NCDHHS 2023 HEAT HEALTH ALERT SYSTEM EVALUATION SUMMARY REPORT

BACKGROUND

The NCDHHS Climate and Health Program implements a Heat Health Alert System (HHAS) each year from May 1 – September 30 with support from the Sandhills Climate Resilience Taskforce (SCRT), a group of stakeholders from local health departments, emergency management and community-based organizations. The HHAS was launched in 2018 across four eastern North Carolina counties and enhanced in 2023, adding a new county and partner, adjusting heat index thresholds based on historical climate data, and offering standardized message templates and graphics in both English and Spanish. Our team began monitoring forecasts and issuing alerts to the Taskforce, aiming to reach people who are disproportionately impacted by extreme heat and those who work with these populations, including community health workers, mobile home park managers, farmworker clinic staff, and coaches. In the fall of 2023, we conducted a process evaluation of the enhanced heat health alert system, with results presented here.

2023 HEAT HEALTH ALERT SYSTEM PROCESS

NCDHHS checked forecasts for 5 target counties & compared it to heat index thresholds from NC State Climate Office → **NCDHHS emailed alerts to SCRT when threshold was forecast to be reached** → **SCRT shared alerts with their jurisdictions thru various communication methods**

EVALUATION PURPOSE AND METHODS

The purpose of the process evaluation was to

1) understand if the enhanced heat health alert system was implemented as intended
2) help us to adapt the system, including thresholds used and geographic areas served
3) understand if and where we need to expand the system to reach more populations disproportionately impacted by extreme heat

Evaluation Questions	Data Sources
Did NCDHHS send out alerts when the heat index threshold was met?	• National Weather Service heat index forecast data recorded each time alert sent • NCDHHS threshold notification log recorded each time alert sent
Did partners share alerts when NCDHHS sent alert notifications?	• Contracted Taskforce partners' heat alert distribution logs • Noncontracted Taskforce partners' heat alert social media data
To what extent did alerts reach intended populations?	• Post-season Heat Health Alert System Awareness Survey distributed online and via hard copy to adults aged 18+ years working with those with greater exposure to heat or fewer resources to adapt in target counties with support of Taskforce • Taskforce feedback on methods of distribution and alerts recipients

RESULTS

ALERT DISTRIBUTION

Percent of days when threshold was met AND NCDHHS sent an alert

93%

Heat index threshold was met **25%** of the days throughout the 2023 summer heat season in at least **1 of the 5** counties

→

Percent of days when NCDHHS sent an alert for a county AND partners shared alerts

67%-86%

Values based on whether **any** taskforce partner sent an alert to that county since some counties were covered by **more than one** partner

HEAT ALERT SYSTEM AWARENESS SURVEY

48 Total Survey Participants

77% (n=37) reported receiving alerts

23% (n=11) reported NOT receiving alerts

Most participants who reported receiving alerts (n=37)…

- Were aged 25-64 years old (94%)
- Were American Indian or Alaska Native (62%) or White (19%)
- Lived or worked in Robeson County (84%)
- Worked with vulnerable populations (84%). This included: low-income residents (73%), mobile home residents (54%), racial or ethnic minorities (62%), older adults (54%), and youth (60%).

Fewer participants who reported receiving alerts…

- Were Black or African American (11%) or Hispanic, Latinx or Chicanx (5%)
- Lived or worked in Cumberland or Sampson counties (5%, respectively)
- Worked with farmworkers (38%) or other outdoor workers (43%)

Most participants who reported NOT receiving alerts (n=11)…

- Were aged 25-64 years old (100%)
- Were American Indian or Alaska Native (64%) or White (54%)
- Lived or worked in Robeson County (82%)
- Worked with vulnerable populations (100%). This included: low-income residents (91%), mobile home residents (64%), racial or ethnic minorities (73%), older adults (55%), and youth (64%).

Fewer participants who reported NOT receiving alerts…

- Lived or worked in Cumberland (9%) or Hoke counties (18%)
- Worked with farmworkers (36%) or other outdoor workers (18%)

OUR PARTNERS SAID…

- NCDHHS Climate and Health Team-initiated alerts and associated resources were useful.
- They support continued messages and materials in English and Spanish that are accessible.

Among participants who reported receiving heat health alerts (n=37)…

- Alerts were received via:
  - Social media (27%)
  - Local Health Department emails and other county communications (59%)
  - Word of mouth (30%)
- Alert recipients most commonly shared alerts with…
  - Low-income residents (49%)
  - Racial or ethnic minorities (46%)
- Fewer alert recipients shared alerts with…
  - Farmworkers (38%)
  - Other outdoor workers (38%)
- 81% reported that populations they work or volunteer with were at least somewhat aware of heat health alerts.
- 100% reported that alerts were at least somewhat useful.

LIMITATIONS/CHALLENGES

- Underestimated percent of time partners distributed alerts as heat alert tracking logs were only required from paid Taskforce partners.
- Social media heat alert posts were difficult to interpret days to which alert applied.
- Participation in the survey was limited and is not generalizable to the 5-county region where alerts were distributed.
- Questions on heat alerts were not specific to our system and might have been interpreted as National Weather Service heat alerts, for example.
- Heat alert awareness level results may not be representative of populations disproportionately impacted by extreme heat.

RECOMMENDATIONS

- **Expand the system statewide to anyone who registers**
- **Create a social media toolkit for use statewide**
- **Use regional, health outcome-based heat index thresholds**
- **Improve outreach to farmworkers and other outdoor workers**

NCDHHS began implementing each of these recommendations in its 2024 Heat Health Alert System. The program continues to evaluate and identify additional areas of opportunity for improving the system for 2025.

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APPENDIX

Table 1. Characteristics of all survey participants (n=48)

Characteristic	Alert receipt N (%)	
	YES	NO
Received Alerts	**37 (77%)**	**11 (23%)**
Age		
18-24 years	1 (3%)	0 (0%)
25-44 years	12 (32%)	6 (55%)
45-64 years	23 (62%)	5 (45%)
65 years or older	1 (3%)	0 (0%)
Ethnicities or race of respondents*		
American Indian or Alaska Native	23 (62%)	7 (64%)
Asian	0 (0%)	0 (0%)
Black or African American	4 (11%)	0 (0%)
Hispanic, Latinx or Chicanx	2 (5%)	0(0%)
Native Hawaiian or Other Pacific Islander	0 (0%)	0 (0%)
White	7 (19%)	6 (54%)
Other	2 (5%)	0 (0%)
Decline to Answer	1 (3%)	0 (0%)
Counties respondents work/volunteer in*		
Bladen	5 (14%)	0 (0%)
Cumberland	2 (5%)	1 (9%)
Hoke	4 (11%)	2 (18%)
Robeson	31 (84%)	9 (82%)
Sampson	2 (5%)	0 (0%)
Scotland	5 (14%)	0 (0%)
Other	2 (5%)†	0 (0%)
Populations respondent works/volunteers with*		
Any vulnerable population	31 (84%)	11(100%)
Low-income residents	27 (73%)	10 (91%)
Mobile home residents	20 (54%)	7 (64%)
Racial or ethnic minorities	23 (62%)	8 (73%)
Older adults	20 (54%)	6 (55%)
Youth	22 (60%)	7 (64%)
Farmworkers	14 (38%)	4 (36%)
Other outdoor workers	16 (43%)	2 (18%)
Other	4 (11%)‡	2 (18%)§

* Percentages do not total to 100% because survey participant could select more than one response.

† Other counties included Columbus (n = 1) and Duplin and Pender (n = 1).

‡ Other populations included county administration (n = 1), environmental health (n = 1), not specified (n = 2).

§ Other populations included All Citizens of Hoke County (n = 1), jail population (n =1).

Table 2. Characteristics of alert recipients (n=37)

Characteristics of alert recipients	Alert receipt N (%)
Heat health message included in alert	
Yes	35 (95%)
No	0 (0%)
Don't know	2 (5%)
Methods of receiving alerts*	
Word of mouth	11 (30%)
Social media	21 (57%)
Text Message or WhatsApp	7 (19%)
Phone app	6 (16%)
News station	9 (24%)
Radio	9 (24%)
Email	22 (59%)
Newspaper	0 (0%)
Website	2 (5%)
Other†	1(3%)
Populations respondent shares alerts with*	
Low-income residents	18 (49%)
Mobile home residents	15 (41%)
Racial or ethnic minorities	17 (46%)
Older adults	16 (43%)
Youth	16 (43%)
Farmworkers	14 (38%)
Other outdoors workers	14 (38%)
Other‡	2 (5%)
Did not answer	11 (30%)
Alert awareness levels among populations respondent works with	
Not at all aware	3 (9%)
Slightly aware	10 (30%)
Moderately aware	12 (36%)
Extremely aware	8 (24%)
Did not respond	4 (11%)
Heat health message awareness levels among populations respondent works with	
Not at all aware	5 (14%)
Slightly aware	7 (19%)
Moderately aware	14 (38%)
Extremely aware	8 (22%)
Did not respond	3 (8%)
Alert usefulness	
Very useful	32 (86%)
Somewhat useful	5 (14%)
Not useful	0 (0%)

* Percentages do not total to 100% because survey participant could select more than one response.

† Other ways of receiving alerts included community presentation (n = 1).

‡ Other populations included people working in an environment without air conditioning (n = 1).

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