West Virginia 2024 Animal Rabies and Animal Encounters Report

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Introduction

Rabies is a viral infection affecting the central nervous system and is a vaccine-preventable zoonotic disease. Rabies is typically transmitted to humans through bites or scratches from infected animals, or when their saliva or other bodily fluid comes into contact with open wounds or mucous membranes. Rarely, it can spread through organ transplants (WHO, 2024). Although the rabies virus can infect any mammal species, only a small number of species are significant disease vectors and reservoirs. Raccoons, skunks, foxes, coyotes, and various insectivorous bat species have all been found to carry various strains of the rabies virus in the United States (U.S.) (OEPS, 2023).

Early symptoms of rabies in humans resemble flu-like illness such as fever, weakness, and headache along with pain or tingling at the bite site. As the disease progresses, it causes neurological symptoms such as anxiety, confusion, hallucinations, and insomnia. Once symptoms appear, rabies is fatal (CDC, 2024). However, prompt administration of post-exposure prophylaxis (PEP) and human rabies immunoglobulin (HRIG) can prevent disease.

Rabies occurs in over 150 countries and is estimated to cause 70,000 deaths each year (WHO, 2024). According to the Centers for Disease Control and Prevention (CDC) bats, raccoons, skunks, and foxes continue to pose a significant rabies threat to 75% of Americans. The Animal and Plant Health Inspection Service (APHIS) reports that of all the wildlife rabies reservoirs identified in the U.S., including different bat species, raccoon rabies has the highest rate of transmission to domestic animals and wildlife. As a result, it is linked to the highest burden of human exposure that may necessitate PEP. About 100,000 people in the U.S. seek PEP treatment annually (CDC, 2025). However, in the U.S. fewer than ten deaths occur in humans from rabies each year (CDC, 2024). In West Virginia (WV), the last reported human rabies case was in 1994 (CDC, 1995). Low incidence in the U.S. is attributed to public health surveillance systems, testing, access to PEP, and rabies vaccinations for pets.

Animal Encounter Surveillance in West Virginia

The West Virginia Reportable Disease Rule (64CSR-7) mandates the reporting of animal bites and other potential rabies exposures (OPRE) within 24 hours to the local health department (LHD) (BPH, 2022). A reportable animal bite or OPRE includes any situation involving an animal that is a mammal and meets one of these criteria:

1. the patient must have either been bitten or scratched by an animal,
2. the animal's saliva or central nervous system tissue (CNS) had contact with a fresh wound on the patient,
3. the animal's saliva or CNS tissue had contact with a mucous membrane of the patient,
4. a bat exposure with no definite bite or scratch.

Health care providers or facilities who are attending to animal bite or OPRE patients (e.g., bite, scratch) are required to report these exposures to the LHD within 24 hours by submitting the Animal Encounter Report Form.

Once the LHD receives the notification of an animal bite or OPRE, they are required to open an investigation into the West Virginia Electronic Disease Surveillance System (WVEDSS). The LHD must begin the investigation right away by contacting the patient to determine the circumstance of the exposure, assess the health of the patient, and provide appropriate recommendations regarding PEP. Additionally, the LHD is responsible for determining the type of animal involved (e.g., wild, stray, or owned). If the animal is owned, the LHD attempts to identify the owner of the animal. In accordance with West Virginia Code (§19-20-9a), any individual who owns or cares for a dog, cat, or other domestic animal, regardless of whether the animal is licensed, is required to immediately confine and quarantine the animal for a 10-day observation period for rabies monitoring. Once the confinement period is over, the LHD must determine the outcome of the animal and document it in WVEDSS. If for any reason the animal has been killed or has died, the LHD coordinates rabies testing for the animal through the West Virginia Office of Laboratory Services (WV OLS), provided the animal's brain is in good condition and suitable for testing.

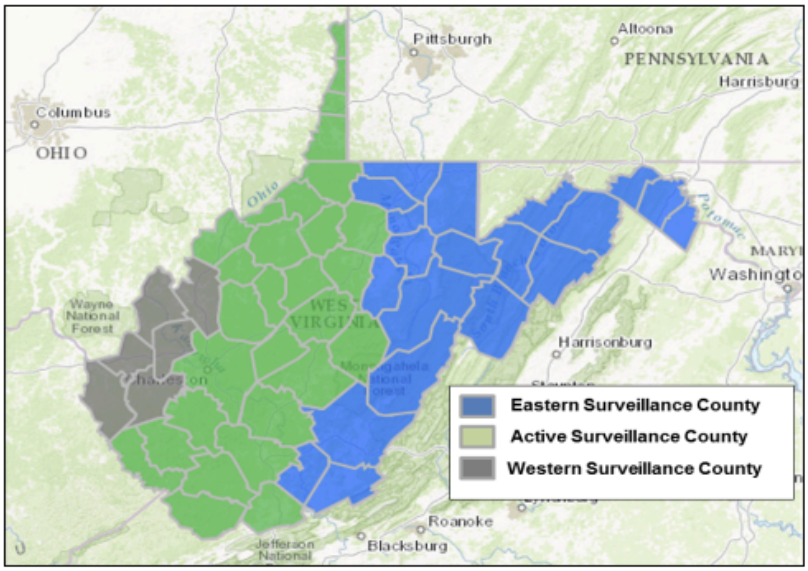
Animal Rabies Testing and Surveillance in West Virginia

There are several animal rabies testing efforts in West Virginia. The United States Department of Agriculture (USDA) collects and tests animal specimens without human exposure to track rabies prevalence, distribution, and variant types. WV OLS accepts specimens from suspected rabid animals such as animals involved with biting or scratching humans, animals involved with biting or scratching domestic animals or livestock, occasional environmental spot check of areas for surveillance efforts, and unusual situations involving the suspect animal such as atypical behavior (WV OLS, n.d.). The West Virginia Department of Agriculture (WVDA) also works alongside LHDs to obtain animal specimens from livestock to send to WV OLS for testing. Testing results from USDA and WV OLS are reported to the West Virginia Department of Health (WVDH).

For animal rabies surveillance, West Virginia is divided into three regions: Eastern, Active, and Western (Figure 1). The raccoon strain of rabies is the most prevalent strain in West Virginia, while the bat strain is found throughout the state (OEPS, 2023). The Eastern region reports the highest number of rabies positive animals, with raccoon strain rabies being common (OEPS, 2023). The Active region has fewer rabies positive animals and serves as a buffer between the Eastern and Western regions. No raccoon strain rabies cases have been reported in the Western region.

Figure 1

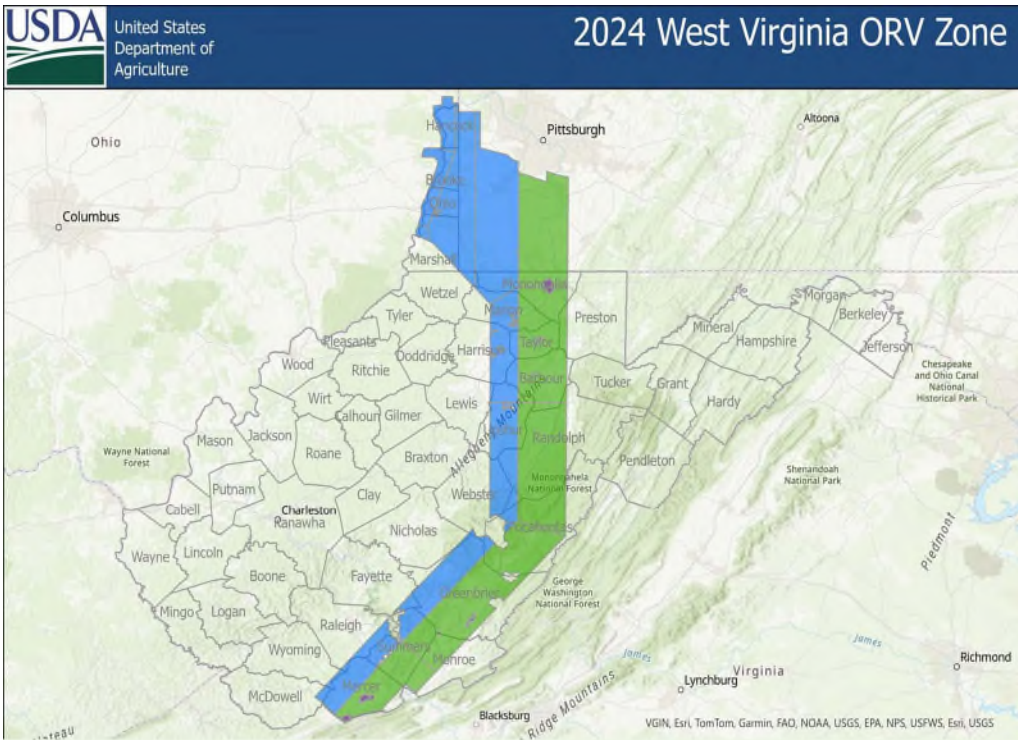
Rabies Surveillance Regions, WV, 2024


Pittsburgh
Altoona
PENNSYLVANIA
Harrisburg
Columbus
OHIO
Ohio
Potomac
Washingto
Wayne
National
Forest
WEST
VIRGINIA
Harrisonburg
Eastern Surveillance County
Active Surveillance County
Western Surveillance County
Roanoke
Blacksburg
Jefferson
National

To contain the spread of raccoon strain rabies from moving east to west, surveillance and preventive measures, such as targeted wildlife vaccination, have been put in place. USDA launched the Oral Rabies Vaccine project (ORV) in 1997 to stop the geographic spread of rabies in the U.S. (USDA, 2024). Every August, vaccine baits are transported by air to specific regions where rabies proliferation is of concern (Figure 2). Approximately 6.5 million baits are distributed annually in selected states by wildlife services and partners to create a zone where raccoon rabies can be contained. Ground and rotary wing applications are used to disperse vaccine baits in specific regions (USDA, 2024). Both the Active and Eastern Surveillance Region counties are included in the bait zone in WV. The objective is for uninfected skunks and raccoons to consume the vaccine containing bait and get immunized against the rabies virus.

Figure 2

USDA Oral Rabies Zone, WV, 2024



This report addresses key components of rabies surveillance and response in West Virginia during 2024. It focuses on three primary areas: animal rabies testing conducted through the WV OLS and the USDA; reported animal encounters involving humans; and recommendations based on the analysis of these data. By examining trends in testing and exposure incidents, the report aims to inform animal bite and OPRE prevention strategies, strengthen surveillance systems, and support timely, evidence-based public health decision making.

Methods

LHDs in West Virginia receive animal encounter reports from healthcare providers, typically via fax. Upon receipt, LHD staff enter the information into WVEDSS and initiate an investigation. As part of this process, the LHD contacts the patient to collect detailed information about the circumstances of the encounter and to provide appropriate guidance regarding PEP. Once the investigation is complete, the LHD submits the investigation into WVEDSS for review by the regional epidemiologist (RE). Following the RE's review, the case is forwarded to the Zoonotic Disease Epidemiologist at the WVDH, who conducts a final assessment to ensure that all documentation is accurate and complete. The Zoonotic Disease Epidemiologist is responsible for formally closing the investigation within WVEDSS. All reportable animal encounters are documented in WVEDSS for ongoing public health surveillance.

The Rabies Unit at WV OLS is responsible for testing animal specimens for rabies. In situations involving potential human exposure to a rabid animal, WV OLS is the only facility in West Virginia authorized to test animal brain tissue for rabies. WV OLS utilizes the Direct Fluorescent Antibody (DFA) staining method, which is recognized as the gold standard for rabies virus detection. Turnaround time for specimen testing varies, however results are usually provided to the submitter, LHD, and/or WVDH within 24-72 hours.

WV OLS accepts specimens of suspected rabid animals such as animals involved with biting or scratching humans, animals involved with biting or scratching domestic animals or livestock, occasional environmental spot check of areas for surveillance efforts, and unusual situations involving the suspect animal such as atypical behavior (WV OLS, n.d.). Specimen testing at WV OLS may be requested by a variety of entities including the LHDs, USDA, WV Department of Natural Resources (DNR), veterinarians, animal control, police, and private citizens. To ensure the integrity and viability of specimens submitted for rabies testing, all submissions must adhere to specific submission requirements including:

1. Advance Notification: WV OLS must be notified prior to the submission of any specimen.
2. Documentation of Exposure: Detailed and accurate information regarding the exposure (i.e., human or domestic animal).
3. Completion of Submission Form: Accurate data must be recorded on the Rabies Laboratory Specimen Submission Form in a complete and accurate manner.
4. Specimen Collection: Specimens must be collected and handled according to WVOLS Rabies Specimen Collection Instructions to preserve diagnostic viability.
5. Timely Submission: Specimens must be received by WVOLS within seven days of the animal's death to ensure testing reliability.

The USDA plays a critical role in the surveillance and control of rabies through the systematic collection and testing of animal specimens. These activities enable the USDA to monitor the prevalence, geographic distribution, and viral variants associated with rabies across wildlife populations. For diagnostic purposes, the USDA utilizes the Direct Rapid Immunohistochemical

Test (DRIT), a practical and efficient tool for field-based surveillance. During surveillance efforts, animals are captured and tested, with detailed documentation including the date of specimen collection, geographic location, species, and sex. Animal specimen testing data is shared with the WVDH, Office of Epidemiology and Prevention Services (OEPS) in a Microsoft Excel file on a monthly basis.

All data presented in this report are derived from the WVEDSS 2024 Morbidity and Mortality Weekly Report (MMWR) year, which spans from December 31, 2023, to December 28, 2024. Rabies animal testing data collected by USDA and WVOLS for MMWR year 2024 was shared with the WVDH OEPS, in a Microsoft Excel File. The dataset included detailed information on animal species tested, geographic location of where the animal was recovered, test results, and reason for testing. Microsoft Excel was used to analyze and portray data. Maps, figures, and tables were generated to illustrate the distribution of rabies-positive specimens across the state.

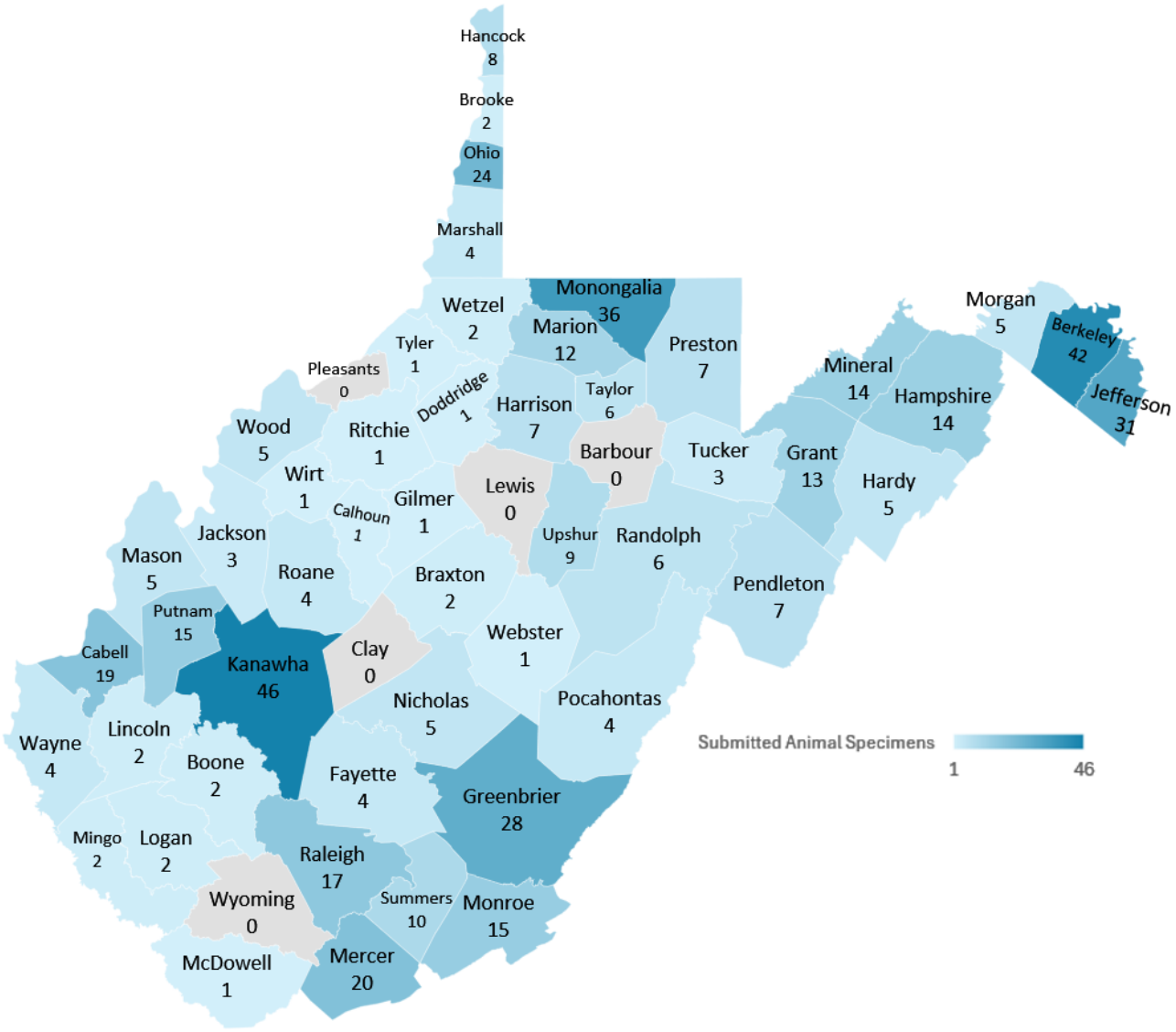
Animal encounter reports from MMWR year 2024 were exported from WVEDSS to Microsoft Excel. The exported file contained a total of 2,668 cases of animal exposure involving a human. Duplicate reports were reconciled and removed, and patient identifiable information was suppressed. All exposure reports for animals other than mammals were excluded as mammals are the only animals susceptible to rabies. Case patients who were not West Virginia residents were excluded. After exclusions, a total of 2,577 animal encounter reports were included in the data analysis. The data was then analyzed using Microsoft Excel, where visualizations such as maps, figures, and tables were created to illustrate key observations.

Results

WVOLS Animal Rabies Testing

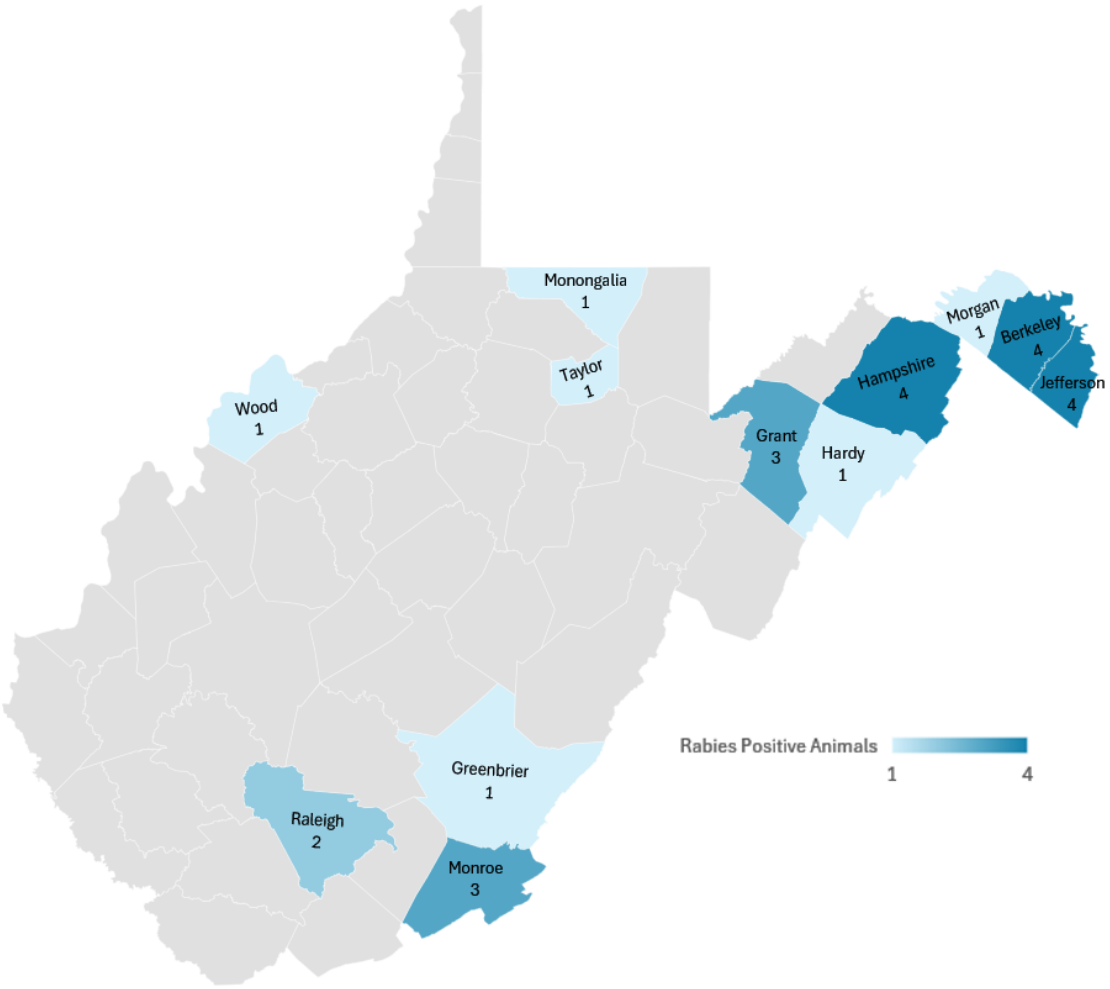
In 2024, WVOLS tested 494 animals from 50 counties in WV (Figure 3).

Figure 3. *Distribution of **Submitted** Animals for Rabies Testing by County, WVOLS, 2024 (N=494)*



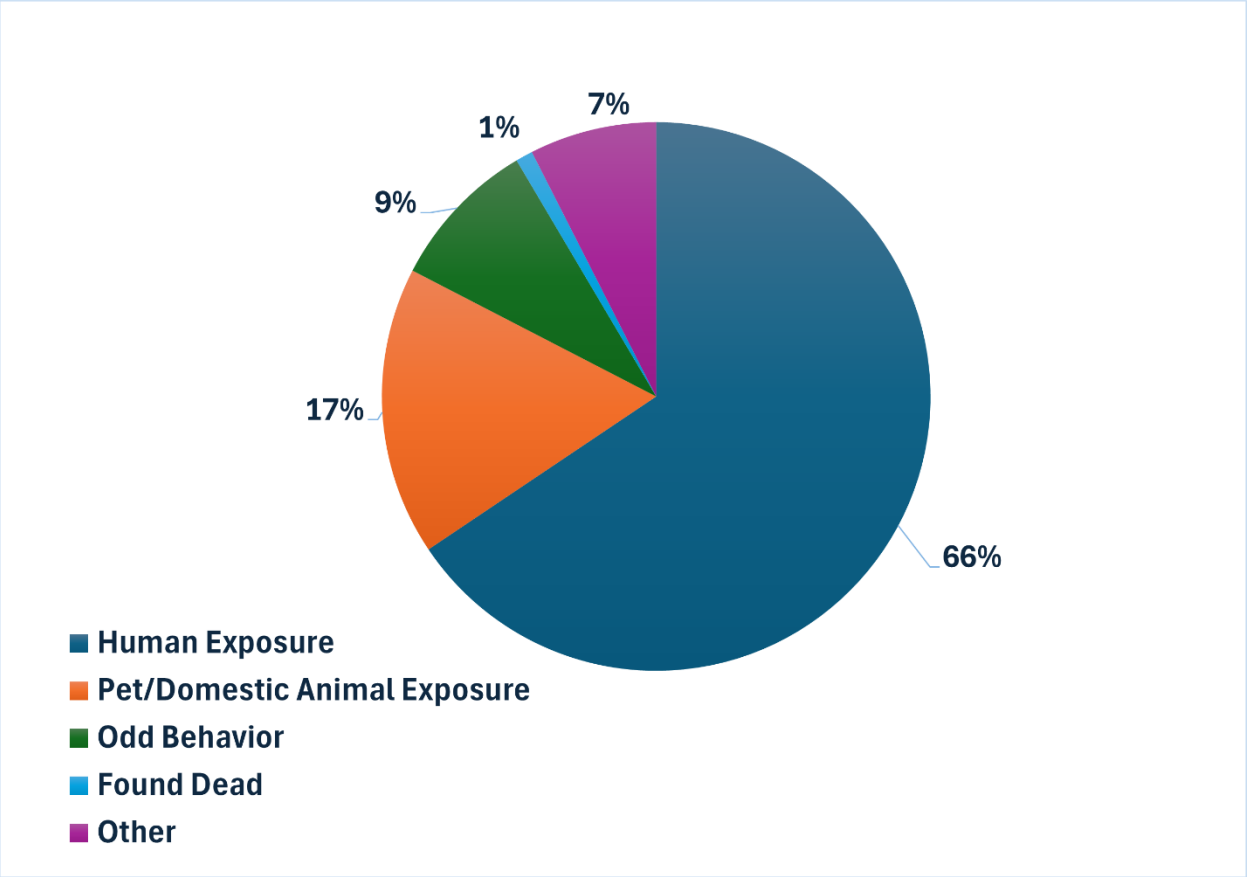
Of the 494 specimens tested for rabies, 26 (5%) tested positive for rabies from 12 counties in WV (Figure 4). The majority of these rabies positive specimens were from the Eastern Surveillance Region.

Figure 4. *Distribution of Rabies **Positive** Animals by County, WVOLS, 2024 (N=26)*



Of the 494 animals tested by WV OLS, the majority 324 (66%) were tested due to human exposure, 84 (17%) were tested because of pet or domestic animal exposure, 44 (9%) were due to odd behavior, five (1%) were found dead, and 37 (7%) were categorized as "other," which includes unknown and specimens tested for surveillance purposes (Figure 5).

Figure 5. *Reported Reason for Rabies Testing, WV OLS, 2024 (N=494)*



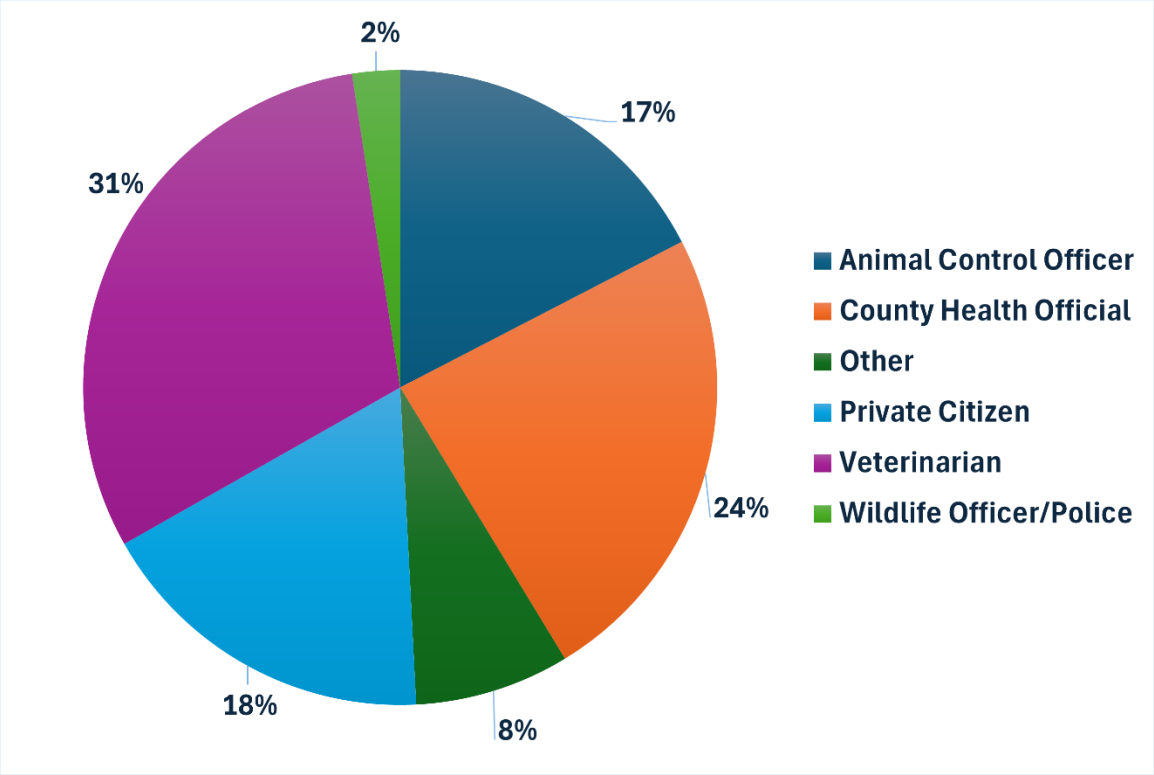
Of the 26 rabies positive animals tested by WV OLS, 15 (58%) had human exposure, nine (35%) had pet/domestic animal exposure, and two (8%) were tested for surveillance/odd behavior (Table 1).

Table 1. Rabies Positive Specimens, WV OLS, 2024 (N=26)

Reason for Rabies Testing	Frequency (Percent)
Human Exposure	15 (58%)
Pet/Domestic Animal Exposure	9 (35%)
Surveillance/Odd Behavior	2 (2%)

Veterinarians were the largest specimen submitters to WV OLS, submitting 152 (31%). County health officials/LHDs submitted 118 (24%). Private citizens submitted 87 (18%). Animal control officers submitted 86 (17%), and wildlife/police officers submitted 12 (2%). An additional 39 (8%) specimens were submitted by individuals categorized as "other," which includes missing information or unknown (Figure 6).

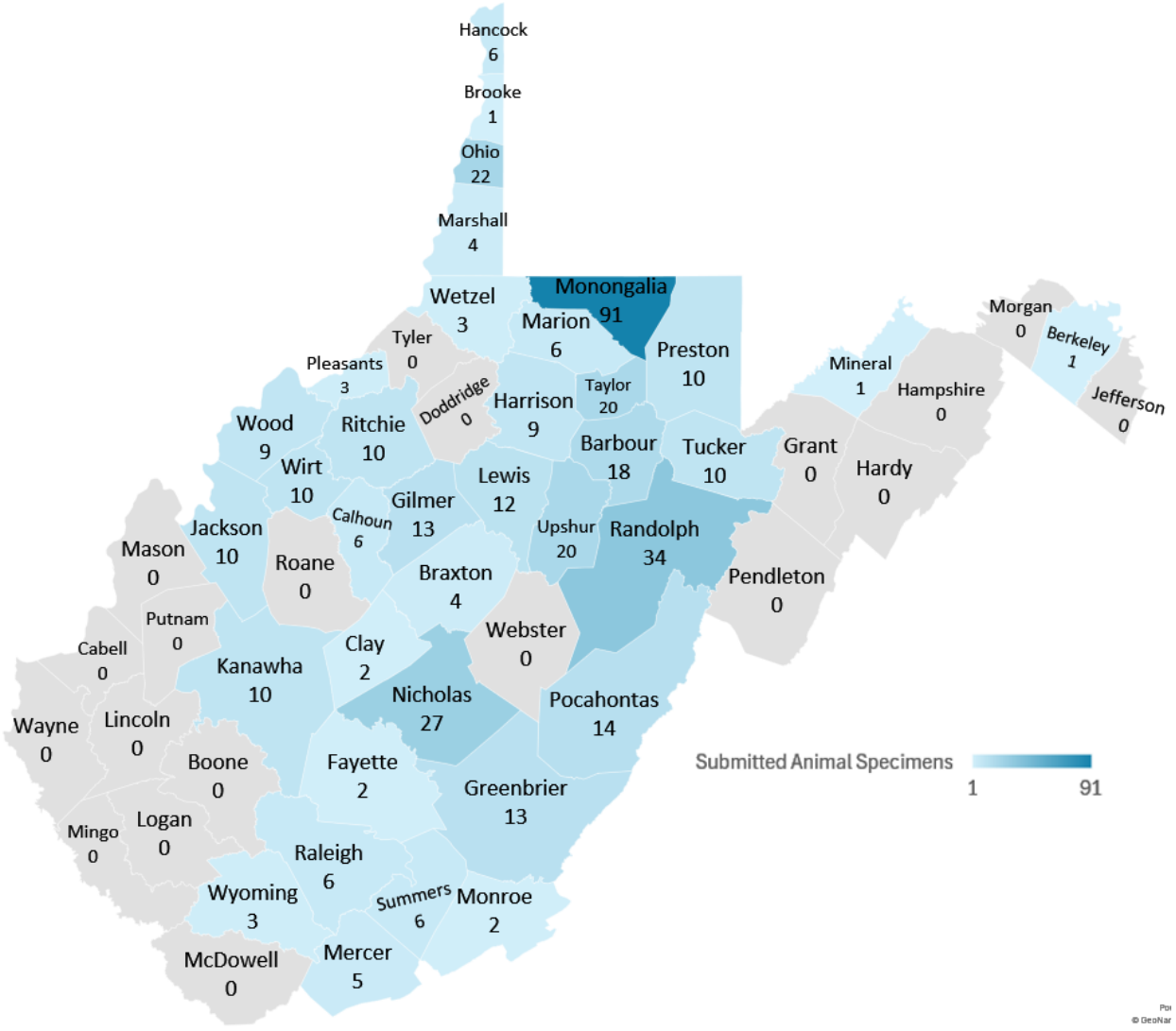
Figure 6. *Animal Rabies Specimen Submitters to WV OLS, 2024 (N=494)*



USDA Animal Rabies Testing

In 2024, USDA tested 423 animals from 36 WV counties for rabies (Figure 7). Of these, only two (0.5%) animals tested positive. Both positive specimens were raccoons identified in Preston County, located within the Eastern Surveillance Region.

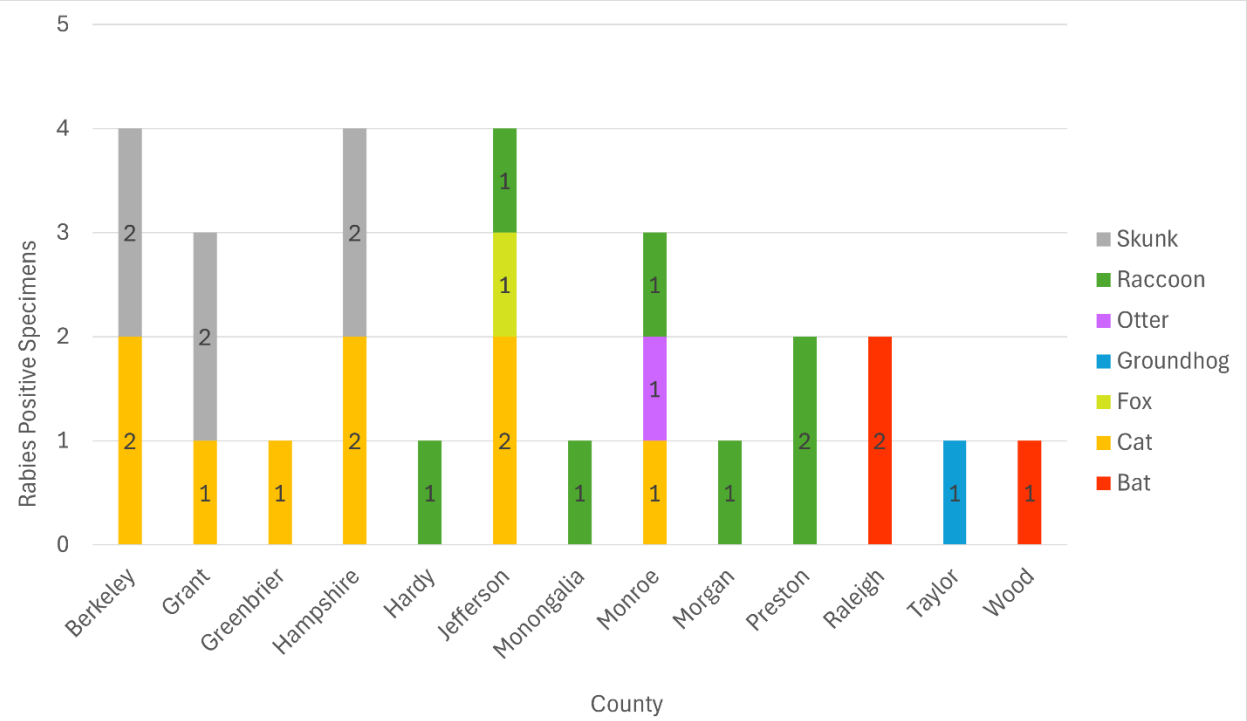
Figure 7. *Distribution of Animal Specimens **Submitted** for Rabies Testing by County, USDA, WV, 2024 (N=423)*



WV OLS and USDA Animal Rabies Testing

In 2024, WV OLS and USDA collectively tested 917 specimens for rabies in WV. Of which 28 (3%) were positive for rabies. The positive specimens included three (10%) bats, nine (32%) cats, one (4%) fox, one (4%) groundhog, one (4%) otter, seven (25%) raccoons, and six (21%) skunks (Figure 8). Notably, 23 (82%) of the positive animals were found in the Eastern Surveillance Region, which comprises Berkeley, Grant, Greenbrier, Hampshire, Hardy, Jefferson, Monongalia, Monroe, Morgan, and Taylor counties.

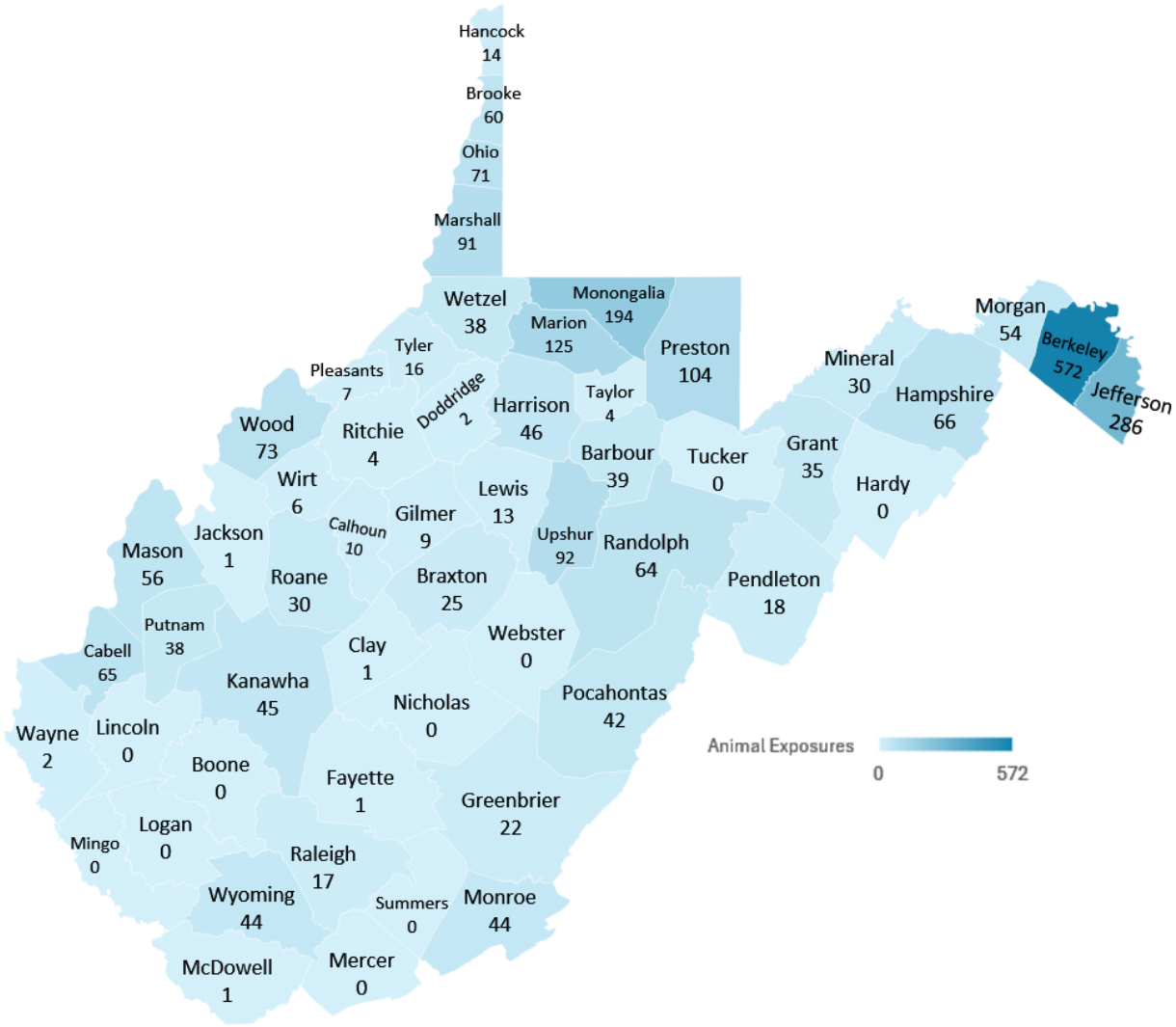
Figure 8. *Rabies Positive Animals Tested by WV OLS and USDA by County, WV,2024 (N=28)*



Geographic Distribution of Reported Animal Encounters

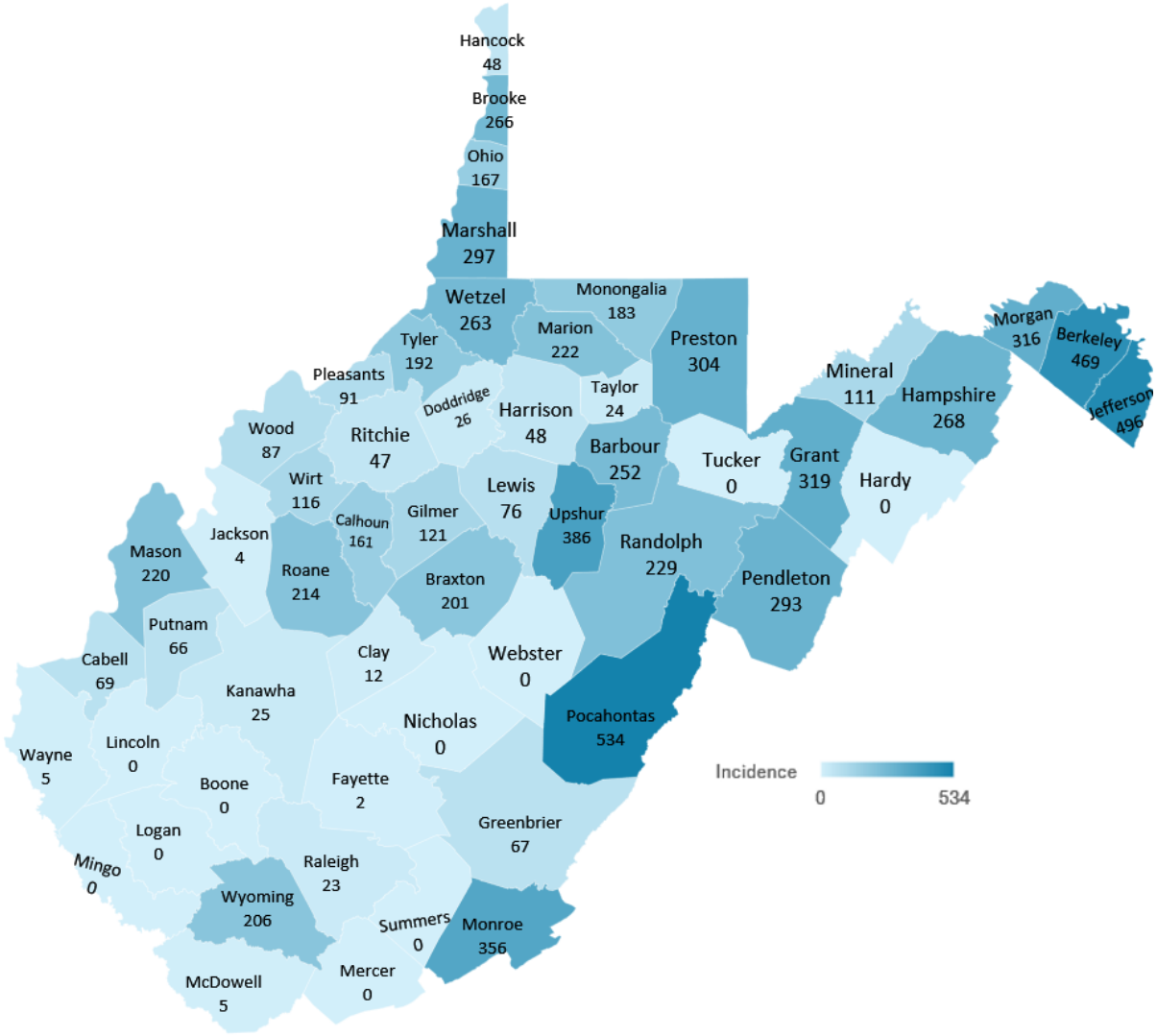
There were a total of 2,577 animal bite reports and OPRE reported in WVEDSS for MMWR year 2024. Berkeley County, located in the Eastern Surveillance Region, reported the highest number of animal bites and OPRE, with 572 cases representing 22% of all reported animal encounters (Figure 9).

Figure 9. *Count of Animal Exposures by Patient County of Residence, WV, 2024 (N=2577)*



Pocahontas County, located in the Eastern Surveillance Region, reported the highest incidence of animal encounters, with 534 per 100,000 population (Figure 10)

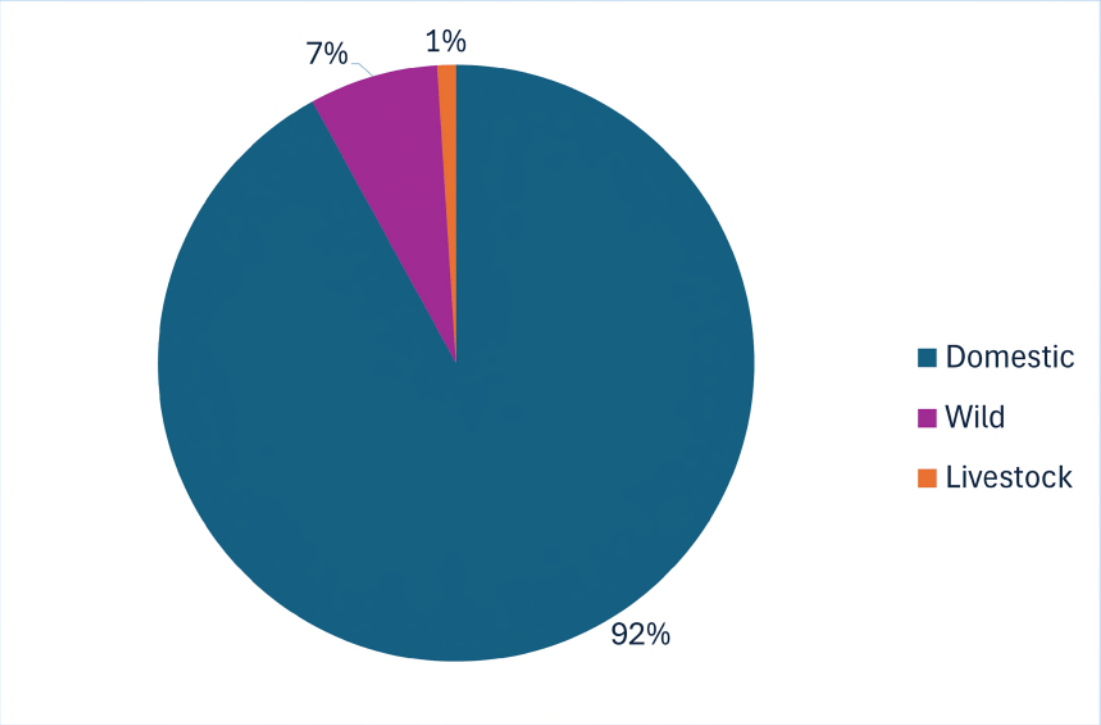
Figure 10. *Incidence of Animal Exposure per 100,000 by Patient County of Residence, WV, 2024*



Species Involved in Reported Animal Encounters

Among the 2,577 animal encounters reported, 2,369 (92%) were domestic animals, 196 (7%) wild, and 12 (1%) livestock (Figure 11).

Figure 11. *Animal Encounter Species Grouped, WV, 2024 (N=2577)*



Wild animals: Bat, Bear, Coyote, Fox, Groundhog, Mustelid, Opossum, Primate, Raccoon, Rabbit, Rodent, or Skunk
Livestock: Cow, Donkey, Goat, Horse, or Pig
Domestic: Cat or Dog

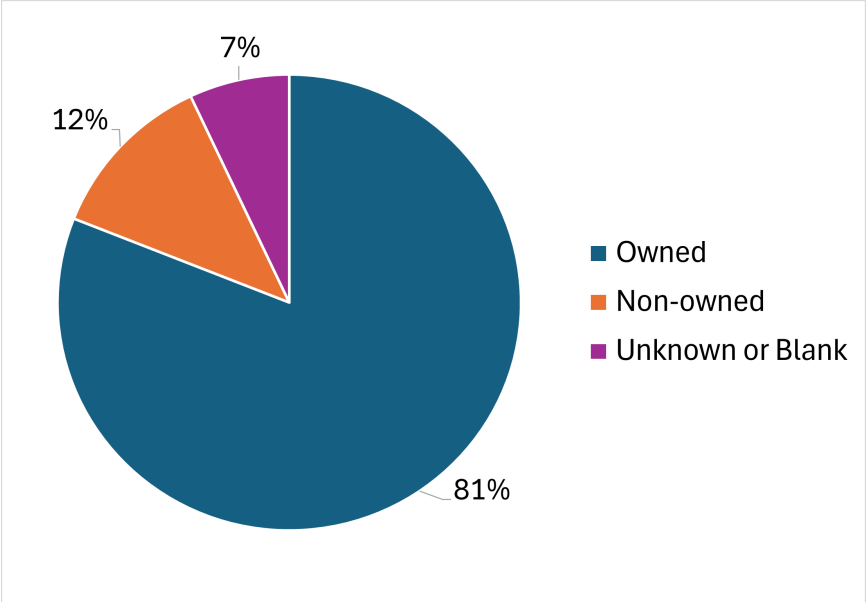
Among the 2,577 documented animal encounters, LHDs recorded the species involved in every encounter. Bats were the most frequently reported wild species, accounting for 83 (3%) encounters. Among domestic animal encounters, dogs and puppies represented the majority, comprising 1,631 (63%) (Table 2).

Table 2. *Animal Encounter Species, WV, 2024 (N=2577)*

Species	Frequency (Percent)
Bat	83 (3%)
Bear	1 (0.04%)
Cat or Kitten	738 (29%)
Coyote	3 (0.12%)
Dog or Puppy	1631 (63%)
Donkey	1 (0.04%)
Fox	2 (0.08%)
Goat	1 (0.04%)
Horse	6 (0.23%)
Mustelid	5 (0.19%)
Opossum	3 (0.12%)
Pig	4 (0.16%)
Primate	2 (0.08%)
Rabbit	8 (0.31%)
Raccoon	41 (1.59%)
Rodent	42 (1.63%)
Skunk	6 (0.23%)
Total	2,577

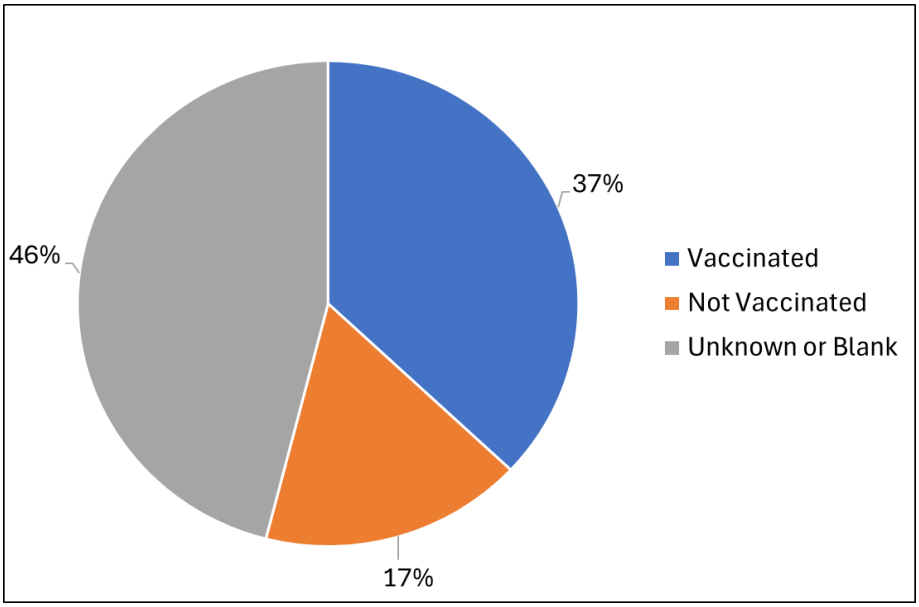
Among the 2,369 domestic animals, 1,917 (81%) were owned pets, 290 (12%) were non-owned, and 162 (7%) were documented as unknown or blank (Figure 12).

Figure 12. *Domestic Animal Ownership Status, WV, 2024 (N=2369)*



Among domestic animals, 875 (37%) were documented as being vaccinated, 393 (17%) were not vaccinated, and 1,101 (46%) were documented as unknown or blank (Figure 13).

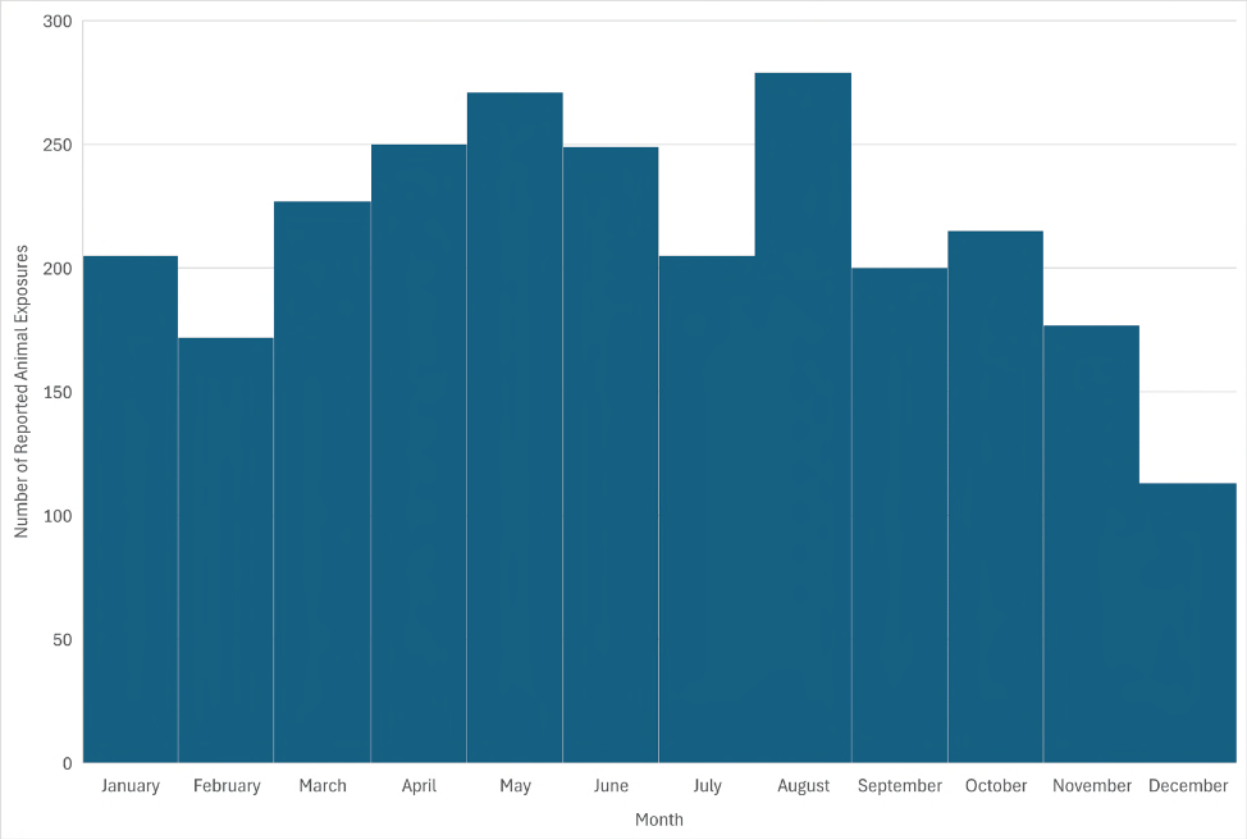
Figure 13. *Domestic Animal Rabies Vaccination Status, WV, 2024 (N=2369)*



Animal Encounters by Month

In 2024, the number of reported animal encounters peaked in May and August (Figure 14).

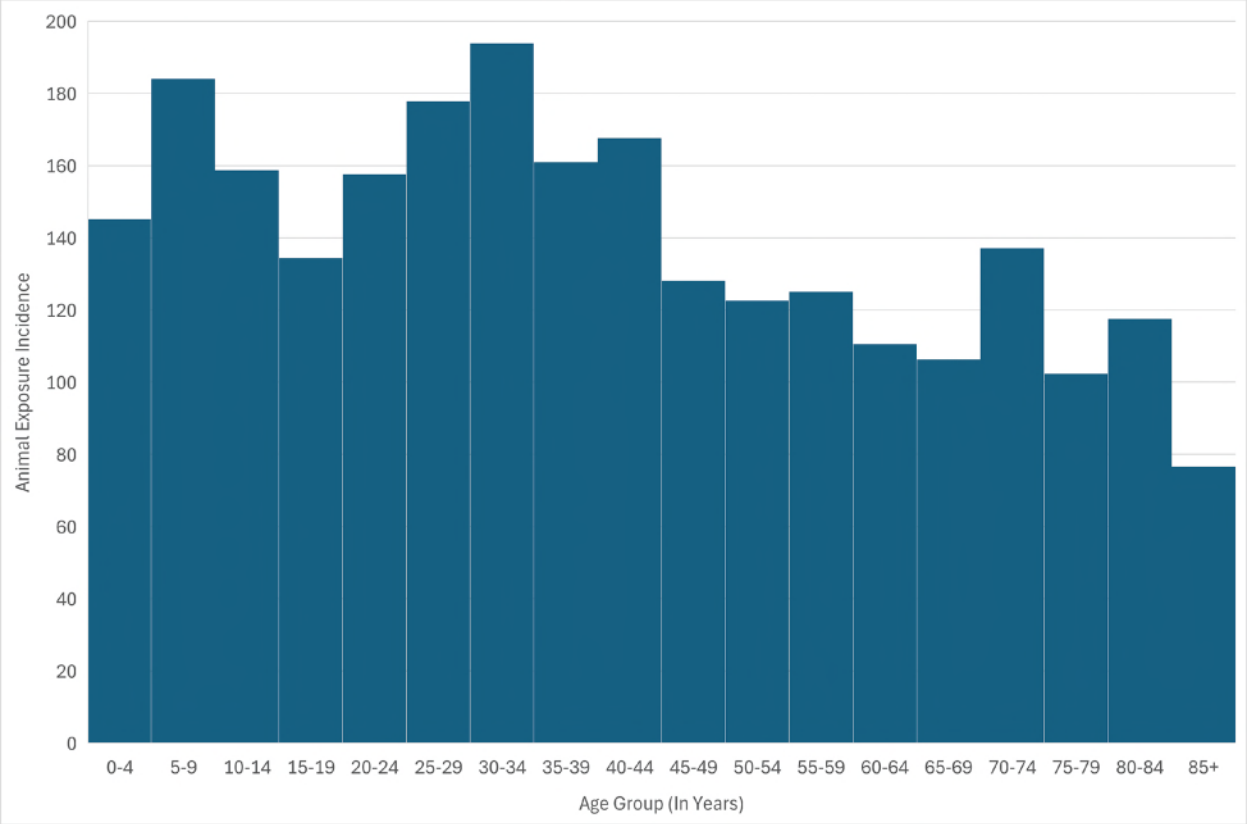
Figure 14. *Reported Animal Exposures by Month, WV, 2024 (N=2577)*



Animal Encounters by Age Group

In 2024, reports of animal encounters encompassed individuals from less than one year of age to 96 years, with a median age of 36 years. Individuals aged 30–34 years had the highest incidence rate of 194 animal encounters per 100,000 population (Figure 15).

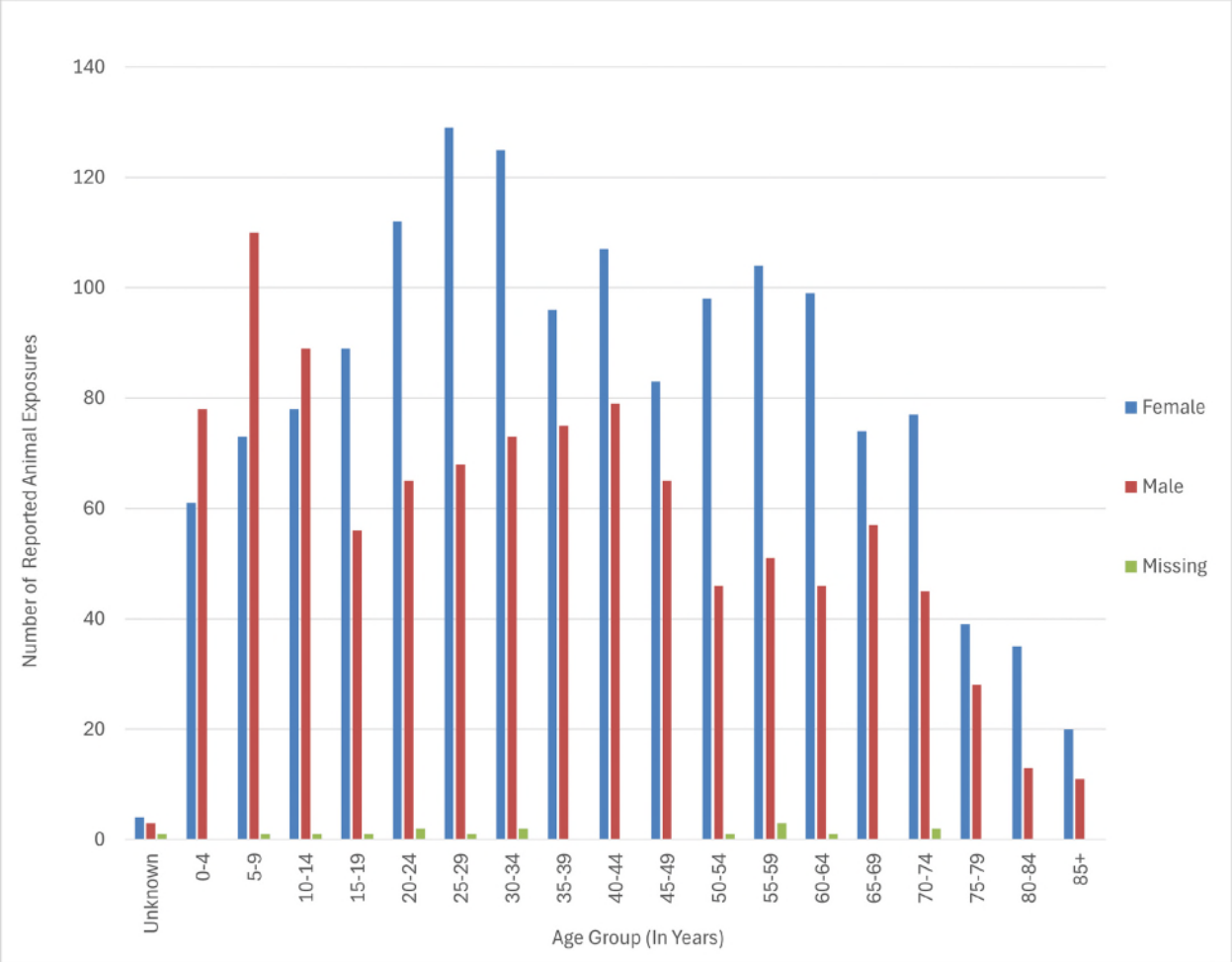
Figure 15. *Incidence of Animal Exposures Per 100,000 by Age Group, WV, 2024*



Animal Encounters by Age and Gender

Of the 2,577 encounters, 1,503 (58%) were female. However, in age groups 0 – 14 years, males had more animal encounters than females. Meanwhile females had more animal encounters for those 15 years of age and older (Figure 16).

Figure 16. *Reported Animal Exposure by Age and Gender, WV, 2024*



Occupational Exposures

Of the 2,577 animal exposures, 1,585 (62%) were of working age. Among this group, 168 (11%) had information on occupation. Ninety-eight percent were in an occupation that directly works with animals (e.g., veterinary care or animal shelter) or frequently encountered animals due to the nature of their job (e.g., delivery driver or home repair workers) (Table 3).

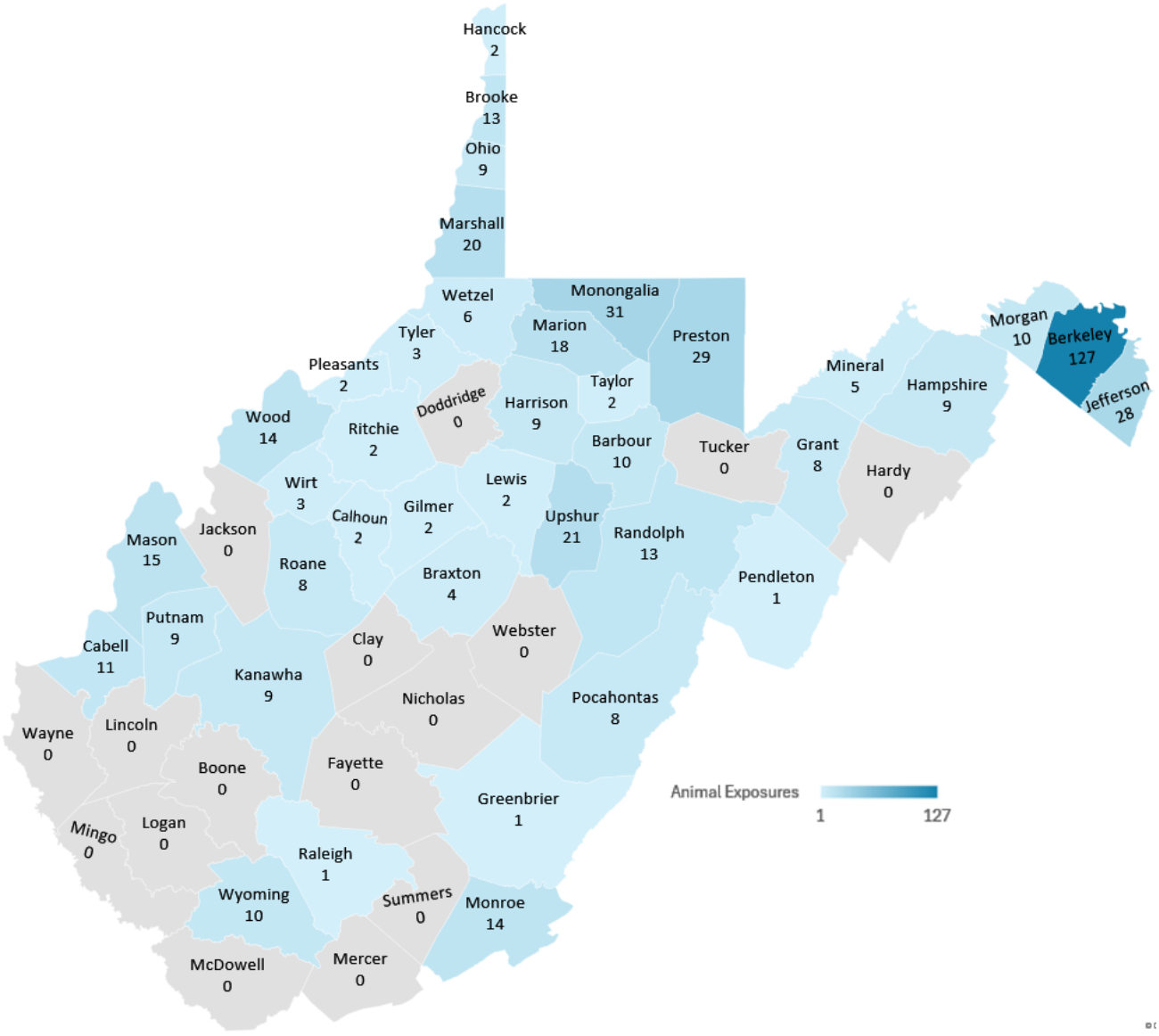
Table 3. *Occupation of Animal Exposure Victim by Gender, WV, 2024 (N=168)*

Occupation	Female	Male	Total
Animal Control	5	10	15
Animal Shelter	14	2	16
Cashier	1	0	1
Delivery Driver	11	26	37
Dog Daycare	3	0	3
Dog Trainer	1	0	1
Emergency Services	0	1	1
Home/Utility Repair	1	7	8
IRS	2	0	2
Motel Worker	0	1	1
Nurse	2	0	2
Park Ranger	0	1	1
Pastor	0	1	1
Pet Groomer	4	0	4
Police	2	10	12
Social Services	1	0	1
Teacher	1	1	2
Veterinary Care	57	3	60
Total	105	63	168

Animal Encounters Involving Children

In West Virginia, 491 (19%) animal encounter reports involved children aged 0-14 years (Figure 17). In 2024, seven animal encounters involving children under one year of age were reported. The youngest victim was eight months old. All these exposures, except for one involving a bat, were attributed to dogs or puppies. Of the cases, 57% involved female infants. Notably, five of the seven exposures involved bites or scratches to the head, face, or neck. One incident involved an injury to the hand, and one case involved bat exposure without a definite bite.

Figure 17. *Geographic Distribution of Reported Animal Exposures in Children Aged 0-14 years, WV, 2024 (N=491)*



Bodily Location of Injury

A total of 2,354 animal encounters documented the location of bodily injury. The majority of animal related injuries involved the hand, accounting for 1,030 (40%) of all documented encounters. Notably, 69 (3%) of encounters involved reported bat exposures without a definite bite (Table 4).

Table 4. *Location of Bodily Injury due to Animal Bites or OPRE, WV, 2024*

Location of Bodily Injury	Frequency (Percent)
Arm	**387 (15%)**
Bat Exposure with No Definite Bite	**69 (3%)**
Foot	**51 (2%)**
Hand	**1030 (40%)**
Head/Neck/Face	**316 (12%)**
Leg	**344 (13%)**
Multiple Affected Body Parts	**168 (7%)**
Torso/Chest/Back	**58 (2%)**
Unknown	**154 (6%)**

Patient Care

Among the 2,577 animal bites 54 (2%) were hospitalized and 2,114 (82%) had documented patient care of their wound being cleansed (Table 5).

Table 5. *Reported Wound Care After Animal Encounter, WV, 2024*

Wound Care	Frequency (Percent)
Cleansed	**2114 (82%)**
Not Cleansed	**104 (14%)**
Unknown	**359 (4%)**

Post-Exposure Prophylaxis (PEP)

A total of 2,577 animal encounters were reported across West Virginia. Of these, LHDs recommended post-exposure prophylaxis (PEP) to 658 (26%) patients. However, only 283 individuals (11%) were documented as having completed the full PEP regimen. Across the surveillance regions of West Virginia, notable variations were observed in both the frequency of animal encounters and the rate of complete PEP documentation. The Eastern Region reported the highest number of encounters, 1,103, with 137 (12%) individuals completing the full PEP regimen (Table 6). The Northeastern Region followed with 475 encounters with 50 (11%) completing the regimen (Table 7). The Northern Region reported 290 encounters with 44 (15%) completing the regimen (Table 8). The Central Region reported 288 encounters with 23 (8%) completing the regimen (Table 9). The Southern Region reported 129 animal encounters with 9 (7%) completing the regimen (Table 10). The Western Region had 162 animal encounters with 12 (7%) completing the PEP regimen (Table 11). Lastly, Mid-Ohio Valley Region reported 130 animal encounters with only eight (6%) documented as having completed the full PEP regimen (Table 12).

Table 6. *Eastern Region PEP Documentation by LHDs, WV, 2024*

County of Residence	Number of Animal Encounter Reports	Number and Percent of PEP Complete
Berkeley	**572**	**67 (12%)**
Grant	**35**	**6 (17%)**
Hampshire	**66**	**15 (23%)**
Hardy	**0**	**0 (0%)**
Jefferson	**286**	**29 (10%)**
Mineral	**30**	**1 (3%)**
Morgan	**54**	**12 (22%)**
Pendleton	**18**	**0 (0%)**
Pocahontas	**42**	**7 (17%)**
Total	**1103**	**137 (12%)**

Table 7. *Northeastern Region PEP Documentation by LHDs, WV, 2024*

County of Residence	Number of Animal Encounter Reports	Number and Percent of PEP Complete
Doddridge	**2**	**1 (50%)**
Harrison	**46**	**1 (2%)**
Marion	**125**	**11 (9%)**
Monongalia	**194**	**29 (15%)**
Preston	**104**	**8 (8%)**
Taylor	**4**	**0 (0%)**
Total	**475**	**50 (11%)**

Table 8. *Northern Region PEP Documentation by LHDs, WV, 2024*

County of Residence	Number of Animal Encounter Reports	Number and Percent of PEP Complete
Brooke County	60	7 (12%)
Hancock County	14	1 (7%)
Marshall County	91	4 4(%)
Ohio County	71	26 (37%)
Tyler County	16	1 (6%)
Wetzel County	38	5 (13%)
Total	290	44 (15%)

Table 9. *Central Region PEP Documentation by LHDs, WV, 2024*

County of Residence	Number of Animal Encounter Reports	Number and Percent of PEP Complete
Barbour	39	2 (5%)
Braxton	25	2 (8%)
Clay	1	0 (0%)
Gilmer	9	0 (0%)
Kanawha	45	1 (2%)
Lewis	13	0 (0%)
Nicholas	0	0 (0%)
Tucker	0	0 (0%)
Randolph	64	11 (17%)
Upshur	92	7 (8%)
Webster	0	0 (0%)
Total	288	23 (8%)

Table 10. *Southern Region PEP Documentation by LHDs, WV, 2024*

County of Residence	Number of Animal Encounter Reports	Number and Percent of PEP Complete
Fayette	1	1 (100%)
Greenbrier	22	1 (5%)
McDowell	1	0 (0%)
Mercer	0	0 (0%)
Monroe	44	7 (16%)
Raleigh	17	0 (0%)
Summers	0	0 (0%)
Wyoming	44	0 (0%)
Total	129	9 (7%)

Table 11. *Western Region PEP Documentation by LHDs, WV, 2024*

County of Residence	Number of Animal Encounter Reports	Number and Percent of PEP Complete
Boone	**0**	**0 (0%)**
Cabell	**65**	**2 (3%)**
Jackson	**1**	**1 (100%)**
Lincoln	**0**	**0 (0%)**
Logan	**0**	**0 (0%)**
Mason	**56**	**0 (0%)**
Mingo	**0**	**0 (0%)**
Putnam	**38**	**9 (24%)**
Wayne	**2**	**0 (0%)**
Total	**162**	**12 (7%)**

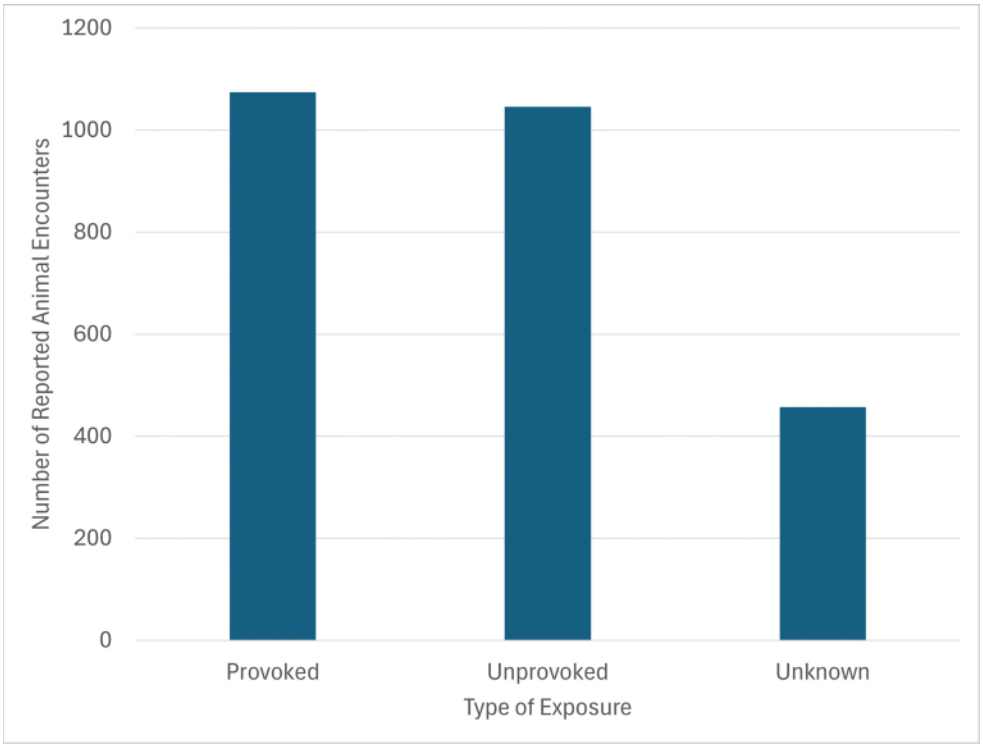
Table 12. *Mid-Ohio Valley Region PEP Documentation by LHDs, WV, 2024*

County of Residence	Number of Animal Encounter Reports	Number and Percent of PEP Complete
Calhoun	**10**	**2 (20%)**
Pleasants	**7**	**0 (0%)**
Ritchie	**4**	**0 (0%)**
Roane	**30**	**2 (7%)**
Wirt	**6**	**1 (17%)**
Wood	**73**	**3 (4%)**
Total	**130**	**8 (6%)**

Types of Exposure

Provoked animal exposures are defined as incidents in which human actions or interactions contribute to an increased risk of a bite or attack (e.g., feeding, grabbing, threatening, etc.). In contrast, unprovoked exposures occur without any apparent trigger. Among the 2,577 reported animal encounters in 2024, 1,074 (42%) were reported as provoked, 1,046 (40%) as unprovoked, and 457 (18%) as unknown (Figure 18).

Figure 18. *Type of Exposure of Reported Animal Encounters, WV, 2024 (N=2577)*



Timeliness of Reporting

Of the 55 counties that make up West Virginia, 31 reported at least 10% of their animal encounter reports within 24 hours (Table 13). Overall, 1,142 (44%) animal encounter reports were reported within 24 hours and 1,435 (56%) were reported late.

Table 13. *Timeliness of Reporting Animal Encounters, WV, 2024*

County of Residence	Count of Reported Animal Bites	Count of Animal Encounters Reported within 24 hours	Percent of Encounters reported within 24 hours
Berkeley	572	500	87%
Brooke	60	35	58%
Cabell	65	9	14%
Calhoun	10	1	10%
Doddridge	2	1	50%
Fayette	1	1	100%
Grant	35	6	17%
Greenbrier	22	15	68%
Hancock	14	6	43%
Jackson	1	1	100%
Jefferson	286	270	94%
Kanawha	45	12	27%
Lewis	13	2	15%
Marion	125	34	27%
Marshall	91	19	21%
Mason	56	30	54%
Mineral	30	3	10%
Monroe	44	21	48%
Morgan	54	48	89%
Pendleton	18	12	67%
Pocahontas	42	8	19%
Preston	104	41	39%
Raleigh	17	13	76%
Ritchie	4	4	100%
Roane	30	17	57%
Taylor	4	1	25%
Tyler	16	2	13%
Wirt	6	1	17%
Wood	73	12	16%

Completeness of Reporting

The most frequently missing variable in the dataset was the outcome of the animal involved. For 1246 cases (48%), the outcome was reported as unknown, indicating that the LHD was unable to determine the animal's health status following human exposure (Table 14).

Table 14. *Missing Variables from WVEDSS Animal Encounter Reporting, WV, 2024 (N=2577)*

Missing Variable	Frequency (Percent)
Age	**8 (0.31%)**
Gender	**16 (0.62%)**
Race	**368 (14%)**
Ethnicity	**568 (22%)**
Zip Code	**187 (7%)**
Animal Exposure Date	**14 (0.5%)**
Was exposing animal vaccinated?	**369 (14%)**
Was there a break in skin?	**38 (1.5%)**
Was rabies education provided?	**61 (2.4%)**
Was animal provoked?	**457 (18%)**
Animal final status in confinement?	**1249 (48%)**
Was patient lost to follow up?	**288 (11%)**

Discussion

In summary, of the 917 animal specimens tested by WV OLS and USDA, 28 (3%) were rabies positive. Of the 28 rabies positive specimens, 23 (82%) were animals from the Eastern Surveillance Region. Of the 494 animal specimens tested through WV OLS, 324 (66%) were tested due to human exposure, and 15 (4.6%) of these animals involved in human exposure were positive. Of the 15 positive animals tested through WV OLS, nine were domestic cats, emphasizing the ongoing risks associated with unvaccinated, stray, or roaming domestic animals. According to the Federation of Humane Organizations of West Virginia, there are over 118,000 stray cats in West Virginia. The majority of these cats are feral and have not been spayed or neutered or received any vaccinations (Bruner, 2024). According to APHIS (2021), free-ranging and feral cats pose a public health risk as they are the most common vector of rabies in domestic animals. In wildlife, raccoons tested positive most frequently through testing at WV OLS and USDA, with 7 (0.76%) testing positive out of the 917 specimens tested in West Virginia for 2024. When looking at the reported animal encounter data, 41 (1.59%) of reported encounters involved raccoons.

The following are recommendations to improve animal rabies detection and testing:

1. Evaluate and refine criteria for submission of animal specimens for rabies testing to address low detection rates.
2. Public Education and Outreach:
    a. Launch statewide campaigns to raise awareness about the risks associated with contact with stray or unvaccinated animals, the importance of pet vaccination, and how to report animal bites or exposures.
    b. Launch statewide campaigns to raise awareness about the risks associated with contact with wild animals or stray animals.
    c. When animals test positive for rabies LHDs should communicate to the public for awareness and risk mitigation.
3. Partnerships with Animal Welfare Organizations: Collaborate with humane societies, rescue groups, and local shelters to increase access to low-cost vaccination and sterilization services through clinics offered in rural and underserved communities.

Of the 2,577 animal encounters reported in West Virginia in 2024, the majority occurred in the Eastern Surveillance Region. Berkeley County reported the highest number of exposures, accounting for 572 (22%) reports. However, Pocahontas County had the highest incidence rate, with 534 reported encounters per 100,000 population. WV OLS and USDA laboratory data revealed 28 positive rabies specimens of the 917 tested for rabies. Of the 28 rabies positive animals, 23 (82%) were from the Eastern Surveillance Region. These findings suggest a potential correlation between geographic location, frequency of animal exposures, and prevalence of rabies positive animals.

Of the 2,577 reported animal encounters in 2024, 2,369 (92%) involved domestic animals, specifically dogs (1,631, 63%) and cats (738, 29%), indicating that pets represent the primary source of reported exposures. Among these domestic animals, 1,917 (81%) were owned pets, but only 875 (37%) were documented as being vaccinated. These findings suggest a need for education for pet owners on the importance of rabies vaccinations for their pets.

Individuals aged 30–34 years had an incidence rate of 194 animal encounters per 100,000 population. Nineteen percent of the 2,577 animal encounters involved children aged 0–14 years, with 1.4% (seven cases) involving infants under the age of one. According to the CDC (2024) children between the ages of 5-14 years are disproportionately affected by animal bites, the highest incidence occurring in the 5-9 age range. According to 2024 data, the 5-9 age group experienced the second highest incidence rate of animal encounters, at 184 per 100,000 population. Of the cases reported in this age group, males accounted for 110 (60%).

Of the 2,577 reported animal encounters in 2024, 1,503 (58%) of patients were female. According to the occupational information gathered through WVEDSS investigations, 105 women reported working in an occupation with direct care to animals or around animals when completing job related tasks. Additionally, women frequently shoulder a greater portion of the responsibility for animal care, so they may be more vulnerable to bites in pet owner situations. According to

Ackerman et al. (2023) from their study on 199 animal foster caregivers at animal shelters within the U.S., they found that most volunteers were females (89.3%). According to the CDC (2023), 69% of veterinarians, 90% of veterinary technicians, 80% of veterinary assistants and laboratory animal workers are female. In occupations related to animal care such as veterinary work, animal control, and shelter services women were more frequently represented than men, suggesting greater occupational exposure risks for females. Analysis of 2024 occupational data revealed that among the 60 patients employed in veterinary care, 57 (95%) were female.

The following are recommendations to address animal exposures:

1. Public Education and Outreach:
    a. Implement statewide campaigns to raise awareness for animal and pet safety, including the need for routine pet vaccinations.
    b. Targeted interventions for individuals 30-34 years of age, females, and male children 5-9 years of age.
    c. Implement statewide initiatives to provide education on animal handling practices, proper use of PEP in occupational settings, and strategies for preventing injuries when working with animals.
    d. Implement statewide initiatives aimed at enhancing the health and safety of those working in occupational exposures with animals through educational programs and guidance for pre-exposure prophylaxis (PrEP).

Of the 2,577 animal encounters for 2024, 1,074 (42%) were reported as provoked incidents, indicating that the attack occurred because of deliberate interaction or behavior that triggered the animal's response. According to Maniscalco & Edens (2025) animal bites or OPRE account for 1% of emergency department (ED) visits in the U.S. Animal encounters that involve animal attacks where a patient is bitten by an animal can be superficial or even fatal. Ninety-five percent of these ED visits are from domesticated cat or dog encounters. Physical trauma from teeth piercing or tearing of soft tissue, as well as blunt force fractures from dog bites, can occur. Cat bites are usually deep and narrow (Maniscalco & Edens, 2025). Even the most minor wound could become infected, which is why it is so important to seek medical attention after these events. Of 2,577 animal encounter reports documented in 2024, 54 (2%) cases were hospitalized and 2,354 animal encounter cases with documented bodily locations of injury. Among these 2,354 encounters with documented bodily locations of injury, injuries to the hand were most prevalent, accounting for 1,030 (40%) encounters. The CDC (2024) recommends wounds from animal bites be washed with soap and water for 15 minutes to aid in flushing out any virus. Of the 2,577 reported animal encounters in West Virginia, 2,114 (82%) had documented wound cleansing, which is an essential first step in post-exposure care. PEP is a critical intervention following exposure to rabid or potentially rabid animals. Rabies is fatal without timely administration of PEP. In West Virginia during 2024, LHDs recommended PEP to 658 (26%) patients. However, 283 (11%) patients were documented to have received the full PEP regimen. The accuracy of PEP-related data for 2024

may be limited due to incomplete or inconsistent documentation, potentially leading to underestimation of PEP utilization.

The following are recommendations to address response to animal exposures:

1. Implement statewide educational campaigns to raise awareness for animal and pet safety, how to prevent animal bites or OPRE, and what to do if you are bit or experience OPREs.
2. Provide community outreach and education on appropriate interactions with animals, specifically making sure the public understands the implications of provoking an animal.
3. Provide education to health care providers on the recommendations for PEP.
4. Provide education to LHDs on the importance of proper documentation of PEP and the need for patients to follow PEP schedule.

Animal bites and OPRE are mandated to be reported within 24 hours of notification. Of the 2,577 animal encounters reported, 1,435 (56%) were entered into WVEDSS by LHDs past the 24 hour window of notification. Delays in reporting could hinder timely public health response. Data completeness also remains a significant challenge. Nearly 48% of cases in WVEDSS listed the animal outcome as 'unknown' meaning the LHD could not determine the animal's health status after the confinement or observation period. This uncertainty may result from uncooperative pet owners, stray or feral animals, or wildlife that could not be safely captured for testing. Complete and timely data is essential for guiding appropriate public health recommendations, managing rabies risk, and preventing unnecessary PEP. However, data completeness may be limited as some local health departments may be reporting to another electronic system known as Health Space and might not be entering all animal encounter reports into WVEDSS. Furthermore, animal bites or OPRE occurring in West Virginia may be underreported if individuals do not seek medical attention.

The following is a recommendation to improve animal encounter data quality:

1. Provide education and training to LHD on the importance of thorough case investigation, data collection, and data entry for WVEDSS.
2. Follow up with counties that did not report animal encounters for 2024 to provide education on the importance of entering these encounters into WVEDSS.

The essential partnership between WVDH and USDA in the ORV project is critical to the control of animal rabies as it targets wildlife populations particularly raccoons and skunks, which are a primary reservoir for rabies in West Virginia by distributing oral rabies vaccine baits in targeted areas. The ORV project helps prevent rabies from spreading to people and domestic animals by reducing rabies rates in wildlife. This partnership emphasizes how important it is for the veterinary, wildlife, and public health sectors to work together to effectively control and prevent rabies at its source.

The following are recommendations to maintain a One Health approach:

1. Hold regularly scheduled meetings with One Health partners such as USDA, WVDA, WVDNR, veterinarians, wildlife management, and the Office of Environmental Health Services (OEHS).
2. Develop a detailed and time-managed agenda to ensure the One Health meeting remains focused and efficient. The agenda should include dedicated discussions on the surveillance of animal bites and OPRE, and trends in positive rabies animals.
3. Consider opening partnerships for One Health to include community members, such as animal shelters.
4. Attend One Health partnership meetings held by other partners, such as events held by West Virginia University, WVDA, and USDA.

In conclusion, the data analysis of the 2024 reported animal encounters revealed the need for public health education and outreach efforts to West Virginians most affected by animal encounters, including the Eastern Surveillance Region, children, women, pet owners, and individuals employed in animal-related occupations. The findings highlight not only geographic and demographic disparities in encounter rates but also potential gaps. To address these issues, future efforts should prioritize educational campaigns, enhance community engagement, and collaboration between public health and One Health partners, such as USDA, WVDA, WVDNR, veterinarians, wildlife management, and OEHS. Integrating these strategies will be essential for reducing risk while improving positive behaviors between humans and animals.

This report also revealed the need to educate and train reporters on the importance of accurate and complete documentation of animal encounters, specifically documentation of PEP and the outcome of the animal. Lastly, maintaining partnerships through a One Health approach is essential for sustaining an effective, and coordinated response to all human-animal interactions particularly those with potential public health implications. These collaborations enable the integration of expertise and resources, fostering intervention strategies that are critical for mitigating public health threats.

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