

NC Department of Health and Human Services

Occupational Heat-Related Illness Emergency Department Visits in North Carolina, 2016–2022

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Background

- Heat-related illness, or HRI, poses a significant threat to the health and wellbeing of North Carolina residents.
- So far this season we have had **4,425 Emergency Department visits for Heat-Related Illness across NC**

Heat Exhaustion		Heat Stroke
ACT FAST <ul style="list-style-type: none">• Move to a cooler area• Loosen clothing• Sip cool water• Seek medical help if symptoms don't improve	<i>Dizziness</i> <i>Thirst</i> <i>Heavy Sweating</i> <i>Nausea</i> <i>Weakness</i>	<i>Confusion</i> <i>Dizziness</i> <i>Becomes Unconscious</i>
<i>Heat exhaustion can lead to heat stroke.</i>		<i>Heat stroke can cause death or permanent disability if emergency treatment is not given.</i>

Stay Cool, Stay Hydrated, Stay Informed!

Source: NC DETECT

Exposure and sensitivity to extreme heat vary by:



Socioeconomic status

Created by Ludovic gicqueau
from the Noun Project



Occupation

Created by Luis Prado
from Noun Project



Age

Created by Liselle
from Noun Project



Health status

Source: North Carolina Climate Risk Assessment and Resilience Plan (2020); Luginbuhl et al 2008; NC DHHS Summer 2022 Heat Report Summary; CDC

Extreme Heat and Farmworkers



NC farm fined \$187,500 for labor violations after death of worker

Mar 12, 2024

The North Carolina Department of Labor last week fined a farm in Nash County \$187,509 after the death of a seasonal farm worker from apparent heat exhaustion last September. The department cited Barnes Farming with what's called a "willful serious violation" along with two other "serious" violations.

Source: <https://www.wfae.org/business/2024-03-12/nc-farm-fined-187-000-for-labor-violations-after-death-of-worker>

OSHA's Proposed Heat Standard

PROPOSED RULE

FACT SHEET

Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings



Occupational
Safety and Health
Administration

Why a Standard is Needed:

Heat is the leading cause of weather-related deaths in the United States. Excessive heat in the workplace can cause a number of adverse health effects, including heat stroke and even death, if not treated properly. While heat hazards impact workers in many industries, workers of color have a higher likelihood of working in jobs with hazardous heat exposure. OSHA published in the Federal Register a Notice of Proposed Rulemaking (NPRM) titled *Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings*, a significant step toward a federal heat standard, which proposes protective measures that the agency has preliminarily determined would significantly reduce heat-related injuries, illnesses, and fatalities in the workplace. The NPRM is available for viewing on the Federal Register web page at <https://federalregister.gov/d/2024-14824> and <https://www.regulations.gov/document/OSHA-2021-0009-4761>. OSHA encourages the public to submit comments to the Heat Injury and Illness Prevention rulemaking docket at <https://www.regulations.gov/commenton/OSHA-2021-0009-4761>. The comment period is open until December 30, 2024.

Source: <https://www.osha.gov/heat-exposure/rulemaking>

Methods for HRI surveillance

1

HRI ED line listing data was abstracted using the validated syndromic surveillance HRI case definition from NC DETECT



2

An occupational HRI case definition was developed by modifying the CSTE occupational health indicators definition



3

Occupational HRI visits were identified by using text mining in the R programming language.



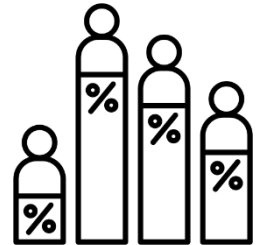
4

Workforce estimates by sex and age group were obtained from the NIOSH Employment Labor Force (ELF) query system



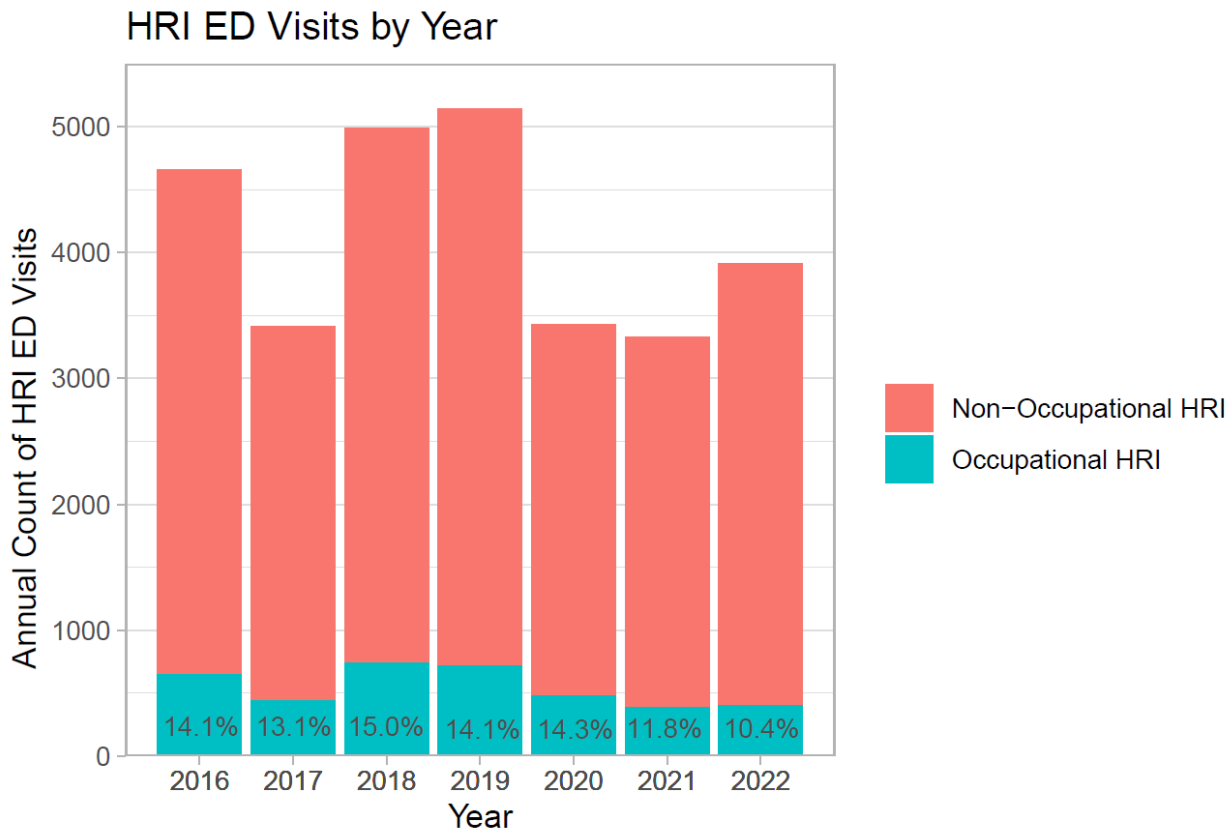
5

Rates were standardized to the U.S. 2000 standard population.



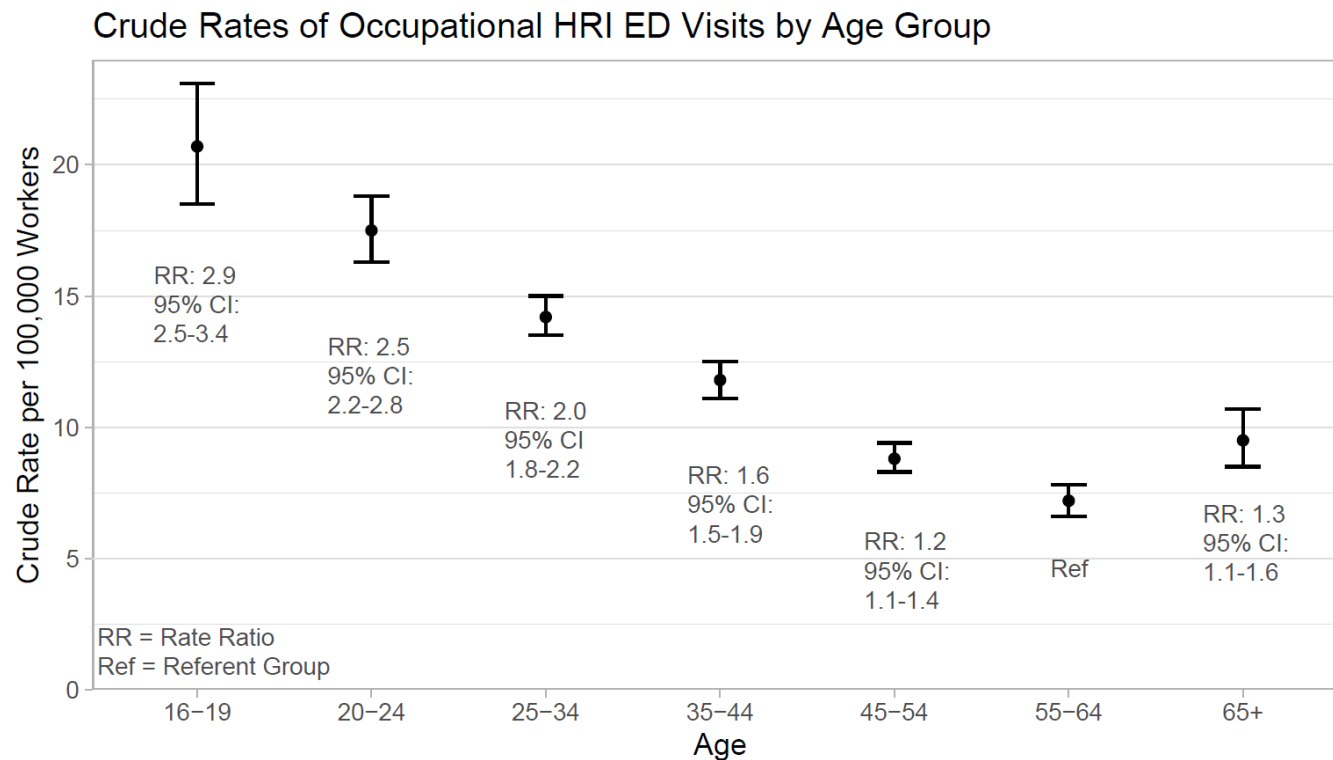
Results

13%
of HRI ED Visits
from 2016-2022
were identified as
occupational.



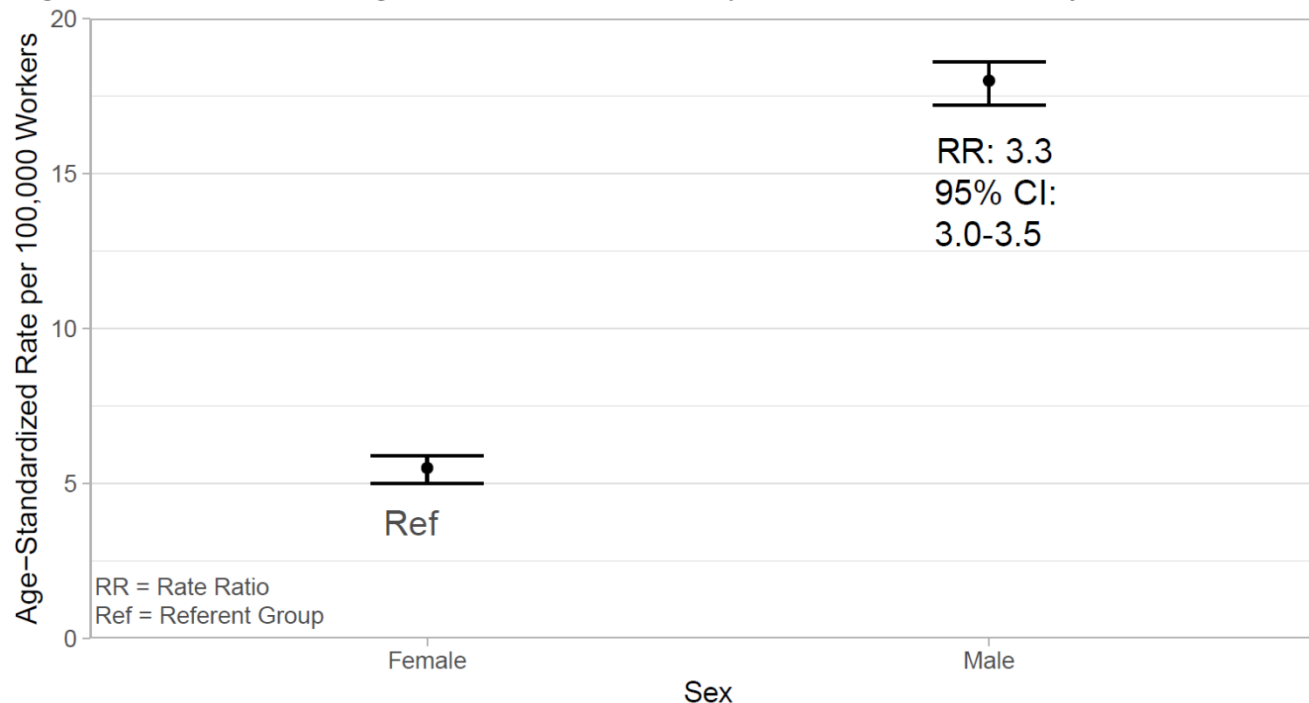
Source: NC DETECT

The rate of occupational HRI ED visits was highest in workers aged 16-19 years



Males experience occupational HRI at a rate 3.3 times the rate of females, on average.

Age-Standardized Average Annual Rates of Occupational HRI ED Visits by Sex, 2016- 2022



Conclusions

- **The rate of occupational HRI ED visits was highest in workers aged 16-19 years.**
- **Males experience occupational HRI at a rate 3.3 times the rate of females.**
- **We need to increase the collection of occupational data on HRI ED visits through additional fields or more consistent reporting of triage notes.**
- **The proportion of occupational HRI visits identified solely by triage notes underscores the need for more consistent reporting of triage notes to NC DETECT.**
- **We recommend adopting an occupational heat safety standard in North Carolina to protect workers from HRI.**

Questions

Autumn Locklear

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Extra Slides

Methods for Occupational HRI surveillance

1

2

3

4

5

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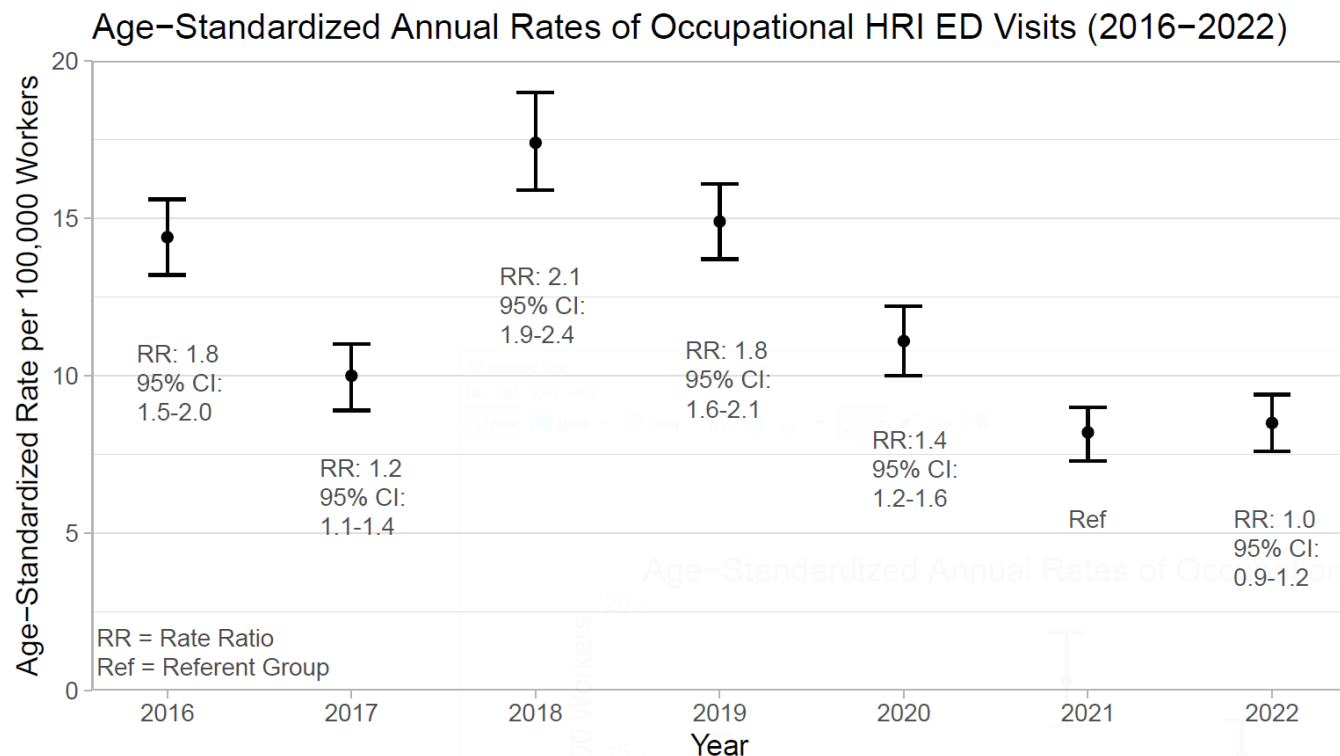


5

Methods – Occupational HRI Case Definition

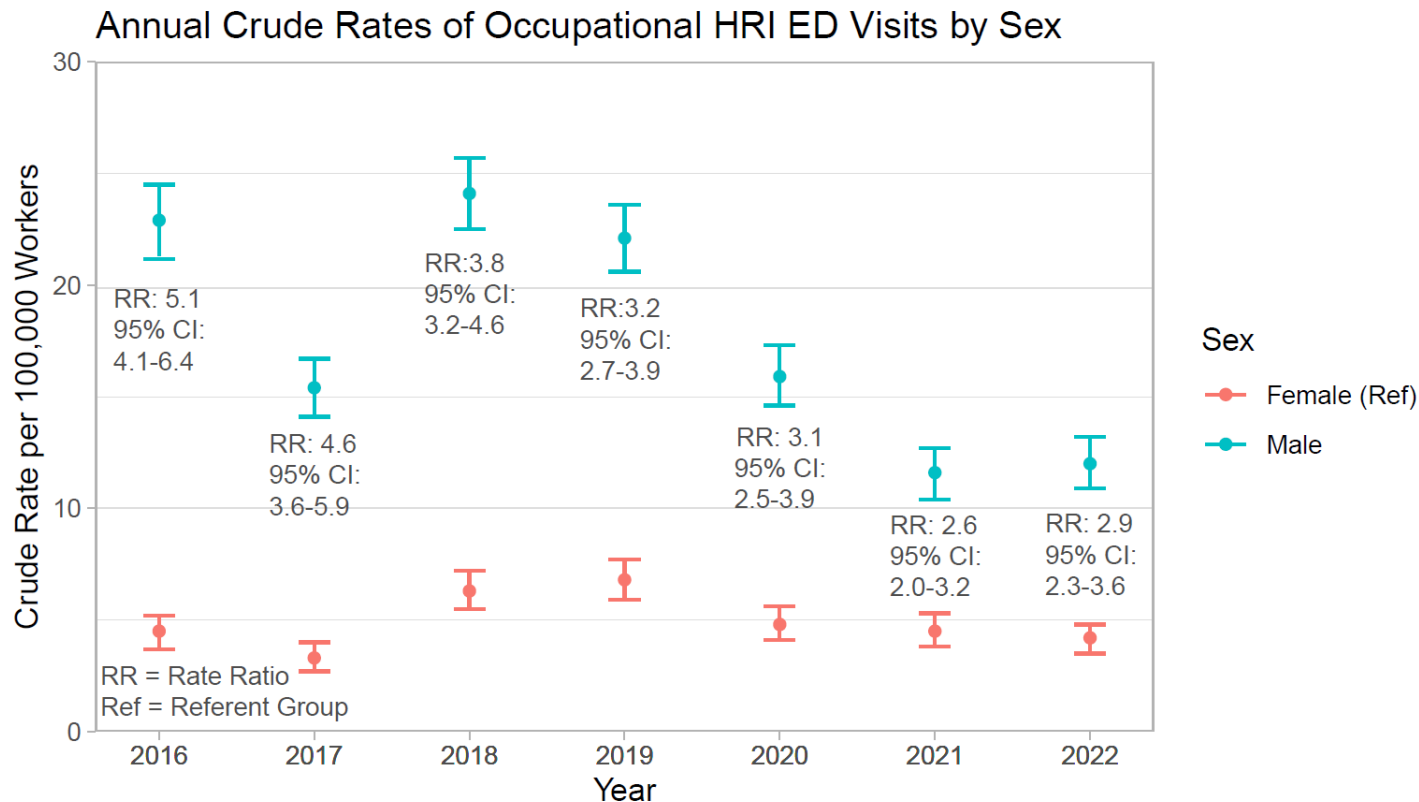
	Diagnosis Codes	Keywords
Inclusion Criteria	Y99.0; Y99.1; Y92.61; Y92.62; Y92.63; Y92.64; Y92.65; Y92.69; Y92.71; Y92.72; Y92.73; Y92.74; Y92.79; Z04.2; Z57.6; Z57.8	"at work" OR @work OR "@ work" OR "work related" OR "work acc*" OR "work inj*" OR "while work*" OR "workers comp*" OR "worker comp*" OR "work mans comp*" OR "workmens comp*" OR "occupa*" OR "accident work*" OR job OR "workmans comp*" OR "job related" OR "on the job" OR "oji" OR "otj" OR "works in" OR "works outside"
	Insurance Coverage Worker's Comp	
Exclusion Criteria		"workout" OR "work up" OR "work note" OR "labwork" OR "lab work" OR bloodwork OR "blood work" OR paperwork OR "paper work" OR firework OR "fire work" OR "return to work" OR "work excuse" OR "work clearance" OR workup OR "work-up" OR "social work" OR "dental work" OR "letter for" OR "not working" OR "working out" OR "yard"

The annual rate of occupational HRI was highest in 2018.



SOURCE: NC DETECT

The annual rate of occupational HRI was consistently higher for men.



SOURCE: NC DETECT

Limitations – Triage Notes

43%

Of HRI ED visits from 2016-2022 in North Carolina are missing triage notes.

57%

Of occupational HRI ED visits were identified by triage notes alone.

The remaining 43% of visits were identified by diagnosis codes, chief complaint, or insurance coverage.

Limitations

- **Analysis is limited to ED data only.**
- **Industry and occupation are not required fields in the NCDETECT surveillance data.**
- **Triage notes are not always provided by hospitals.**