

# Vector-borne Surveillance Report

2023 Summary Report (updated January 31, 2024)

## Mosquito-borne Disease Activity

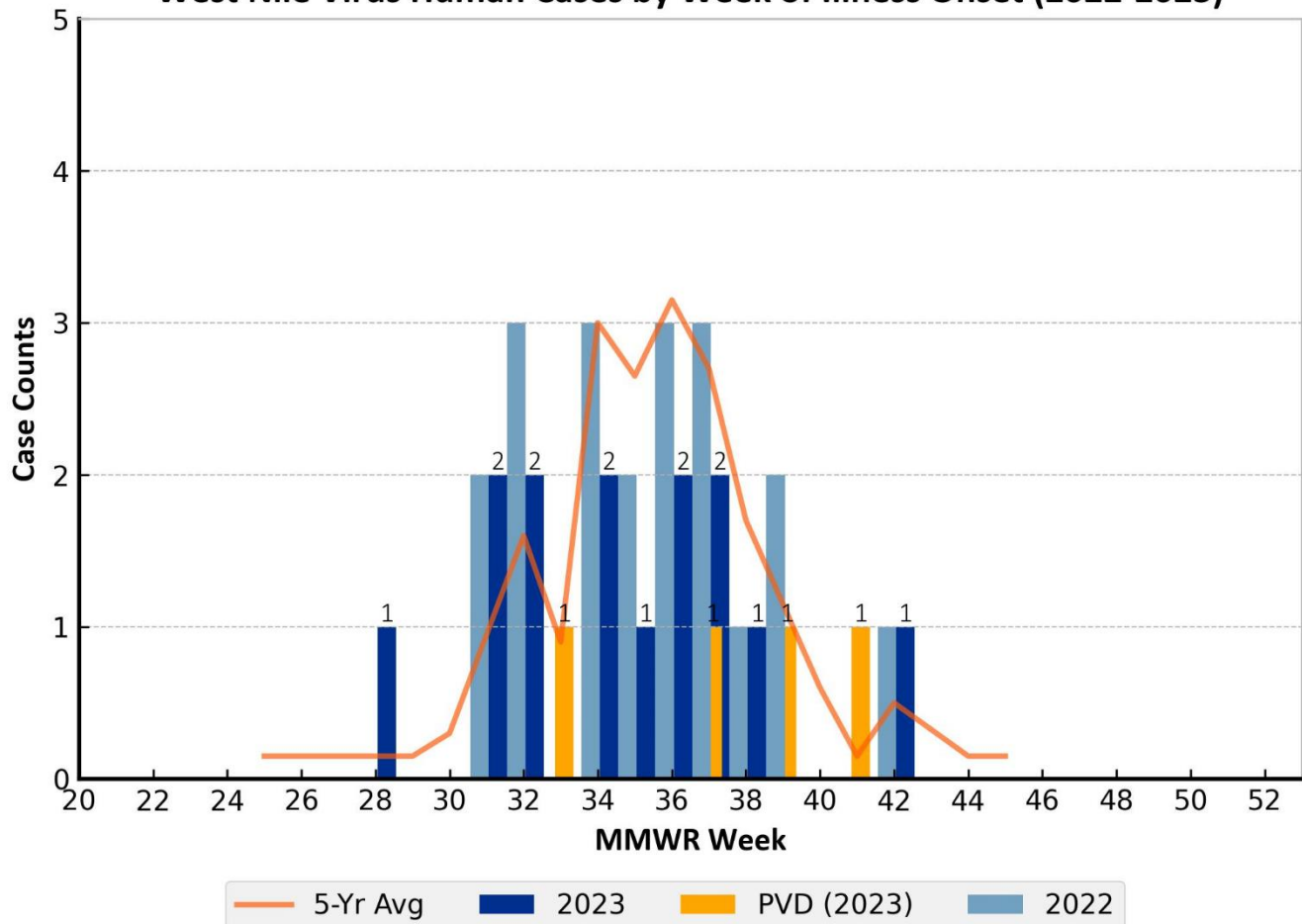
N.J.A.C.8:57 mandates public health reporting of communicable diseases. 2023 data reflect cases that have been approved by NJDOH and do not include cases under investigation. Due to the time needed for public health investigation, the number of tickborne diseases (with the exception of Lyme disease) may be significantly lower than actual counts and should be interpreted with caution. All 2023 numbers are preliminary and subject to change.

## 2023 West Nile Virus

### Human Cases

- There were 14 human West Nile Virus (WNV) cases reported in N.J. in 2023 with 1 fatality (Bergen County). Cases were reported in Bergen (4), Middlesex (3), Camden (2), Atlantic (1), Burlington (1), Monmouth (1), Morris (1), and Passaic (1) counties. There were 4 positive viremic donors (PVD) reported in Camden (2), Burlington (1), and Mercer (1) counties.
- 12 of the 14 (86%) WNV cases were classified as having neuroinvasive disease, meaning the patient presented with meningitis, encephalitis, acute flaccid paralysis, or other acute signs of central or peripheral neurologic dysfunction.
- 12 cases (86%) were hospitalized for an average length of stay of 14 days; 6 of the 12 hospitalized cases (50%) required additional medical care after hospitalization in a long-term care/rehabilitation facility.
- The age of onset ranged from 3 to 84 years, and 64% of cases were male.
- The date of illness onset ranged from CDC week 28 (week ending 7/15/23) to CDC week 42 (week ending 10/21/23).

**West Nile Virus Human Cases by Week of Illness Onset (2022-2023)**



## Mosquito Activity

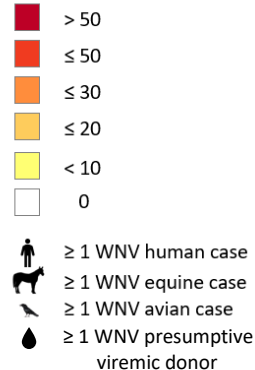
- In 2023, 10,400 pools from 21 counties were tested for WNV and 847 (8.1%) mosquito pools tested positive for WNV. The number of pools tested is 36% higher compared to 2022, largely due to an increase in testing from Cape May County.
- 820 out of 847 WNV positive mosquito pools (97%) were detected in *Culex pipiens* or other combinations of *Culex* species mosquitos.
- The highest number of positive pools was detected between weeks 31 to 35. Bergen, Hudson, and Middlesex counties reported the most positive pools in 2023.
- Compared with the previous 5 years, 2023 was the third most active season for WNV detection in mosquitos.

| County       | Cumulative Pos. Total |            | # Pools Tested* |
|--------------|-----------------------|------------|-----------------|
|              | 2023                  | 2022       | 2023            |
| Bergen       | 118                   | 97         | 411             |
| Hudson       | 81                    | 86         | 300             |
| Middlesex    | 67                    | 67         | 335             |
| Somerset     | 65                    | 29         | 334             |
| Hunterdon    | 64                    | 15         | 403             |
| Union        | 57                    | 44         | 229             |
| Mercer       | 54                    | 34         | 477             |
| Gloucester   | 47                    | 21         | 793             |
| Morris       | 41                    | 29         | 468             |
| Monmouth     | 33                    | 34         | 486             |
| Sussex       | 30                    | 8          | 775             |
| Warren       | 29                    | 8          | 458             |
| Atlantic     | 27                    | 6          | 452             |
| Burlington   | 27                    | 32         | 376             |
| Cape May     | 27                    | 2          | 1793            |
| Passaic      | 26                    | 49         | 261             |
| Camden       | 20                    | 24         | 347             |
| Ocean        | 20                    | 10         | 441             |
| Essex        | 7                     | 11         | 327             |
| Salem        | 6                     | 2          | 508             |
| Cumberland   | 1                     | 1          | 426             |
| <b>Total</b> | <b>847</b>            | <b>609</b> | <b>10400</b>    |

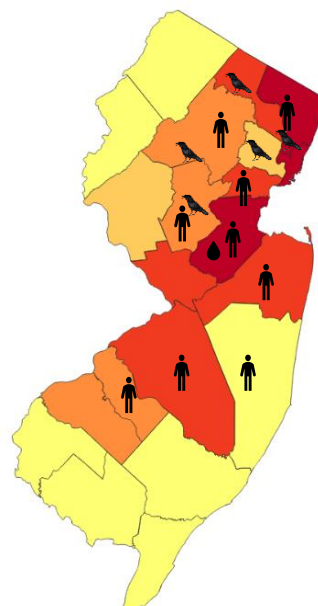
| Species                                  | Positive pools |
|--|----------------|
| <i>Culex pipiens/restuans/salinarius</i> | 743            |
| <i>Culex</i>                             | 41             |
| <i>Culex pipiens</i>                     | 26             |
| <i>Aedes albopictus</i>                  | 12             |
| <i>Culex restuans</i>                    | 6              |
| <i>Aedes japonicus</i>                   | 4              |
| <i>Culex erraticus</i>                   | 4              |
| <i>Culiseta melanura</i>                 | 4              |
| <i>Aedes triseriatus</i>                 | 3              |
| <i>Anopheles punctipennis</i>            | 2              |
| <i>Aedes taeniorhynchus</i>              | 1              |
| <i>Psorophora ferox</i>                  | 1              |
| <b>Total</b>                             | <b>847</b>     |

\*The number of pools tested for 9 counties includes early season collections that were specifically targeting JCV: Camden (9), Cape May (15), Cumberland (13), Essex (3), Gloucester (100), Mercer (7), Morris (18), Salem (8), Sussex (92), and Warren (27).

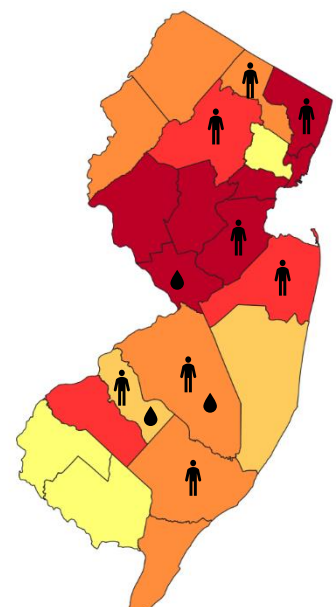
### WNV Positive Pools



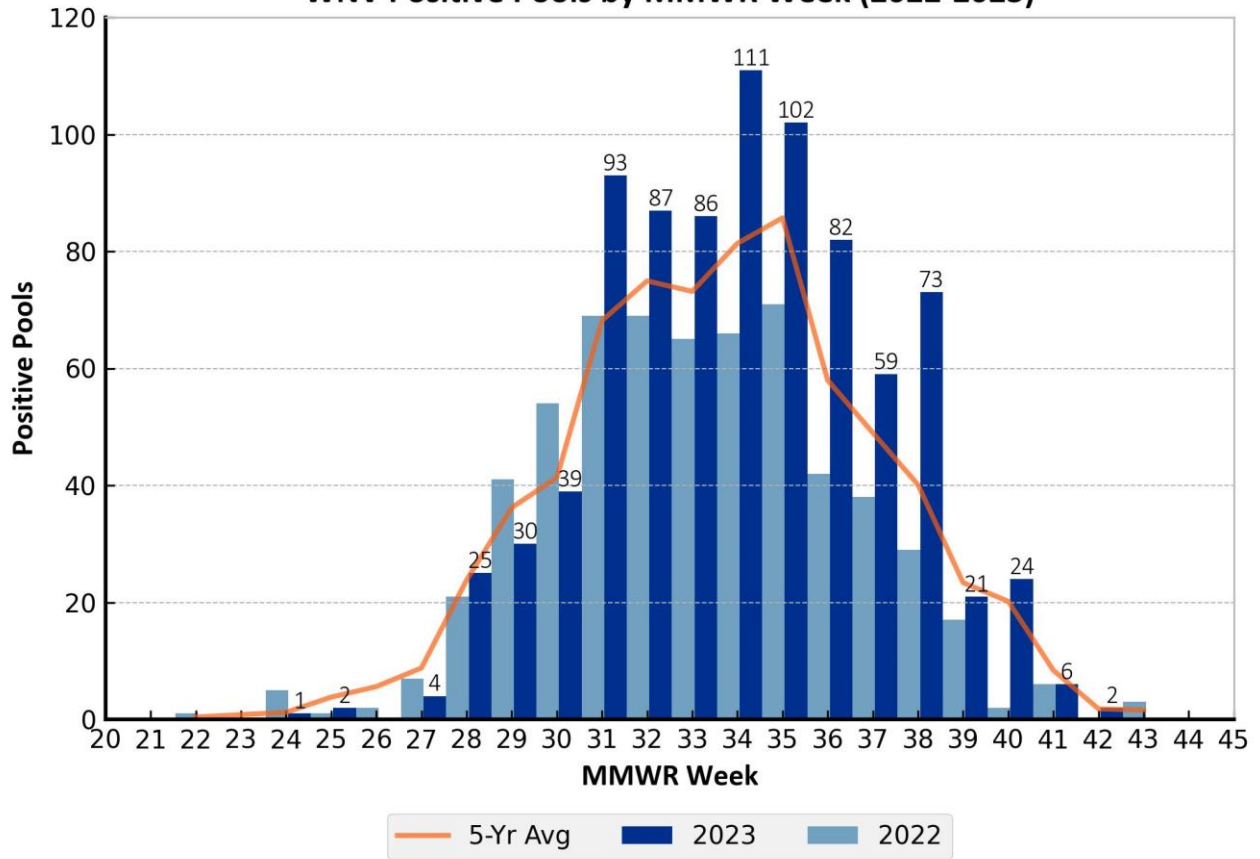
2022 WNV Activity



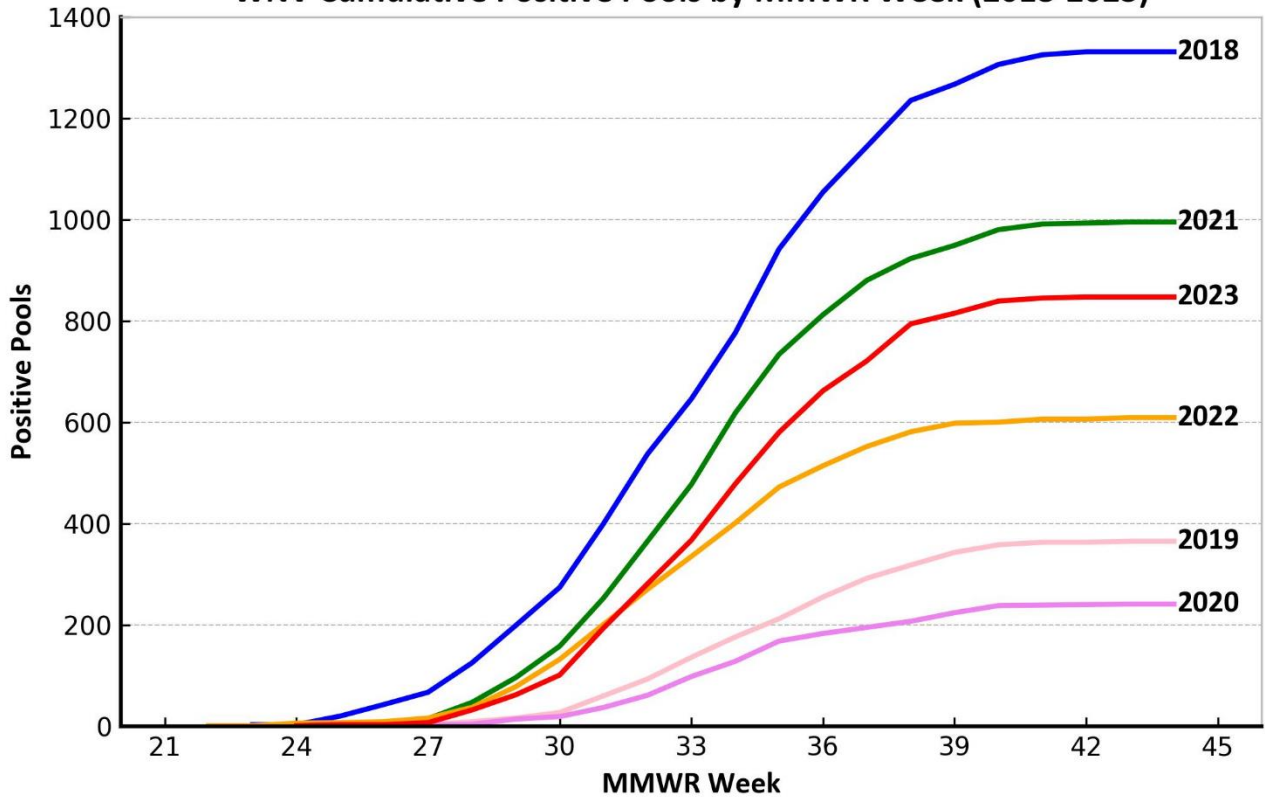
2023 WNV Activity



**WNV Positive Pools by MMWR Week (2022-2023)**



**WNV Cumulative Positive Pools by MMWR Week (2018-2023)**

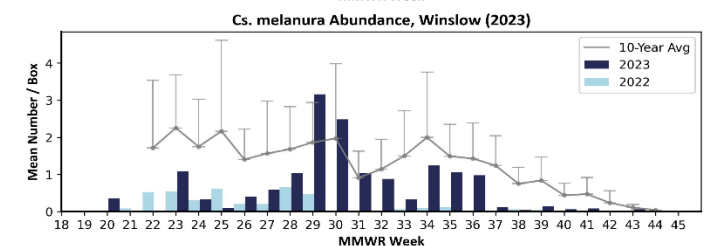
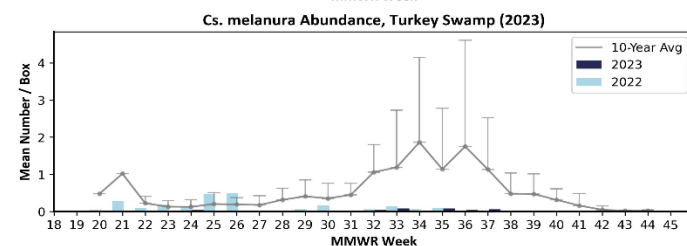
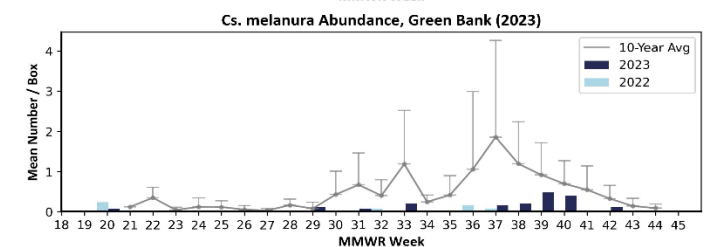
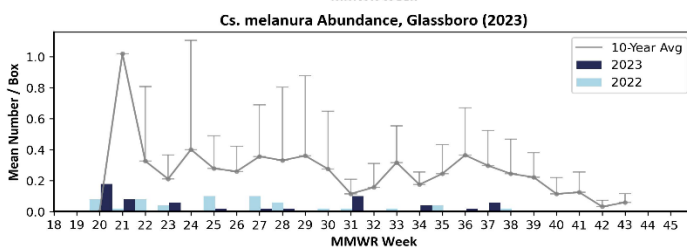
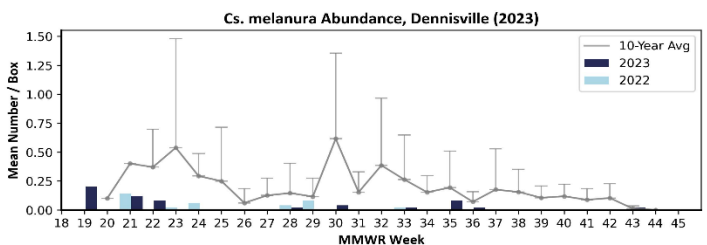
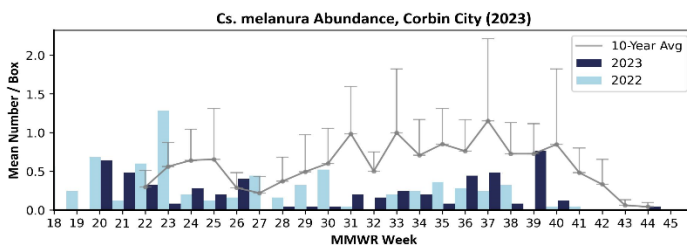
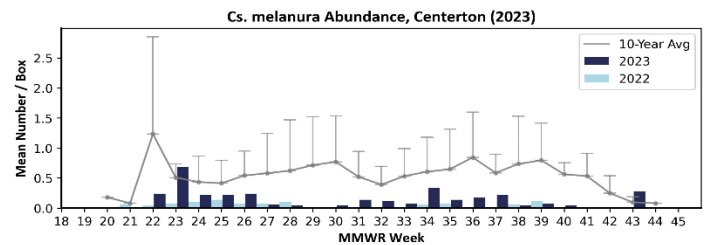
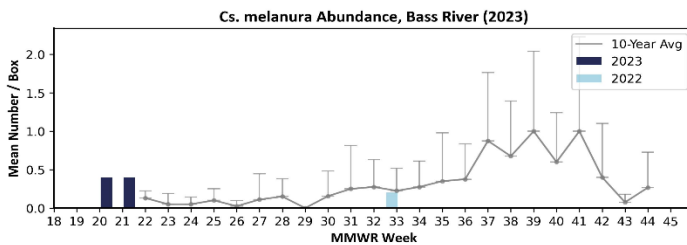


## Eastern Equine Encephalitis

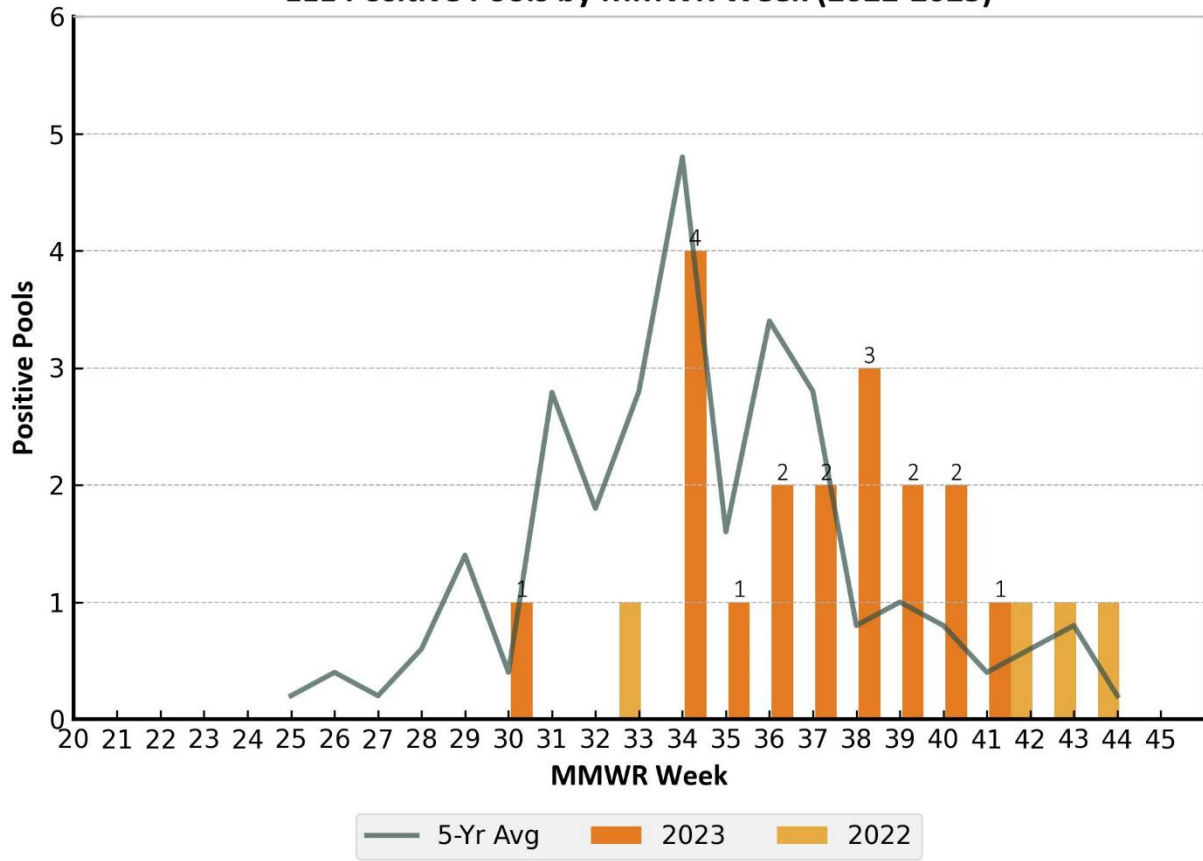
- There were no human cases of Eastern Equine Encephalitis (EEE) in New Jersey in 2023. EEE human cases were last reported in 2019 (4 cases).
- Three equine cases of EEE were reported in 2023; one in Gloucester County in week 37, which had been vaccinated previously for EEE but was not up to date; one in Salem County in week 41, which had an unverified vaccination history; and one in Ocean County in week 50 with no history of vaccination. All three horses were euthanized.
- In 2023, 10,139 mosquito pools were tested for EEE and 18 pools (<1%) were positive.
- EEE activity is detected each year in southern New Jersey; northern detections have historically been rare but have been increasing in frequency. EEE-positive pools were found in *Culiseta melanura* and *Culex* mosquitoes.
- Based on state resting box collection data, the highest abundances of *Culiseta melanura* were found at the Corbin City site in Atlantic County and the Winslow site in Camden County.

| Species                                  | Positive pools |
|--|----------------|
| <i>Culiseta melanura</i>                 | 13             |
| <i>Culex pipiens/restuans/salinarius</i> | 4              |
| <i>Culex pipiens</i>                     | 1              |
| <b>Total</b>                             | <b>18</b>      |

| County       | Cumulative Pos. Total |          | # Pools Tested |
|--------------|-----------------------|----------|----------------|
|              | 2023                  | 2022     |                |
| Atlantic     | 3                     | 1        | 452            |
| Burlington   | 3                     | 2        | 368            |
| Cumberland   | 3                     |          | 426            |
| Camden       | 2                     |          | 339            |
| Cape May     | 2                     |          | 1722           |
| Sussex       | 2                     |          | 683            |
| Hunterdon    | 1                     |          | 400            |
| Morris       | 1                     | 1        | 468            |
| Somerset     | 1                     |          | 334            |
| Bergen       |                       |          | 411            |
| Essex        |                       |          | 327            |
| Gloucester   |                       |          | 786            |
| Hudson       |                       |          | 300            |
| Mercer       |                       |          | 464            |
| Middlesex    |                       |          | 335            |
| Monmouth     |                       |          | 486            |
| Ocean        |                       |          | 435            |
| Passaic      |                       |          | 261            |
| Salem        |                       |          | 484            |
| Union        |                       |          | 229            |
| Warren       |                       |          | 429            |
| <b>Total</b> | <b>18</b>             | <b>4</b> | <b>10139</b>   |

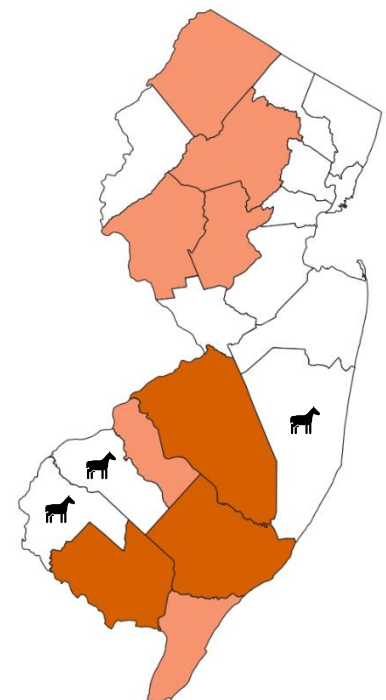
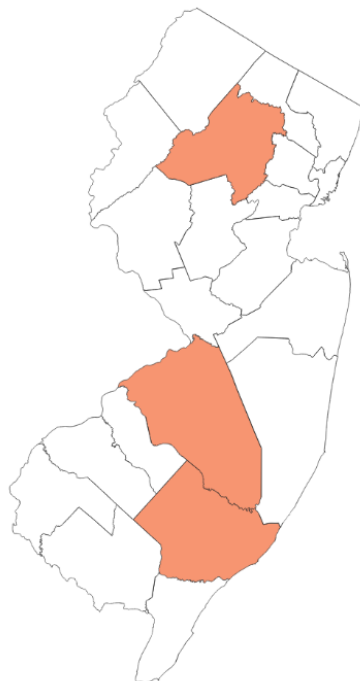
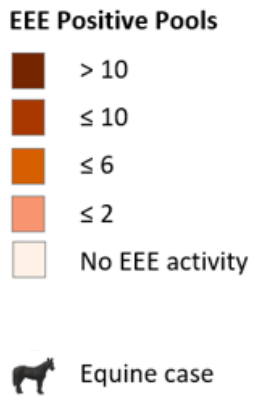


### EEE Positive Pools by MMWR Week (2022-2023)



#### 2022 EEE Activity

#### 2023 EEE Activity



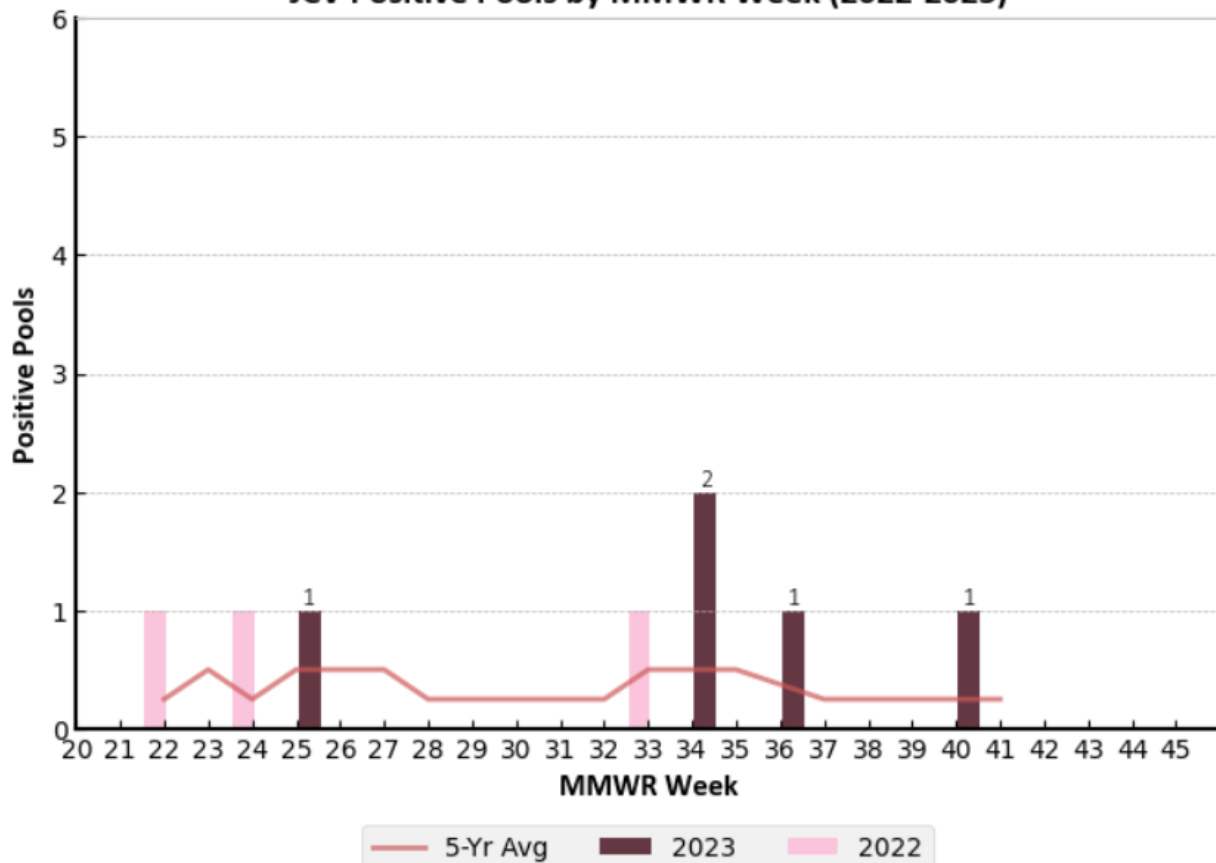
## Jamestown Canyon Virus

- There was one human case of Jamestown Canyon Virus (JCV) reported in 2023 in Sussex County. The case presented with neuroinvasive disease, with an illness onset in CDC week 42.
- 9,007 mosquito pools from 21 counties were tested for JCV in 2023 and 5 pools were positive in Cumberland, Gloucester, Salem, and Sussex counties. The first positive JCV pool was identified in Cumberland County in week 25.
- JCV was detected in *Anopheles* and *Coquilletidia* species mosquitoes and were detected between CDC weeks 25-40.
- JCV can be detected in early-season mosquitoes. Nine counties submitted early season mosquito pools for JCV testing, with collection dates starting the 1<sup>st</sup> week of April. These are Camden (9), Cape May (15), Cumberland (13), Essex (3), Gloucester (100), Mercer (7), Morris (18), Salem (8), Sussex (92), and Warren (27). None of the early-season pools was positive for JCV.

| Species                               | Positive pools |
|---------------------------------------|----------------|
| <i>Anopheles punctipennis</i>         | 3              |
| <i>Anopheles quadrimaculatus s.l.</i> | 1              |
| <i>Coquilletidia perturbans</i>       | 1              |
| <b>Total</b>                          | <b>5</b>       |

| County       | Cumulative Pos. Total |          | # Pools Tested |
|--------------|-----------------------|----------|----------------|
|              | 2023                  | 2022     |                |
| Sussex       | 2                     | 1        | 683            |
| Cumberland   | 1                     |          | 426            |
| Gloucester   | 1                     |          | 777            |
| Salem        | 1                     |          | 466            |
| Atlantic     |                       |          | 452            |
| Bergen       |                       | 2        | 411            |
| Burlington   |                       |          | 368            |
| Camden       |                       |          | 302            |
| Cape May     |                       |          | 654            |
| Essex        |                       |          | 327            |
| Hudson       |                       |          | 300            |
| Hunterdon    |                       |          | 400            |
| Mercer       |                       |          | 464            |
| Middlesex    |                       |          | 335            |
| Monmouth     |                       |          | 486            |
| Morris       |                       |          | 468            |
| Ocean        |                       |          | 435            |
| Passaic      |                       |          | 261            |
| Somerset     |                       |          | 334            |
| Union        |                       |          | 229            |
| Warren       |                       |          | 429            |
| <b>Total</b> | <b>5</b>              | <b>3</b> | <b>9007</b>    |

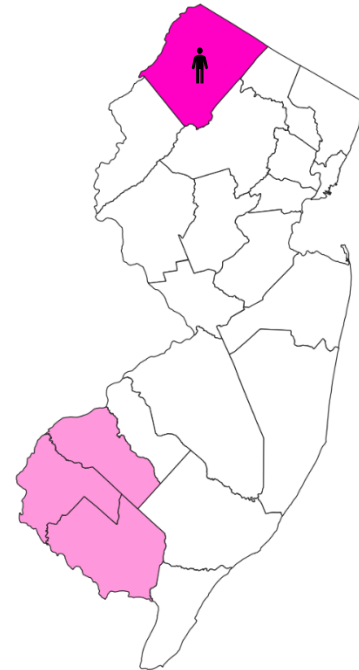
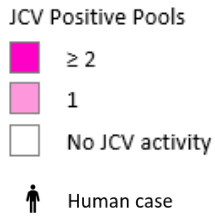
JCV Positive Pools by MMWR Week (2022-2023)





### 2022 JCV Activity

### 2023 JCV Activity



### Other Mosquito-borne Viruses

- There was 1 positive pool of La Crosse virus (LAC) in Sussex County in week 38. The positive pool was in *Ae. triseriatus*. The last positive LAC pool in New Jersey was identified in 2019 in Passaic County.

### Cumulative 2023 Mosquito Pool Testing (Other Viruses<sup>a</sup>)

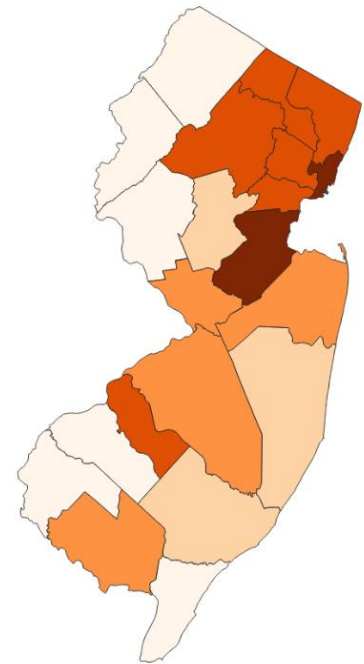
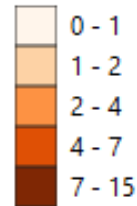
| County       | SLE          |          | LAC        |          | CHIKV      |          | DENV      |          | ZIKV       |          |
|--------------|--------------|----------|------------|----------|------------|----------|-----------|----------|------------|----------|
|              | Pools        | Pos      | Pools      | Pos      | Pools      | Pos      | Pools     | Pos      | Pools      | Pos      |
| Atlantic     | 452          |          | 4          |          | 5          |          | 5         |          | 5          |          |
| Bergen       | 411          |          | 13         |          | 5          |          | 5         |          | 5          |          |
| Burlington   | 368          |          | 8          |          | 2          |          | 2         |          | 2          |          |
| Camden       | 332          |          | 11         |          | 4          |          | 4         |          | 4          |          |
| Cape May     | 1622         |          | 33         |          | 238        |          |           |          | 238        |          |
| Cumberland   | 426          |          |            |          |            |          |           |          |            |          |
| Essex        | 327          |          |            |          | 7          |          | 7         |          | 7          |          |
| Gloucester   | 785          |          | 6          |          | 2          |          | 2         |          | 2          |          |
| Hudson       | 300          |          |            |          |            |          |           |          |            |          |
| Hunterdon    | 400          |          | 3          |          |            |          |           |          |            |          |
| Mercer       | 464          |          | 13         |          | 11         |          | 11        |          | 11         |          |
| Middlesex    | 335          |          |            |          | 2          |          | 2         |          | 2          |          |
| Monmouth     | 486          |          |            |          | 2          |          | 2         |          | 2          |          |
| Morris       | 468          |          |            |          | 10         |          | 10        |          | 10         |          |
| Ocean        | 435          |          | 6          |          | 2          |          | 2         |          | 2          |          |
| Passaic      | 261          |          | 12         |          | 3          |          | 3         |          | 3          |          |
| Salem        | 481          |          | 24         |          | 1          |          | 1         |          | 1          |          |
| Somerset     | 334          |          |            |          |            |          |           |          |            |          |
| Sussex       | 683          |          | 94         | 1        |            |          |           |          |            |          |
| Union        | 229          |          |            |          |            |          |           |          |            |          |
| Warren       | 429          |          | 30         |          | 3          |          | 3         |          | 3          |          |
| <b>Total</b> | <b>10028</b> | <b>-</b> | <b>257</b> | <b>1</b> | <b>297</b> | <b>-</b> | <b>59</b> | <b>-</b> | <b>297</b> | <b>-</b> |

<sup>a</sup> St. Louis virus (SLE), La Crosse encephalitis (LAC), Chikungunya virus (CHIKV), Dengue virus (DENV), Zika Virus (ZIKV)  
 Numbers in white columns represent number of pools tested to date in 2023  
 Number in blue shaded columns represent positive pools in 2023

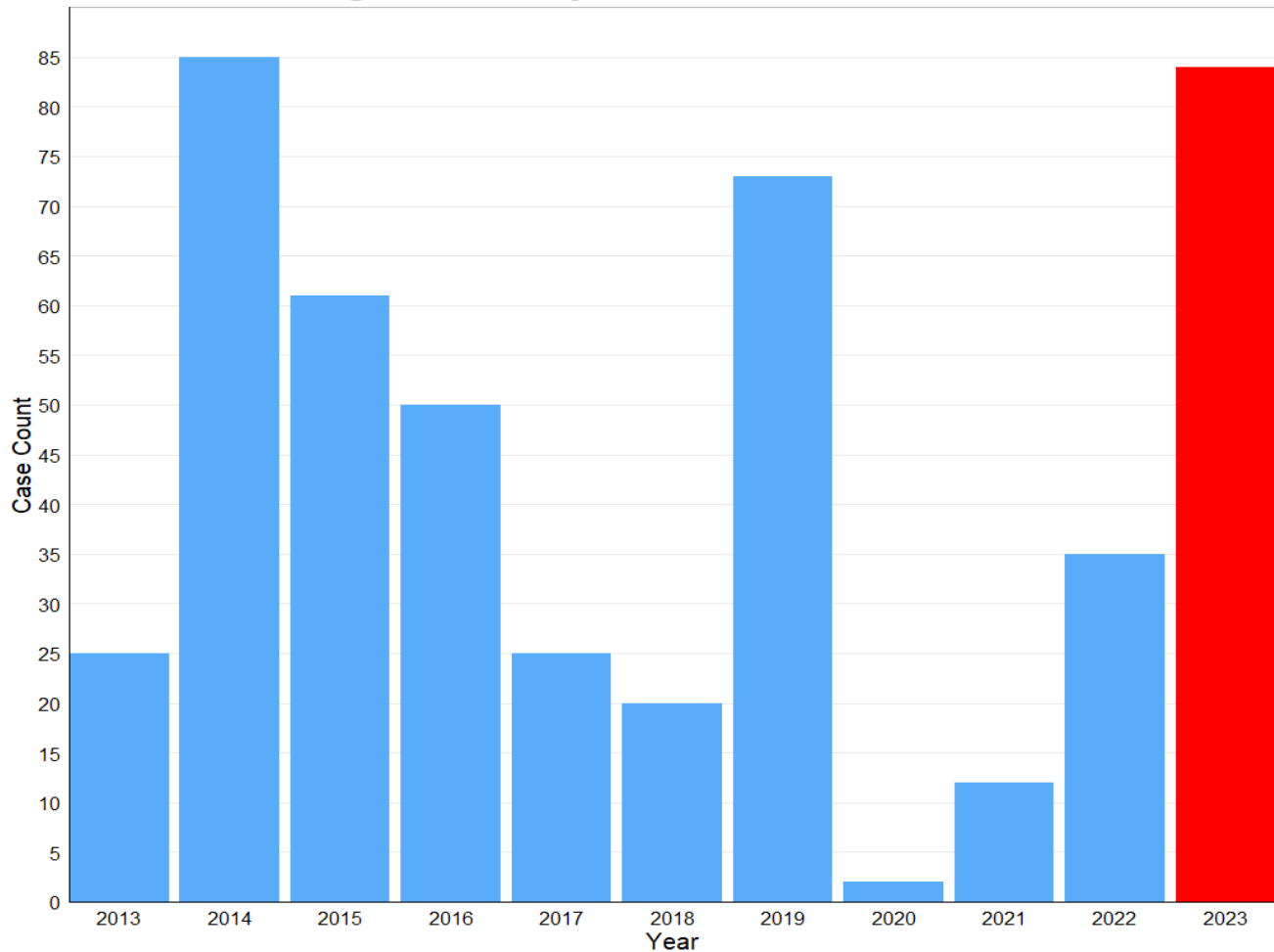
## Travel-Associated Dengue Virus Cases

- As of January 31, 2024, there were 84 human cases of dengue virus reported in New Jersey in 2023, the highest number since 2014. All were travel-associated. 11 reports are still under investigation.
- Cases were concentrated in the northeastern part of the state, with the largest number of cases reported in Hudson and Middlesex counties.
- Half (52%) of the cases were female. 36% of cases were between the ages of 30 and 49.
- Four cases met the public health surveillance classification of “severe dengue.”
  - Symptoms included impaired level of consciousness, severe bleeding, elevated liver enzymes, pancreatitis, and cholecystitis.
- 41 cases (49%) were hospitalized, with no deaths reported.
- The travel destinations most often associated with the 2023 dengue cases were India, the Dominican Republic, and Mexico.
- No cases reported travel to West-Africa, despite ongoing outbreaks in the region.

Dengue Cases



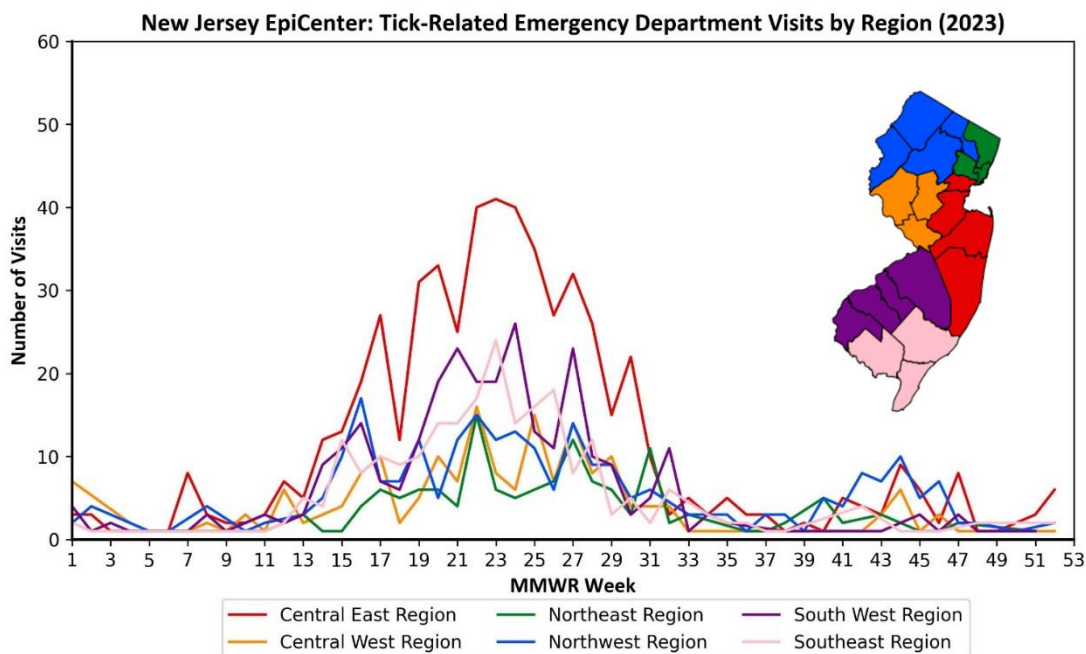
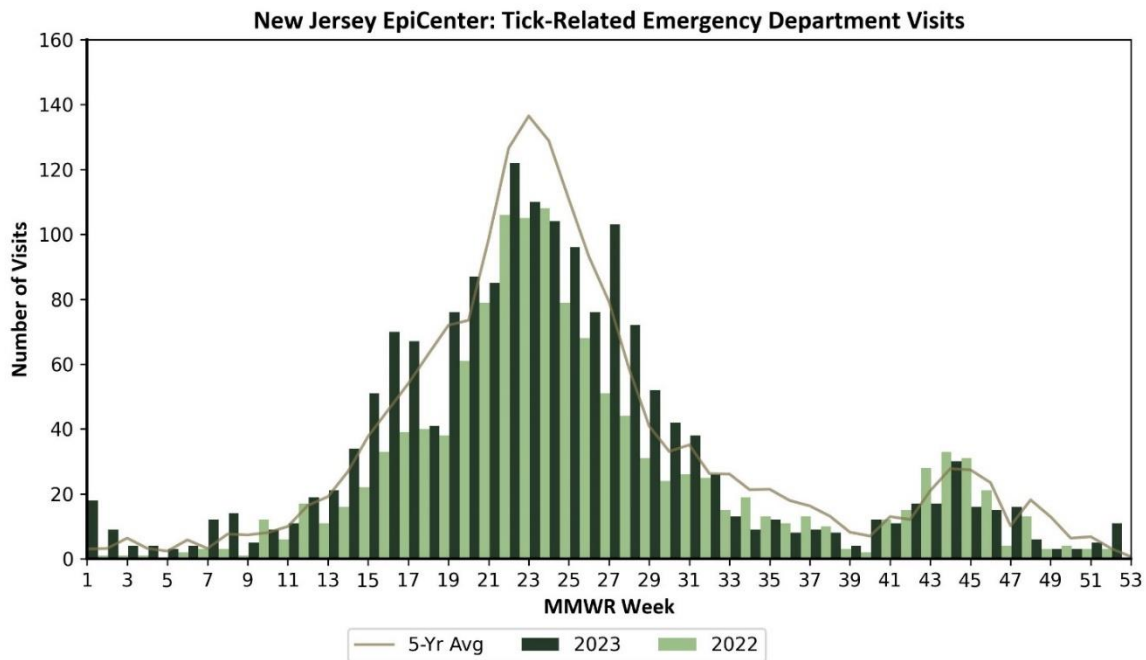
Dengue Cases by Year of Onset, 2013 - 2023





## Tick-related Emergency Department Visits

New Jersey’s syndromic surveillance system, known as EpiCenter, receives real time Emergency Department (ED) data from 78 acute care and satellite health (99 percent reporting) facilities statewide. The system collects “chief complaint” information and limited patient registration data from existing ED computer systems. The chart below represents N.J. residents seen at emergency departments statewide with a tick-bite complaint or signs/symptoms associated with a reported tick-bite. Tick-related ED visits occur throughout the year with peak number of visits in the summer months and a smaller peak in the fall weeks when adult *Ixodes scapularis* (blacklegged ticks) are active. Tick-related ED visits in 2023 followed a similar trend compared to 2022 and to the 5-year average, although with an increase in visits starting at CDC week 27, consistent with reported tickborne disease cases.



*Data reflects ED visits downloaded from EpiCenter as of January 2024*

### For more information

- NJDOH Communicable Disease Service: <https://www.nj.gov/health/cd/topics/vectorborne.shtml>
- New Jersey Vector-borne Disease Dashboard: [https://dashboards.doh.nj.gov/views/public\\_dashboard/Intro](https://dashboards.doh.nj.gov/views/public_dashboard/Intro)