West Nile virus and other nationally notifiable arboviruses Final data reported to ArboNET, United States, 2022

These are final 2022 data reported to ArboNET for nationally notifiable arboviruses, excluding dengue. Data for dengue are released separately by the CDC Dengue Branch.

About ArboNET

ArboNET is a national arboviral surveillance system managed by CDC and state health departments. In addition to human disease, ArboNET maintains data on arboviral infections among presumptive viremic blood donors (PVDs), veterinary disease cases, mosquitoes, dead birds, and sentinel animals. As with other national surveillance data, ArboNET data has several limitations that should be considered in analysis, interpretation, and reporting **[Box]**.

Box: Limitations of ArboNET data

The following should be considered in the analysis, interpretation, and reporting of ArboNET data:

1. ArboNET is a passive surveillance system. It is dependent on clinicians considering the diagnosis of an arboviral disease and obtaining the appropriate diagnostic test and reporting of laboratory-confirmed cases to public health authorities. Diagnosis and reporting are incomplete, and the incidence of arboviral diseases is underestimated.
2. Reported neuroinvasive disease cases are considered the most accurate indicator of arboviral activity in humans because of the substantial associated morbidity. In contrast, reported cases of non-neuroinvasive arboviral disease are more likely to be affected by disease awareness and healthcare-seeking behavior in different communities and by the availability and specificity of laboratory tests performed. Surveillance data for non-neuroinvasive disease should be interpreted with caution and generally should not be used to make comparisons between geographic areas or over time.

Additional resources

For additional arboviral disease information and data, please visit the following websites:

CDC's Division of Vector-Borne Diseases:
http://www.cdc.gov/ncezid/dvbd/

National Notifiable Diseases Surveillance System:
https://ndc.services.cdc.gov/case-definitions/arboviral-diseases-neuroinvasive-and-non-neuroinvasive-2015/

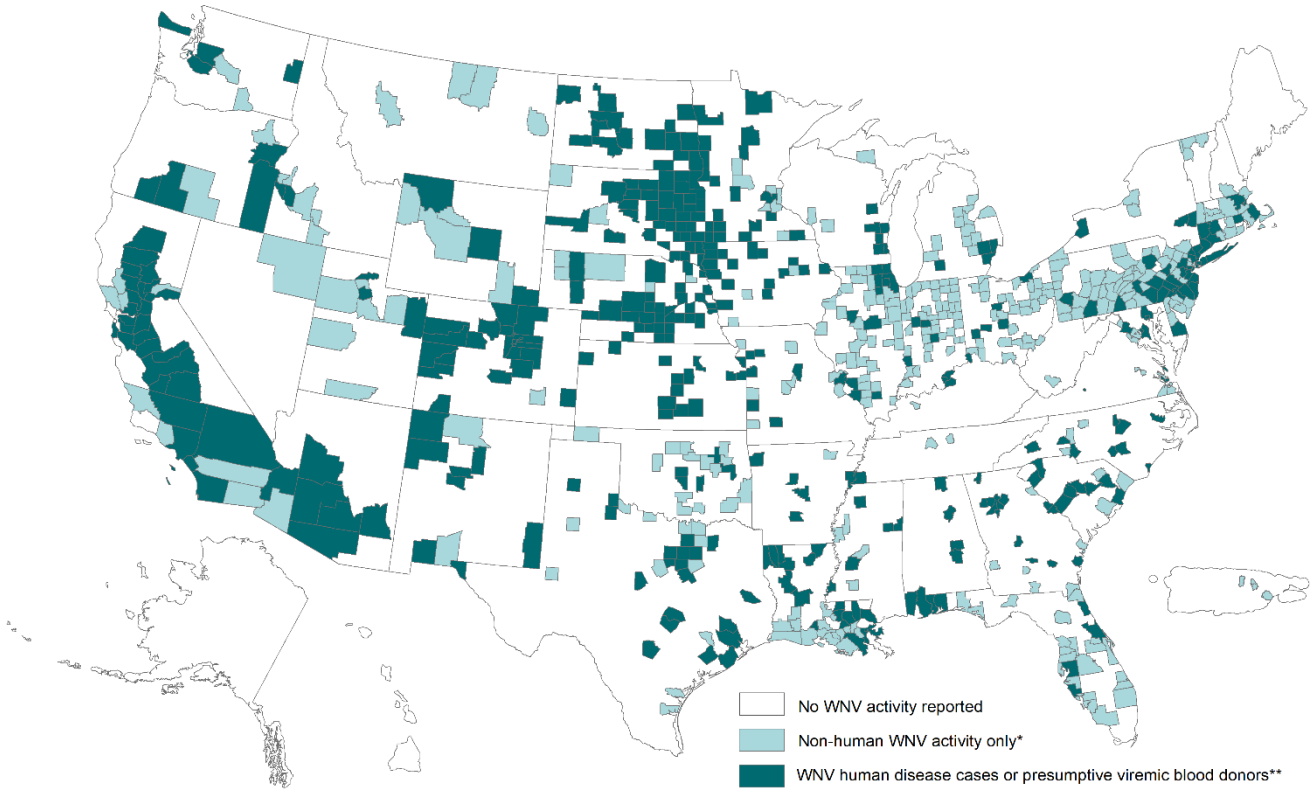
ABB (American Association of Blood Banks):
https://www.aabb.org/news-resources/resources/hemovigilance/west-nile-virus-biovigilance-network

Data dashboards for domestic viruses:
https://www.cdc.gov/westnile/statsmaps/data-and-maps.html
https://www.cdc.gov/easternequineencephalitis/statistics-maps/data-and-maps.html
https://www.cdc.gov/jamestown-canyon/statistics/data-and-maps.html
https://www.cdc.gov/lac/statistics/data-and-maps.html
https://www.cdc.gov/powassan/statistics-data/current-season-data.html
https://www.cdc.gov/sle/statistics/data-and-maps.html

West Nile virus (WNV) activity in 2022

A total of 752 counties from 47 states, Puerto Rico, and the District of Columbia reported WNV activity to ArboNET for 2022 **[Figure 1]**. Forty-two states and the District of Columbia reported WNV human infections (i.e., disease cases or viremic blood donors).

Figure 1. West Nile virus activity reported to ArboNET, by county — United States, 2022



*WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

**WNV human disease cases or presumptive viremic blood donors. Presumptive viremic blood donors have a positive screening test which has not necessarily been confirmed. These areas might also include reports of non-human WNV activity (see https://www.cdc.gov/westnile/statsmaps/data-and-maps.html for more details).

Reported WNV disease cases

In 2022, a total of 1,132 human WNV disease cases were reported from 403 counties in 42 states and the District of Columbia **[Table 1]**. Dates of illness onset for cases ranged from January–December **[Figure 2]**.

Of these, 827 (73%) were classified as neuroinvasive disease (such as meningitis or encephalitis) and 305 (27%) were classified as non-neuroinvasive disease **[Figure 3]**.

Presumptive viremic donors (PVDs)

A total of 188 WNV PVDs were reported from 28 states for 2022 **[Table 1]**. Of these, 35 (19%) developed clinical illness and are also included as disease cases.

Table 1. West Nile virus disease cases* and presumptive viremic blood donors reported to ArboNET, 2022

State	Human Disease Cases Reported to CDC				Presumptive Viremic Blood Donors
	Neuroinvasive	Non-neuroinvasive	Total	Deaths	
Alabama	6	0	6	0	2
Arizona	40	13	53	3	7
Arkansas	3	2	5	1	0
California	162	45	207	15	18
Colorado	131	75	206	19	16
Connecticut	7	0	7	0	0
Delaware	1	0	1	0	0
District of Columbia	1	0	1	0	0
Florida	7	0	7	0	0
Georgia	16	3	19	2	4
Idaho	1	2	3	0	0
Illinois	27	6	33	6	4
Indiana	6	0	6	0	2
Iowa	8	1	9	0	11
Kansas	6	8	14	0	7
Kentucky	3	1	4	1	0
Louisiana	41	8	49	7	6
Maryland	6	0	6	1	0
Massachusetts	7	1	8	1	2
Michigan	13	0	13	2	3
Minnesota	17	5	22	1	5
Mississippi	5	2	7	1	0
Missouri	11	2	13	2	0
Nebraska	37	27	64	4	24
New Jersey	13	7	20	4	2
New Mexico	8	3	11	2	3
New York	75	15	90	3	8
North Carolina	12	0	12	2	7
North Dakota	8	18	26	0	10
Ohio	5	2	7	1	2
Oklahoma	4	0	4	1	2
Oregon	3	2	5	0	0
Pennsylvania	26	8	34	2	6
Rhode Island	1	0	1	0	0
South Carolina	10	2	12	1	10
South Dakota	36	35	71	2	12
Tennessee	3	3	6	0	1
Texas	39	7	46	8	12
Utah	5	0	5	0	0
Virginia	6	0	6	1	0
Washington	3	1	4	0	1
Wisconsin	6	0	6	0	1
Wyoming	2	1	3	0	0
Totals	**827**	**305**	**1,132**	**93**	**188**

* Includes confirmed and probable cases

Figure 2. West Nile virus disease cases reported to ArboNET, by month of onset — United States, 2022

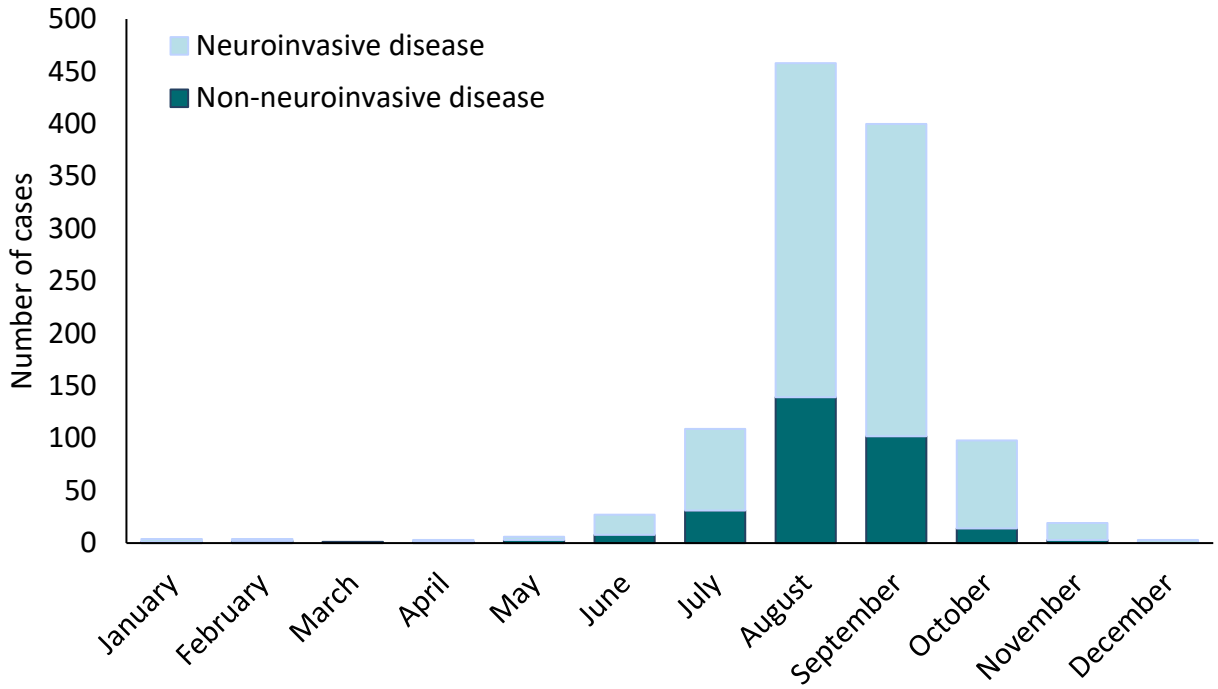
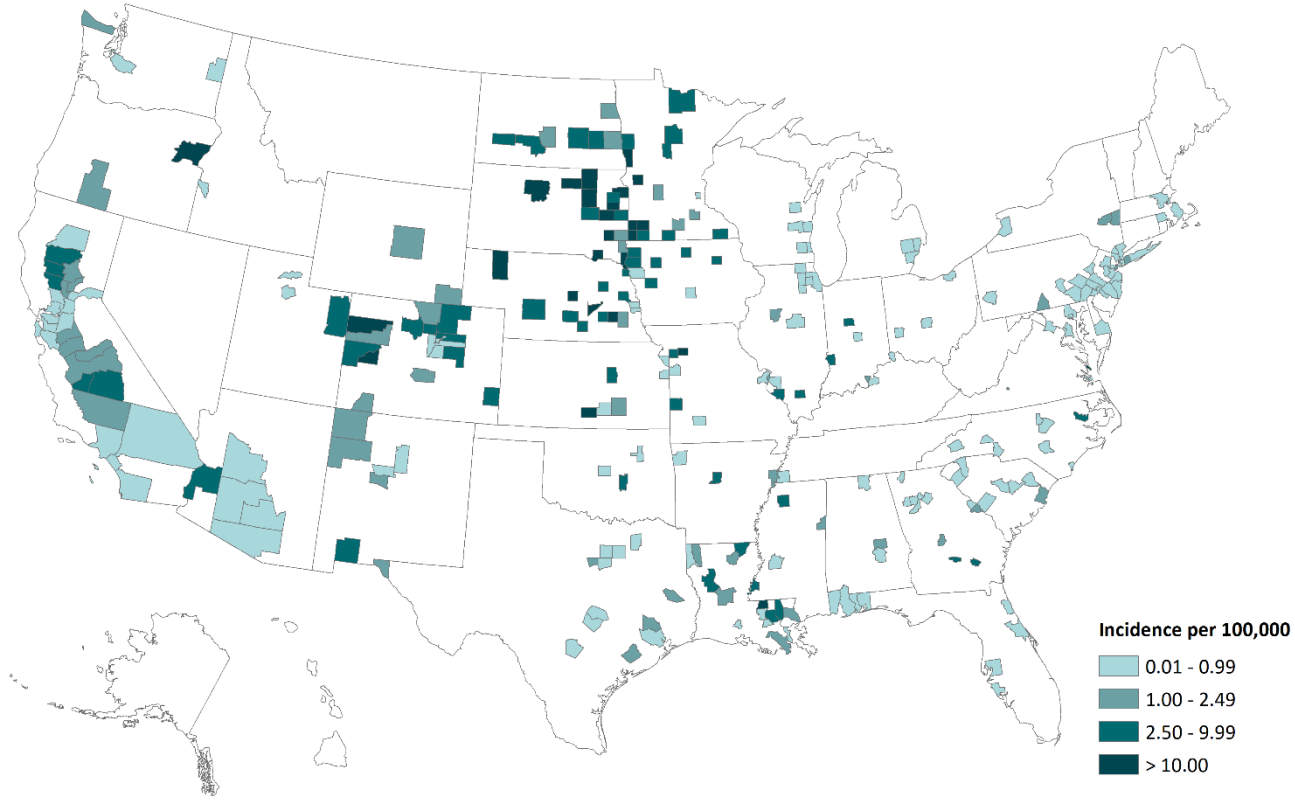


Figure 3. West Nile virus neuroinvasive disease incidence* reported to ArboNET, by county — United States, 2022

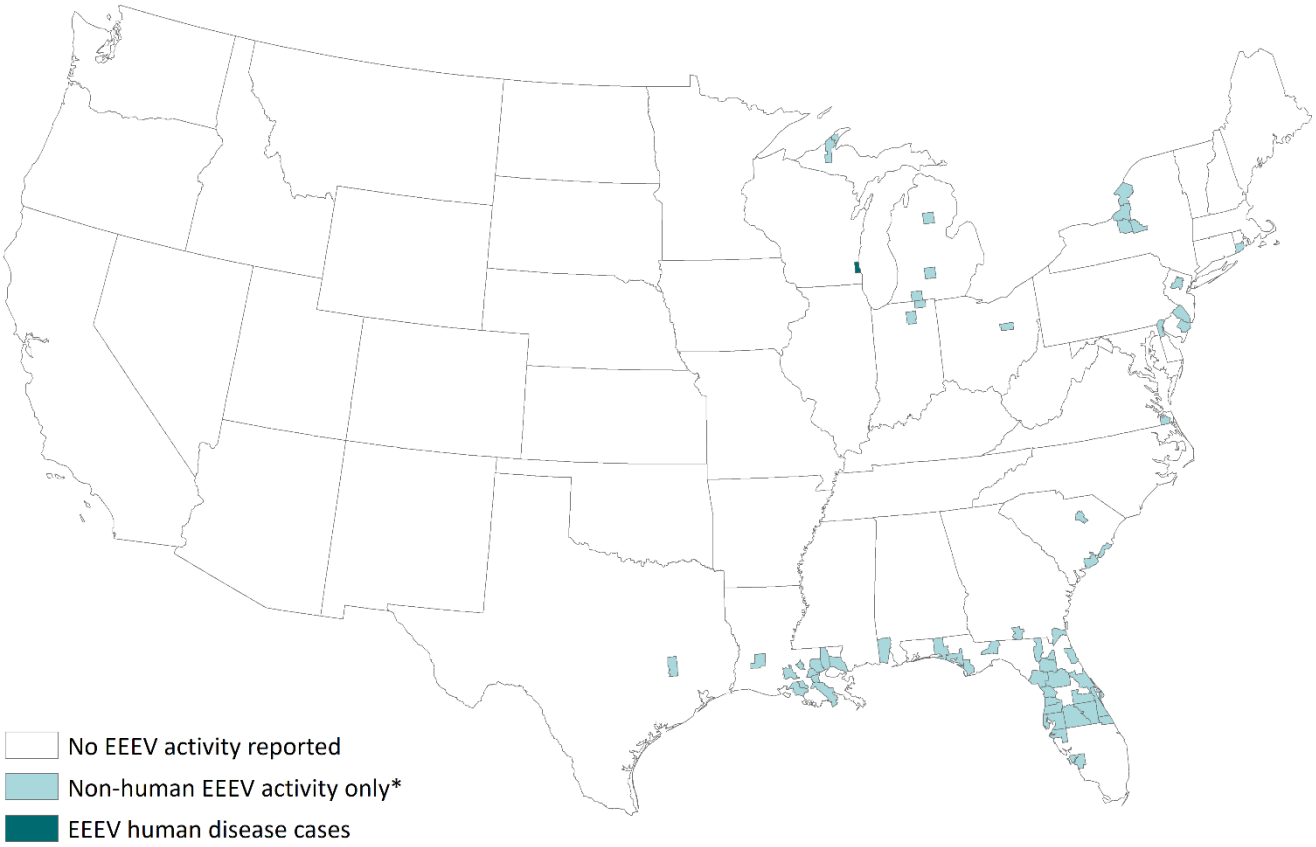


*Incidence per 100,000 population

Eastern equine encephalitis virus (EEEV) activity in 2022

One county in one state reported a human case of EEEV disease to ArboNET for 2022 **[Figure 4 and Table 2]**. Fifty-six additional counties in 14 states reported EEEV activity in non-human species only.

Figure 4. Eastern equine encephalitis virus activity reported to ArboNET, by county — United States, 2022



* EEEV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 2. Eastern equine encephalitis virus human disease cases* reported to ArboNET, United States, 2022

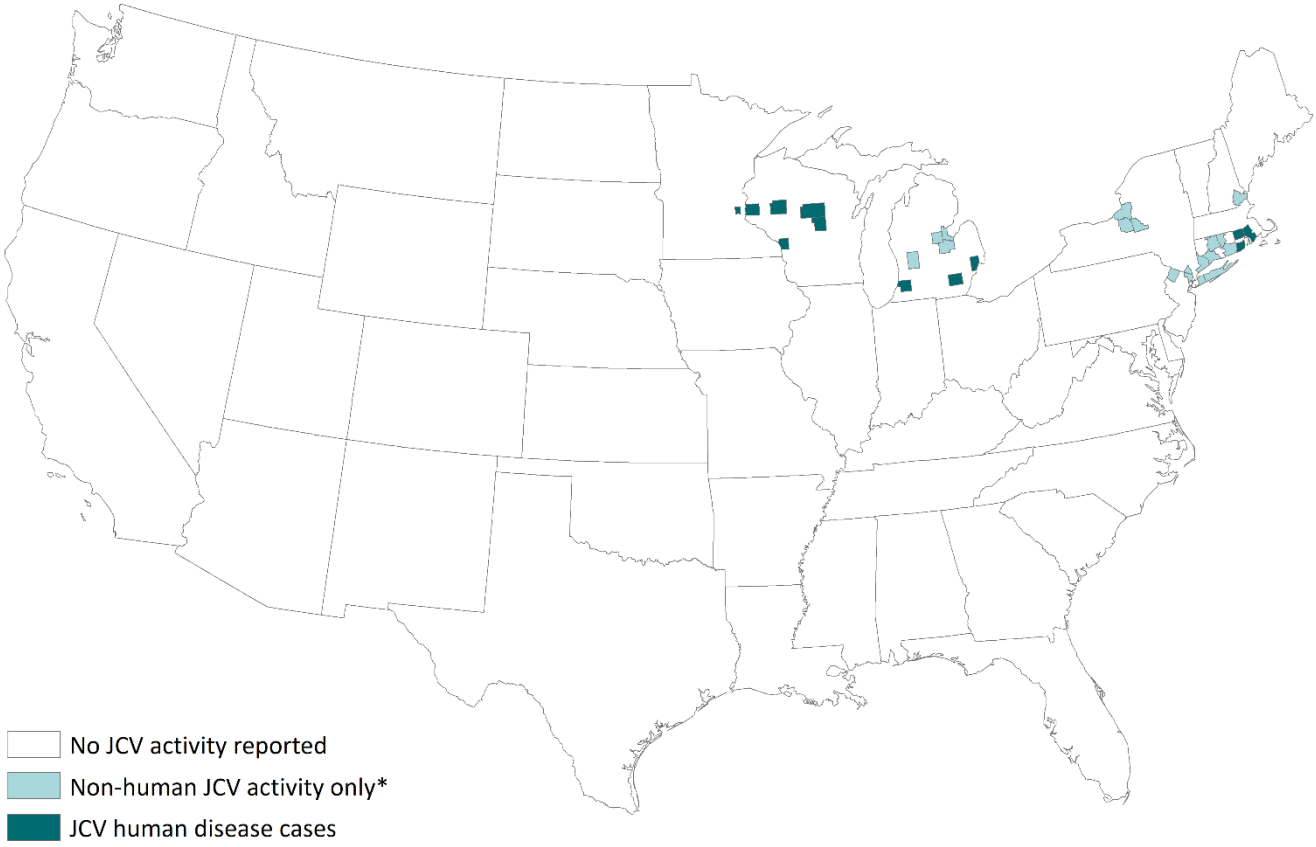
State	Neuroinvasive disease cases	Non-neuroinvasive disease cases	Total cases	Deaths
Wisconsin	1	0	1	0
Totals	**1**	**0**	**1**	**0**

*Includes confirmed and probable cases.

Jamestown Canyon virus (JCV) activity in 2022

A total of 12 counties in 5 states reported human cases of JCV disease to ArboNET for 2022 **[Figure 5 and Table 3]**. Eighteen additional counties in 5 states reported JCV activity in non-human species only.

Figure 5. Jamestown Canyon virus activity reported to ArboNET, by county — United States, 2022



* JCV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 3. Jamestown Canyon virus human disease cases* reported to ArboNET, United States, 2022

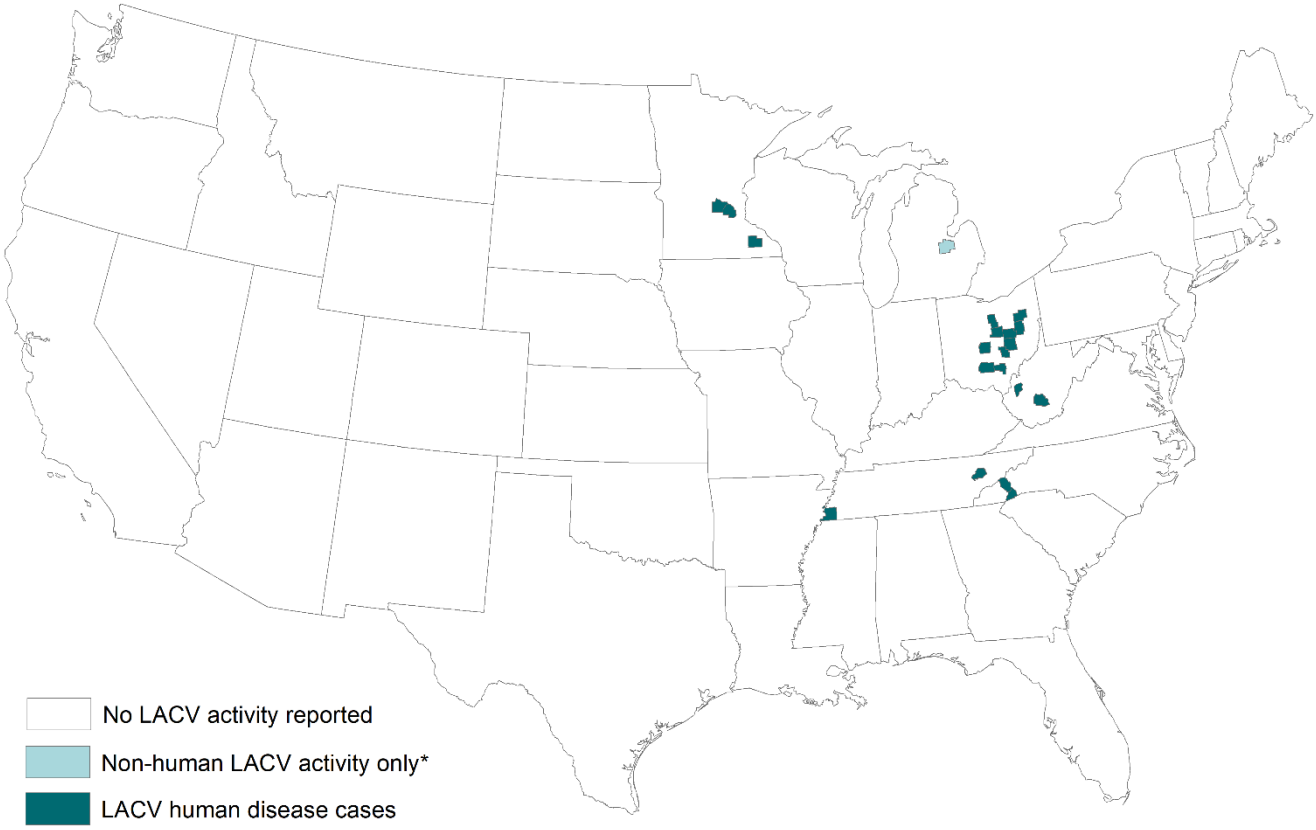
State	Neuroinvasive disease cases	Non-neuroinvasive disease cases	Total Cases	Deaths
Massachusetts	1	0	1	0
Michigan	3	0	3	0
Minnesota	1	0	1	0
Rhode Island	2	0	2	0
Wisconsin	4	1	5	0
Totals	**11**	**1**	**12**	**0**

*Includes confirmed and probable cases.

La Crosse encephalitis virus (LACV) activity in 2022

A total of 19 counties in 5 states reported human cases of LACV disease to ArboNET for 2022 **[Figure 6 and Table 4]**. One additional county reported LACV activity in non-human species.

Figure 6. La Crosse encephalitis virus activity reported to ArboNET, by county — United States, 202



*LACV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 4. La Crosse encephalitis virus human disease cases* reported to ArboNET, United States, 2022

State	Neuroinvasive disease cases	Non-neuroinvasive disease cases	Total cases	Deaths
Minnesota	3	0	3	0
North Carolina	2	0	2	0
Ohio	12	1	13	0
Tennessee	1	1	2	0
West Virginia	1	1	2	0
Totals	**19**	**3**	**22**	**0**

*Includes confirmed and probable cases.

Powassan virus (POWV) activity in 2022

A total of 38 counties in 8 states reported human cases of POWV disease to ArboNET for 2022 **[Figure 7 and Table 5].**

Figure 7. Powassan virus activity reported to ArboNET, by county — United States, 2022

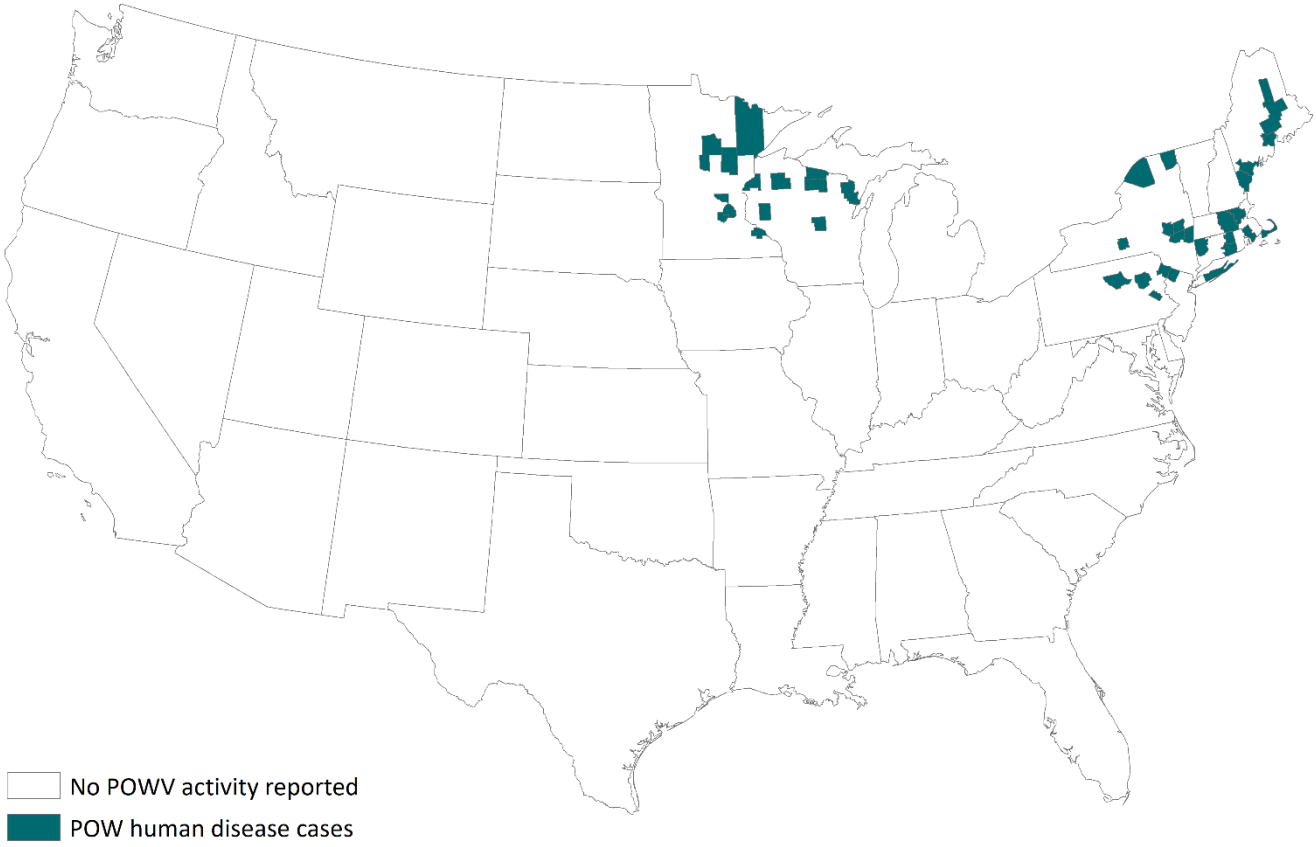


Table 5. Powassan virus human disease cases* reported to ArboNET, United States, 2022

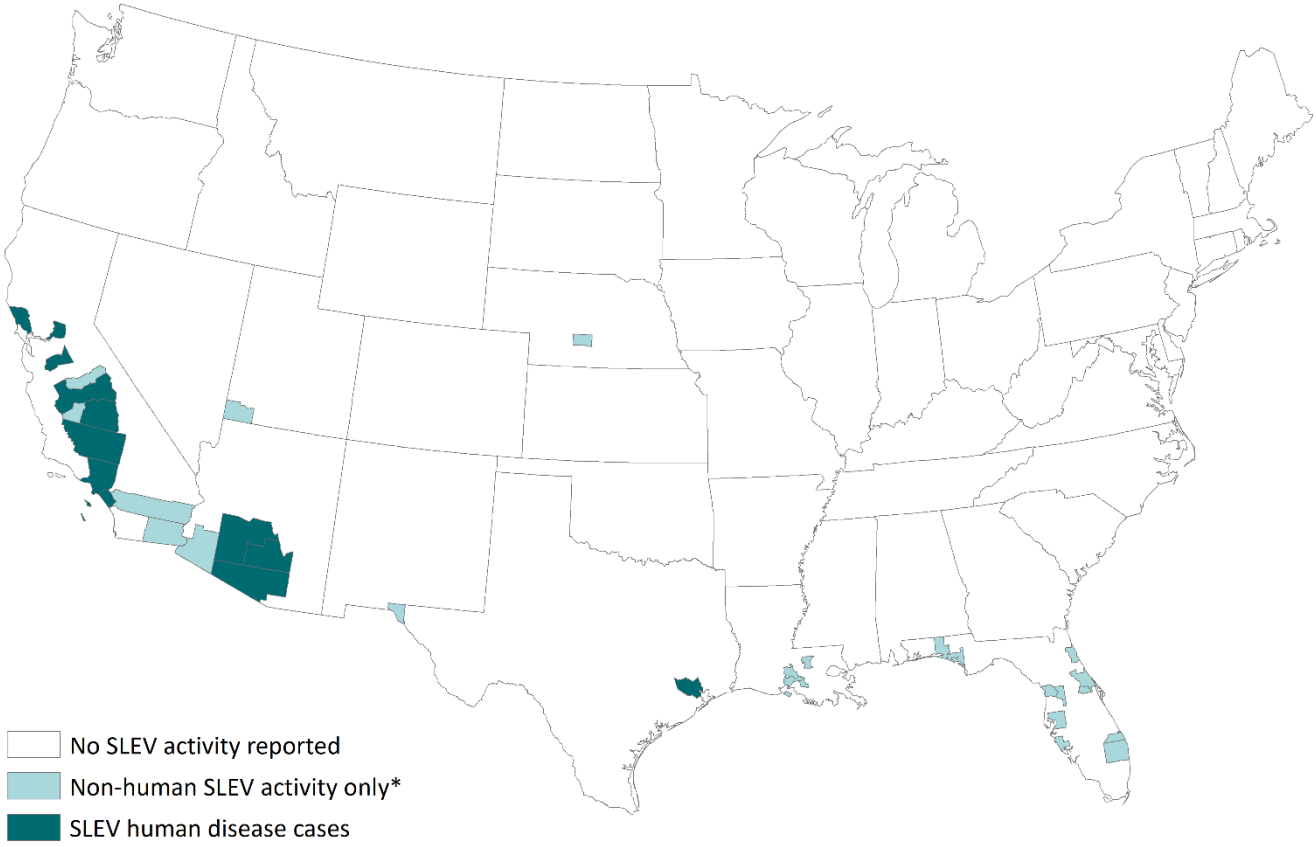
State	Neuroinvasive disease cases	Non-neuroinvasive disease cases	Total cases	Deaths
Connecticut	6	0	6	2
Maine	4	0	4	2
Massachusetts	4	1	5	2
Minnesota	7	1	8	1
New Jersey	2	0	2	0
New York	7	2	9	0
Pennsylvania	4	0	4	0
Wisconsin	8	0	8	0
Totals	**42**	**4**	**46**	**7**

*Includes confirmed and probable cases.

St. Louis encephalitis virus (SLEV) activity in 2022

A total of 12 counties in 3 states reported human cases of SLEV disease to ArboNET for 2022 **[Figure 8 and Table 6]**. Twenty-two additional counties in 7 states reported SLEV activity in non-human species only.

Figure 8. St. Louis encephalitis virus activity reported to ArboNET, by county — United States, 2022



* SLEV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 6. St. Louis encephalitis virus human disease cases* reported to ArboNET, United States, 2022

State	Neuroinvasive disease cases	Non-neuroinvasive disease cases	Total cases	Deaths
Arizona	12	4	16	2
California	14	2	16	1
Texas	1	0	1	0
Totals	**27**	**6**	**33**	**3**

*Includes confirmed and probable cases.

Chikungunya virus

A total of 81 chikungunya virus disease cases with illness onset in 2022 were reported to ArboNET from 25 states **[Figure 9 and Table 7]**. All reported cases occurred in travelers returning from areas outside of the continental United States or had laboratory exposure **[Table 8]**. No locally acquired cases of chikungunya virus disease were reported in 2022.

Figure 9. Chikungunya virus disease cases with laboratory evidence of infection reported to ArboNET by states and territories – United States, 2022

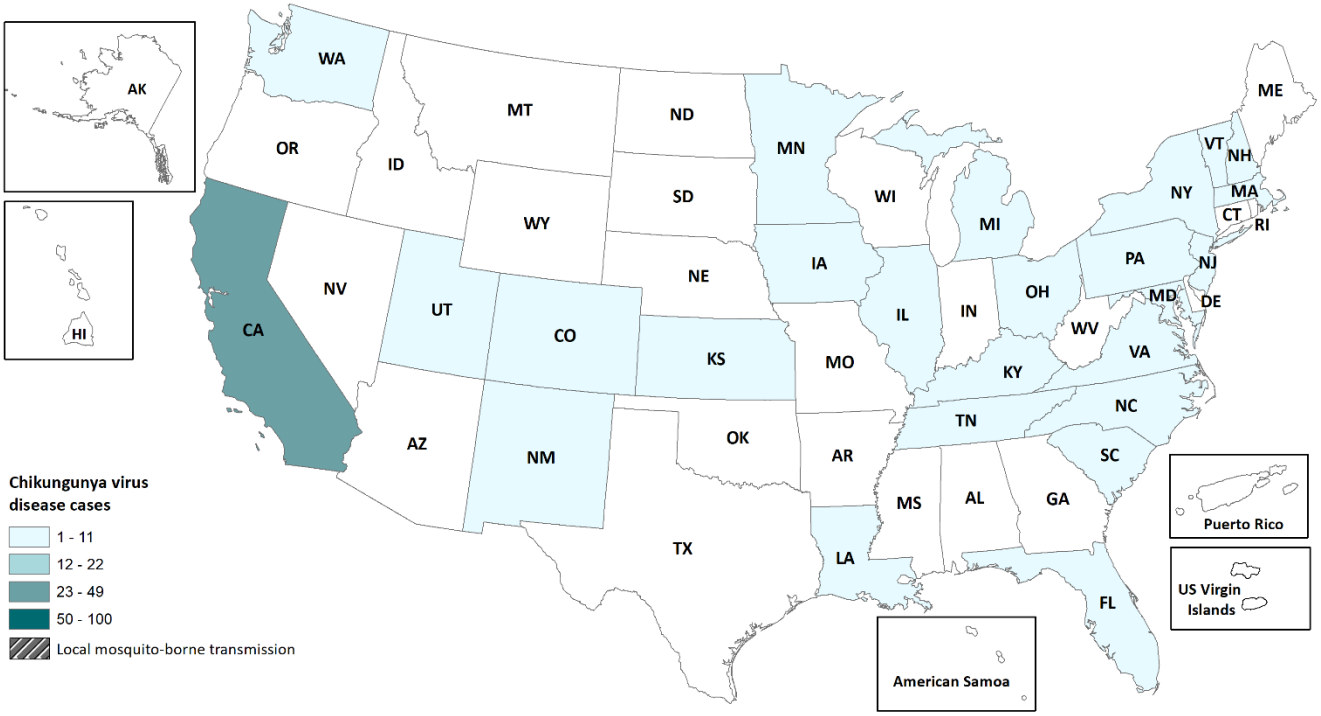


Table 7. Chikungunya virus disease cases* reported to ArboNET, United States, 2022

Jurisdiction	Travel-associated No. (%)	Not Imported No. (%)
California	24 (30)	0 (0)
Colorado	3 (4)	0 (0)
Florida	1 (1)	0 (0)
Illinois	7 (9)	0 (0)
Iowa	3 (4)	0 (0)
Kansas	1 (1)	0 (0)
Kentucky	1 (1)	0 (0)
Louisiana	1 (1)	0 (0)
Maryland	1 (1)	0 (0)
Massachusetts	3 (4)	0 (0)
Michigan	1 (1)	0 (0)
Minnesota	3 (4)	0 (0)
New Hampshire	1 (1)	0 (0)
New Jersey	2 (2)	0 (0)
New Mexico	2 (2)	0 (0)
New York	7 (9)†	0 (0)
North Carolina	3 (4)	0 (0)
Ohio	3 (4)	0 (0)
Pennsylvania	2 (2)	0 (0)
South Carolina	1 (1)	0 (0)
Tennessee	3 (4)	0 (0)
Utah	2 (2)	0 (0)
Vermont	1 (1)	0 (0)
Virginia	3 (4)	0 (0)
Washington	2 (2)	0 (0)

*Includes confirmed and probable cases

†Includes cases acquired through other routes (e.g., laboratory transmission)

Table 8. Chikungunya virus human disease cases* reported to ArboNET by region of travel, United States, 2022

Region	Travel-associated (N=36) No. (%)
Africa	10 (12)
Asia	27 (33)
Caribbean	11 (14)
Central America	8 (10)
North America	11 (14)
South America	12 (15)
Unknown	2 (2)

*Includes confirmed and probable cases

Zika virus

A total of 5 Zika virus disease cases were reported from 4 states to ArboNET in 2022 **[Table 9]**. All cases were in travelers returning from the Caribbean, Central America, and South America. A total of 17 Zika virus diseases cases were reported from Puerto Rico **[Table 9]**, and all were reported as acquired through presumed local transmission.

The presumed locally acquired cases of Zika virus disease in Puerto Rico were diagnosed using serologic testing, which detects antibodies against Zika virus. Since antibodies against Zika virus can persist for years after infection, serology cannot distinguish between a recent or past infection. Additionally, Zika and dengue virus antibodies cross-react, making it difficult to diagnose which virus is the cause of the current illness. In 2022, there were no confirmed Zika virus disease cases reported from U.S. territories. All cases reported were probable with none of the cases having tested positive using molecular testing, which detects the presence of the virus in the body and is the best indicator of a recent infection.

Table 9. Zika virus disease cases* reported to ArboNET by states and territories, United States, 2022

Jurisdiction	Travel-associated No. (%)	Locally acquired No. (%)
States	**N=5**	**N=0**
California	2 (40)	0 (0)
Illinois	1 (20)	0 (0)
Kentucky	1 (20)	0 (0)
New York	1 (20)	0 (0)
Territories	**N=0**	**N=17**
Puerto Rico	0 (0)	17 (100)

*Includes confirmed and probable cases