HOUSTON HEALTH
DEPARTMENT

DEHYDRATION

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Dehydration is defined as the excessive loss of water from the body. Dehydration can result from disease, heat exposure, excessive exercise, and inadequate water intake. Severe dehydration can lead to changes in the body's chemistry, kidney failure, and even become life threatening.[1] According to a 2016 report from National Center for Health Statistics, "Total water intake was lower among men and women aged 60 and over than among younger adults. Non-Hispanic black men and women had the lowest average total water intake, similar to results from previous studies."[2] In other words, differences in water intake can lead to differences in risk for dehydration. In much of the world, food insecurity and water insecurity go hand in hand.[3]

Exposure to the heat, especially without adequate fluid intake, can lead to dehydration. The National Weather Service (NWS) issues a heat advisory when people can be affected by the heat if precautions are not taken. A heat advisory is issued whenever the heat index is greater than or equal to 108 F, or the temperature is greater than or equal to 103 F[4] Historically, the majority of such alerts (for Harris County) from the NWS have been in the months of July and August.

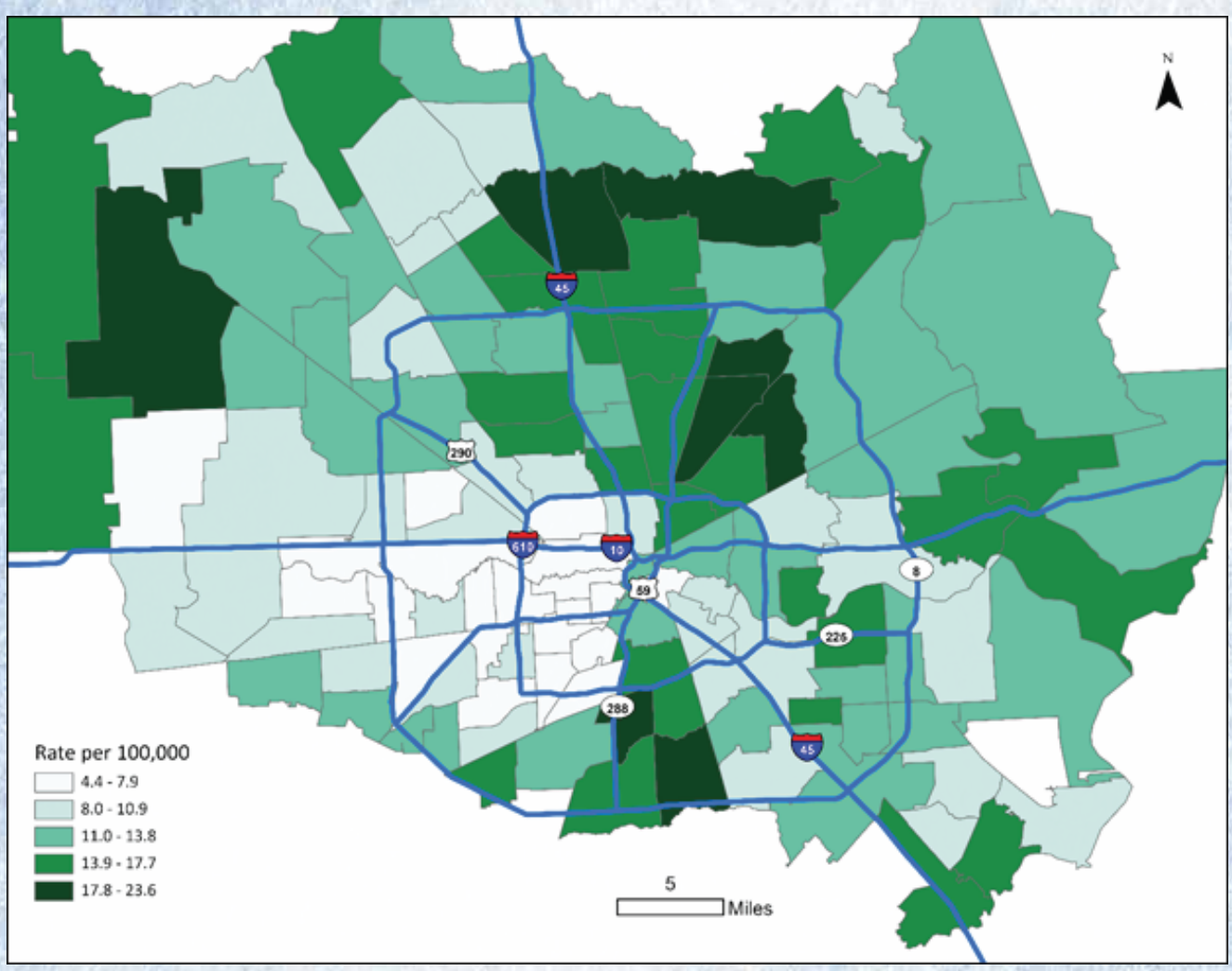
	2017	2018	2019	2020	2021	2022	Total
May						1	1
June		1	4	1	2	1	9
July	1	4	2	5		3	15
August	6	4	5	4	2		21
September				1			1
Total	7	9	11	11	4	5	47

Table 1.
Total number of heat advisories by month for Harris County (as of July 27, 2022)[5]

The majority of homes in Houston have air conditioning.[6] However, some people choose not to run their air conditioning because of the cost of electricity. Air conditioning repair can be too expensive for some homes. When leaving the home, people with access to a vehicle can be sheltered from the heat to an extent, while those who rely on public transportation may beat increased risk for heat exposure and potential dehydration. In some neighborhoods in Houston, as many as one in five households have no access to a vehicle,[7] meaning that residents may have to walk or take public transportation for daily activities. Those who are homeless, of course, have no access to air conditioning. Walking in the hottest times of the day raises the risk for dehydration.

Lack of adequate fluid intake in a timely manner can lead to hospitalization. The following map shows the ZIP Codes with the highest rates of hospitalization due to dehydration. Data is for the years 2017 to 2019, and is for those age 18 and over.[8]

Map: Rate of hospitalizations due to dehydration



The dark green areas indicate higher rates of admission for dehydration. The five ZIP codes with the highest rates are 77016 (23.6), 77050 (23.0), 77051 (21.9), 77073 (21.7), and 77078 (18.9). Areas with the lowest rates are along the west loop – generally a higher income area. The highest rates are found in areas such as northeast Houston and Sunnyside – generally lower income areas. This data is only for those who are admitted to the hospital. It does not include emergency room visits by patients who are sent home, and it also leaves out outpatient visits for dehydration. Socioeconomic status may be a factor in who is at risk for hospitalization due to dehydration.

Solutions

The simplest solutions are to drink more fluids (especially water) and to stay indoors when possible during the hottest times of the day. One response is the system of cooling centers operated by the City of Houston. The centers open whenever the "feels like" temperature is elevated, and are often supplied with bottled water. Reliant Energy has a program to assist those who cannot afford to pay their electric bills during the heat of the summer. Reliant has also worked in conjunction with community partners (City of Houston, Area Agency on Aging, and St. Martin's Episcopal Church) to provide portable air conditioners to those who could not otherwise afford one.[9] People from the Coalition for the Homeless have outreach efforts to ensure that homeless people are aware of and have access to resources in extreme heat.[10]

References

[1] Age-Adjusted Hospitalization Rate due to Dehydration. https://www.houstonstateofhealth.com/

[2] Rosinger and Herrick. (2016). Daily water intake among U.S. men and women, 2009-2012. National Center for Health Statistics Data Brief #242.

[3] American Society for Nutrition. (2022). Food insecurity and water insecurity go hand in hand, study finds. https://medicalxpress.com/news/2022-06-food-insecurity.html

[4] https://uh.edu/emergency-management/be-prepared/extreme-heat/; https://www.weather.gov/safety/heat-ww; Excessive heat warning/advisory criteria: National Weather Service, Southern Region.

[5] https://mesonet.agron.iastate.edu/vtec/search.php#byugc. Data listed is for inland Harris County.

[6] https://usafacts.org/articles/91-of-households-nationwide-have-air-conditioning-44-of-those-in-seattle-do/

[7] Households without a vehicle. American Community Survey, 2016-2020. https://www.houstonstateofhealth.com/indicators/index/view?indicatorId=281&localeTypeId=3

[8] Age-adjusted hospitalization rate due to dehydration. Texas Department of State Health Services, 2017-2019. https://www.houstonstateofhealth.com/indicators/index/view?indicatorId=146&localeTypeId=3

[9] https://www.reliant.com/en/about/community/beat-the-heat.jsp

[10] https://www.homelesshouston.org/preparing-for-extreme-heat-june-2022