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Increase in Travel-Associated and Locally Acquired Dengue Cases — United States, 2024

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Abstract

Dengue is a mosquitoborne viral disease that can cause mild to severe illness and death. During 2010–2023, an average of 828 dengue cases (range = 202–2,055) were reported annually to ArboNET, the national arboviral surveillance system for the 50 U.S. states and the District of Columbia. During 2024, a record 3,798 dengue cases were reported, representing a 359% increase above the 2010–2023 annual average. Among these 3,798 cases, 97.2% were associated with travel outside the reporting jurisdiction during the 2 weeks preceding symptom onset; the remaining 2.8% were locally acquired. The number of dengue cases peaked during July–September (accounting for 41.6% of total annual cases), with the highest percentage (21.8%) of cases occurring among persons aged 50–59 years. Among travel-associated cases, acquisition occurred primarily in the Caribbean (including Puerto Rico and the U.S. Virgin Islands) (34.1%), North America (Mexico and the United States) (24.3%), and Central America (15.6%); Hispanic or Latino persons accounted for 57.5% of all cases. Among all patients, 36.1% required hospitalization, 2.8% of cases were severe, and six (0.2%) patients died. Among 1,204 patients with known dengue virus (DENV) serotype, DENV-3 was the most commonly reported (54.8%) among the four DENV serotypes. These findings underscore the urgent need for enhanced prevention strategies, clinical awareness, and tailored public health messaging for travelers to areas where dengue is endemic.

Introduction

Dengue, a mosquitoborne viral disease caused by four distinct dengue virus (DENV) types (1–4), is a leading cause of febrile illness in travelers returning to the United States from regions where the virus is endemic (*1*). Illness can be mild or life-threatening (*2*). Frequent or continuous DENV transmission in the United States is limited to six U.S. territories and freely associated states*; however, dengue cases occur annually among residents of the 50 U.S. states and the District of Columbia (DC) who travel to areas where dengue is endemic, and sporadic locally acquired cases have been reported from limited areas of the continental United States with competent mosquito vectors. During 2010–2023, an average of 828 dengue cases (range = 202–2,055) among residents of the 50 U.S. states and DC were reported annually to ArboNET, the national arboviral surveillance system; the majority of cases were travel associated. During 2024, a sharp increase in cases was reported among travelers returning from areas with endemic dengue (*3*), highlighting the importance of identifying and evaluating travel-associated cases, which might result in higher risk for autochthonous transmission in parts of the United States where dengue is not endemic. To better understand travel-associated and locally acquired dengue, this analysis describes dengue cases reported to CDC during 2024 from the 50 U.S. states and DC.

* Frequent or continuous risk is considered to be evidence of more than 10 locally acquired dengue cases in ≥3 of the previous 10 years. Dengue occurs frequently or continuously in the U.S. territories of American Samoa, Puerto Rico, and the U.S. Virgin Islands, and the freely associated states, including the Federated States of Micronesia, Marshall Islands, and Palau. Areas with Risk of Dengue | Dengue | CDC; Data and Statistics on Dengue in the United States | Dengue | CDC

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Methods

Data Source

Confirmed and probable dengue cases[†] reported to CDC from U.S. states and DC among persons with symptom onset in 2024 were included in the analysis. Cases were classified as dengue, denguelike illness, or severe dengue using the 2015 Council of State and Territorial Epidemiologists case definitions.[§] Case numbers are preliminary and might not reflect final counts for 2024.

[†] Confirmed cases required detection of DENV RNA by reverse transcription–polymerase chain reaction, DENV antigen, nonstructural protein 1 antigen, or immunoglobulin M (IgM) anti-DENV antibody without likely flavivirus cross exposure; probable cases had anti-DENV IgM detected among persons living in or traveling to an area with evidence of other flavivirus transmission. Dengue Virus Infections 2015 Case Definition | CDC

[§] Dengue is defined as the presence of fever (as reported by the patient or a health care provider) and one or more of the following signs and symptoms: nausea or vomiting, rash, aches and pains (e.g., headache, retro-orbital pain, joint pain, myalgia, or arthralgia), positive tourniquet test, leukopenia (total white blood cell count <5,000/mm^3), or any warning sign for severe dengue (i.e., abdominal pain or tenderness, persistent vomiting, or extravascular fluid accumulation [e.g., pleural or pericardial effusion or ascites]), mucosal bleeding at any site, liver enlargement of >0.8 in (>2 cm), or increasing hematocrit concurrent with a rapid decrease in platelet count. Denguelike illness is defined as the presence of fever as reported by the patient or a health care provider. Severe dengue is defined as dengue with any one or more of the following: 1) severe plasma leakage evidenced by hypovolemic shock or extravascular fluid accumulation with respiratory distress; 2) severe bleeding from the gastrointestinal tract or vagina requiring medical intervention; or 3) severe organ involvement, including elevated liver transaminases (aspartate aminotransferase or alanine aminotransferase ≥1,000 U/L), impaired consciousness, or heart or other organ involvement.

Analysis

Travel-associated cases were defined as those that occurred in persons who traveled outside their reporting jurisdiction in the 2 weeks preceding symptom onset. Persons who did not travel in the 2 weeks preceding symptom onset were considered to have locally acquired infections. The characteristics analyzed included case status, sex, age group, race and ethnicity, month of infection, patient outcome, DENV serotype, and most likely location of exposure. Incidences were calculated using 2024 U.S. Census Bureau population estimates. R (version 4.5.0; R Core Team) was used to conduct all analyses. This activity was reviewed by CDC, deemed not research, and conducted consistent with applicable federal law and CDC policy.[¶]

Results

Travel-Associated and Locally Acquired Dengue Cases

During 2024, a total of 3,798 dengue cases, including 2,252 (59.3%) confirmed and 1,546 (40.7%) probable cases, were reported to CDC from the 50 U.S. states and DC. These represent a 359% increase above the annual average of 828 cases per year during 2010–2023. Among these cases, 3,693 (97.2%) were travel associated, and 105 (2.8%) were locally acquired (Table 1). Overall, 1,581 (41.6%) of all travel associated and locally acquired cases occurred during the summer months,

[¶] 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

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TABLE 1. Characteristics of confirmed and probable travel-associated and locally acquired dengue cases — National Arbovirus Surveillance System, 50 U.S. states and the District of Columbia, 2024

Characteristic	No. (%)		
	Travel associated	Locally acquired	Total
Total	**3,693 (97.2)**	**105 (2.8)**	**3,798 (100.0)**
Case status*			
Confirmed	2,165 (58.6)	87 (82.9)	**2,252 (59.3)**
Probable	1,528 (41.4)	18 (17.1)	**1,546 (40.7)**
Sex			
Female	1,946 (52.7)	49 (46.7)	**1,995 (52.5)**
Male	1,745 (47.3)	56 (53.3)	**1,801 (47.4)**
Unknown	2 (0.1)	—	**2 (0.1)**
Age group, yrs, median (IQR)	**49 (31–61)**	**46 (31–57)**	**49 (31–61)**
0–10	110 (3.0)	2 (1.9)	**112 (2.9)**
11–19	383 (10.4)	10 (9.5)	**393 (10.3)**
20–29	397 (10.8)	12 (11.4)	**409 (10.8)**
30–39	481 (13.0)	13 (12.4)	**494 (13.0)**
40–49	582 (15.8)	25 (23.8)	**607 (16.0)**
50–59	806 (21.8)	23 (21.9)	**829 (21.8)**
60–69	570 (15.4)	8 (7.6)	**578 (15.2)**
≥70	364 (9.9)	12 (11.4)	**376 (9.9)**
Race and ethnicity			
Hispanic or Latino (any race)	2,115 (57.3)	70 (66.7)	**2,185 (57.5)**
American Indian or Alaska Native, NH	3 (0.1)	—	**3 (0.1)**
Asian, NH	229 (6.2)	3 (2.9)	**232 (6.1)**
Black or African American, NH	95 (2.6)	—	**95 (2.5)**
Native Hawaiian or Pacific Islander, NH	10 (0.3)	—	**10 (0.3)**
White, NH	605 (16.4)	28 (26.7)	**633 (16.7)**
Other/Multiple races	154 (4.2)	1 (1.0)	**155 (4.1)**
Unknown race and ethnicity	482 (13.1)	3 (2.9)	**485 (12.8)**
Month of illness onset			
Jan–Mar	636 (17.2)	6 (5.7)	**642 (16.9)**
Apr–Jun	594 (16.1)	10 (9.5)	**604 (15.9)**
Jul–Sep	1,528 (41.4)	53 (50.5)	**1,581 (41.6)**
Oct–Dec	935 (25.3)	36 (34.3)	**971 (25.6)**
Dengue classification†			
Denguelike illness	51 (1.4)	3 (2.9)	**54 (1.4)**
Dengue	3,538 (95.8)	101 (96.2)	**3,639 (95.8)**
Severe dengue	104 (2.8)	1 (1.0)	**105 (2.8)**
Hospitalized			
Yes	1,321 (35.8)	49 (46.7)	**1,370 (36.1)**
No	2,271 (61.5)	56 (53.3)	**2,327 (61.3)**
Unknown	101 (2.7)	—	**101 (2.7)**
Outcome			
Survived	3,522 (95.4)	104 (99.0)	**3,626 (95.5)**
Died	6 (0.2)	—	**6 (0.2)**
Unknown	165 (4.5)	1 (1.0)	**166 (4.4)**
DENV serotype (among 1,204 cases with known serotype)			
DENV-1	142 (12.5)	9 (13.0)	**151 (12.5)**
DENV-2	114 (10.0)	—	**114 (9.5)**
DENV-3	607 (53.5)	53 (76.8)	**660 (54.8)**
DENV-4	272 (24.0)	7 (10.1)	**279 (23.2)**
Location of exposure			
International (outside of U.S. states or territories)	3,259 (88.2)	—	**3,259 (85.8)**
Within a U.S. state or territory	246 (6.7)	105 (100.0)	**351 (9.2)**
Unknown	188 (5.1)	—	**188 (4.9)**

TABLE 1. (*Continued*) Characteristics of confirmed and probable travel-associated and locally acquired dengue cases — National Arbovirus Surveillance System, 50 U.S. states and the District of Columbia, 2024

Characteristic	No. (%)		
	Travel associated	Locally acquired	Total
U.S. state or territory of acquisition of travel-associated dengue (n = 246)			
Puerto Rico	188 (76.4)	—	**188 (76.4)**
U.S. Virgin Islands	54 (22.0)	—	**54 (22.0)**
Florida	4 (1.6)	—	**4 (1.6)**
Region of travel acquisition			
Caribbean§	1,259 (34.1)	—	**1,259 (34.1)**
North America	896 (24.3)	—	**896 (24.3)**
Central America	577 (15.6)	—	**577 (15.6)**
Asia	373 (10.1)	—	**373 (10.1)**
South America	346 (9.4)	—	**346 (9.4)**
Africa	40 (1.1)	—	**40 (1.1)**
Oceania	11 (0.3)	—	**11 (0.3)**
Europe	2 (0.1)	—	**2 (0.1)**
Multiple regions¶	1 (0)	—	**1 (0)**
Unknown	188 (5.1)	—	**188 (5.1)**

Abbreviations: DENV = dengue virus; IgM = immunoglobulin M; NH = non-Hispanic.

* Confirmed cases required detection of DENV RNA by reverse transcription–polymerase chain reaction, DENV antigen, nonstructural protein 1 antigen, or IgM anti-DENV antibody without likely flavivirus cross exposure; probable cases had anti-DENV IgM detected among persons living in or traveling to an area with evidence of other flavivirus transmission. Dengue 2015 Case Definition | CDC

† Dengue is defined as the presence of fever (as reported by the patient or a health care provider) and one or more of the following signs and symptoms: nausea or vomiting, rash, aches and pains (e.g., headache, retro-orbital pain, joint pain, myalgia, or arthralgia), positive tourniquet test, leukopenia (total white blood cell count <5,000/mm^3), or any warning sign for severe dengue (i.e., abdominal pain or tenderness, persistent vomiting, or extravascular fluid accumulation [e.g., pleural or pericardial effusion or ascites]), mucosal bleeding at any site, liver enlargement of >0.8 in (>2 cm), or increasing hematocrit concurrent with a rapid decrease in platelet count. Denguelike illness is defined as the presence of fever as reported by the patient or a health care provider. Severe dengue is defined as dengue with any one or more of the following: 1) severe plasma leakage evidenced by hypovolemic shock or extravascular fluid accumulation with respiratory distress; 2) severe bleeding from the gastrointestinal tract or vagina requiring medical intervention; or 3) severe organ involvement, including elevated liver transaminases (aspartate aminotransferase or alanine aminotransferase ≥1,000 U/L), impaired consciousness, or heart or other organ involvement.

§ Includes all Caribbean islands, including Puerto Rico and the U.S. Virgin Islands.

¶ Includes persons who traveled to more than one region.

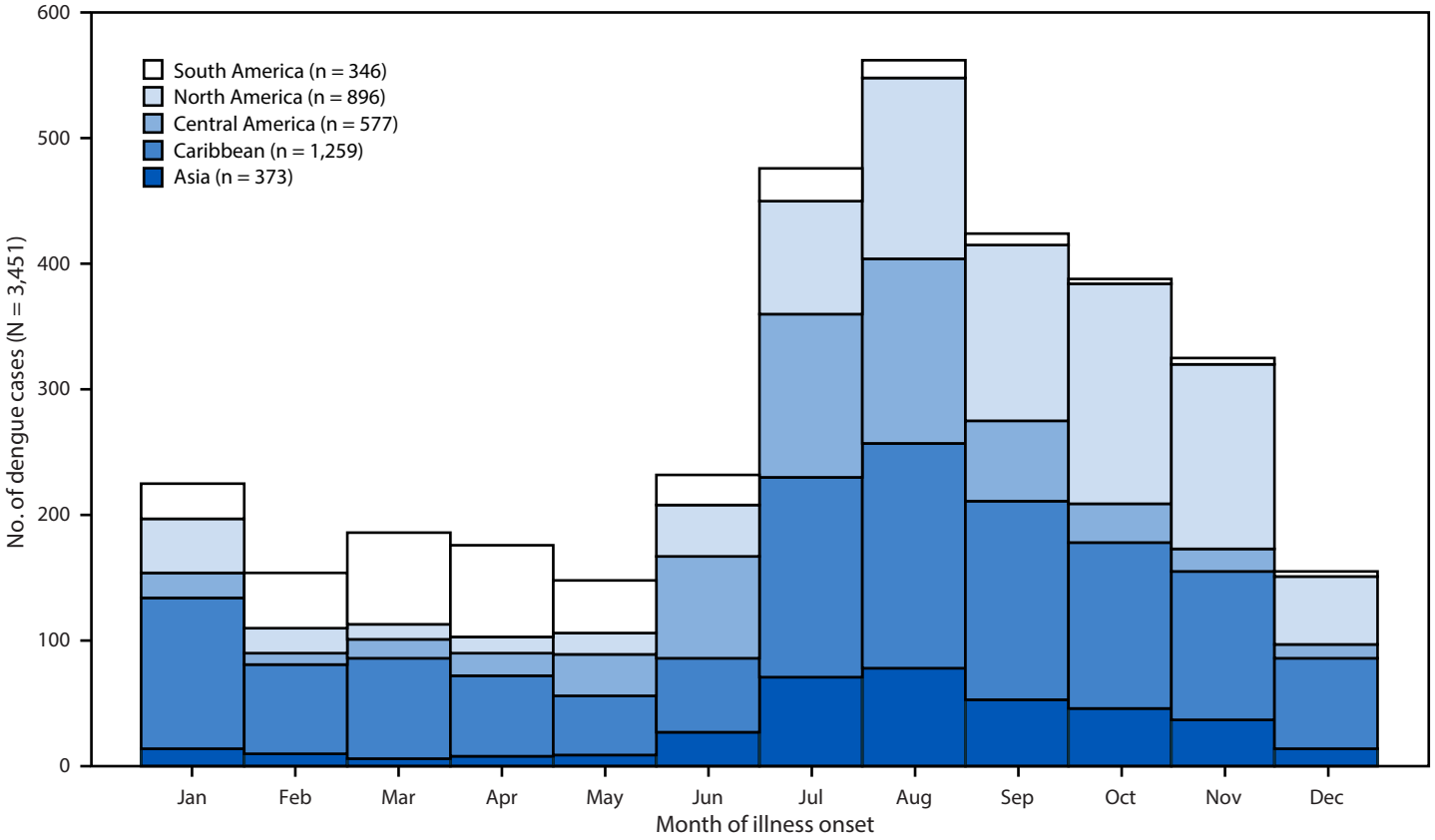
including 509 (13.4%) in July, 602 (15.9%) in August, and 470 (12.4%) in September (Figure).

Characteristics of Patients with Dengue

The median patient age was 49 years (IQR = 31–61 years); approximately one fifth of cases (21.8%) occurred in adults aged 50–59 years, followed by 16% in adults aged 40–49 years. Females accounted for 52.5% of cases. Overall, 2,185 (57.5%) patients identified as Hispanic or Latino (Hispanic), as did two thirds (66.7%) of patients with locally acquired cases.

Among all patients with travel-associated or locally acquired dengue, 54 (1.4%) had denguelike illness, 3,639 (95.8%) had

FIGURE. Travel-associated dengue cases, by region* of travel and month of illness onset — National Arbovirus Surveillance System, United States, 2024



* Includes regions with 50 or more cases. A total of 242 travel-associated cases are not included for Africa (40 cases), Oceania (11), Europe (two), multiple regions (one), and unknown locations (188). North America includes Mexico and the United States. The Caribbean and Central America are presented separately.

dengue, and 105 (2.8%) had severe dengue. More than one third (36.1%) of patients required hospitalization. Six (0.2%) deaths were reported, all among patients with travel-associated DENV infection who developed severe dengue. The highest case-fatality rate (CFR) (0.36%) occurred among adults aged 50–59 years; three deaths occurred among 829 patients in this age group, followed by two deaths among 578 adults aged 60–69 years (CFR = 0.35%), and one death among 409 adults aged 20–29 years (CFR = 0.24%).

DENV Serotypes

DENV serotype was available for 1,204 (31.7%) dengue cases. Among these, DENV-3 was the most commonly identified serotype (54.8%), followed by DENV-4 (23.2%), DENV-1 (12.5%), and DENV-2 (9.5%).

Geographic Distribution of Cases

The highest number of dengue cases among residents of U.S. states and DC occurred in Florida (1,044; 27.5% of cases), followed by California (720; 19.0%), New York (338; 8.9%), and Texas (241; 6.3%) (Table 2). The highest dengue incidence (4.47 per 100,000 population) occurred in Florida and was approximately four times the national incidence (1.12). Three jurisdictions reported locally acquired cases, including Florida (85 cases reported from 10 counties), California (18 from three counties), and Texas (two from two counties).

Reported Travel Among Persons with Travel-Associated Dengue

Among the 3,693 persons with travel-associated dengue, 3,259 (88.2%) reported international travel (outside U.S. states and territories), and 246 (6.7%) reported travel to a U.S. state or territory. Most of the 246 cases among travelers to U.S. jurisdictions occurred in Puerto Rico (76.4%) or the U.S. Virgin Islands (22.0%); 1.6% occurred in Florida. Among the 3,505 (94.9%) persons with travel-associated dengue and known exposure location, the most frequent destinations were Mexico (892; 25.4%), Cuba (633; 18.1%), and India (225; 6.4%) (Supplementary Figure). Among all travel-associated cases, the most frequently visited regions were the Caribbean (including Puerto Rico and the U.S. Virgin Islands [34.1%]), North America (Mexico and the United States) (24.3%),

TABLE 2. Travel-associated and locally acquired dengue cases, by state — National Arbovirus Surveillance System, United States, 2024

Jurisdiction	Total no. of cases (column %)	No. (row %)		Incidence*
		Locally acquired	Travel associated	
United States	**3,798 (100.0)**	**105 (2.8)**	**3,693 (97.2)**	**1.12**
Florida	**1044**	85	959	4.47
California	**720**	18	702	1.83
New York	**338**	0	338	1.70
Texas	**241**	2	239	0.77
Massachusetts	**143**	0	143	2.00
New Jersey	**127**	0	127	1.34
Illinois	**119**	0	119	0.94
Maryland	**80**	0	80	1.28
North Carolina	**70**	0	70	0.63
Washington	**67**	0	67	0.84
Pennsylvania	**66**	0	66	0.50
Georgia	**56**	0	56	0.50
Arizona	**53**	0	53	0.70
Colorado	**48**	0	48	0.81
Virginia	**47**	0	47	0.53
Connecticut	**45**	0	45	1.22
Minnesota	**44**	0	44	0.76
Michigan	**43**	0	43	0.42
Wisconsin	**39**	0	39	0.65
Oregon	**34**	0	34	0.80
Ohio	**33**	0	33	0.28
Indiana	**27**	0	27	0.39
Utah	**25**	0	25	0.71
Louisiana	**25**	0	25	0.54
South Carolina	**25**	0	25	0.46
Rhode Island	**19**	0	19	1.71
Tennessee	**19**	0	19	0.26
Hawaii	**16**	0	16	1.11
Kentucky	**15**	0	15	0.33
Arkansas	**14**	0	14	0.45
Nevada	**14**	0	14	0.43
Vermont	**13**	0	13	2.00
District of Columbia	**13**	0	13	1.85
New Mexico	**13**	0	13	0.61
Missouri	**12**	0	12	0.19
Alabama	**11**	0	11	0.21
New Hampshire	**10**	0	10	0.71
Nebraska	**10**	0	10	0.50
Iowa	**9**	0	9	0.28
Kansas	**8**	0	8	0.27
Oklahoma	**8**	0	8	0.20
Delaware	**7**	0	7	0.67
Idaho	**7**	0	7	0.35
Maine	**5**	0	5	0.36
Mississippi	**4**	0	4	0.14
Alaska	**3**	0	3	0.41
South Dakota	**3**	0	3	0.32
Montana	**3**	0	3	0.26
West Virginia	**2**	0	2	0.11
Wyoming	**1**	0	1	0.17

* Cases per 100,000 population, calculated using data from the U.S. Census Bureau.

Central America (15.6%) and Asia (10.1%).** Trends varied by month, with more cases occurring in persons returning from South America during January–May and more in persons returning from the Caribbean, North America, Central America, and Asia during July–November (Figure).

Discussion

The record number of dengue cases reported in residents of U.S. states and DC in 2024 represented a 359% increase above the annual average of 828 reported cases during 2010–2023. The 2024 increase was primarily caused by an increase in travel-associated cases (97.2% of reported dengue cases) and reflects the sharp global surge in dengue cases observed in 2024 (*3*). Worldwide, dengue cases reached 14.1 million in 2024, including approximately 13 million cases in the region of the Americas, an increase of approximately 8 million cases compared with 2023 (*3*,*4*). In U.S. states, cases increased seasonally among residents who traveled to areas experiencing dengue outbreaks, with more cases among travelers to South America during the first half of the year and more cases among travelers to Central America and the Caribbean during the second half of the year (*3*). Dengue cases among residents of the continental United States who traveled to the Caribbean included those in persons who traveled to the U.S. territories of Puerto Rico and the U.S. Virgin Islands; both territories reported dengue outbreaks in 2024 (*5*).

Locally acquired cases in Florida, California, and Texas were reported from multiple counties within each state, suggesting multiple introduction events rather than extensive ongoing transmission in one location. Although these introductions did not lead to larger outbreaks in the continental United States, they indicate an increasing risk for locally acquired cases, underscoring the need for enhanced surveillance, vector control, and public health preparedness and response efforts in areas with competent mosquito vectors. *Aedes aegypti* and *Aedes albopictus* mosquitoes are present in many counties in both the eastern and western United States and pose an ongoing risk for DENV transmission in new areas. Approximately one half of U.S. counties have competent mosquito vectors, and the climate in three quarters of the United States is suitable for *Aedes* species mosquitoes (*6*). Vector presence and distribution

** Given the high dengue incidence within subregions of North America, three regions were defined for analytic purposes. The Caribbean includes all Caribbean islands, including Puerto Rico and the U.S. Virgin Islands. Central America includes Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. North America includes Mexico and the United States.

might be further affected by increasing temperatures, which can expand the range of mosquitoes that spread dengue, enhance vector survival, and change the reproduction and biting rates (*7*).

A majority of dengue cases occurred among patients reporting Hispanic ethnicity. This finding likely reflects travel patterns, because Hispanic persons might travel more frequently to areas with endemic dengue, such as Latin America and the Caribbean; these areas experienced large dengue outbreaks in 2024 (*8*,*9*). Approximately one third of travelers with dengue were hospitalized. In addition, 105 patients met the criteria for severe dengue, which can be associated with life-threatening complications, including severe bleeding, plasma leakage, and organ impairment; 92 (88%) patients with severe dengue were hospitalized. Although cases and hospitalizations occurred among all age groups, CFR was highest among adults aged 50–59 years, followed by those aged 60–69 years. This pattern might reflect the higher prevalence of underlying medical conditions and increased risk for severe outcomes among older adults.

Limitations

The findings in this report are subject to at least three limitations. First, reported case counts are an underestimate of the true number of infections, because many persons with dengue have mild symptoms or might not seek health care services. Second, dengue diagnoses might be missed if health care providers do not suspect dengue or test accordingly, also resulting in an underestimate of the number of infections. Finally, underreporting might vary by jurisdiction because of differences in dengue awareness, surveillance capacity, and public health infrastructure.

Implications for Public Health Practice

A record-high number of dengue cases, primarily travel associated, were reported among residents of U.S. states and DC in 2024, highlighting an urgent need for coordinated dengue prevention and response efforts across public health agencies, clinical settings, and vector control programs. Public health and clinical partners can use the CDC Yellow Book and Travel Health Notices to strengthen messaging to U.S. travelers about places where dengue outbreaks are occurring and recommended protective measures such as Environmental Protection Agency (EPA)–approved repellents; wearing loose-fitting long-sleeved pants and shirts; and using air conditioning and window screens when visiting regions with endemic dengue. Public health authorities can also play an essential role in conducting case investigations, reporting dengue cases, and educating communities at risk for dengue about prevention strategies. Given the disproportionate impact of dengue on Hispanic communities and travelers, culturally tailored public health messaging might help mitigate travel-related risk, particularly among persons visiting regions with endemic dengue in Latin America and the Caribbean. Clinicians should maintain a high index of suspicion for dengue in febrile patients returning from affected areas and be prepared to order appropriate diagnostic testing and effectively manage cases, including monitoring patients for warning signs that might indicate progression to severe dengue, such as severe abdominal pain, persistent vomiting, mucosal bleeding, or altered mental status (Dengue Clinical Management Pocket Guide | Dengue | CDC).

Although no dengue vaccines are currently approved for U.S. travelers who are visiting but not living in dengue-endemic areas (*10*), persons can protect themselves by preventing mosquito bites during travel to and after returning from areas with dengue risk where competent mosquito vectors are present to reduce the risk and potential for local transmission. Recommended prevention strategies include applying EPA-approved repellents; wearing loose-fitting long-sleeved pants and shirts; using air conditioning and window screens when available; and eliminating standing water containers around homes to prevent mosquitoes from laying eggs.

Dengue is a public health threat to persons of all ages. Enhanced surveillance by vector control programs and implementation of targeted interventions to reduce *A. aegypti* populations in areas with ongoing dengue transmission can mitigate the risk for local establishment of dengue transmission.

Summary

What is already known about this topic?

Dengue is a leading cause of febrile illness in travelers returning from regions where the virus is endemic.

What is added by this report?

During 2024, the number of dengue cases reported from U.S. states and the District of Columbia increased 359% above the annual average during 2010–2023; a total of 97.2% of cases were travel associated, and 2.8% were locally acquired. Approximately one fifth (21.8%) of cases occurred among persons aged 50–59 years, and more than one half (57.5%) occurred in Hispanic or Latino persons. Approximately one third (36.1%) of patients were hospitalized; six (0.2%) patients died.

What are the implications for public health practice?

The sharp increase in travel-associated dengue highlights an urgent need for enhanced prevention strategies, improved clinical awareness, and tailored messaging for travelers to areas with ongoing dengue transmission.

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References

1. Osman S, Preet R. Dengue, chikungunya and Zika in GeoSentinel surveillance of international travellers: a literature review from 1995 to 2020. Journal of Travel Medicine 2020;27:e0013291. PMID:33258476 https://doi.org/10.1093/jtm/taaa222
2. Adams LE, Wong JM, Paz-Bailey G. Dengue. JAMA 2024;332:2109–10. PMID:39602174 https://doi.org/10.1001/jama.2024.21094
3. Haider N, Hasan MN, Onyango J, et al. Global dengue epidemic worsens with record 14 million cases and 9000 deaths reported in 2024. Int J Infect Dis 2025;158:107940. PMID:40449873 https://doi.org/10.1016/j.ijid.2025.107940
4. Pan American Health Organization. Dengue multi-country outbreak: situation in the region of the Americas. Washington, DC: Pan American Health Organization; 2026. https://www.paho.org/en/topics/dengue/dengue-multi-country-grade-3-outbreak
5. Ware-Gilmore F, Rodriguez DM, Ryff K, et al. Dengue outbreak and response—Puerto Rico, 2024. MMWR Morb Mortal Wkly Rep 2025;74:54–60. PMID:39977371 https://doi.org/10.15585/mmwr.mm7405a1
6. Johnson TL, Haque U, Monaghan AJ, et al. Modeling the environmental suitability for Aedes (Stegomyia) aegypti and Aedes (Stegomyia) albopictus (Diptera: Culicidae) in the contiguous United States. J Med Entomol 2017;54:1605–14. PMID:29029153 https://doi.org/10.1093/jme/tjx163
7. Liu-Helmersson J, Stenlund H, Wilder-Smith A, Rocklöv J. Vectorial capacity of Aedes aegypti: effects of temperature and implications for global dengue epidemic potential. PLoS One 2014;9:e89783. PMID:24603439 https://doi.org/10.1371/journal.pone.0089783
8. Wong JM, Rivera A, Volkman HR, et al. Travel-associated dengue cases—United States, 2010–2021. MMWR Morb Mortal Wkly Rep 2023;72:821–6. PMID:37498793 https://doi.org/10.15585/mmwr.mm7230a3
9. Duvignaud A, Stoney RJ, Angelo KM, et al.; GeoSentinel Network. Epidemiology of travel-associated dengue from 2007 to 2022: a GeoSentinel analysis. J Travel Med 2024;31:taae089. PMID:38951998 https://doi.org/10.1093/jtm/taae089
10. Paz-Bailey G, Adams L, Wong JM, et al. Dengue vaccine: recommendations of the Advisory Committee on Immunization Practices, United States, 2021. MMWR Recomm Rep 2021;70:1–16. PMID:34978547 https://doi.org/10.15585/mmwr.rr7006a1

Knowledge, Attitudes, and Practices Regarding Avian Influenza Among Owners of Backyard Flocks — United States, July–December 2025

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Abstract

Many U.S. households keep backyard bird flocks for their personal food supply or as garden partners. Backyard flocks in the United States have occasionally been infected with avian influenza A viruses, putting flock owners at risk for exposure. During July–December 2025, CDC, in collaboration with state health and agricultural partners, conducted an online survey to learn more about backyard flock owners and their knowledge, attitudes, and practices related to avian influenza. Among 638 respondents who completed the survey, 92% were White (and not Hispanic or Latino), and approximately one half had a graduate or professional degree; a majority kept small, predominantly chicken flocks; and many reported that wild birds could access their flock or the flock's food or water, which increases the flock's risk for avian influenza exposure. Although a majority of respondents had heard of avian influenza, approximately one third were unaware of the signs and symptoms of infection in their birds or humans. If they needed to interact with ill or dead birds, a majority of owners knew the recommended precautions to take and indicated willingness to use most, though not all, recommended personal protective equipment. These findings highlight important topics for risk messaging and educational resources so that backyard flock owners are better informed and better able to protect their flocks, themselves, and their families from avian influenza.

Introduction

Avian influenza A(H5) viruses, commonly referred to as bird flu, circulate among wild waterfowl and seabirds and are causing outbreaks in domestic poultry, dairy cows, and other mammals in the United States; 71 human cases of influenza A(H5) have been reported in the United States since March 2024. Three of these cases, including two deaths (*1*–*4*), occurred among persons who were owners of backyard flocks.

Surveys of U.S. backyard flock owners conducted in 2013 (*5*) and 2018 (*6*), found that a majority of respondents kept small flocks (fewer than 10 birds, primarily chickens) for <5 years. Most respondents were aware of avian influenza, and few reported using personal protective equipment (PPE) during regular interactions with their birds (*6*). To update and build on previous surveys, CDC and state partners conducted a survey among backyard flock owners aimed to assess knowledge of specific signs and symptoms of avian influenza and planned practices if their flock were to become infected with avian influenza viruses. These data might help guide and refine public health messaging to U.S. backyard flock owners.

Methods

Data Source

CDC collaborated with state health and agricultural authorities to conduct an anonymous online survey to assess knowledge, attitudes, and practices related to avian influenza.* The survey was hosted in Research Electronic Data Capture (REDCap; Vanderbilt University) and was available in English or Spanish. Survey links were distributed by CDC, state and local public health and agricultural partners, and U.S. Department of Agriculture agricultural extension programs. Links were shared through online platforms including newsletters, social media accounts, and online community forums, as well as with local community groups, at agricultural fairs, and with registered backyard flock owners, depending on the state. The survey was available during July 23–December 3, 2025. This activity was reviewed by CDC, deemed not research, and conducted consistent with applicable federal law and CDC policy.†

Analysis

Survey responses were analyzed in R statistical environment (version 4.5; R Foundation). Respondent overall knowledge of avian influenza was categorized by the number of correct responses to 21 questions about the signs of avian influenza in birds and humans and current events related to avian influenza.§ Respondents with 10 or fewer, 11–16, or 17–21

* The survey included questions on respondent and household demographic characteristics (age, state of residence, setting of premises, highest educational attainment, and race and ethnicity), flock characteristics, other animals on premises, knowledge of avian influenza (current events and signs and symptoms of infection), knowledge and intended use of recommended precautions, and perceptions about risk.

† 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. Sect. 241(d); 5 U.S.C. Sect. 552a; 44 U.S.C. Sect. 3501 et seq.

§ The survey ascertained whether respondents knew about ongoing outbreaks of avian influenza worldwide and in the United States, outbreaks affecting cattle and backyard flocks in the United States, whether there have been human cases in the United States, and signs and symptoms of avian influenza infection in birds and humans.

correct answers were classified as having low, moderate, or high knowledge of avian influenza, respectively. Response frequencies among respondent groups were compared using chi-square statistical tests; p-values <0.05 were considered statistically significant.

Results

Characteristics of Survey Respondents

Among 747 respondents who started the survey and provided consent for their information to be used, 638 (85%) completed the survey and reported keeping at least one bird in a backyard flock. The 638 respondents who completed the survey did not differ significantly in age or place of residence from the 109 who did not. Respondents lived in 48 U.S. states, 61% lived in a rural setting, 92% reported their race as White (and not Hispanic or Latino), 60% were aged 30–54 years, and 47% reported having a graduate or professional degree (Table). The majority of respondents (58%) reported that at least one person in their household, including themselves, was at increased risk for developing complications of influenza virus infection based on age, including children aged <5 years and adults aged ≥65 years; pregnant women; or persons with certain underlying medical conditions. A majority of respondents were experienced flock owners; 29% had owned their flocks for >10 years, and 48% for 3–10 years. A total of 69% had fewer than 20 birds at the time of survey. Overall, 71% of respondents did not have a veterinarian who they talked to about their flock.

Flock Characteristics

Chickens were present in 97% of flocks, and 22% of flocks included more than one type of bird.[¶] Approximately three fourths (74%) of flocks included only chickens, 16% included chickens with ducks or geese, and 10% included other bird combinations. Approximately one half (47%) of flocks reportedly spent most of the day in a covered run,[**] and approximately one half (54%) of respondents reported that wild birds could, or sometimes could, access the food or water of the backyard flock.

Knowledge About Avian Influenza in Birds

Nearly all respondents (94%) had heard of avian influenza or bird flu. A total of 71% knew that humans could be infected with avian influenza by their flock, and 63% knew that humans could be infected by wild birds (Supplementary Table). When asked about current events related to avian influenza, a majority of respondents correctly answered that there have been outbreaks in backyard flocks (89%) and that human cases of avian influenza have been reported in the United States (79%).

Approximately one third (32%) of respondents correctly identified all signs of avian influenza infection in birds, including sudden or unexpected death, lack of energy or appetite, difficulty breathing, reduced egg production, and diarrhea. Approximately one half (48%) did not identify all signs but did identify unexpected death as a sign; 7% did not identify unexpected death as a sign but identified other signs; and 13% indicated they did not know the signs of infection in birds (Figure 1). If their flock exhibited signs of avian influenza, such as an unexpected death or difficulty breathing, 57% of respondents indicated that they would contact someone, most commonly indicating they would contact a veterinarian, a local department of agriculture, or a local health department.[††]

Knowledge About Avian Influenza in Humans

Knowledge of signs and symptoms of avian influenza in humans varied: 16% of respondents knew all associated signs and symptoms (including influenza-like symptoms of fever, cough, sore throat, runny nose, fatigue, headache, and muscle ache and other symptoms of pink or watery eyes, diarrhea, and vomiting), 55% correctly identified influenza-like symptoms but not all signs and symptoms, 1% knew some but not all signs and symptoms, and 27% reported not knowing signs and symptoms in humans (Figure 1). Approximately three fourths (77%) of respondents perceived themselves to be at low risk for becoming infected with avian influenza; 28% reported being somewhat or very concerned about avian influenza for their own health.

Knowledge of Recommended Precautions

Approximately 90% of respondents were aware of recommended precautions to take if they suspected avian influenza in their flock, including avoiding touching ill or dead birds, avoiding bringing the ill birds inside their home, avoiding consuming raw or undercooked products from the birds, and using PPE if touching ill or dead birds or their environment. When asked which types of PPE they would use if they needed to touch ill or dead birds or their environment, 92% of respondents reported they would wear disposable gloves, 86% would wear rubber boots or boot covers, 77% would wear an N95

[¶] Respondents reported various other flock combinations (e.g., chickens, ducks, turkeys, geese, guinea fowl, peafowl, pigeons, pheasants, and emus).

[**] A fully enclosed area with a solid roof, fencing, or wire netting overhead.

[††] Participants who reported that they would contact someone if their flock exhibited signs or symptoms of avian influenza were asked a follow-up question about whom they would contact: 43% specified a veterinarian, 40% specified the local agricultural extension, 40% specified the local department of agriculture, 21% specified the local department of health, 12% specified the U.S. Department of Agriculture, and <10% specified "someone else," the local department of natural resources, CDC, or a physician. Participants could indicate more than one entity in their response.

TABLE. Characteristics of backyard flock owners and their flocks, by flock setting* — United States, July–December 2025

Characteristic	No. (column %)†			
	Total N = 638 (100%)	Urban n = 66 (10%)	Suburban n = 181 (28%)	Rural n = 387 (61%)
Age group, yrs				
18–29	**40 (6)**	4 (6)	16 (9)	19 (5)
30–44	**221 (35)**	30 (46)	71 (39)	119 (31)
45–54	**155 (25)**	16 (25)	50 (28)	88 (23)
55–64	**131 (21)**	11 (17)	27 (15)	92 (24)
≥65	**84 (13)**	4 (6)	17 (9)	63 (17)
Unknown	**7**	1	0	6
U.S. Census Bureau region of residence§				
Northeast	**102 (16)**	0 (0)	44 (24)	58 (15)
South	**122 (19)**	15 (23)	32 (18)	74 (19)
Midwest	**208 (33)**	16 (24)	36 (20)	156 (40)
West	**205 (32)**	35 (53)	69 (38)	98 (25)
Unknown	**1**	0	0	1
White, not Hispanic or Latino	**588 (92)**	56 (85)	167 (92)	361 (93)
Highest education attained in household				
High school through some college	**118 (19)**	8 (13)	28 (15)	81 (21)
Bachelor's degree	**213 (34)**	23 (36)	58 (32)	130 (34)
Graduate or professional degree	**299 (47)**	33 (52)	95 (52)	170 (45)
Unknown	**8**	2	0	6
At least one person in household is at high risk for influenza complications	**372 (58)**	33 (50)	101 (56)	236 (61)
No. of household members who received the 2024–25 season influenza vaccine				
All persons in the household	**281 (62)**	38 (70)	93 (65)	150 (60)
Some persons in the household	**152 (34)**	15 (28)	47 (33)	89 (35)
No one in the household	**18 (4)**	1 (2)	4 (3)	13 (5)
Unknown	**187**	12	37	135
No. of years owning a backyard flock				
<1	**71 (11)**	12 (18)	28 (16)	30 (8)
1–2	**73 (11)**	12 (18)	25 (14)	36 (9)
3–5	**151 (24)**	19 (29)	45 (25)	85 (22)
6–10	**155 (24)**	11 (17)	46 (26)	97 (25)
>10	**187 (29)**	12 (18)	36 (20)	139 (36)
Unknown	**1**	0	1	0
Owner has a veterinarian to talk to about the flock	**184 (29)**	21 (32)	46 (25)	115 (30)

See table footnotes on the next page.

respirator or well-fitting face mask, 51% would wear safety goggles, and 34% would wear disposable coveralls. A total of 3% of respondents reported they would use no PPE. A higher level of knowledge about avian influenza was associated with increased intention to use PPE (Figure 2); all p-values were <0.01 when comparing reported intention of each PPE item by knowledge category.

Discussion

A majority of surveyed U.S. backyard flock owners had heard about avian influenza, were aware that U.S. backyard flocks have been infected, and knew that human cases of avian influenza have occurred in the United States. However, important gaps in knowledge and prevention practices remain among flock owners, suggesting opportunities for focused public health, animal health, and agricultural outreach.

Many respondents reported that wild birds could come into contact with their flocks, which increases the risk for avian influenza virus transmission. Educational messages should continue to emphasize best practices for keeping flocks healthy by physically separating flocks, feed, and water from wild birds and following other practices suggested in the U.S. Department of Agriculture's Defend the Flock campaign (*7*), an education program that offers tools and resources for proper practices to protect flocks from illness.

In addition, early recognition of possible avian influenza virus infection in a flock is important for interrupting transmission within the flock and to humans interacting with the birds. Educational messages could emphasize the signs of avian influenza virus infection in domestic or wild birds and provide guidance about contacting a veterinarian or an agricultural or wildlife official for support. Approximately one third (29%) of backyard flock owners reported having a veterinarian. Encouraging flock owners to consider establishing a relationship with a veterinarian might improve early recognition and response to illness in the flock, as well as serve as a resource to help keep birds healthy.

TABLE. (*Continued*) Characteristics of backyard flock owners and their flocks, by flock setting* — United States, July–December 2025

Characteristic	No. (column %)†			
	Total N = 638 (100%)	Urban n = 66 (10%)	Suburban n = 181 (28%)	Rural n = 387 (61%)
No. of birds in the flock at time of survey				
1–4	**76 (13)**	31 (49)	26 (16)	19 (5)
5–19	**322 (56)**	31 (49)	111 (68)	178 (51)
20–49	**116 (20)**	1 (2)	18 (11)	95 (27)
≥50	**65 (11)**	0 (0)	8 (5)	57 (16)
Unknown	**59**	3	18	38
Type of birds in the flock				
Chickens only	**472 (74)**	55 (83)	151 (83)	263 (68)
Chickens and ducks or geese	**101 (16)**	6 (9)	17 (9)	77 (20)
Other combinations of birds¶	**65 (10)**	5 (8)	13 (7)	47 (12)
Where the flock spends most of the day				
Covered run	**303 (47)**	31 (47)	99 (55)	171 (44)
Fenced outdoor area, no cover	**176 (28)**	28 (42)	61 (34)	87 (22)
Free range (minimal or no fencing)	**124 (19)**	5 (8)	14 (8)	103 (27)
Barn, coop, or structure	**28 (4)**	1 (2)	5 (3)	22 (6)
Other	**7 (1)**	1 (2)	2 (1)	4 (1)
Do not know	**0 (0)**	0 (0)	0 (0)	0 (0)
Flock has some free range	**355 (56)**	39 (59)	92 (51)	222 (57)
Can wild birds access the food or water for your backyard flock?				
Yes	**177 (28)**	21 (32)	46 (26)	109 (28)
Sometimes/Occasionally	**165 (26)**	11 (17)	49 (27)	104 (27)
No	**286 (45)**	33 (50)	82 (46)	169 (44)
Don't know	**7 (1)**	1 (2)	2 (1)	4 (1)
Unknown	**3**	0	2	1

* Four survey respondents who reported their flock setting as "other" are in the total column but were not classified as being in an urban, suburban, or rural setting.
† Percentages were calculated from responses that were not "unknown."
§ Census Regions and Divisions of the United States
¶ Other reported combinations of birds included chickens, ducks, turkey, geese, guinea fowl, quail, peafowl, pigeons, pheasants, and emus.

Backyard flock owners should know how to protect themselves from avian influenza. Although most survey respondents reported willingness to use some types of PPE, fewer indicated they would use eye protection or coveralls. Messages to flock owners could highlight reasons to use each piece of recommended PPE, when to use it, and how to use it correctly.

Recent incidences of influenza A(H5) human cases among backyard flock owners in the United States underscore the importance of flock owners knowing the signs and symptoms of possible human A(H5) virus infection. The survey identified limited awareness of nonrespiratory symptoms of avian influenza in humans (such as conjunctivitis, diarrhea, and vomiting) and low perceived personal risk, which could result in delays in seeking health care. Flock owners should be encouraged to seek prompt medical evaluation for any potential symptoms of avian influenza virus infection and report recent bird exposure to health care providers to support timely diagnosis and further infection prevention and control measures.

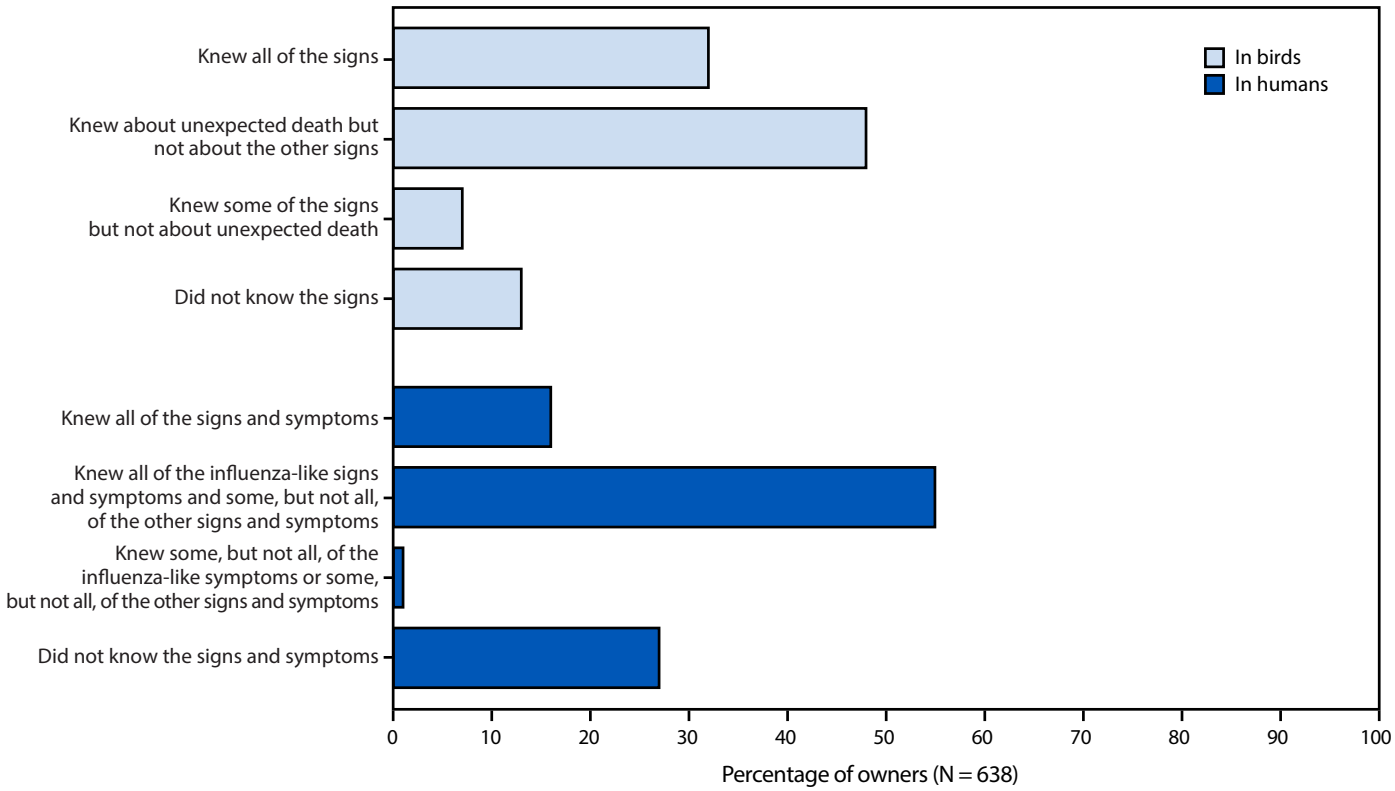
Limitations

The findings in this report are subject to at least two limitations. First, survey respondents represented an online convenience sample of backyard flock owners and therefore might not be representative of all U.S. backyard flock owners. Although no population-based survey data are available regarding the number of persons in the United States who have backyard flocks, data from the 2021 American Housing Survey estimates that 2.7 million households in the United States had pet birds, although backyard flocks could not be differentiated from indoor birds (*8*). Compared with American Housing Survey respondents who had pet birds, survey respondents in this report were more likely to live in a rural setting and have a higher level of education (*9*); therefore, this report might overestimate knowledge of avian influenza among all backyard flock owners. Second, because data were self-reported, responses might have been subject to social desirability bias, which might overestimate the willingness to use PPE or precautions when interacting with ill or dead birds.

Implications for Public Health Practice

Avian influenza continues to circulate among wild birds in the United States, placing backyard flocks and their owners at risk for infection. Human and animal health partners should continue to educate flock owners about signs and symptoms

FIGURE 1. Knowledge of signs and symptoms of avian influenza in birds* and humans† among owners of backyard flocks — United States, July–December 2025



* Signs of avian influenza virus infection in birds include unexpected death, lack of energy and appetite, difficulty breathing, and diarrhea.
† Signs and symptoms of avian influenza virus infection in humans include 1) influenza-like signs and symptoms such as fever, cough, sore throat, runny nose, fatigue, headache, and muscle ache and 2) other symptoms such as pink or watery eyes, diarrhea, and vomiting.

of avian influenza, appropriate use of PPE, and other practices that can help flock owners keep their flocks, themselves, and their families healthy.

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Summary

What is already known about this topic?

Since 2024, three human influenza A(H5) cases have been reported among people in the U.S. who own backyard birds. Although previous surveys suggest that backyard flock owners are aware of avian influenza, information on knowledge, attitudes, and practices is needed to guide development of education and prevention materials.

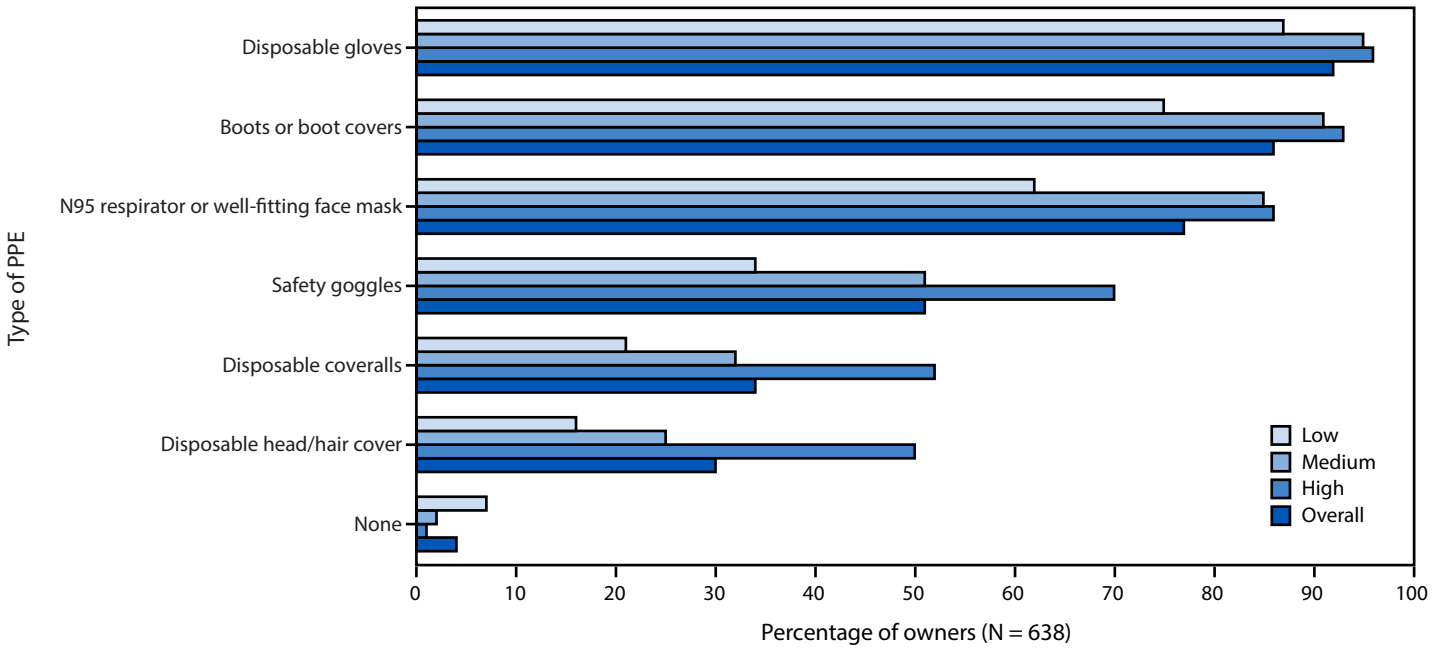
What is added by this report?

A survey of 638 U.S. backyard flock owners revealed incomplete knowledge about signs and symptoms of avian influenza in humans and birds. Respondents who knew more about avian influenza were more likely to report an intention to use personal protective equipment if they were to interact with potentially infected birds.

What are the implications for public health practice?

Education of backyard flock owners by health partners regarding signs and symptoms of avian influenza can help flock owners keep their flocks, themselves, and their families healthy.

FIGURE 2. Percentage of backyard flock owners who would use personal protective equipment if their flock exhibited signs of illness, by type of equipment* and by level of knowledge about avian influenza† — United States, July–December 2025



Abbreviation: PPE = personal protective equipment.
* Chi-square p-values comparing frequencies by level of knowledge are all p<0.01 for each PPE category.
† Knowledge level was categorized based on owner responses to 21 questions related to avian influenza: 17–21 correct answers indicated a high level of knowledge; 11–16 correct answers indicated a moderate level of knowledge; and 10 or fewer correct answers indicated a low level of knowledge.

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References

1. Louisiana Department of Health. LDH reports first U.S. H5N1-related human death. Baton Rouge, LA: Louisiana Department of Health; 2025. https://www.ldh.la.gov/news/H5N1-death
2. Tacoma-Pierce County Health Department. Health advisory: H5N5 avian influenza confirmed in Washington. Tacoma, WA: Tacoma-Pierce County Health Department; 2025. https://tpchd.org/topics/health-advisory-h5n5-avian-influenza-confirmed-in-washington/
3. Kibiger L, Oltean HN, Leitz L, et al. Fatal human case of highly pathogenic avian influenza A(H5N5) in a backyard flock owner—Washington, November 2025. MMWR Morb Mortal Wkly Rep; 2026;75:221–5. PMID:42096351 https://dx.doi.org/10.15585/mmwr.mm7517a2
4. Rolfes MA, Kniss K, Kirby MK, et al. Human infections with highly pathogenic avian influenza A(H5N1) viruses in the United States from March 2024 to May 2025. Nat Med 2025;31:3889–98. PMID:40712649 https://doi.org/10.1038/s41591-025-03905-2
5. Elkhoraibi C, Blatchford RA, Pitesky ME, Mench JA. Backyard chickens in the United States: a survey of flock owners. Poult Sci 2014;93:2920–31. PMID:25193256 https://doi.org/10.3382/ps.2014-04154
6. Nicholson CW, Campagnolo ER, Boktor SW, Butler CL. Zoonotic disease awareness survey of backyard poultry and swine owners in southcentral Pennsylvania. Zoonoses Public Health 2020;67:280–90. PMID:32020787 https://doi.org/10.1111/zph.12686
7. US Department of Agriculture, Animal and Plant Health Inspection Service. Defend the flock. Washington, DC: US Department of Agriculture, Animal and Plant Health Inspection Service; 2025. https://www.aphis.usda.gov/livestock-poultry-disease/avian/defend-the-flock
8. US Census Bureau. 2021 household pets. Suitland, MD: US Census Bureau; 2022. https://www.census.gov/library/visualizations/2022/demo/2021-household-pets.html
9. US Census Bureau. American Housing Survey table creator. Suitland, MD: US Census Bureau; 2025. https://www.census.gov/programs-surveys/ahs/data/interactive/ahstablecreator.html

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