The effects of temperature on labor productivity. *Annual Review of Resource Economics*, *15*, 213–232. https://doi.org/10.1146/annurev-resource-101222-125630
- Filomena, M., & Picchio, M. (2023). Unsafe temperatures, unsafe jobs: The impact of weather conditions on work-related injuries. *Journal of Economic Behavior & Organization, 224,* 851–875. https://doi.org/10.1016/j.jebo.2024.06.016
- Skarha, J., Dominick, A., Spangler, K., Dosa, D., Rich, J. D., Savitz, D. A., & Zanobetti, A. (2022). Provision of air conditioning and heat-related mortality in Texas prisons. *JAMA Network Open*, 5(11), e2239849. https://doi.org/10.1001/jamanetworkopen.2022.39849
- 15. Heyes, A., & Saberian, S. (2019). Temperature and decisions: Evidence from 207,000 court cases. *American Economic Journal: Applied Economics*, *11*(2), 238-265. https://doi.org/10.1257/app.20170223
- 16. Craigie, T.-A., Taraz, V., & Zapryanova, M. (2023). Temperature and convictions: Evidence from India. *Environment and Development Economics*, 28(6), 1-21. https://doi.org/10.1017/S1355770X23000050
- 17. Krause, J. S., Brandt, G., Schmidt, U., & Schunk, D. (2023). Don't sweat it: Ambient temperature does not affect social behavior and perception. *Journal of Economic Psychology, 99,* 102657. https://doi.org/10.1016/j.joep.2023.102657
- 18. Fesselmeyer, E. (2021). The impact of temperature on labor quality: Umpire accuracy in Major League Baseball. *Southern Economic Journal, 88*(2), 545–567. https://doi.org/10.1002/soej.12524
- 19. Behrer, A. P., & Bolotnyy, V. (2024). Heat and law enforcement. *PNAS Nexus, 3*(5), pgad425. https://doi.org/10.1093/pnasnexus/pgad425
- 20. Spamann, H. (2020). *No, judges are not influenced by outdoor temperature (or other weather): Comment* (Harvard Law School John M Olin Center Discussion Paper No. 1036). http://www.law.harvard.edu/programs/olin_center/papers/pdf/Spamann_1036.pdf
- Dixon, P. G., McDonald, A. N., Scheitlin, K. N., Stapleton, J. E., Allen, J. S., Carter, M. W., Holley, M. R., Inman, D. D., & Roberts, J. B. (2007). Effects of temperature variation on suicide in five US counties, 1991–2001. *International Journal of Biometeorology, 51*, 395-403. https://doi.org/10.1007/s00484-006-0081-4
- 22. Cianconi, P., Betrò, S., & Janiri, L. (2020). The impact of climate change on mental health: A systematic descriptive review. *Frontiers in Psychiatry*, *11*, 74. https://doi.org/10.3389/fpsyt.2020.00074
- 23. Mullins, J. T., & White C. (2019). Temperature and mental health: Evidence from the spectrum of mental health outcomes. *Journal of Health Economics, 68,* 102240. https://doi.org/10.1016/j.jhealeco.2019.102240
- Liu, J., Varghese, B. M., Hansen, A., & Xiang, J. (2021). Is there an association between hot weather and poor mental health outcomes? A systematic review and meta-analysis. *Environment International*, 153(6), 106533. https://doi.org/10.1016/j.envint.2021.106533
- 25. Heilmann, K., Kahn, M. E., & Tang, C. K. (2021). The urban crime and heat gradient in high and low poverty



areas. Journal of Public Economics, 197, 104408. https://doi.org/10.1016/j.jpubeco.2021.104408

- 26. Florido Ngu, F., Kelman, I., Chambers, J., & Ayeb-Karlsson, S. (2021). Correlating heatwaves and relative humidity with suicide (fatal intentional self-harm). *Scientific Reports, 11*(1), 22175. https://doi.org/10.1038/s41598-021-03089-y
- Noelke, C., McGovern, M., Corsi, D. J., Jimenez, M. P., Stern, A., Wing, I. S., & Berkman, L. (2016). Increasing ambient temperature reduces emotional well-being. *Environmental Research*, 151, 124-129. https://doi.org/10.1016/j.envres.2016.06.045
- Colmer, J., & Doleac J. L. (2022). Access to guns in the heat of the moment: More restrictive gun laws mitigate the effect of temperature on violence (CESifo working paper no. 10525). https://dx.doi.org/10.2139/ssrn.4499480
- 29. Narayan, A. (2022). The impact of extreme heat on workplace harassment and discrimination. *PNAS*, *119*(39), e2204076119. https://doi.org/10.1073/pnas.2204076119
- 30. Otrachshenko, V., Popova, O., & Tavares, J. (2021). Extreme temperature and extreme violence: Evidence from Russia. *Economic Inquiry*, *59*(1), 243-262. https://doi.org/10.1111/ecin.12936
- Chen, Y., Sun, R., Chen, X., & Qin, X. (2023). Does extreme temperature exposure take a toll on mental health? Evidence from the China Health and Retirement Longitudinal Study. *Environment and Development Economics, 28*(5), 486–510. https://doi.org/10.1017/S1355770X23000037
- 32. Awaworyi Churchill, S., Smyth, R., & Trinh, T.-A. (2023). Crime, weather and climate change in Australia. *Economic Record*, *99*(324), 84-107. https://doi.org/10.1111/1475-4932.12720
- 33. Janzen, B. (2022). Temperature and mental health: Evidence from helpline calls. *arXiv*:220704992v2. https://doi.org/10.48550/arXiv.2207.04992
- Cloud, D. H., Williams, B. A., Haardörfer, R., Brinkley-Rubinstein, L., & Cooper, H. L. F. (2023). Extreme heat and suicide watch incidents among incarcerated men. *JAMA Network Open*, 6(8), e2328380. https://doi.org/10.1001/jamanetworkopen.2023.28380
- Skarha, J., Peterson, M., Rich, J. D., & Dosa, D. (2020). An overlooked crisis: Extreme temperature exposures in incarceration settings. *American Journal of Public Health*, *110*, S41-S42. https://doi.org/10.2105/AJPH.2019.305453
- 36. Mukherjee, A., & Sanders, N. J. (2021). *The causal effect of heat on violence: Social implications of unmitigated heat among the incarcerated* (Working paper 28987). National Bureau of Economic Research. https://doi.org/10.3386/w28987
- 37. Segule, M., Lin, J., Allen, J., & Jimenez, M. (2022). Heat policies and AC availability in US prison systems. ISEE Conference Abstracts. https://doi.org/10.1289/isee.2022.P-0279
- 38. Applegate, B. K., Daou, J., & Ouellette, H. M. (2024). The future of American jails: A national survey of jail leaders' ideals. *The Prison Journal, 104*(1), 3–23. https://doi.org/10.1177/00328855231212421