



Kentucky Department for Public Health
KY17-089 - Acute Hepatitis A Outbreak Weekly Report
Morbidity and Mortality Weekly Report (MMWR) Week 44, 2018
October 28, 2018 – November 3, 2018

Brief Description of Outbreak: In November 2017, the Kentucky Department for Public Health (DPH) identified an outbreak of acute hepatitis A. The increase in cases observed in Kentucky was well over the 10-year average of reported hepatitis A cases, and several cases have been infected with hepatitis A virus (HAV) strains genetically linked to outbreaks in California, Utah, and Michigan. Similar to hepatitis A outbreaks in other states, the primary risk factors have been illicit drug use and homelessness. A contaminated food source has not been identified, and HAV transmission is believed to have occurred through person-to-person contact. Below is a weekly and cumulative update on the outbreak. Please note that all data is preliminary and subject to change as additional reports are received.

In accordance with 902 KAR 2:020, cases of acute hepatitis A should be reported within 24 hours.

The case definition used for outbreak-associated acute hepatitis A cases is available upon request.

Table 1: Summary of Outbreak-Associated Acute Hepatitis A Cases*

Update for Week 44:		Total Case Counts: 8/1/2017 – 11/03/2018:	
Number of new cases (n=114):	Confirmed[^] - 0 Probable - 86 Suspected - 28	Total number of cases (n=2545):	Confirmed[^] - 587 Probable - 1315 Suspected - 643
Number of counties with new cases:	42	Total number of counties with cases:	94 (78% of KY counties)
Number of individuals with specimens submitted for genotyping where results are available:	0	Number of individuals with specimens submitted for genotyping where results are available:	625 (25%)
Number of cases with genotype IB among those with genotype testing:	0	Total number of cases with genotype IB among those with genotype testing:	571 (91% of those tested)
Number of Hospitalizations:	68	Total Number of Hospitalizations:	1342 (53%)
Number of deaths Reported[†]:	1	Total number of deaths reported[†]:	17 (<1%)

* Cases are reported based on date of specimen collection

[^] Cases are generally confirmed weeks after submission for testing, so will only be reflected in total case counts.

[†] Deaths are defined as any outbreak-associated acute hepatitis A case with documentation of hepatitis A as a contributing factor to the individual's death.

Table 2: Cumulative Distribution of Cases by County

KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases, by County, August 1, 2017 – November 3, 2018*^#					
County	Total number of cases reported	Number of confirmed cases	Number of probable cases	Number of suspected cases	Incident Rate per 100,000 population
Adair	3	0	2	1	15.4
Allen	25	4	17	4	119.4
Anderson	11	0	8	3	48.8
Ballard	9	4	2	3	112.0
Barren	5	1	4	0	11.4
Bath	24	0	10	14	193.9
Bell	6	0	2	4	22.3
Boone	32	4	18	10	24.5
Bourbon	6	0	6	0	30.0
Boyd	163	98	38	27	339.7
Boyle	10	0	4	6	33.4
Breathitt	2	0	2	0	15.5
Bullitt	64	30	24	10	79.8
Butler	3	0	1	2	23.4
Campbell	41	2	35	4	44.3
Carlisle	1	0	1	0	20.6
Carroll	4	1	1	2	37.3
Carter	126	41	63	22	464.2
Casey	5	1	3	1	31.7
Christian	1	1	0	0	1.4
Clark	29	0	19	10	80.5
Clay	11	0	5	6	54.0

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – November 3, 2018*^#**

County	Total number of cases reported	Number of confirmed cases	Number of probable cases	Number of suspected cases	Incident Rate per 100,000 population
Daviess	3	0	2	1	3.0
Edmonson	1	0	1	0	8.2
Elliott	23	4	4	15	305.7
Estill	5	0	4	1	35.0
Fayette	46	4	33	9	14.3
Fleming	4	0	0	4	27.7
Floyd	77	1	42	34	212.3
Franklin	32	0	26	6	63.4
Gallatin	3	0	2	1	34.2
Garrard	4	0	2	2	22.8
Grant	32	3	24	5	128.1
Grayson	26	2	21	3	98.6
Green	3	0	3	0	27.1
Greenup	57	28	18	11	160.5
Hardin	32	9	6	17	29.6
Harrison	3	0	3	0	16.0
Hart	2	0	2	0	10.7
Henry	10	3	5	2	62.5
Hickman	1	0	0	1	22.1
Hopkins	1	0	0	1	2.2
Jackson	7	0	4	3	52.1
Jefferson	637	292	233	112	82.6
Jessamine	5	0	2	3	9.4

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – November 3, 2018*^#**

County	Total number of cases reported	Number of confirmed cases	Number of probable cases	Number of suspected cases	Incident Rate per 100,000 population
Johnson	42	0	21	21	185.9
Kenton	65	7	53	5	39.3
Knott	14	1	10	3	91.6
Knox	39	0	25	14	124.9
Larue	3	0	1	2	21.1
Laurel	64	0	51	13	106.4
Lawrence	22	3	13	6	140.0
Lee	8	0	8	0	121.8
Leslie	6	0	4	2	58.1
Letcher	2	0	1	1	9.0
Lewis	5	0	3	2	37.5
Lincoln	11	2	6	3	45.0
Logan	1	0	1	0	3.7
Madison	29	2	22	5	31.8
Magoffin	31	0	19	12	247.2
Marion	22	2	16	4	113.4
Marshall	2	0	1	1	6.4
Martin	33	0	23	10	288.2
Mason	3	0	2	1	17.5
McCracken	8	2	3	3	12.2
Meade	12	1	1	10	42.6
Menifee	17	0	11	6	263.4
Mercer	18	0	12	6	83.6

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – November 3, 2018*^#**

County	Total number of cases reported	Number of confirmed cases	Number of probable cases	Number of suspected cases	Incident Rate per 100,000 population
Metcalfe	1	0	1	0	9.9
Montgomery	72	5	51	16	257.8
Morgan	17	1	13	3	128.9
Nelson	15	4	5	6	32.9
Nicholas	2	0	0	2	28.1
Ohio	6	0	3	3	24.8
Oldham	11	3	5	3	24.8
Owen	4	0	4	0	37.2
Owsley	1	0	1	0	22.5
Pendleton	4	0	2	2	27.4
Perry	30	0	20	10	113.0
Pike	24	0	21	3	40.8
Powell	9	0	7	2	72.7
Pulaski	6	0	4	2	9.3
Rowan	42	0	26	16	171.3
Russell	1	0	0	1	5.6
Scott	4	0	0	4	7.3
Shelby	20	5	11	4	42.2
Simpson	6	0	6	0	33.1
Spencer	5	3	1	1	27.0
Taylor	42	2	30	10	164.9
Warren	28	8	16	4	21.7
Washington	5	0	3	2	41.2

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – November 3, 2018*^#**

County	Total number of cases reported	Number of confirmed cases	Number of probable cases	Number of suspected cases	Incident Rate per 100,000 population
Whitley	126	3	67	56	347.9
Wolfe	11	0	9	2	151.4
Woodford	1	0	0	1	3.8
Total Number of Cases:	2545	587	1315	643	57.1

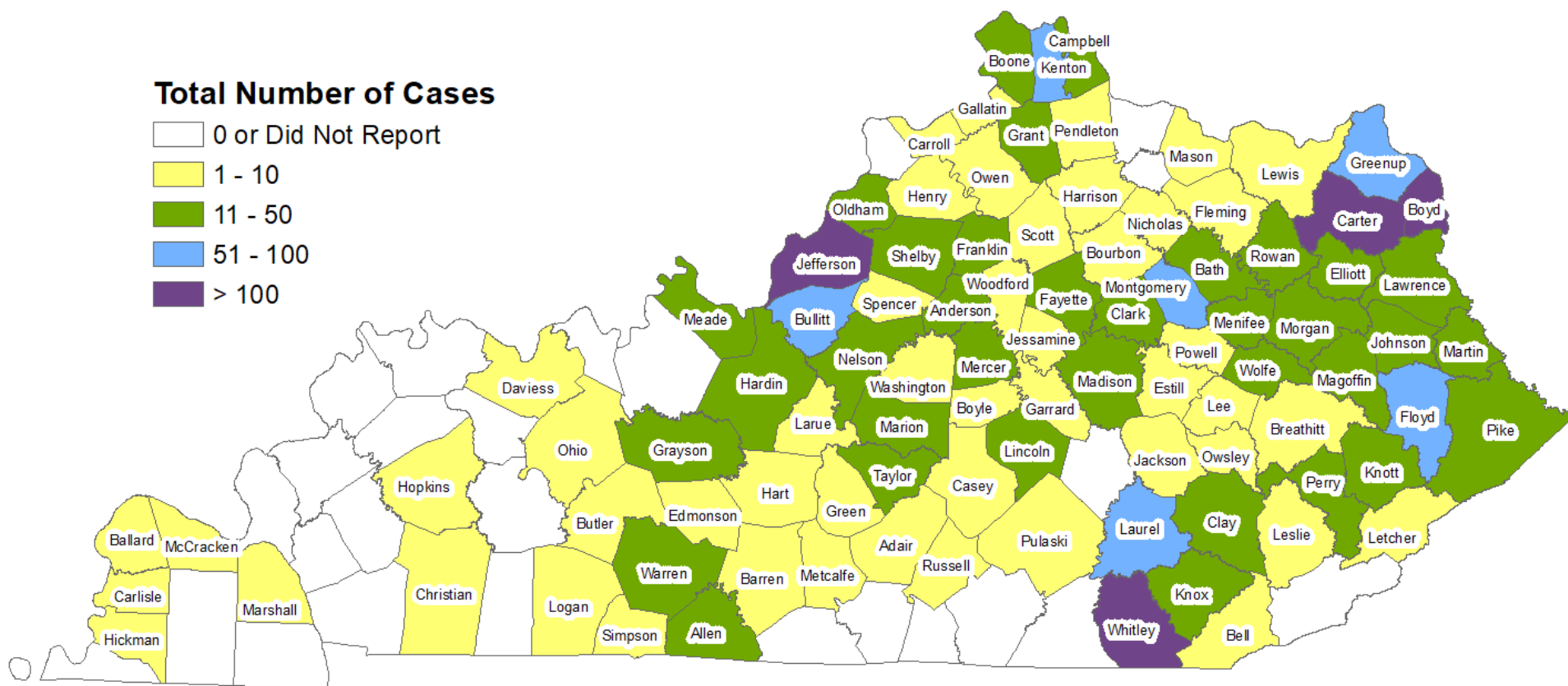
* Cases are reported based on date of specimen collection.

^ Denotes a county where cases have not been previously identified.

As genotyping results become available, cases may be excluded if they do not meet the outbreak case definition. Cases in the following counties have been excluded from the outbreak case count this week: None.

Figure 1: Geographic Distribution of Outbreak-Associated Cases by County

KY17-089 Distribution of Outbreak-Associated Acute Hepatitis A Cases by County, August 1, 2017 - November 3, 2018

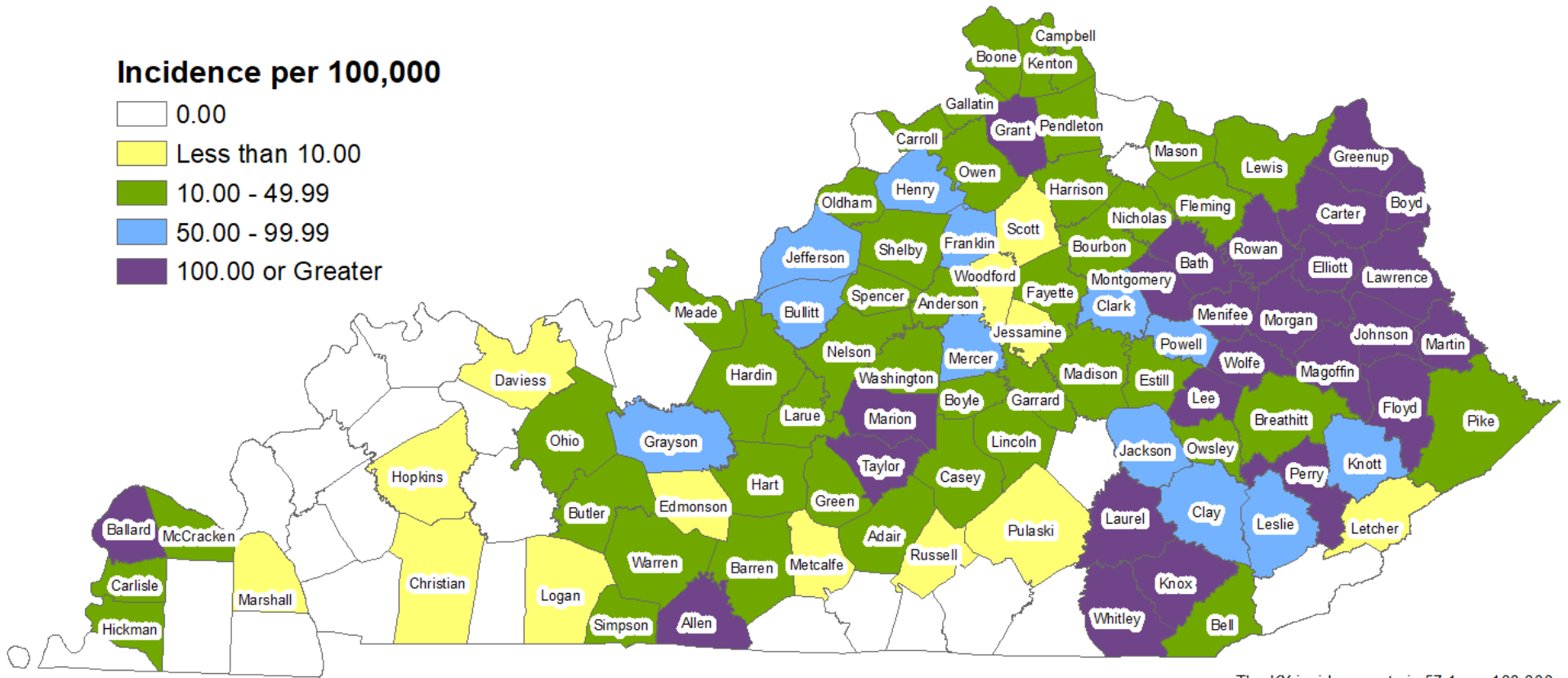


n = 94 counties with outbreak-associated cases

Counties where cases have not previously been identified: None.

Figure 2: Incidence of Outbreak-Associated Cases by County

KY17-089 Incidence of Outbreak-Associated Acute Hepatitis A Cases by County, August 1, 2017 - November 3, 2018



The KY incidence rate is 57.1 per 100,000.
 Note: Rates calculated from numerators less than 20 may not be reliably used to determine trends.

Figure 3: Major Interstates and Syringe Exchange Programs in Counties Reporting Outbreak-Associated Cases

KY17-089 Major Interstates and Syringe Exchange Programs in Counties Reporting Outbreak-Associated Acute Hepatitis A Cases, August 1, 2017 - November 3, 2018

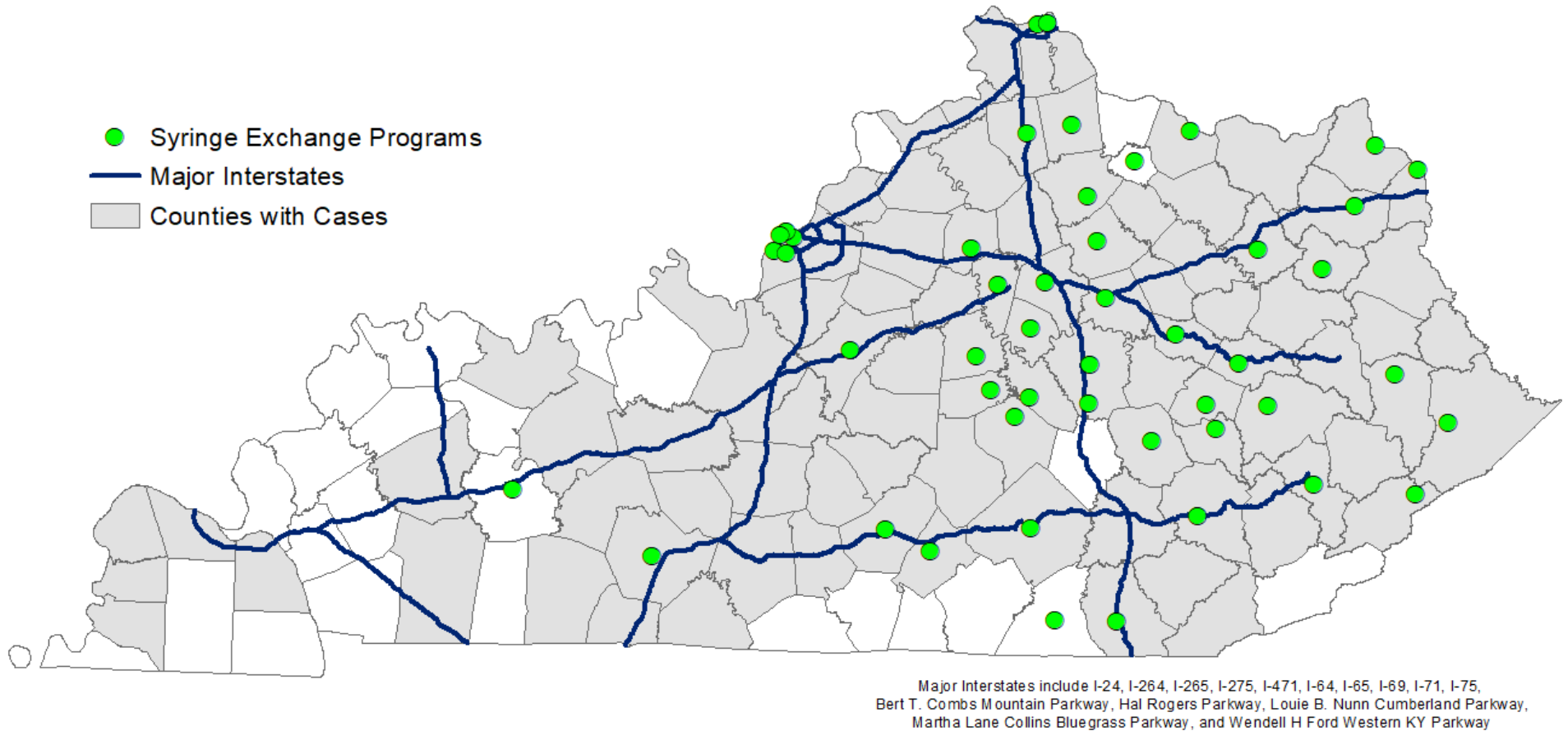
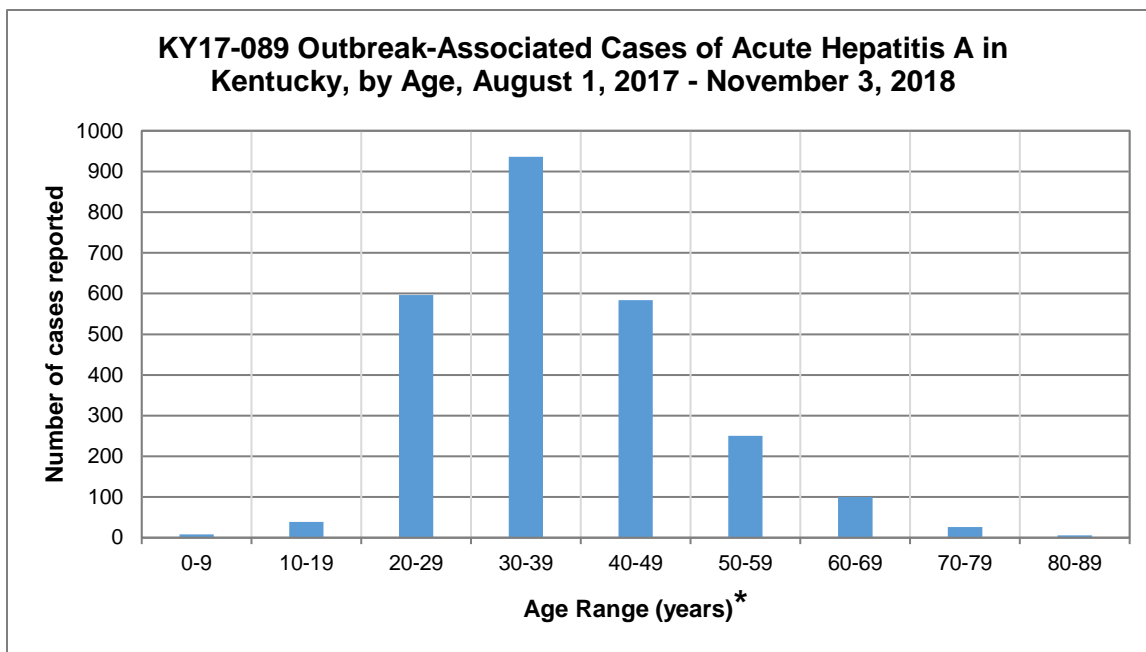


Figure 4: Outbreak-Associated Cases by Age



* The mean age of cases is 37.7 years, and the median age is 36.0 years.

Table 3: Frequent Risk Factors of Outbreak-associated Cases

KY17-089 Risk Factors of Outbreak-Associated Acute Hepatitis A Cases, August 1, 2017 – November 3, 2018 ^{#^}	
Risk Factor	Number of Cases Reporting Risk Factor (n=2084) ^{* †}
Homelessness + No/Unk Illicit Drug Use	44 (2.1%)
Illicit Drug Use + No/Unk Homelessness	1381 (66%)
Homelessness + Illicit drug use	226 (11%)
No Outbreak-Related Risk Factors	433 (21%)

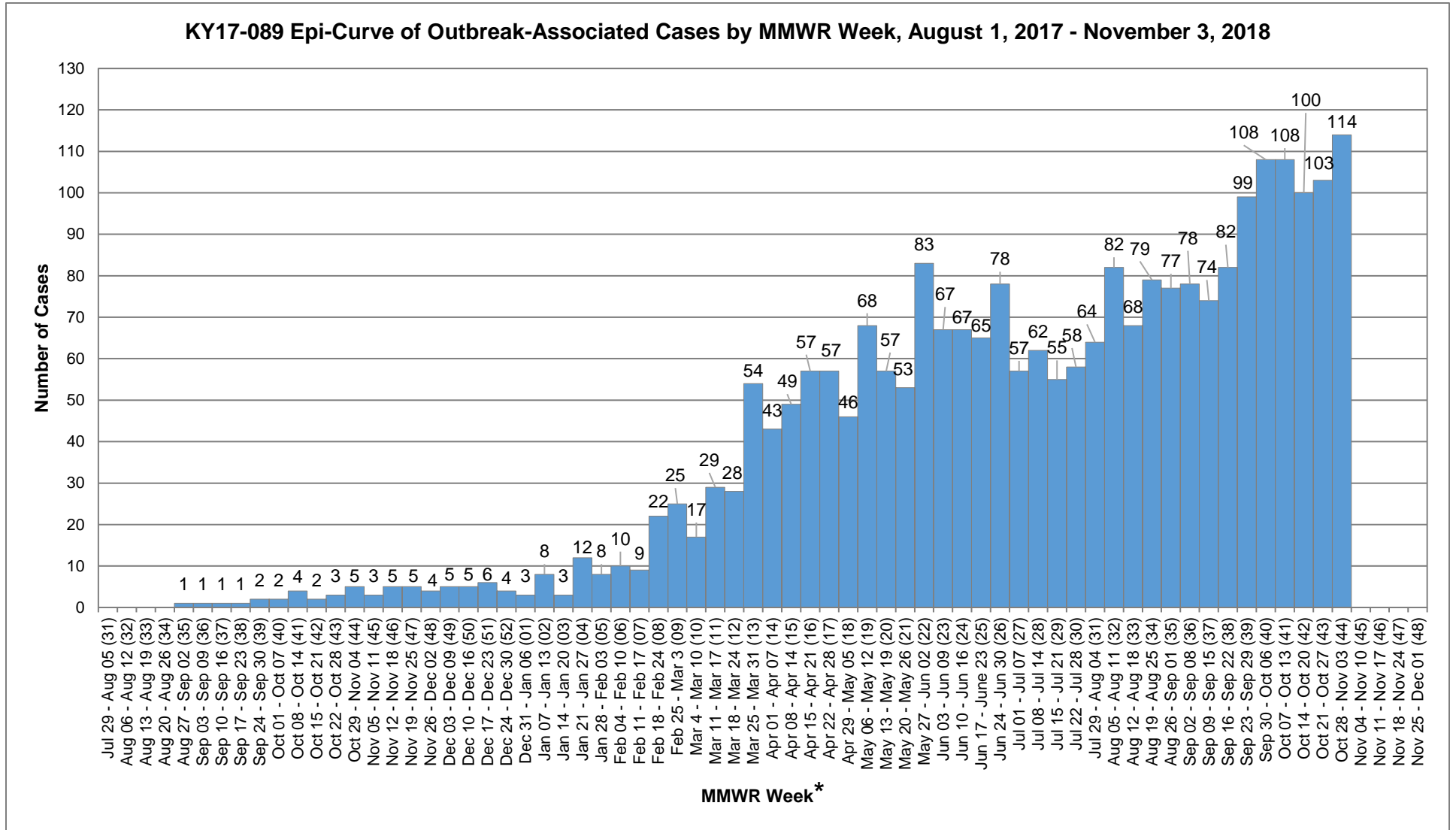
* Risk factor information is unavailable for 461 (18.1%) of all outbreak-associated cases.

† The categories below do not add up to the total number in this count due to other possible risk factor combinations not shown in the table.

At this point in the outbreak, MSM is no longer considered an outbreak-related risk factor. Percentages in this table may have changed due to removing MSM from risk factor combinations.

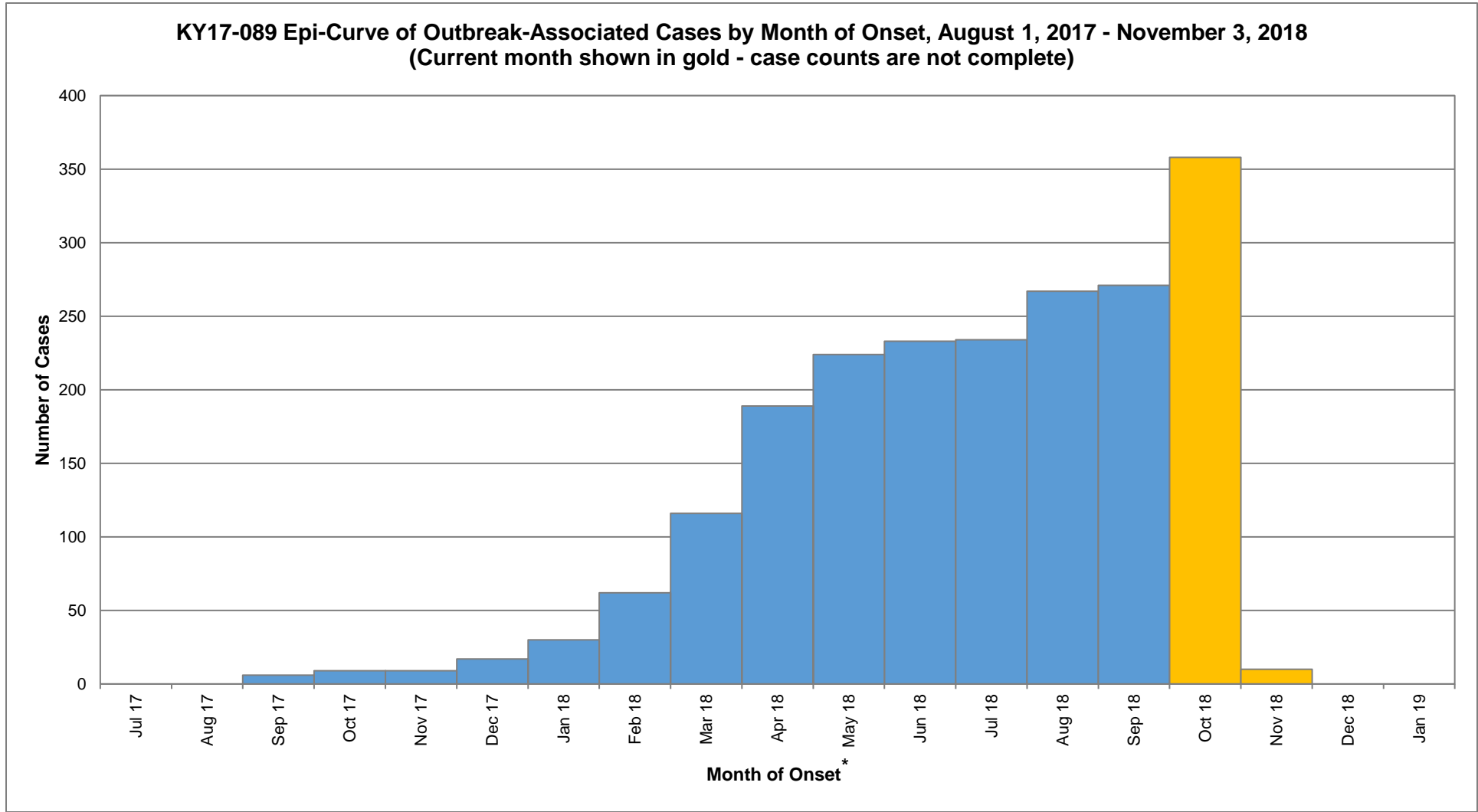
^ 31 MSM cases have been reported. Of those, 9 have reported no other risk factors.

Figure 5: Epidemic-curve (Epi-Curve) of Outbreak-Associated Cases



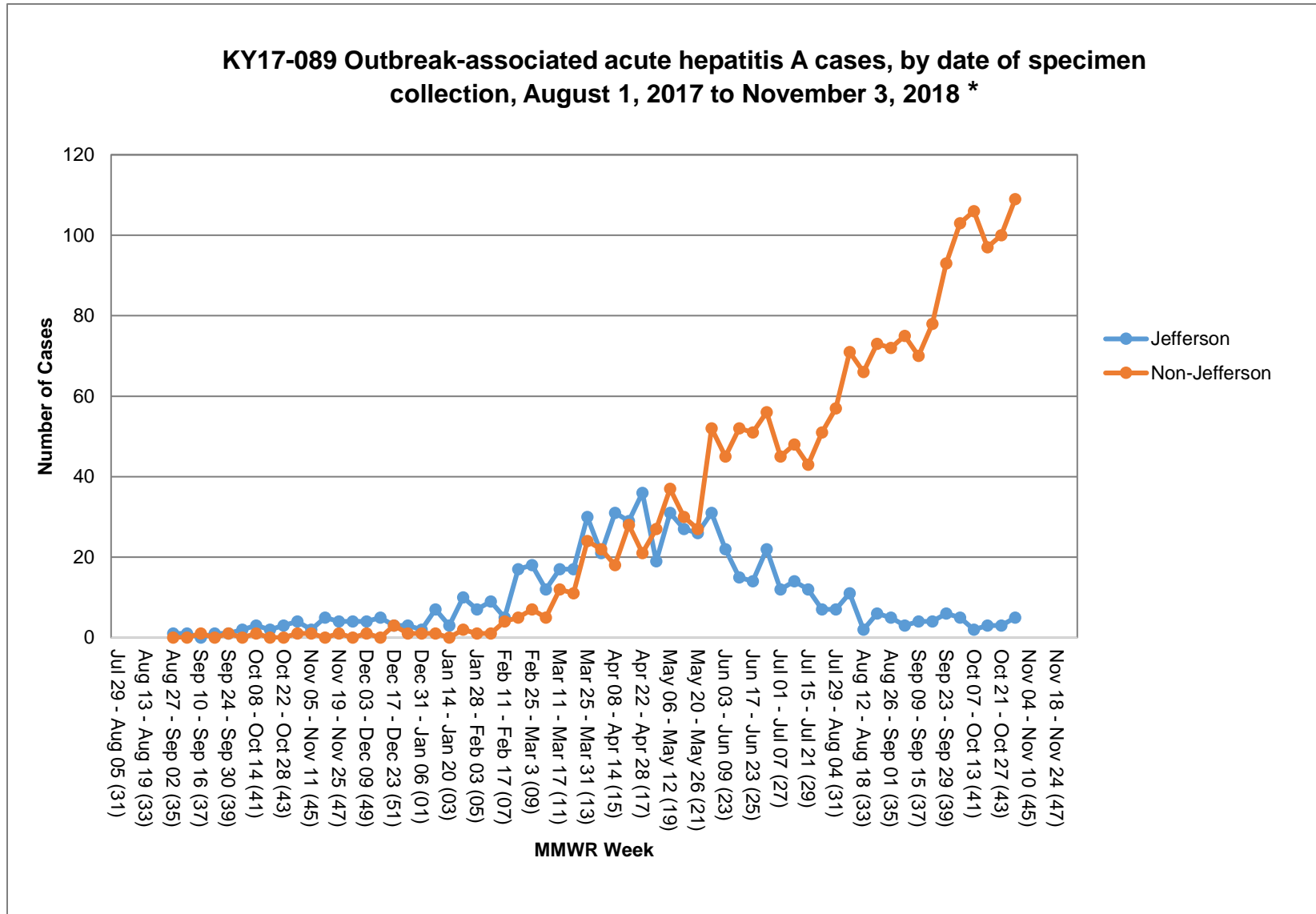
* MMWR weeks are based on date of specimen collection.

Figure 6: Epidemic-curve (Epi-Curve) of Outbreak-Associated Cases by Month of Onset



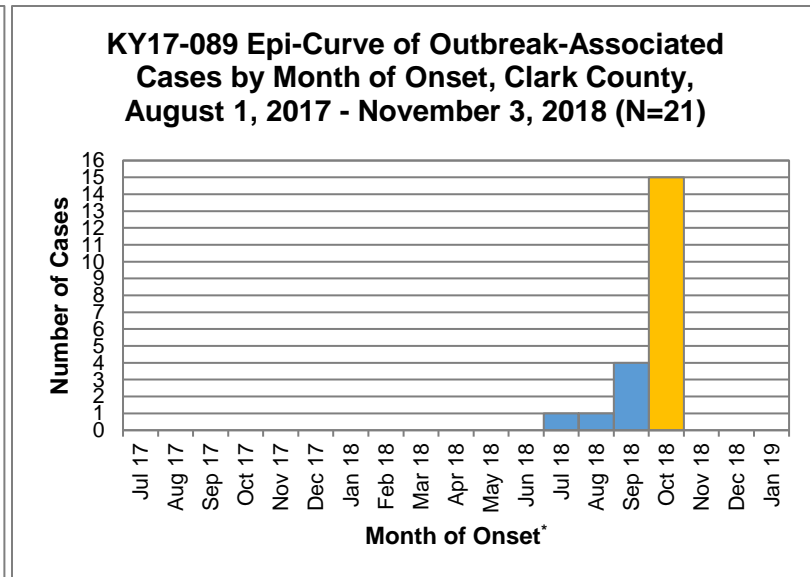
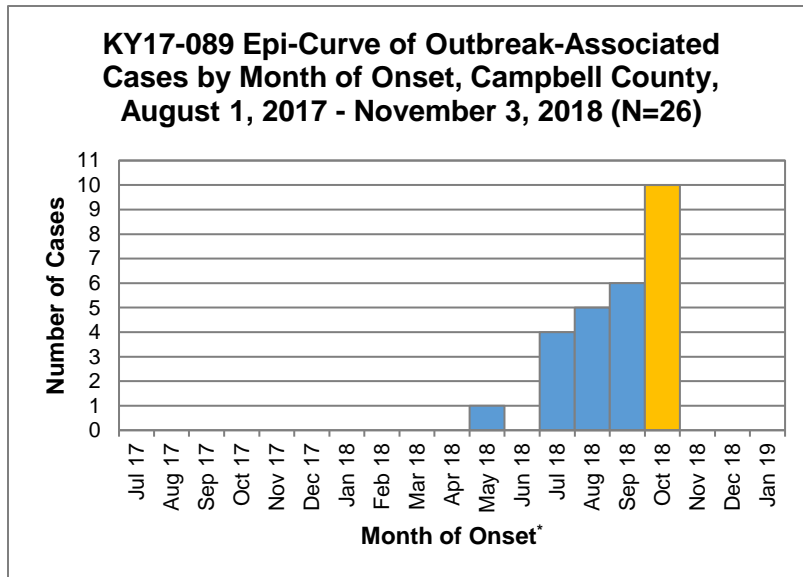
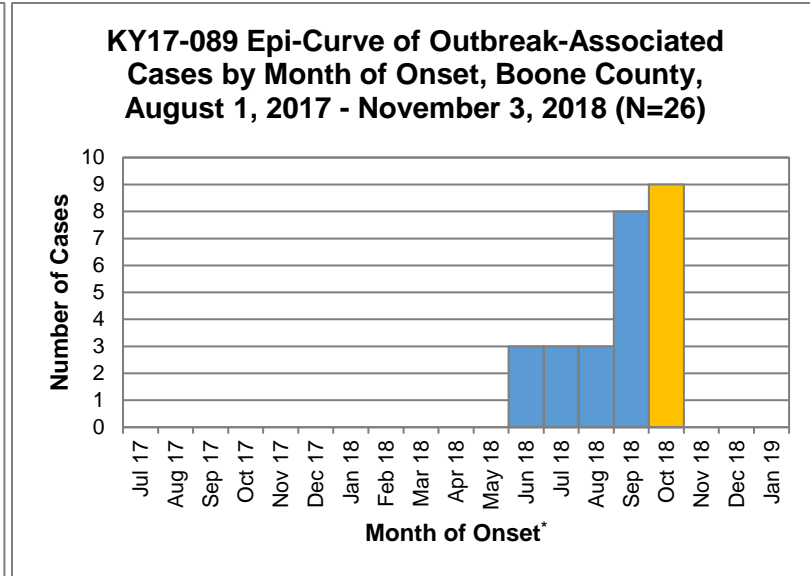
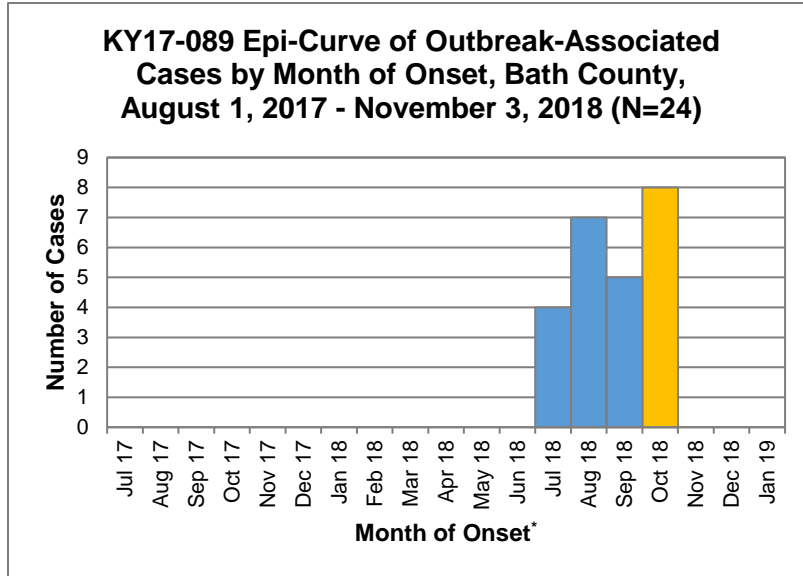
* Date of onset has been reported for 80.0% (or 2035/2545) of cases.

Figure 7: Case count comparison of acute hepatitis A cases, Jefferson County versus Non-Jefferson Counties

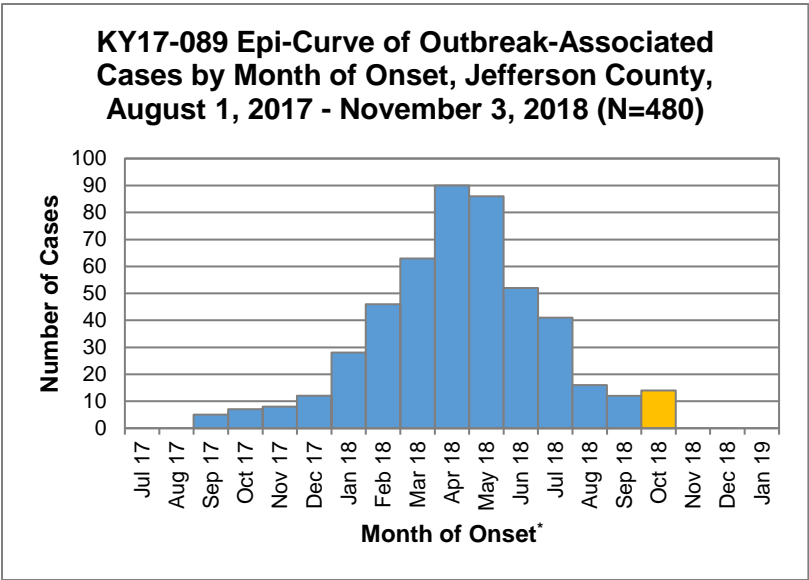
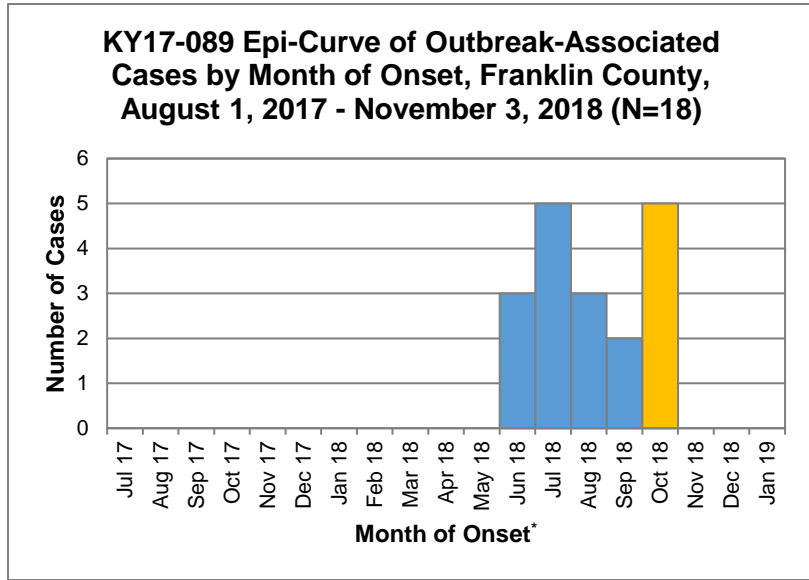
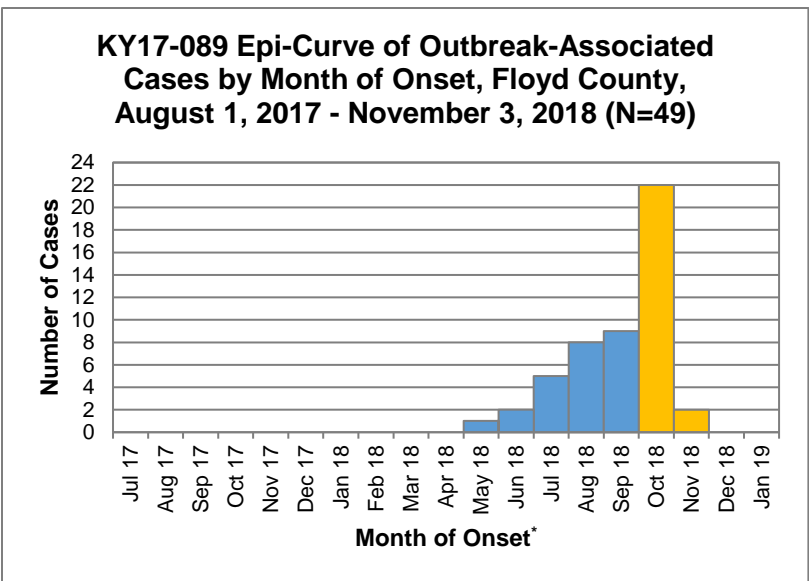
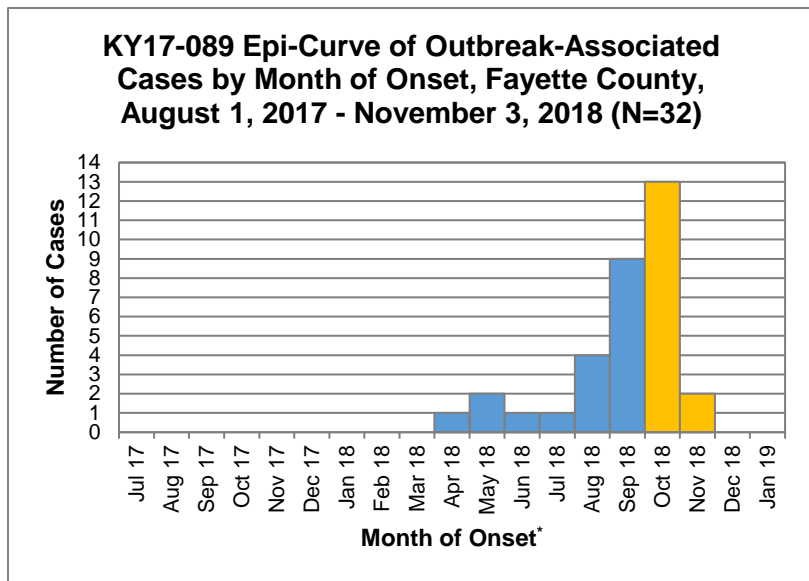


* MMWR weeks are based on date of specimen collection.

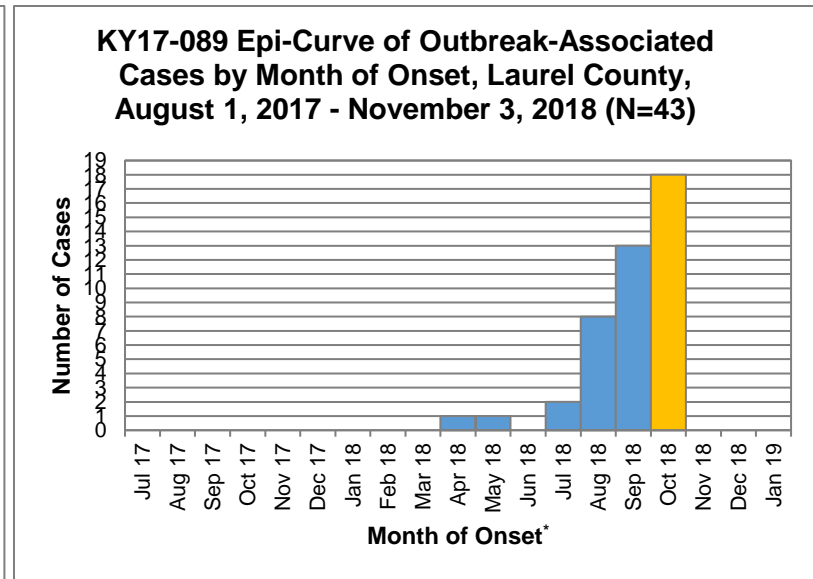
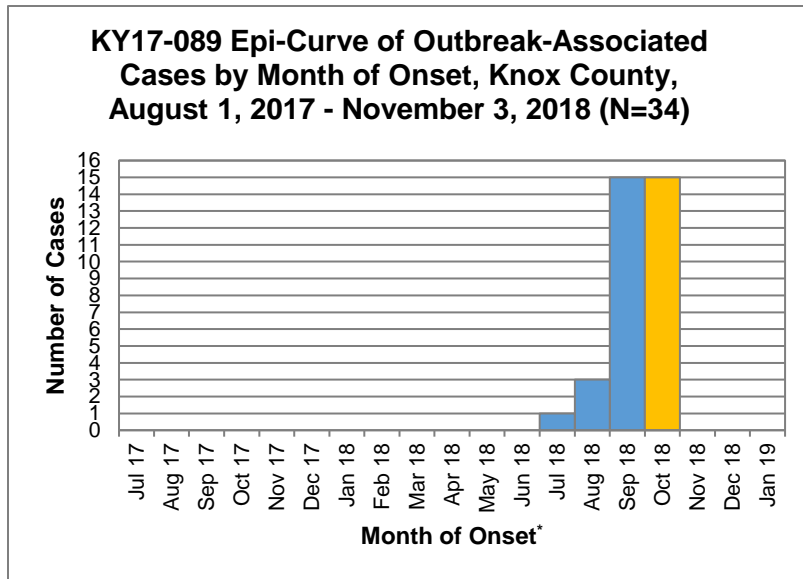
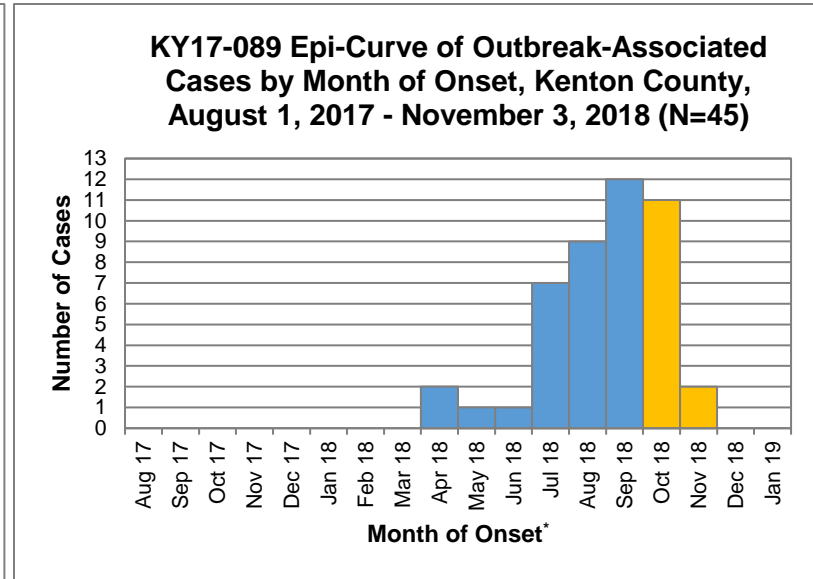
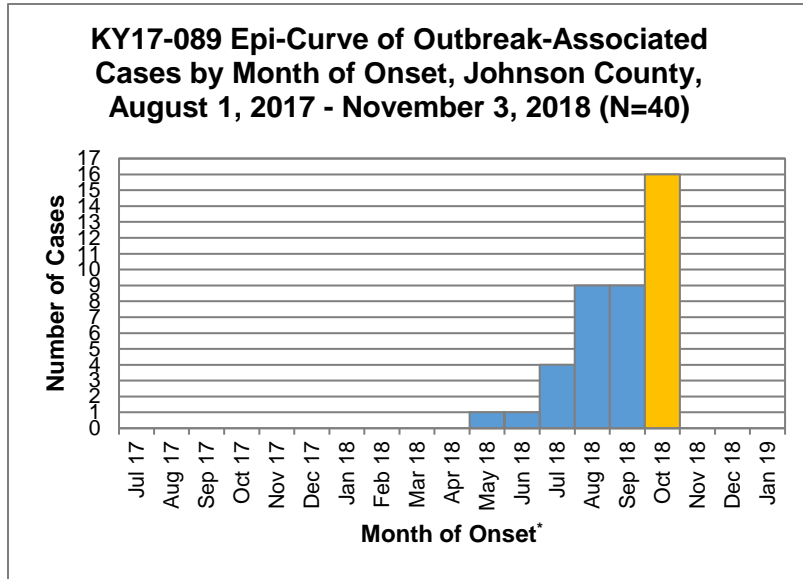
Figures 8-11: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Bath, Boone, Campbell, and Clark Counties)



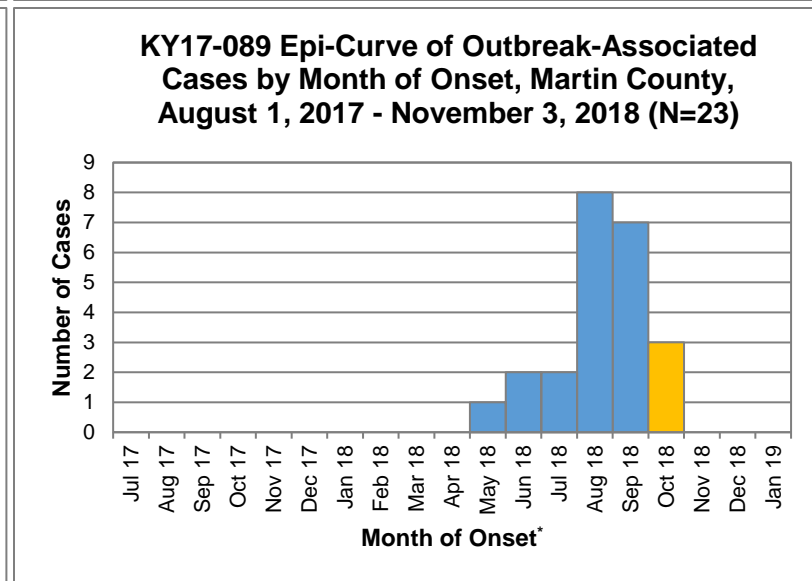
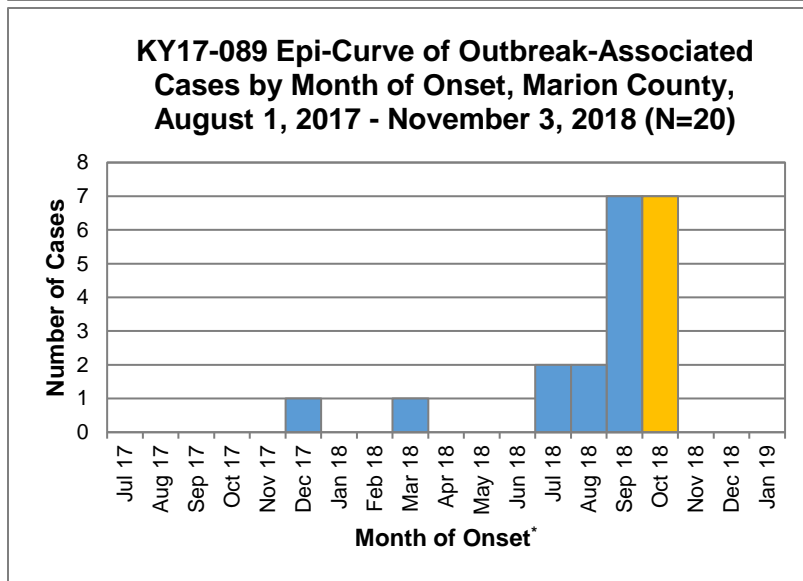
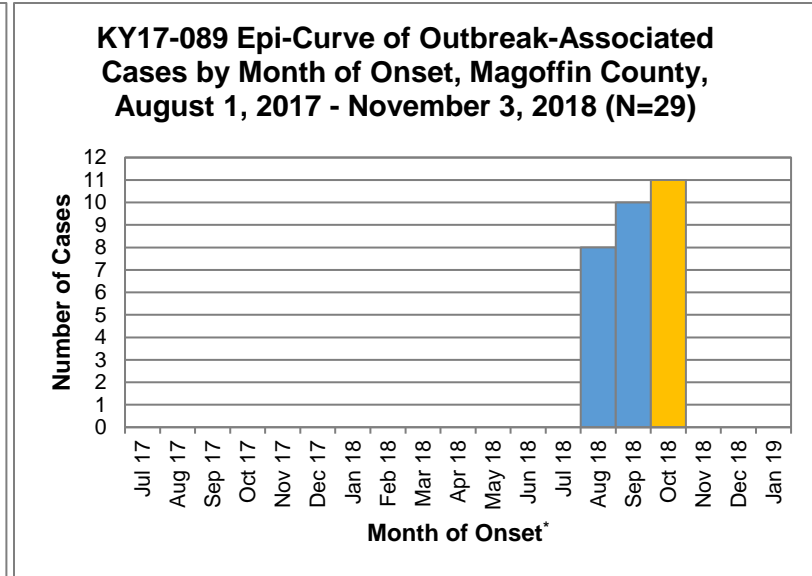
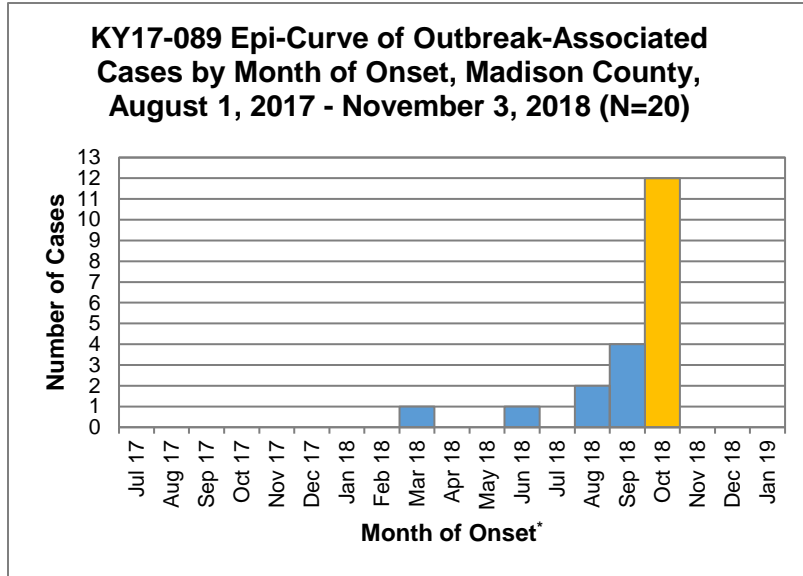
Figures 12-15: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Fayette, Floyd, Franklin, and Jefferson Counties)



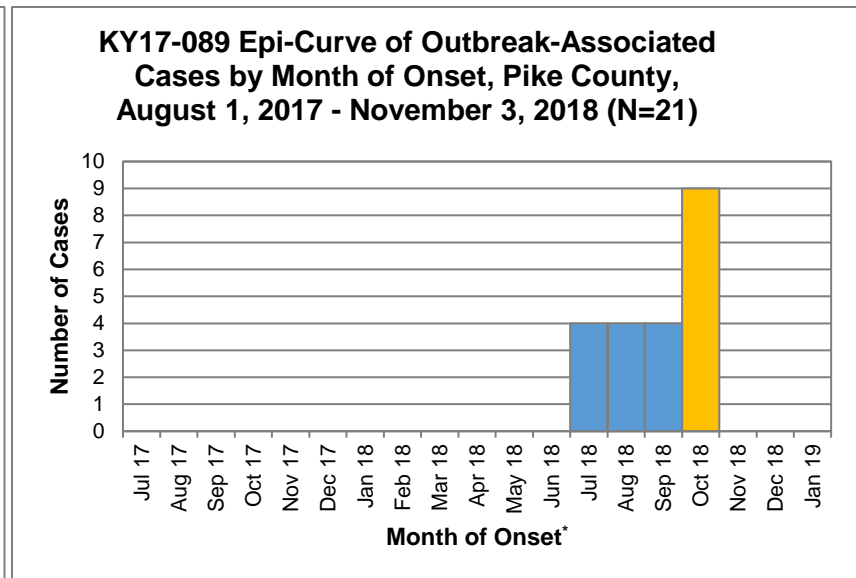
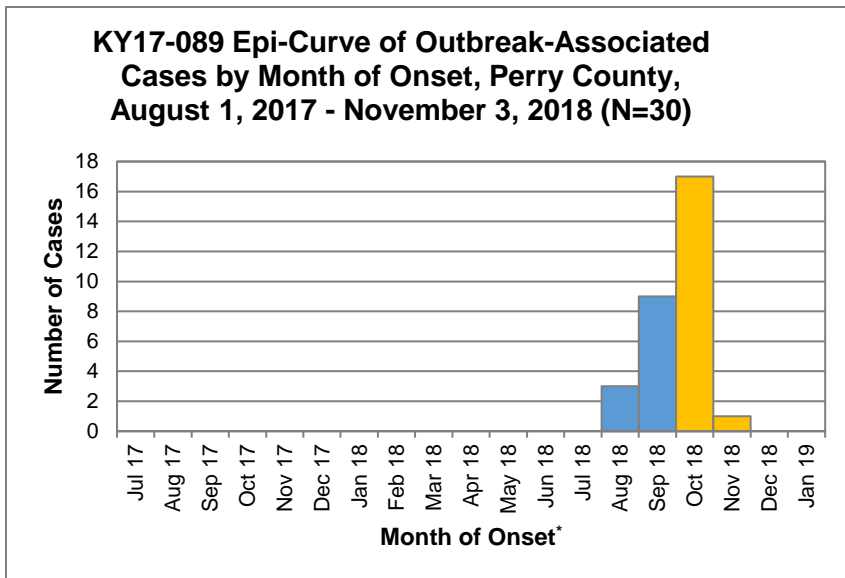
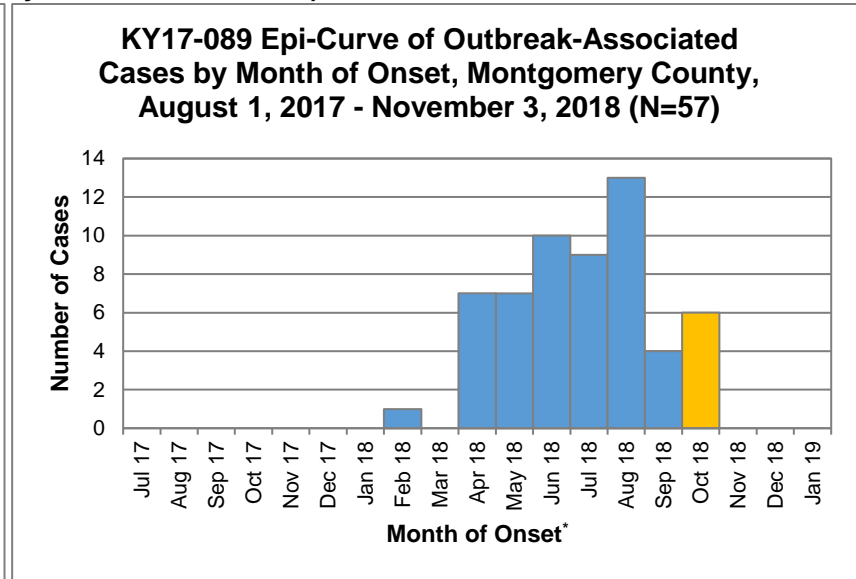
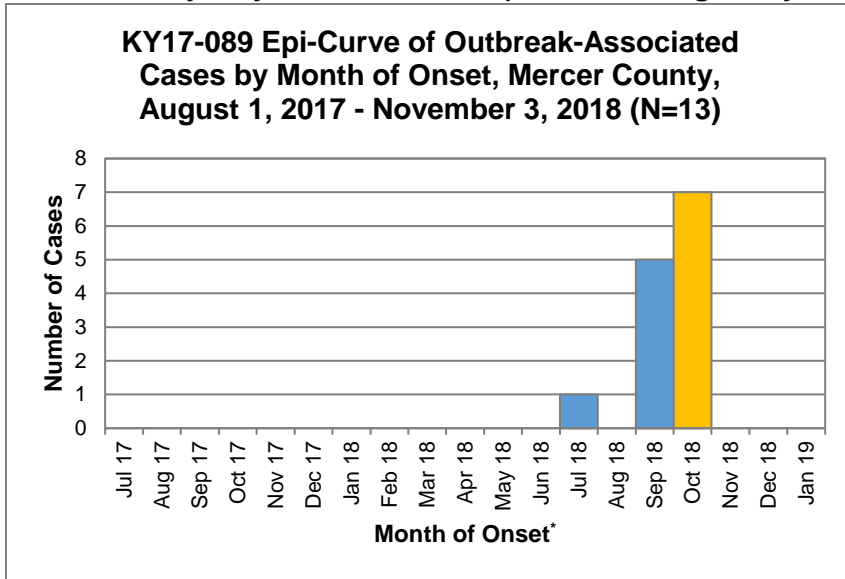
Figures 16-19: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Johnson, Kenton, Knox, and Laurel Counties)



Figures 20-23: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Madison, Magoffin, Marion, and Martin Counties)



Figures 24-27: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Mercer, Montgomery, Perry, and Pike Counties)



Figures 28-29: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Taylor and Whitley Counties)

