



Nebraska Department of Health and Human Services

Division of Public Health

Epidemiology Unit

301 Centennial Mall South

Lincoln, NE 68509

Nebraska Vector-Borne Disease Surveillance Report, December 16, 2022



Acknowledgments

This report was prepared by the following NDHHS staff:

Jeff Hamik

Halie Smith

Tammy Dawdy

Rachael Birn

Nebraska Vector-Borne Disease Surveillance Report, December 16, 2022

1. Report Highlights

- 64 WNV cases (including four deaths) have been reported in humans for the 2022 season through week 48 (week ending 03 December 2022)
- 24 WNV blood donor cases have been reported through week 48 (week ending 03 December 2022)
- Two equine WNV cases has been reported for the 2022 season through week 48 (week ending 03 December 2022)
- Mosquito surveillance concluded for the 2022 season at the end of week 39 (week ending 01 October 2022)
- 88 positive mosquito pools were detected during the 2022 season
- The 88 positive WNV mosquito pools are the most since 2018
- One St. Louis Encephalitis virus (SLE) positive mosquito pool was detected during the 2022 season

2. Human Case Investigations

Nebraska statute mandates public health reporting of specified vector-borne diseases to prevent further disease spread.

Table 1. Human Cases ^a

Mosquito-borne Diseases			Tickborne Disease		
	2022 ^b	2021		2022 ^b	2021
Chikungunya	0	0	Anaplasmosis	1	1
Dengue	4	3	Babesiosis	0	0
Malaria	9	7	Ehrlichiosis	19	7
West Nile Clinical Cases	64	107	Lyme Disease	9	9
West Nile Blood Donors	24	18	Spotted Fever Group Rickettsioses	7	5
Zika	0	0	Tularemia	13	9

Table 2. Human Clinical Case Breakdown ^a

Age Range	Number ^b
0-13	0
14-25	3
26-50	17
51-64	17
65+	27
Sex	
Male	41
Female	23
Diagnosis	
WNV Neuroinvasive	37
WNV Non-Neuroinvasive	27
Hospitalized	33
Death	4

^a Data for 2022 reflect confirmed and probable cases that have been approved by the Nebraska Department of Health and Human Services. This does not include cases under investigation. All 2022 numbers are preliminary and subject to change.

^b Cumulative through MMWR week #48: November 27 – December 3, 2022

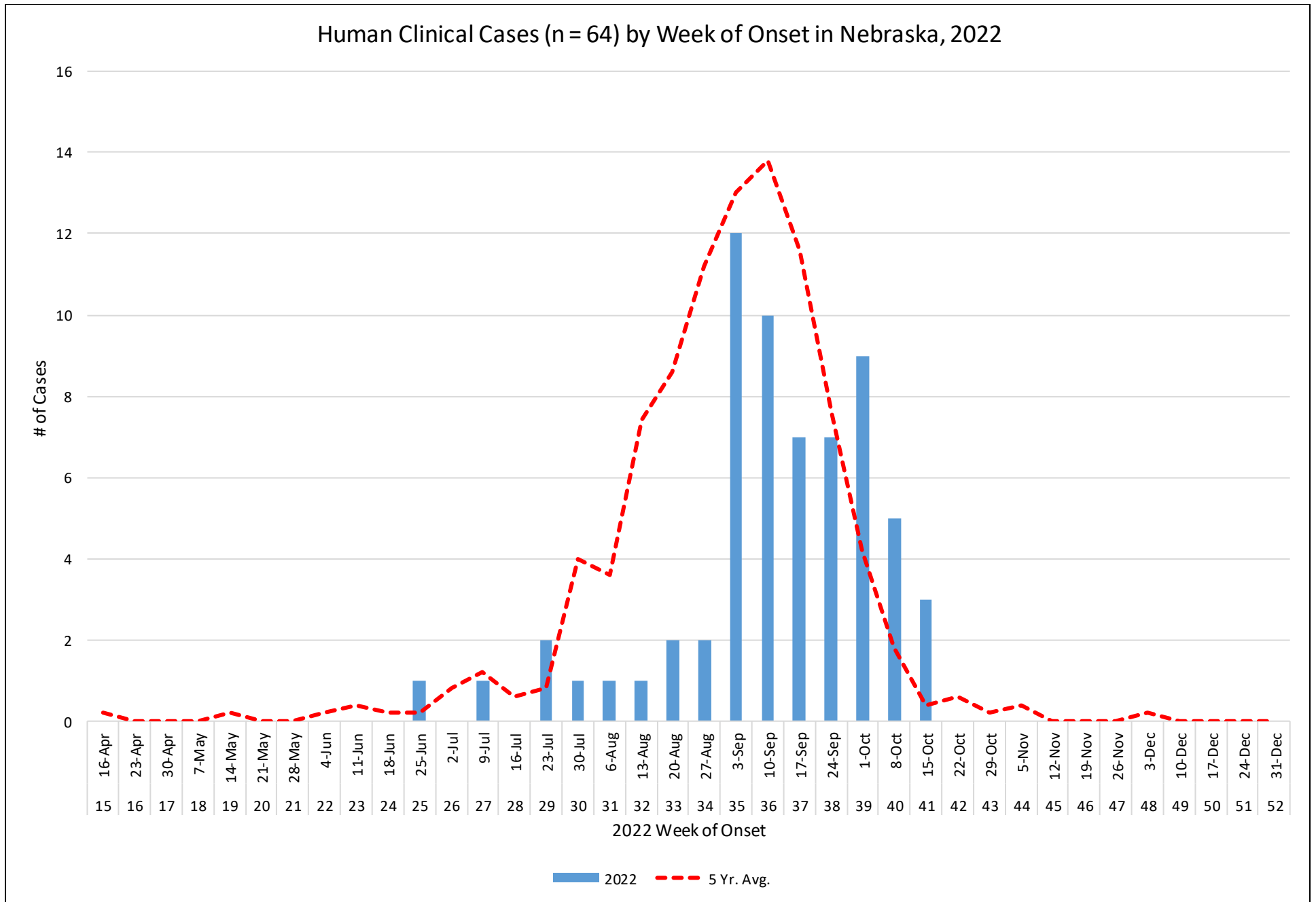


Figure 1. Epi-Curve of Human West Nile Virus Clinical Cases, 2022.

Data current as of 03 December 2022 and are subject to change

2022 West Nile Virus Human Clinical Cases

by Local Health Department, Updated 3 December 2022 (n=64)

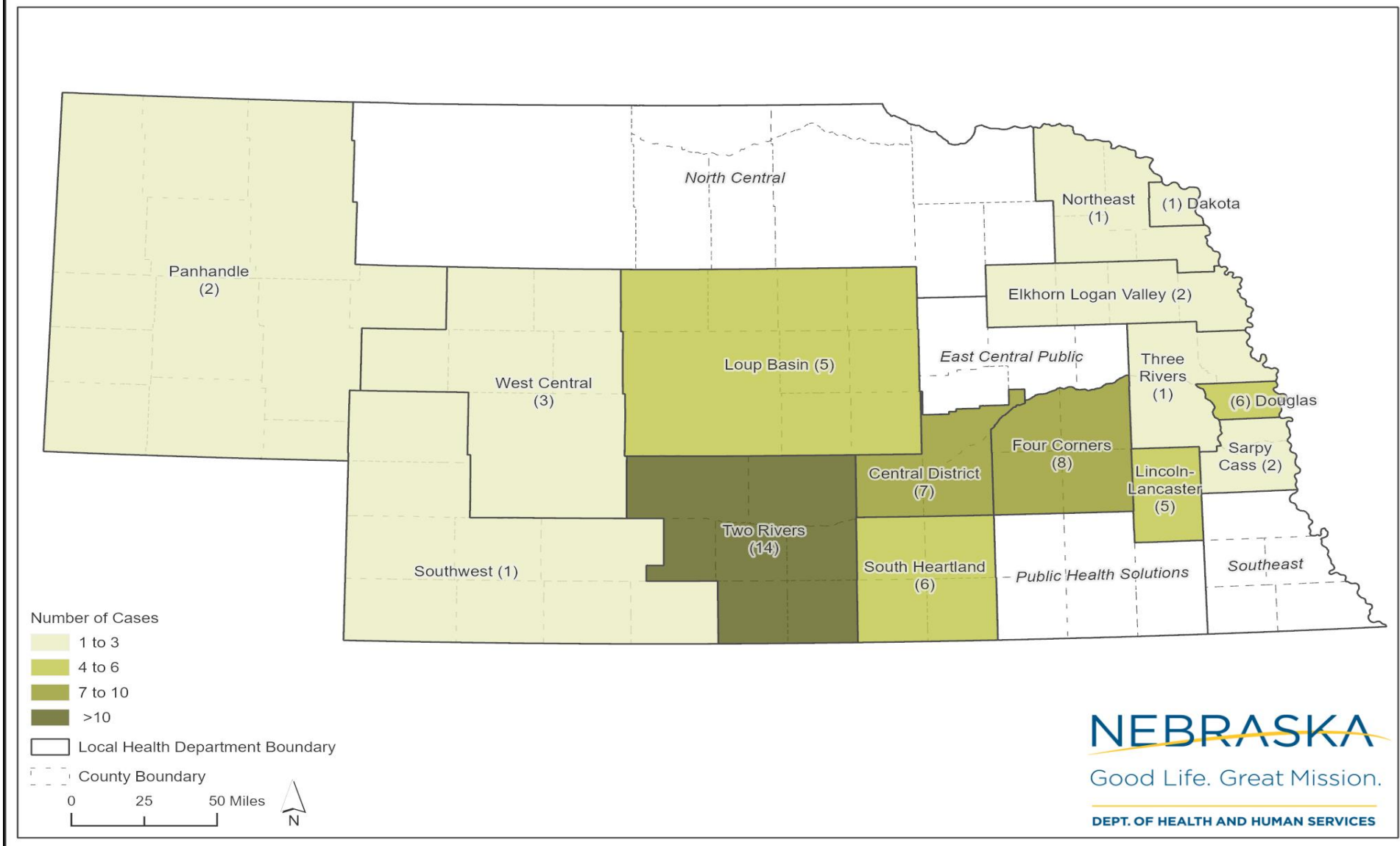


Figure 2. Nebraska Human West Nile Virus Clinical Cases by Local Health Department, 2022.

Data current as of 03 December 2022 and are subject to change

2022 West Nile Virus Blood Donation Cases

by Local Health Department, Updated 3 December 2022 (n=24)

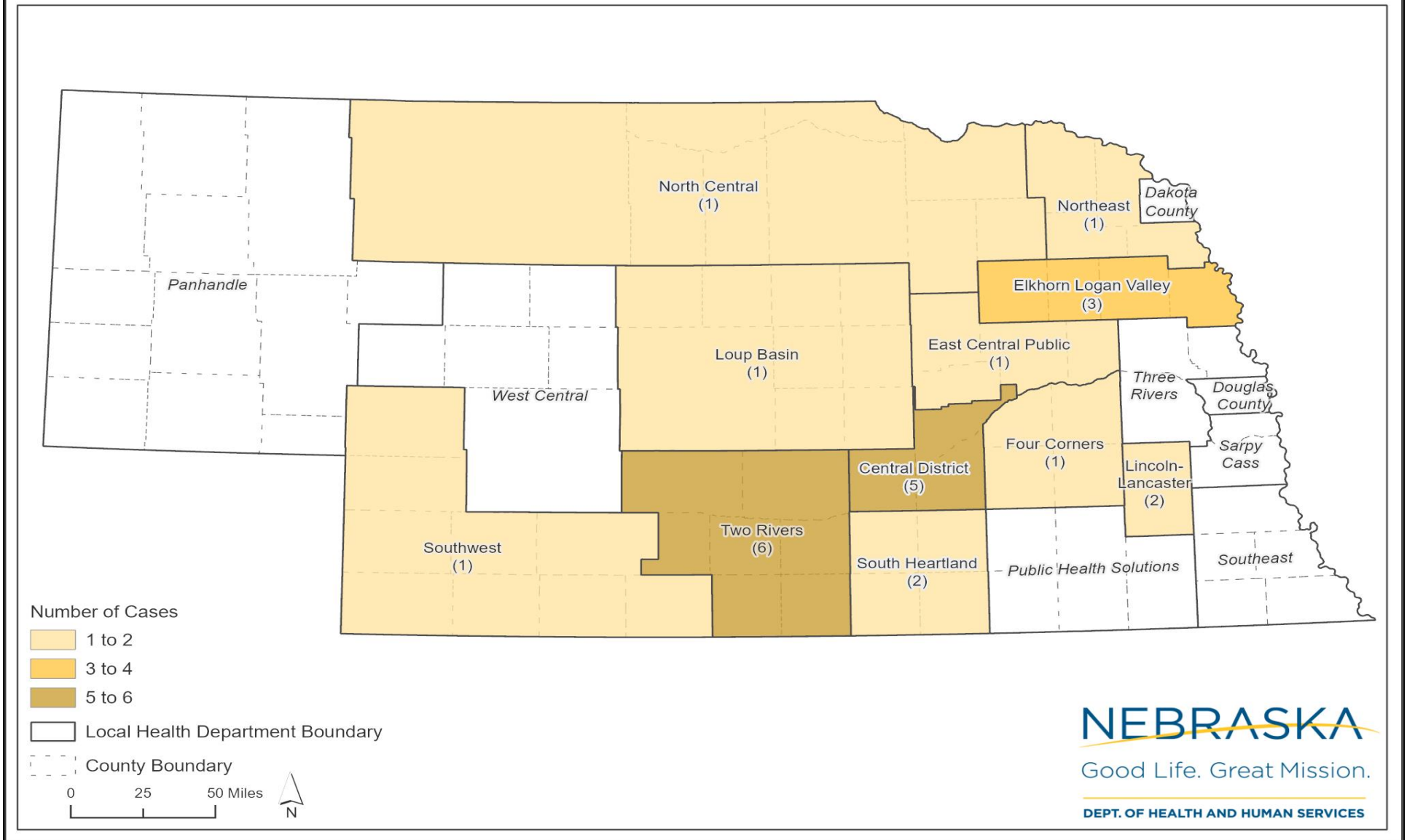


Figure 3. Nebraska Human West Nile Virus Blood Donor Cases by Local Health Department, 2022.

Data current as of 03 December 2022 and are subject to change

3. Mosquito Testing

The Nebraska Department of Health and Human Services in partnership with local public health departments collect mosquitoes from across the state. The primary vector mosquitoes are then tested by the Nebraska Public Health Laboratory in pools for the presence of West Nile virus, St. Louis Encephalitis virus, and Western Equine Encephalitis virus.

West Nile virus (WNV):

- Mosquito surveillance and testing has ended for the 2022 season.
- Cumulatively, 992 pools containing 14,511 mosquitoes were tested in 2022.
- 88 positive mosquito pools were detected during the 2022 season from 14 of 20 counties that were surveyed.
- The 88 positive pools are the highest number of positives since 2018.
- The first WNV positive pool was detected in week 28 (week ending 17 July 2022) from Hall County. In 2021 the first WNV positive mosquito pool was identified during week 27 from Scottsbluff County.

Table 3. WNV Positive Mosquito Pools

Region/County	Weeks 38/39*		Cumulative Total (Final)	
	2022	2021 [^]	2022	2021
Central Region	5		69	20
Adams Co.			38	3
Dawson Co.	2	1	17	10
Garfield Co.	1		4	
Hall Co.	2		9	6
Holt Co.			1	1
East Region			17	6
Dakota Co.			1	
Dodge Co.			4	1
Douglas Co.			2	1
Jefferson Co.				
Lancaster Co.			3	
Madison Co.			1	1
Platte Co.				
Richardson Co.				
Sarpy Co.				2
Thurston Co.				
Wayne Co.		1	5	2
York Co.			1	
West Region			2	11
Box Butte Co.			1	4
Lincoln Co.			1	1
Red Willow Co.				
Scotts Bluff Co.				6
Total	5	2	88	38

*Please note that the sampling schedule for the NEDHHS mosquito surveillance program is set up so that half of the counties trap on an even MMWR week the other half trap on an odd MMWR week through the season. Therefore, it takes a full two weeks to have data from all counties that participate in the program. As a result, the data that is presented represents data from the most recent two weeks of mosquito surveillance.

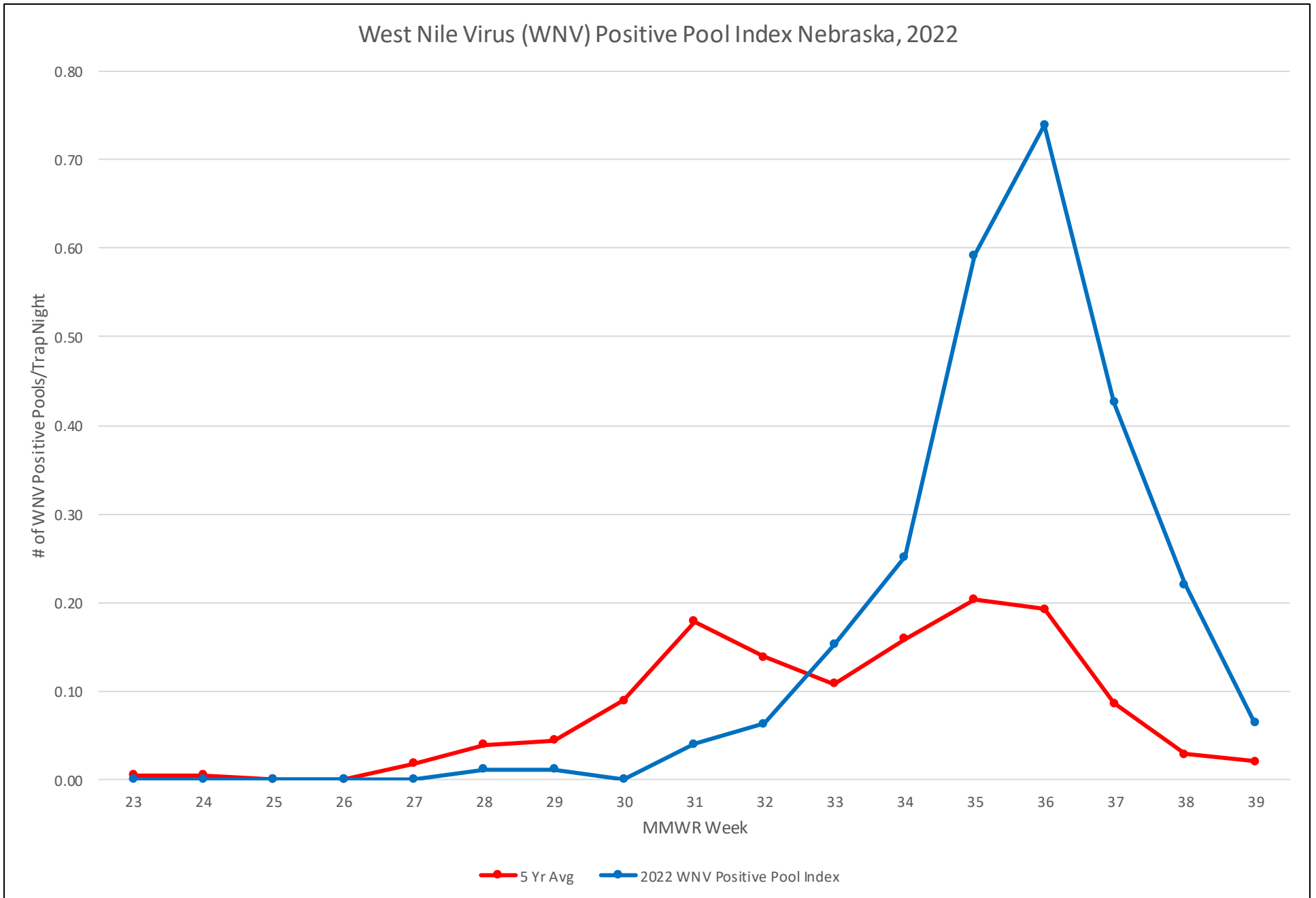


Figure 4. West Nile Virus Positive Mosquito Pool Index, 2022.

Data current as of 03 December 2022 and are subject to change

St. Louis Encephalitis Virus (SLE) and Western Equine Encephalitis Virus (WEE):

Table 4. Cumulative 2022 Mosquito Pool Testing for SLE and WEE

Region/County	SLE		WEE	
	Pools	Positive	Pools	Positive
Central Region	370		370	
Adams Co.	125		125	
Dawson Co.	99	1	99	
Garfield Co.	35		35	
Hall Co.	72		72	
Holt Co.	39		39	
East Region	491		491	
Dakota Co.	34		34	
Dodge Co.	45		45	
Douglas Co.	64		64	
Jefferson Co.	41		41	
Lancaster Co.	79		79	
Madison Co.	31		31	
Platte Co.	20		20	
Richardson Co.	36		36	
Sarpy Co.	30		30	
Thurston Co.	12		12	
Wayne Co.	57		57	
York Co.	42		42	
West Region	131		131	
Box Butte Co.	41		41	
Lincoln Co.	22		22	
Red Willow Co.	15		15	
Scotts Bluff Co.	53		53	
Total	992	1	992	-

2022 CDC Light Trap Mosquito Surveillance

Final Map Update 1 October 2022

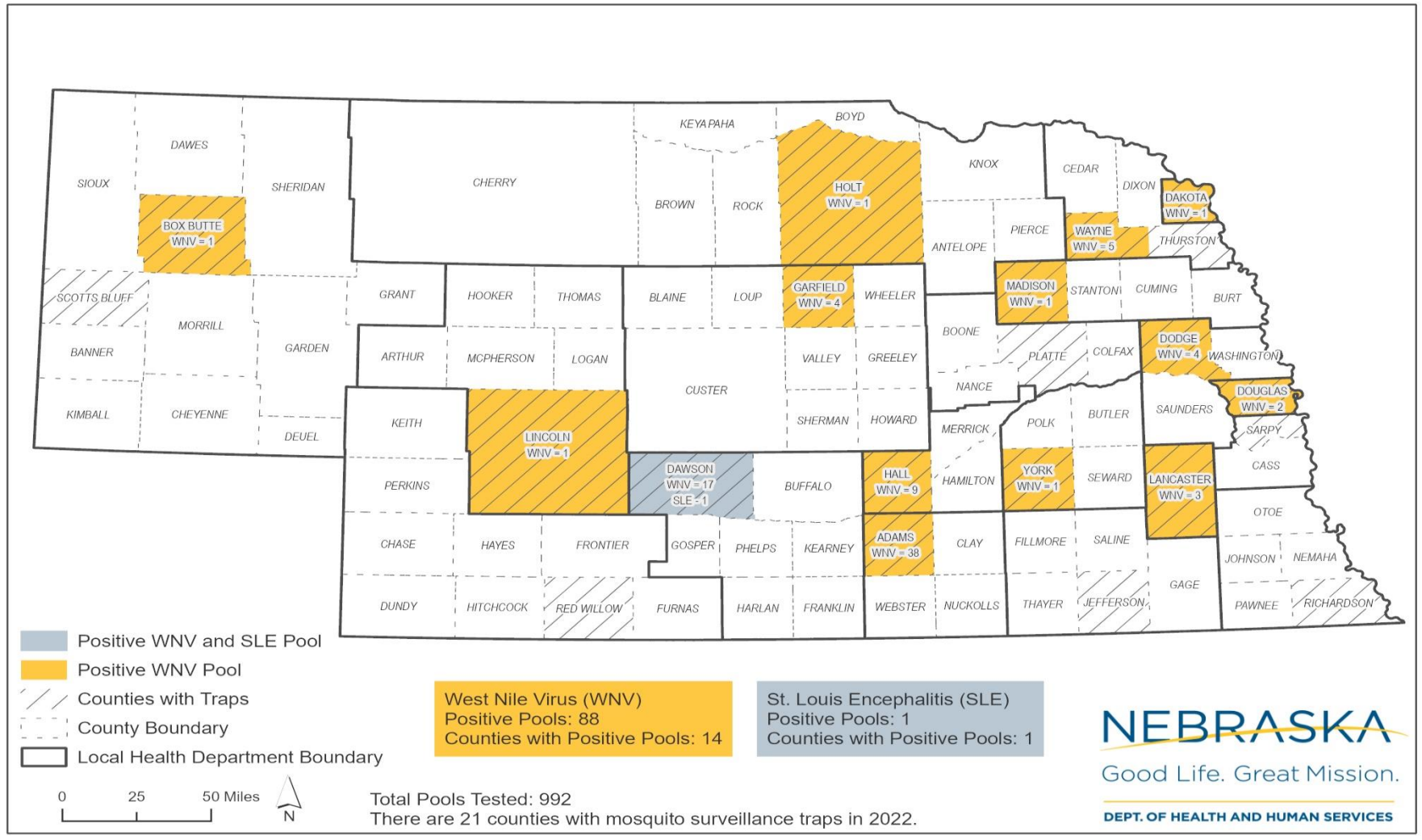


Figure 5. Arboviral Positive Mosquito Pools by County in the Nebraska CDC Light Trap Network, 2022.

Data current as of 03 December 2022 and are subject to change

4. Equine West Nile Virus (WNV) Cases

Equine cases of WNV are investigated and reported to the Nebraska Department of Health and Human Services by the Nebraska Department of Agriculture

- Two equine WNV cases has been reported during the 2022 season.
- The first equine WNV case of the season was reported during week 35 (week ending 03 September 2022) from Dawes County.

Table 5. Equine WNV Cases Reported to the Nebraska Department of Health and Human Services

	Weeks 48		Cumulative Total (Year)	
	2022	2021	2022	2021
Equine WNV Cases	0	0	2	7

2022 Equine West Nile Virus Surveillance

Updated 3 December 2022 (n=2)

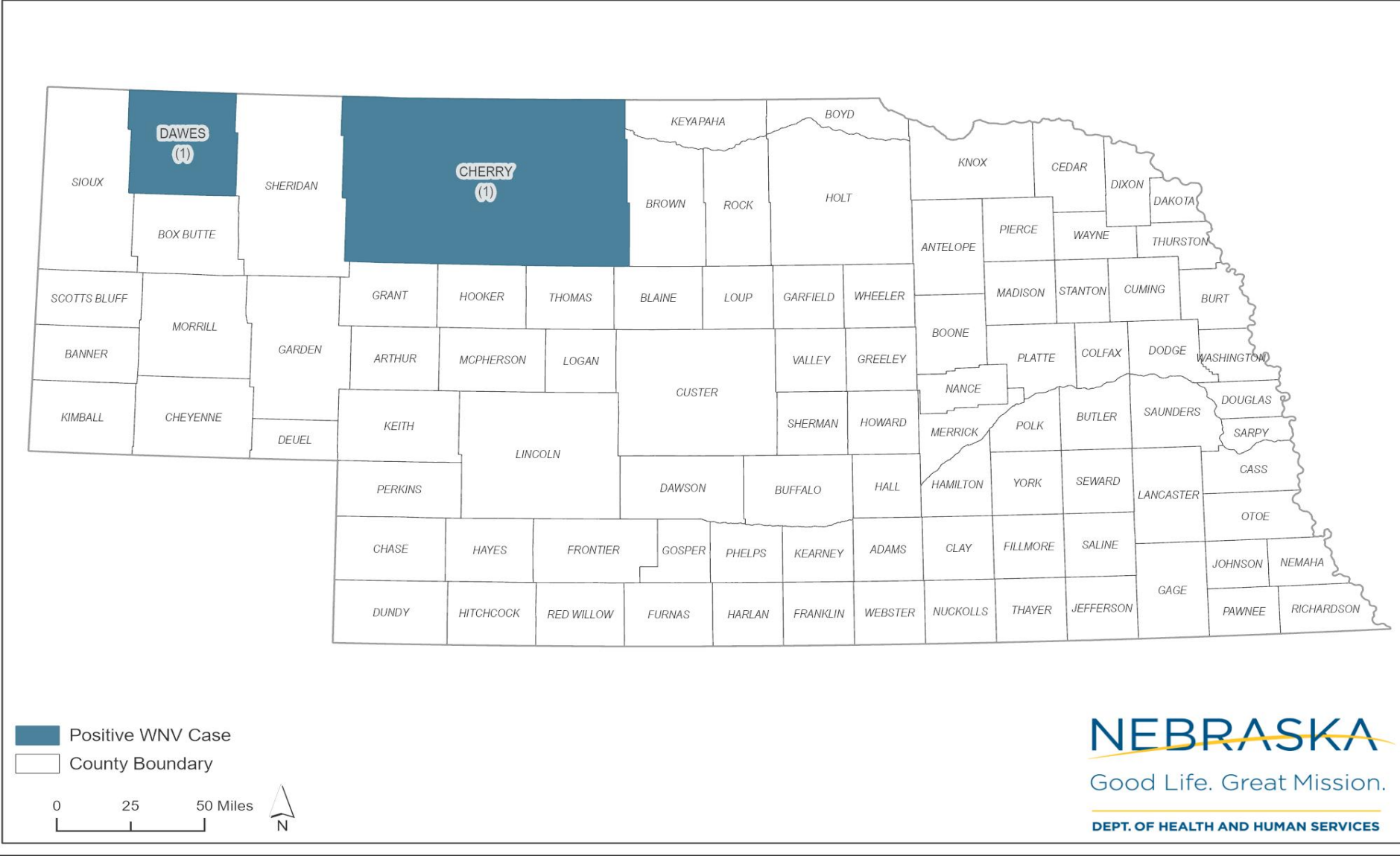


Figure 5. Nebraska WNV Equine Cases, 2022.

Data current as of 03 December 2022 and are subject to change

5. Syndromic Surveillance for Tick-Related Emergency Department and Outpatient Visits

The Nebraska Department of Health and Human Services' (NDHHS) Syndromic Surveillance program electronically collects de-identified, limited information on patient visits to emergency departments (ED) and outpatient clinics across the state. The data allow the NDHHS Vector-Borne Disease Program to track trends for certain types of ED and outpatient clinic visits. Tick exposures are where a patient reports a tick bite during their visit. Tick bite exposure data can act as a proxy to tick activity and indicate when people may be at risk for tick bites. It is important to note that not everyone exposed to ticks will be seen in an ED or outpatient clinic and thus the data does not show all patients with tick bites in Nebraska. Additionally, not all EDs and outpatient clinics currently report data to the NDHHS Syndromic Surveillance program. Finally, due to the nature of the data being collected, the data may over-estimate or under-estimate the true numbers.

With the primary tick season over, the syndromic surveillance graph (Figure 6) will now be updated monthly.

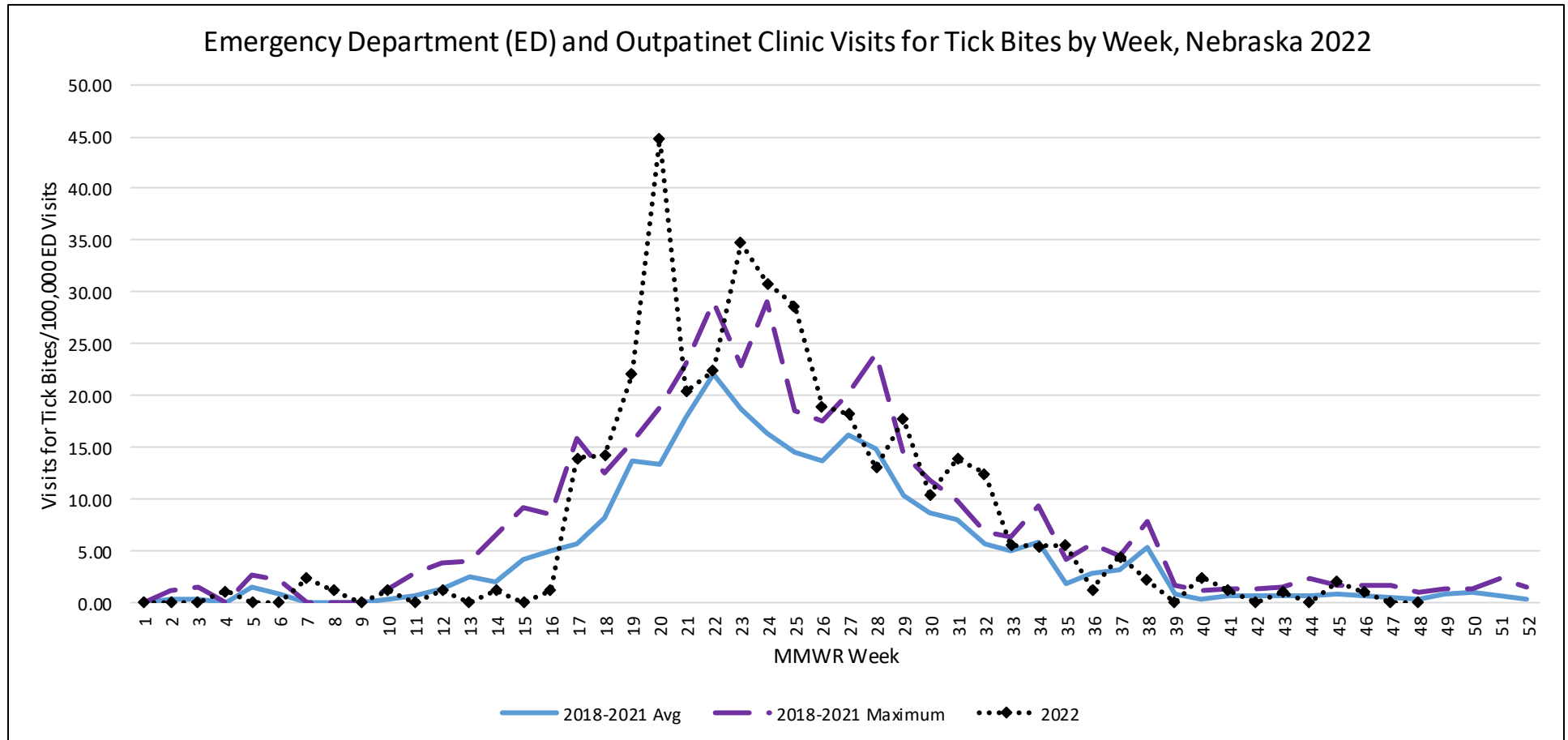


Figure 6. Tick Bite Related Emergency Department and Outpatient Clinic Visits, Nebraska 2022.

MMWR Weeks

MMWR Week	Week Starting	Week Ending
1	1/2/2022	1/8/2022
2	1/9/2022	1/15/2022
3	1/16/2022	1/22/2022
4	1/23/2022	1/29/2022
5	1/30/2022	2/5/2022
6	2/6/2022	2/12/2022
7	2/13/2022	2/19/2022
8	2/20/2022	2/26/2022
9	2/27/2022	3/5/2022
10	3/6/2022	3/12/2022
11	3/13/2022	3/19/2022
12	3/20/2022	3/26/2022
13	3/27/2022	4/2/2022
14	4/3/2022	4/9/2022
15	4/10/2022	4/16/2022
16	4/17/2022	4/23/2022
17	4/24/2022	4/30/2022
18	5/1/2022	5/7/2022
19	5/8/2022	5/14/2022
20	5/15/2022	5/21/2022
21	5/22/2022	5/28/2022
22	5/29/2022	6/4/2022
23	6/5/2022	6/11/2022
24	6/12/2022	6/18/2022
25	6/19/2022	6/25/2022
26	6/26/2022	7/2/2022
27	7/3/2022	7/9/2022
28	7/10/2022	7/16/2022
29	7/17/2022	7/23/2022
30	7/24/2022	7/30/2022
31	7/31/2022	8/6/2022
32	8/7/2022	8/13/2022
33	8/14/2022	8/20/2022
34	8/21/2022	8/27/2022
35	8/28/2022	9/3/2022
36	9/4/2022	9/10/2022
37	9/11/2022	9/17/2022
38	9/18/2022	9/24/2022
39	9/25/2022	10/1/2022
40	10/2/2022	10/8/2022
41	10/9/2022	10/15/2022

MMWR Week	Week Starting	Week Ending
42	10/16/2022	10/22/2022
43	10/23/2022	10/29/2022
44	10/30/2022	11/5/2022
45	11/6/2022	11/12/2022
46	11/13/2022	11/19/2022
47	11/20/2022	11/26/2022
48	11/27/2022	12/3/2022
49	12/4/2022	12/10/2022
50	12/11/2022	12/17/2022
51	12/18/2022	12/24/2022
52	12/25/2022	12/31/2022

Data current as of 03 December 2022 and are subject to change

6. Resources

- CDC Prevent Mosquito Bites Page: <https://www.cdc.gov/ncezid/dvbd/media/stopmosquitoes.html>
- CDC West Nile Virus Page: <https://www.cdc.gov/westnile/index.html>
- CDC Tick Bite Prevention Page: https://www.cdc.gov/ticks/avoid/on_people.html
- CDC Tick-borne Diseases Page: <https://www.cdc.gov/ticks/tickbornediseases/index.html>
- CDC Tick Bite Data Tracker Page: <https://www.cdc.gov/ticks/tickedvisits/index.html>
- NDA WNV Page: <https://nda.nebraska.gov/animal/diseases/westnile/index.html>
- U.S. EPA Insect Repellent Page: <https://www.epa.gov/insect-repellents>
- Nebraska Mosquito and Vector Control Association Page: <https://www.nemosquito.org/>
- NEDHHS Vector-Borne Diseases Page: <https://dhhs.ne.gov/VBD>