Overview: Heat is the number one weather-related killer in the US, according to National Weather Service statistics (www.nws.noaa.gov/om/hazstats.shtml). In an effort to determine how extreme heat impacts North Carolinians and to identify vulnerable populations in North Carolina, the NC Department of Health and Human Services has been tracking statewide heat illness data since 2007, using data collected from emergency department visits. These data are sorted by gender and age, and information regarding aggravating factors is collected. Emergency department visits are compared to observed daily maximum heat index values.

How it was done: Inpatient hospitalization data was obtained from the North Carolina Inpatient Hospital Discharge Database (NC State Center for Health Statistics). Discharge data includes demographic and diagnostic information. Emergency department visit data was obtained through the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT), created by the North Carolina Division of Public Health, in collaboration with the Carolina Center for Health Informatics in the UNC Department of Emergency Medicine, and collects state-mandated data from all 122 emergency departments in North Carolina. Heat-related illness is captured through a near real-time keyword search for “heat”, “hot”, “hyperthermia”, “heat cramp”, “heat exhaustion”, “heat stroke”, and “sun stroke” in chief complaint or triage notes of emergency department records or a diagnosis code for heat-related illness. These figures present an estimate of the number of emergency department visits for heat-related illness.

2016 saw 4,847 heat-related emergency department visits, a 43% increase from 2015 (3,376). In 2016, the percentage of heat-related emergency room visits was much higher in rural parts of the NC Coastal Area, Coastal Plain, Sandhills, and far northern Piedmont. This may be a reflection of the agricultural and other outdoor workers living in these areas.

The number seeking treatment for potential heat-related illnesses rose roughly in tandem with heat index peaks, especially for heat indices over 90°F. Visits peaked during the hottest days in June and July, then dropped in August despite continued high heat indices. This may be a reflection of acclimation, but results are not conclusive.

Heat-related emergency department visits in NC have shown an increasing trend in recent years.

Number of emergency department visits for heat-related illness was highest among 25-64 year olds. Around 25% of those 65 or older resulted in hospitalization.

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Goals and Future Work
- Continued analysis of heat illness-related emergency department visits, including statistical analysis and correlation with heat index and wet bulb globe temperature
- Use of data to expand outreach and shape heat safety campaigns, particularly for vulnerable populations
- Application of data to predict emergency room visits (experimental tool under development at http://convergence.unc.edu)
- Ensure communication of information to local officials to prompt appropriate community action