Dengue Surveillance in North Carolina, 2023

Dengue is caused by one of the four closely related dengue viruses. Dengue can lead to severe illness; however, only one in four people infected will develop symptoms.

The dengue virus infects *Aedes* mosquitoes when they bite an infected human. Then, the mosquito can transmit the virus while biting other humans. Dengue does not spread from person to person.

It is possible for local dengue transmission to occur in the United States. However, the primary mosquito that transmits dengue, *Aedes aegypti*, does not live in North Carolina. A similar species, *Aedes albopictus,* resides in parts of NC and has been documented as able to transmit dengue, although less likely.

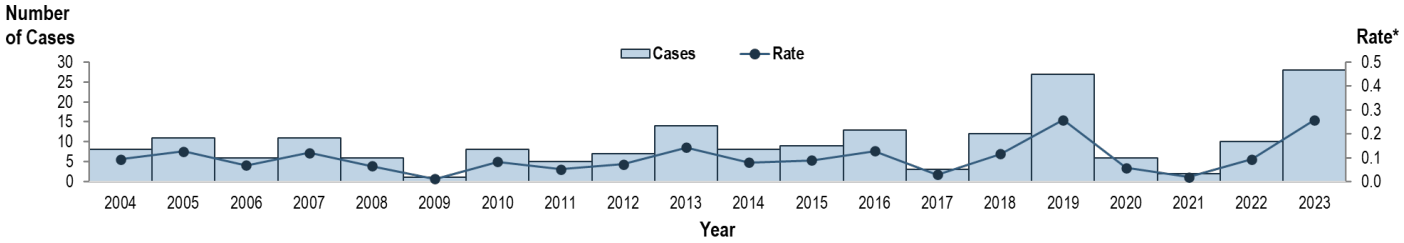
To avoid being infected with dengue, take precautions to avoid mosquito bites, especially when traveling internationally to countries with known dengue transmission.

Additional information regarding dengue vectors, transmission, symptomology, and prevention can be found on the CDC's website.

Dengue Epidemiology

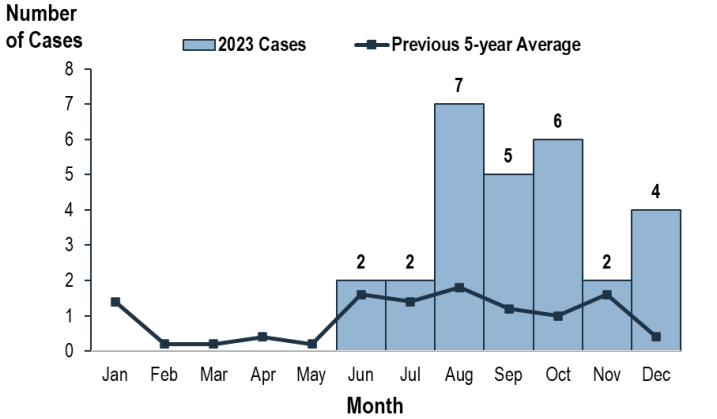
Although dengue cases in North Carolina (NC) have remained relatively low over the last 20-years, 2023 had the highest ever annual count and rate.

Dengue has historically had low annual counts and rates, but 2023 had the highest annual count and rate to date.
NC 2004-2023 dengue case count and rate by year

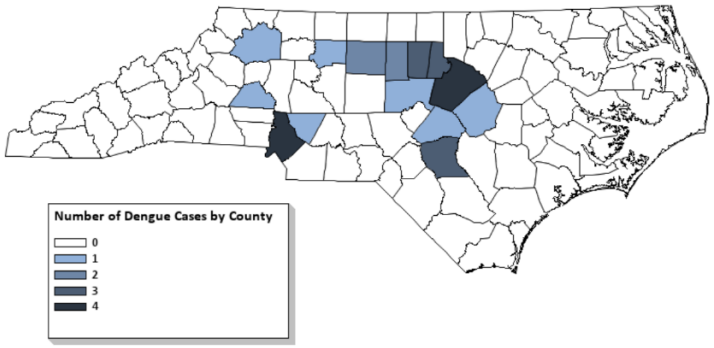


In 2023, there were 28 cases of dengue in NC residents, a rate of 0.26 per 100,000 North Carolinians. This is the highest NC has ever seen, 2.4 times higher than the 5-year average rate (2018 to 2022; 0.27 versus 0.11, respectively). Cases were more likely to occur in the summer and fall months (86% of cases between June and November).

Dengue seasonality is primarily late summer and early fall.
NC 2023 dengue cases by month with previous 5-year average** comparison



Dengue cases occurred in 14 out of 100 counties.
NC 2023 dengue cases by county

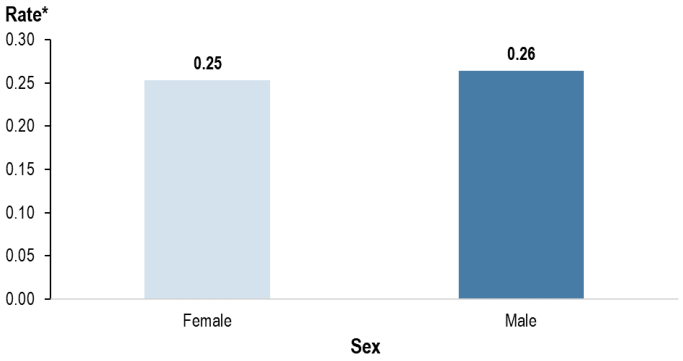


Most 2023 dengue cases reside in the central part of NC. Mecklenburg and Wake County have the highest case counts, which is to be expected given the increased population residing in those counties.

Dengue Case Demographics

Dengue rates were similar among male and female North Carolinians.

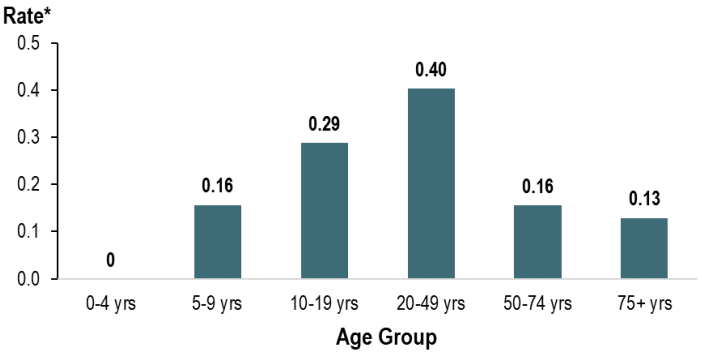
NC 2023 dengue rates by sex



In 2023, 14 (50%) of dengue cases in NC were female and 14 (50%) of cases were male. Rates were almost identical (0.26 per 100,000 in females and 0.25 per 100,000 in males).

Dengue rate was highest among persons aged 20 to 49 years old.

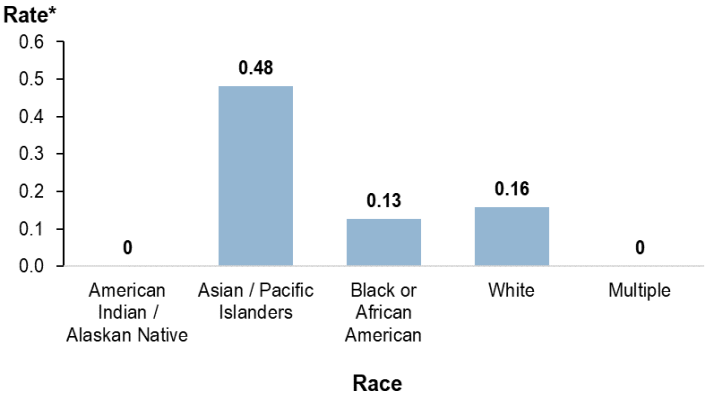
NC 2023 dengue rates by age group



Adults 20 to 49 years old had the highest rate of dengue infection in 2023 (0.40 per 100,000 NC residents). Adults 20 years of age and older had a rate 1.5 times higher than persons less than 20 years of age (0.28 versus 0.19 per 100,000, respectively). Most cases (82%, N=23) were in adults 20 years and older.

Dengue rate was highest among Asian or Pacific Islanders.

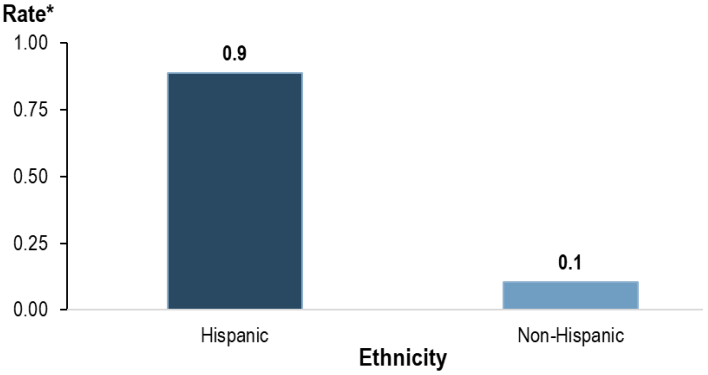
NC 2023 dengue rates by race



Forty-three percent (43%, N=12) of 2023 dengue cases were white. However, Asian or Pacific Islanders had an infection rate 3.0 times higher than White North Carolina residents (0.48 versus 0.16, respectively).

Dengue rate was highest among Hispanic North Carolinians.

NC 2023 dengue rates by ethnicity

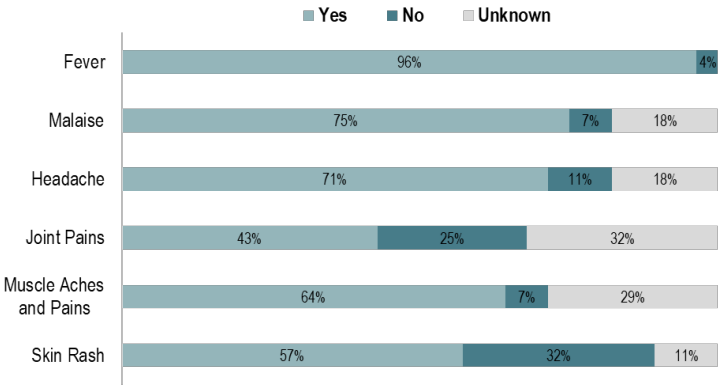


In 2023, Hispanic North Carolinians were infected with dengue 8.5 times more than non-Hispanic North Carolinians (0.88 versus 0.10 per 100,000 NC residents).

The most common symptom experienced was fever (96%), followed by malaise (75%), headache (71%), and muscle aches and pains (64%).

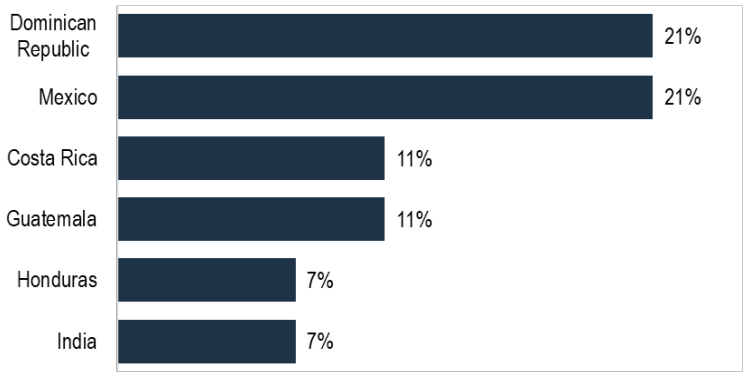
Almost all dengue cases were febrile during their illness.

NC 2023 dengue cases clinical manifestation



All dengue cases reported international travel.

NC 2023 dengue cases top five countries of travel*



*Honduras and India tied for fifth. Some individuals reported travel to multiple countries.

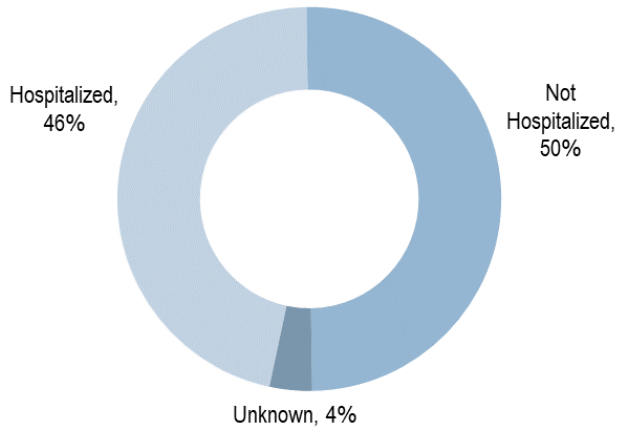
In 2023, all (100%) cases of dengue in North Carolinians occurred in individuals who had reported travel to areas with known dengue transmission, outside of the continental United States. Travel to the Dominican Republic (21% of cases) and Mexico (21% of cases) were the most frequent.

From 2018 to 2023, NC dengue cases most frequently reported travel to India (22%), Mexico (22%), Dominican Republic (20%) and Costa Rica (15%).

Thirteen (46%) cases were hospitalized for their illness in 2023, and all (100%) cases recovered. The hospitalization rate in 2023 was almost two times higher than the 5-year average (0.12 versus 0.06 per 100,000 NC residents).

Dengue cases needed hospitalized about half the time.

NC 2023 dengue cases by clinical severity



NC Dengue Statistics	Count	Percent (%)	Rate*	Previous 5-year Average** Count	Previous 5-year Average** Percent (%)	Previous 5-year Average** Rate*
Total Cases	28	100	0.26	11	100	0.11
Sex						
Male	14	50	0.26	5	47	0.09
Female	14	50	0.25	7	53	0.12
Race						
White	12	43	0.16	4	33	0.06
Black / African American	3	11	0.13	1	4	0.03
Asian / Pacific Islander	2	7	0.48	3	24	0.73
American Indian / Alaskan Native	0	0	0.0	0	0	0.0
Multiple	0	0	0.0	0	0	0.0
Other	7	25	--	1	10	--
Unknown	4	14	--	2	28	--
Ethnicity						
Hispanic	11	39	0.89	3	24	0.28
Non-Hispanic	10	36	0.10	6	51	0.06
Unknown	7	25	--	2	25	--
Age Group						
0-4 years	0	0	0.0	0	0	0.0
5-9 years	1	4	0.16	<1	2	**
10-19 years	4	14	0.29	1	16	0.10
20-49 years	17	61	0.40	6	51	0.15
50-74 years	5	18	0.16	3	30	0.11
75+ years	1	4	0.13	0	0	0.0
Additional Details						
Travel – associated[1]	28	100	0.26	11^	100	0.11
Hospitalizations	13	46	0.12	21	38	0.06
Deaths	0	0	0.0	0	0	0.0

*Rate per 100,000 North Carolina residents; rates supported by counts <5 should be interpreted with caution

** Previous 5-year average refers to years 2018 to 2022. Counts and percents are rounded to the nearest whole number; average counts less than one corresponding rate suppressed

[1] Travel – associated cases are instances when NC residents travel to areas outside of NC, where dengue virus is known to occur, and become infected

[2] Average 5-year travel associated cases includes one lab-associated case and two cases with possible local transmission

Note: Cases are counted using earliest date of illness identification against the Council for State and Territorial (CSTE) dengue case definition. Data are entered and downloaded from the North Carolina Electronic Disease Surveillance System (NCEDSS). These data reflect reported cases and may be missing asymptomatic cases.