



Kentucky Department for Public Health
KY17-089 - Acute Hepatitis A Outbreak Weekly Report
Morbidity and Mortality Weekly Report (MMWR) Week 45, 2018
November 4, 2018 – November 10, 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 45:		Total Case Counts: 8/1/2017 – 11/10/2018:	
Number of new cases (n=75):	Confirmed[^] - 0 Probable - 54 Suspected - 21	Total number of cases (n=2639):	Confirmed[^] - 587 Probable - 1383 Suspected - 669
Number of counties with new cases:	34	Total number of counties with cases:	96 (80% 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:	626 (24%)
Number of cases with genotype IB among those with genotype testing:	0	Total number of cases with genotype IB among those with genotype testing:	572 (91% of those tested)
Number of Hospitalizations:	36	Total Number of Hospitalizations:	1389 (53%)
Number of deaths Reported[†]:	0	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 10, 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	12	0	9	3	53.2
Ballard	9	4	2	3	112.0
Barren	5	1	4	0	11.4
Bath	25	0	11	14	202.0
Bell	6	0	2	4	22.3
Boone	33	4	18	11	25.2
Bourbon	7	0	7	0	34.9
Boyd	164	98	39	27	341.8
Boyle	10	0	4	6	33.4
Breathitt	3	0	3	0	23.2
Bullitt	64	30	24	10	79.8
Butler	3	0	1	2	23.4
Campbell	43	2	37	4	46.5
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	36	0	23	13	99.9
Clay	13	0	6	7	63.8

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – November 10, 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	59	4	44	11	18.3
Fleming	4	0	0	4	27.7
Floyd	87	1	50	36	239.9
Franklin	34	0	28	6	67.3
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	58	28	18	12	163.3
Hardin	32	9	6	17	29.6
Harrison	4	0	3	1	21.3
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	7	0	4	3	13.1

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – November 10, 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	48	0	26	22	212.4
Kenton	68	7	55	6	41.1
Knott	15	1	11	3	98.1
Knox	43	0	28	15	137.7
Larue	3	0	1	2	21.1
Laurel	65	0	51	14	108.0
Lawrence	22	3	13	6	140.0
Lee	8	0	8	0	121.8
Leslie	7	0	5	2	67.7
Letcher	2	0	1	1	9.0
Lewis	8	0	6	2	60.0
Lincoln	12	2	6	4	49.1
Logan	1	0	1	0	3.7
Madison	31	2	22	7	34.0
Magoffin	32	0	19	13	255.2
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
McCreary [^]	2	0	2	0	11.5
Meade	12	1	1	10	42.6
Menifee	17	0	11	6	263.4

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – November 10, 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
Mercer	23	0	15	8	106.9
Metcalfe	1	0	1	0	9.9
Montgomery	73	5	52	16	261.4
Morgan	18	1	14	3	136.5
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	33	0	23	10	124.3
Pike	24	0	21	3	40.8
Powell	9	0	7	2	72.7
Pulaski	7	0	5	2	10.9
Rockcastle [^]	1	0	1	0	6.0
Rowan	43	0	27	16	175.4
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

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – November 10, 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
Warren	29	8	16	5	22.5
Washington	5	0	3	2	41.2
Whitley	134	3	72	59	370.0
Wolfe	11	0	9	2	151.4
Woodford	2	0	0	2	7.6
Total Number of Cases:	2639	587	1383	669	59.2

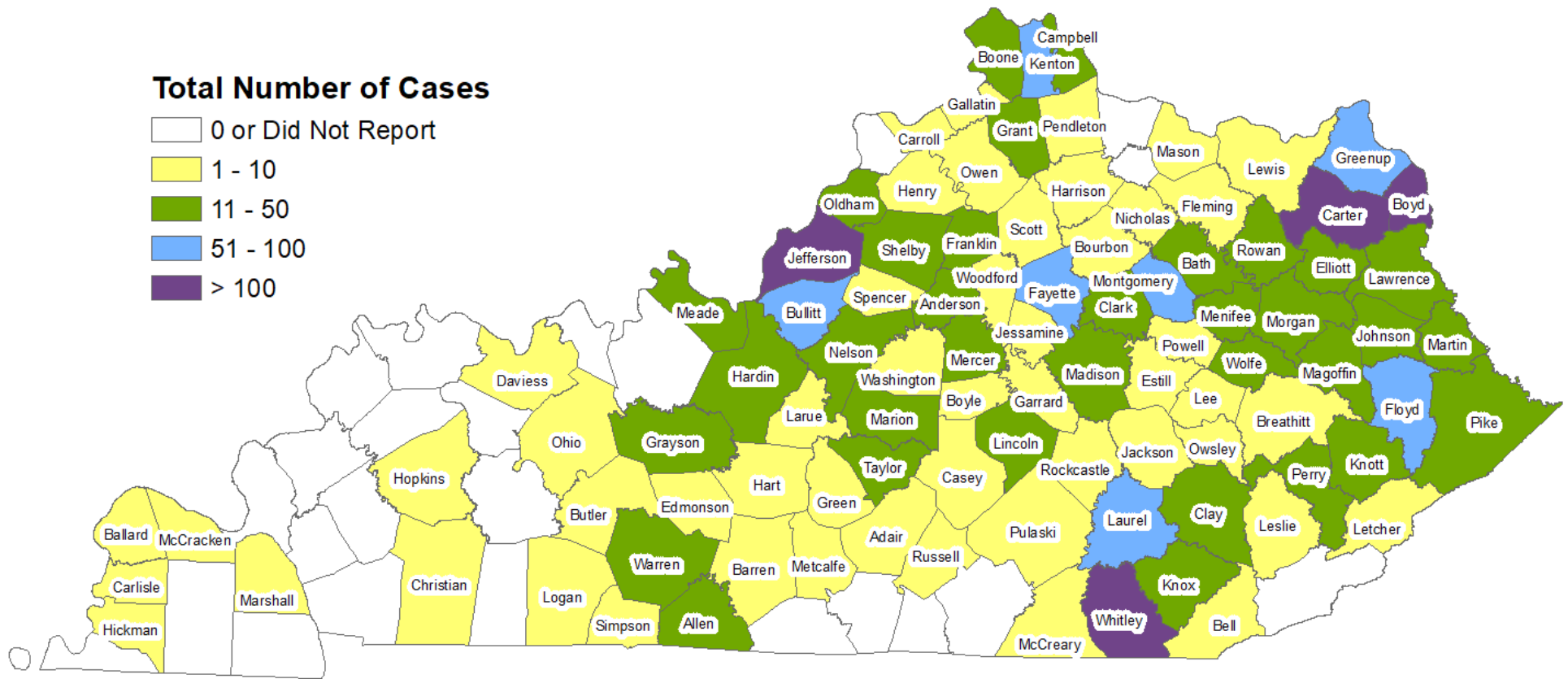
* Cases are reported based on date of specimen collection.

^ 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 10, 2018

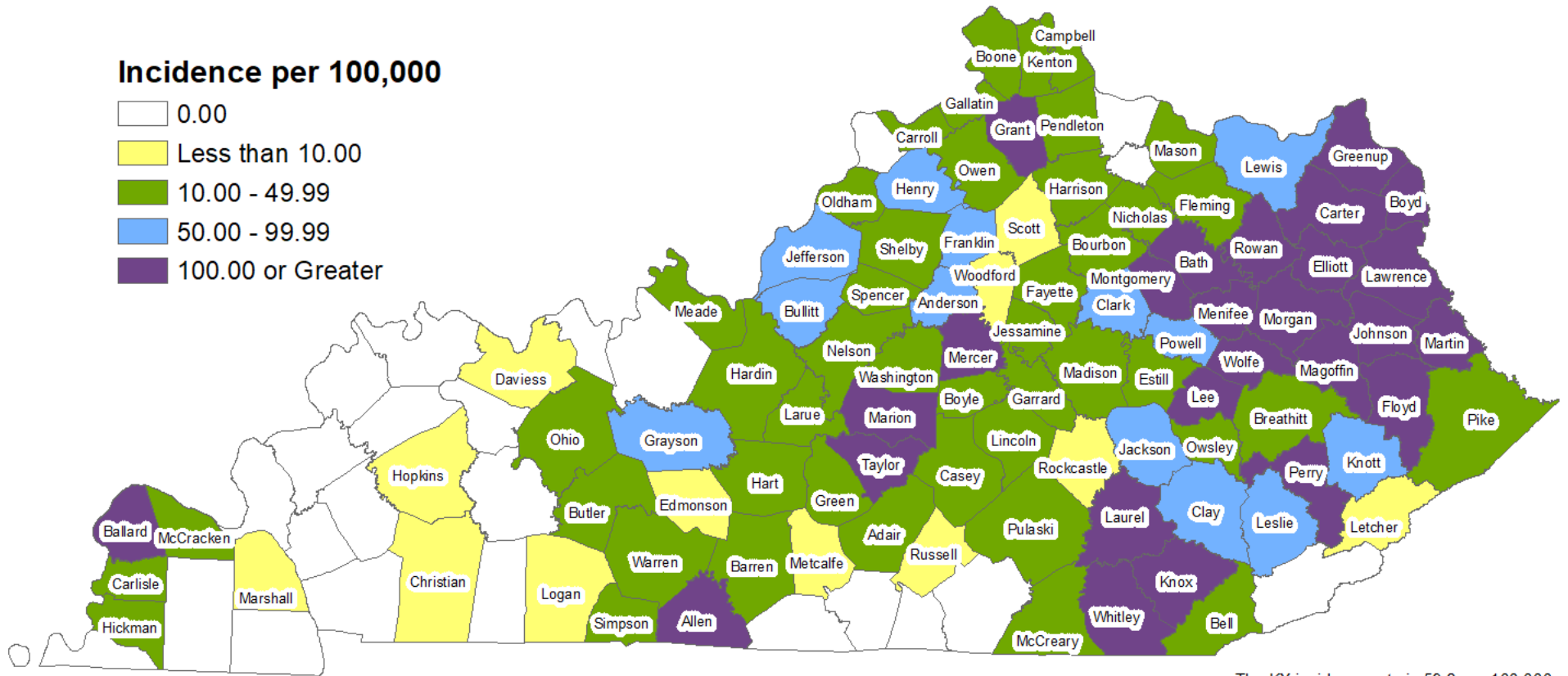


n = 96 counties with outbreak-associated cases

Counties where cases have not previously been identified: McCreary, Rockcastle.

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 10, 2018



The KY incidence rate is 59.2 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 10, 2018

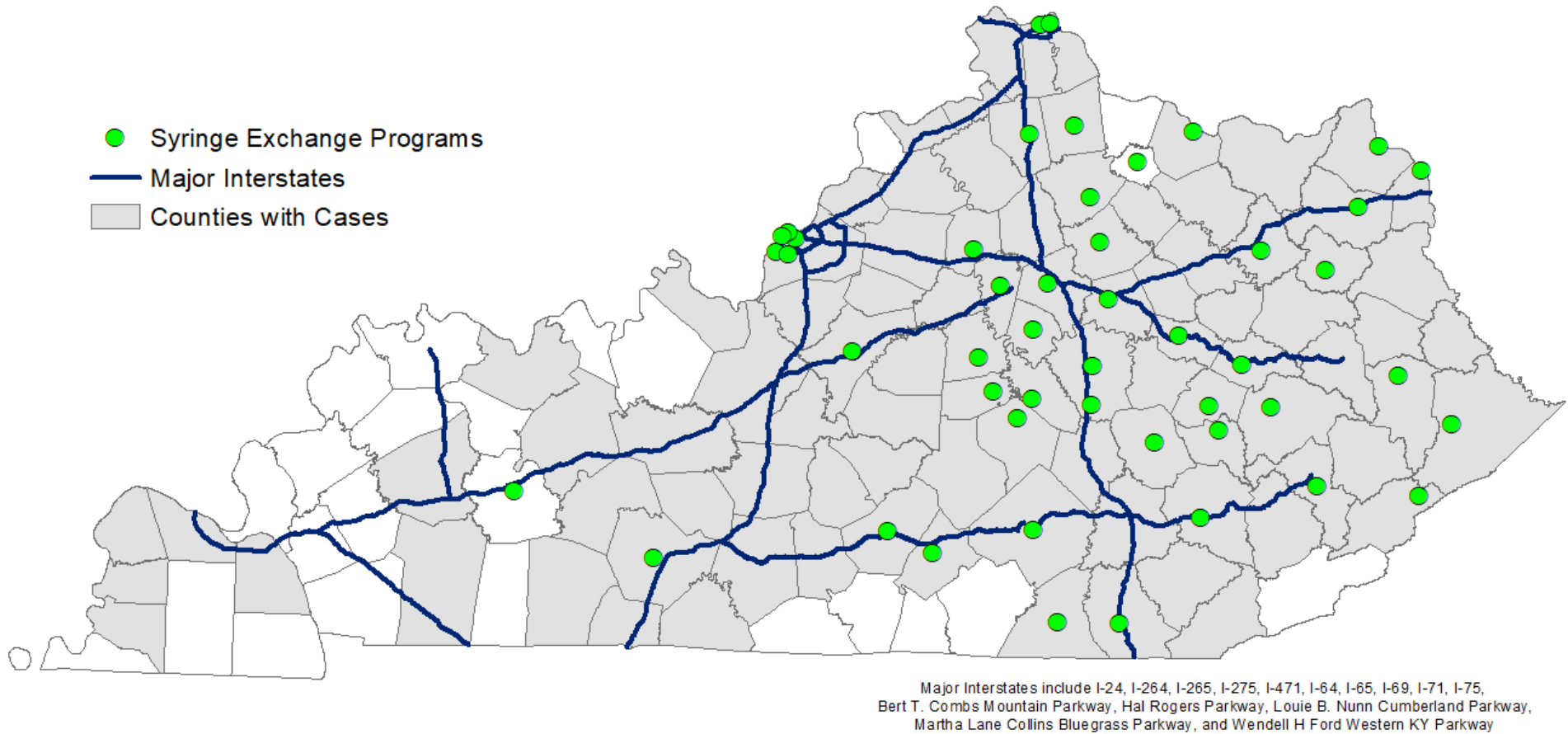
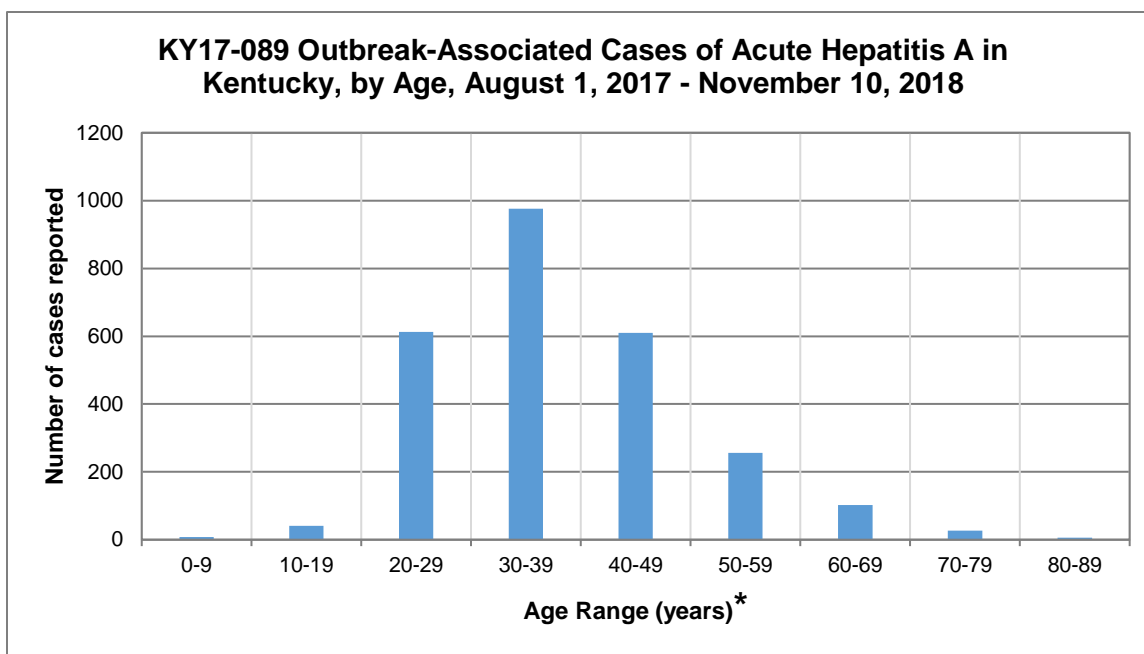


Figure 4: Outbreak-Associated Cases by Age



* 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 10, 2018 ^{#^}	
Risk Factor	Number of Cases Reporting Risk Factor (n=2165) ^{* †}
Homelessness + No/Unk Illicit Drug Use	45 (2.1%)
Illicit Drug Use + No/Unk Homelessness	1447 (67%)
Homelessness + Illicit drug use	230 (11%)
No Outbreak-Related Risk Factors	443 (20%)

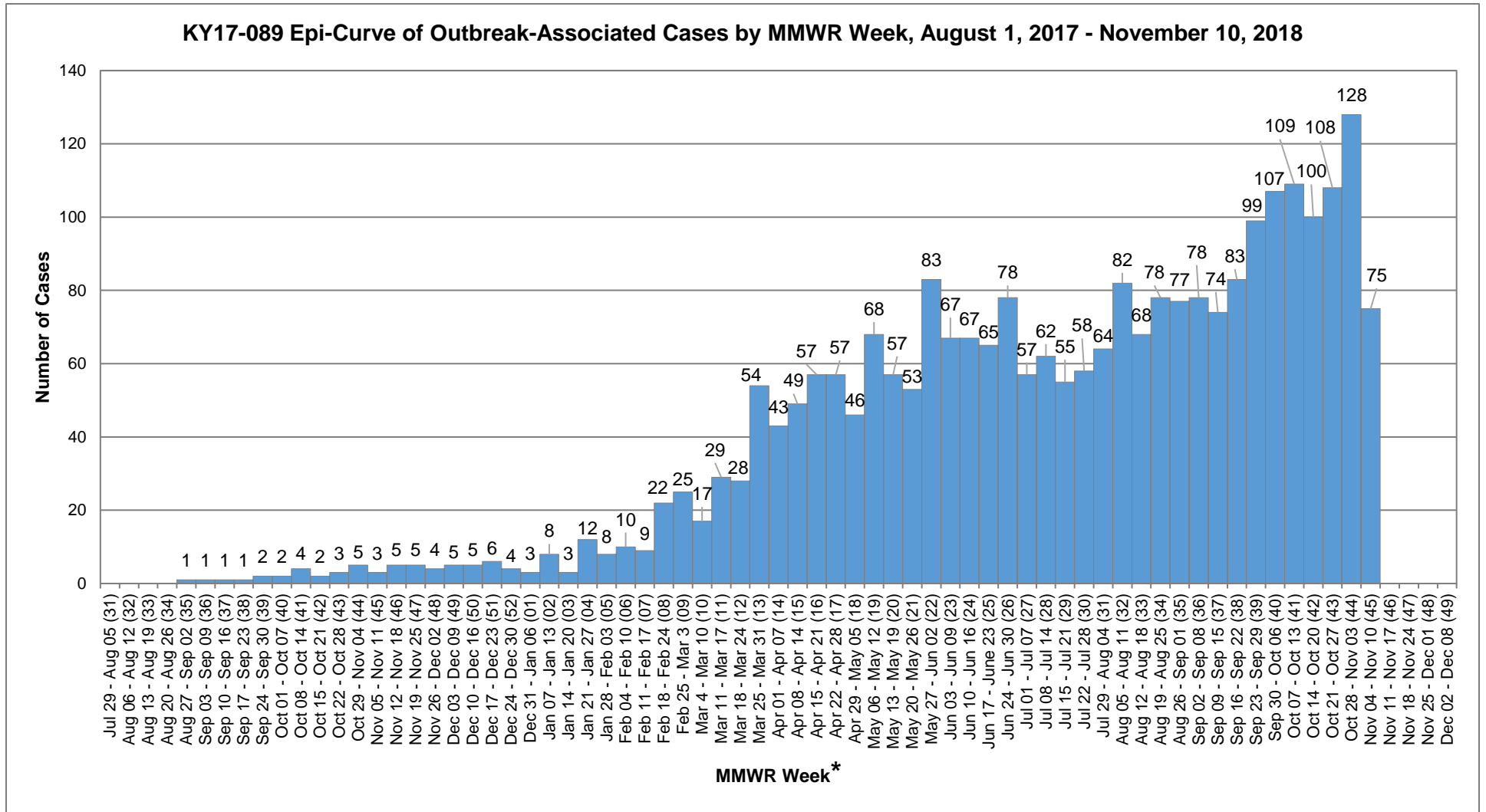
* Risk factor information is unavailable for 474 (18.0%) of all outbreak-associated cases.

† 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.

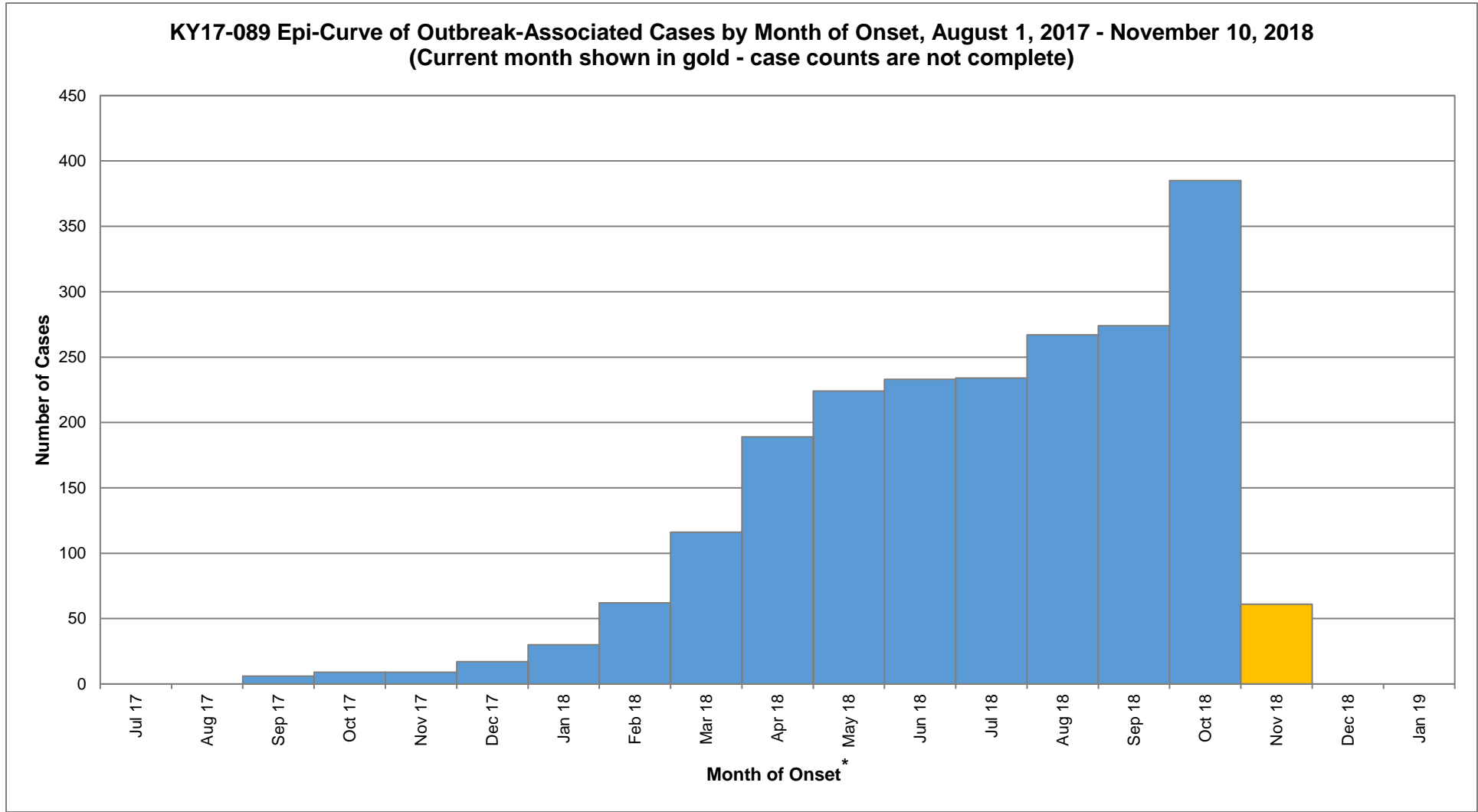
^ 31 MSM cases have been reported. Of those, 9 have reported no other risk factors.

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



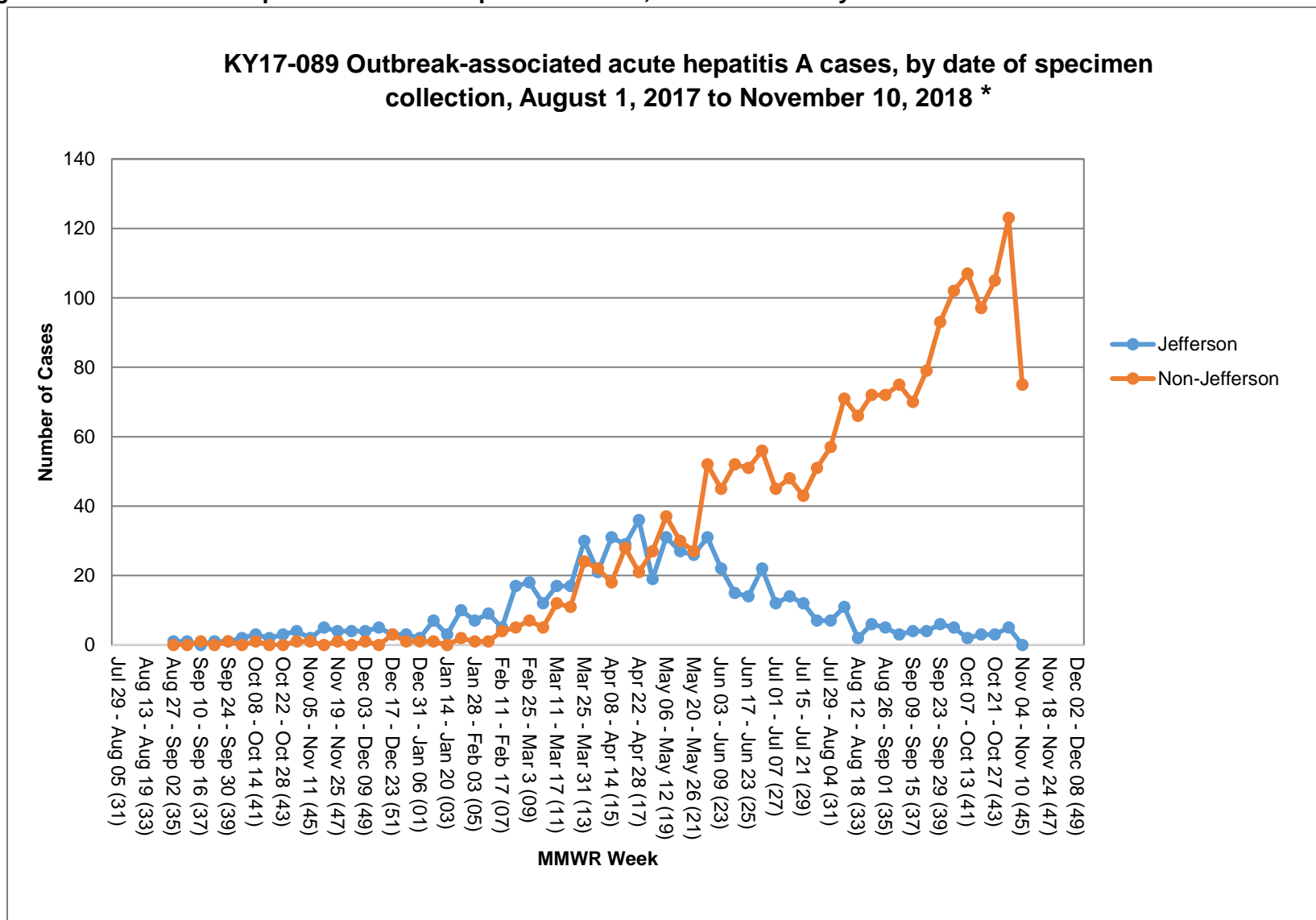
* MMWR weeks are based on date of specimen collection.

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



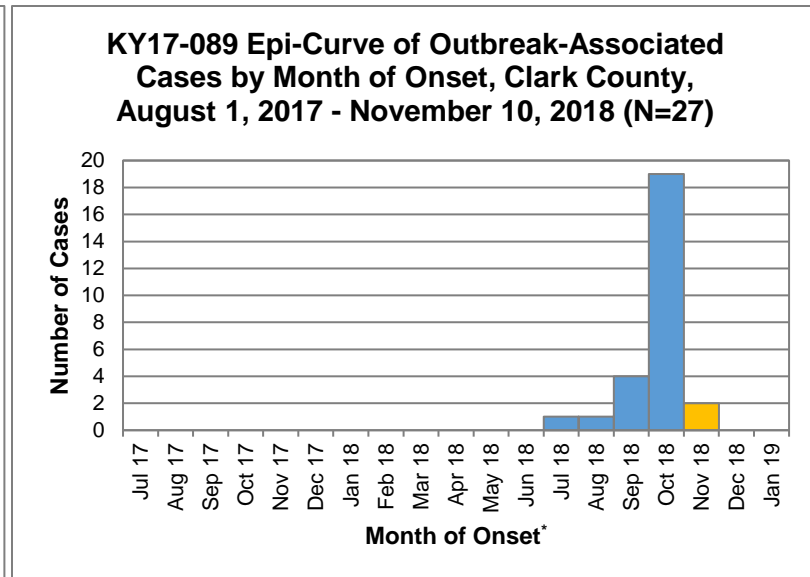
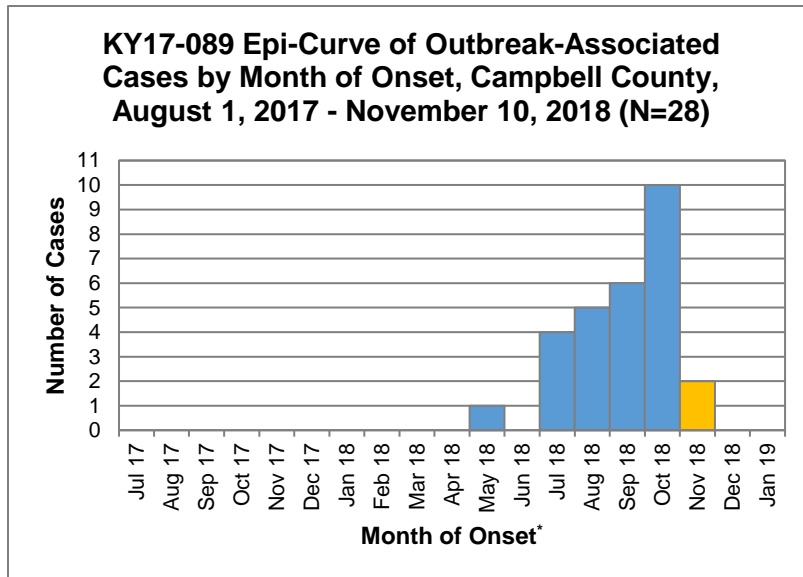
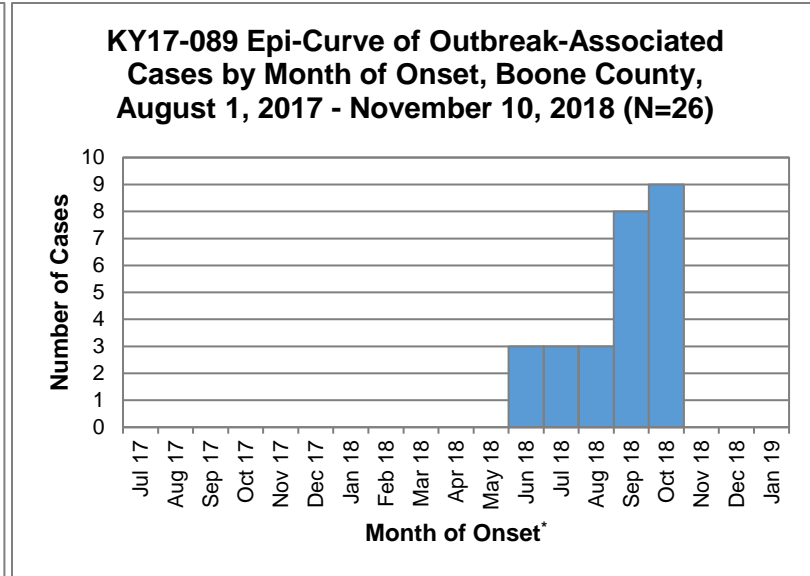
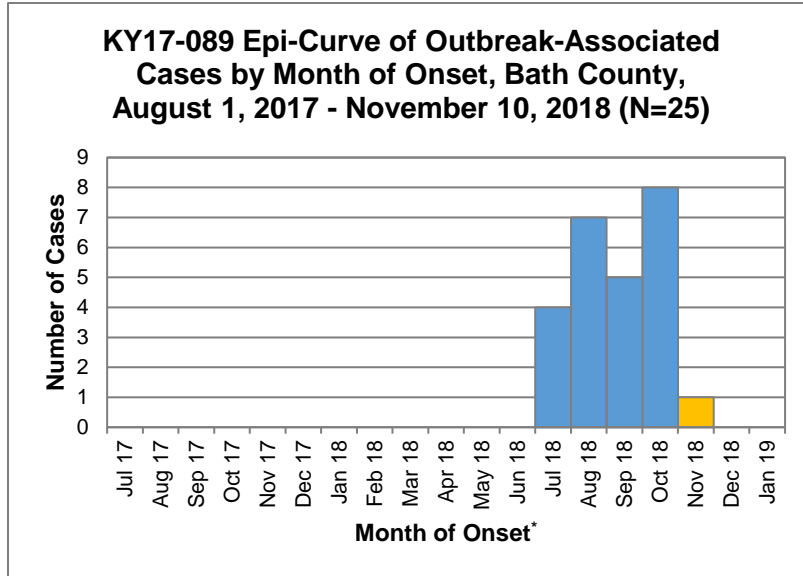
* Date of onset has been reported for 80.2% (or 2116/2639) of cases.

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

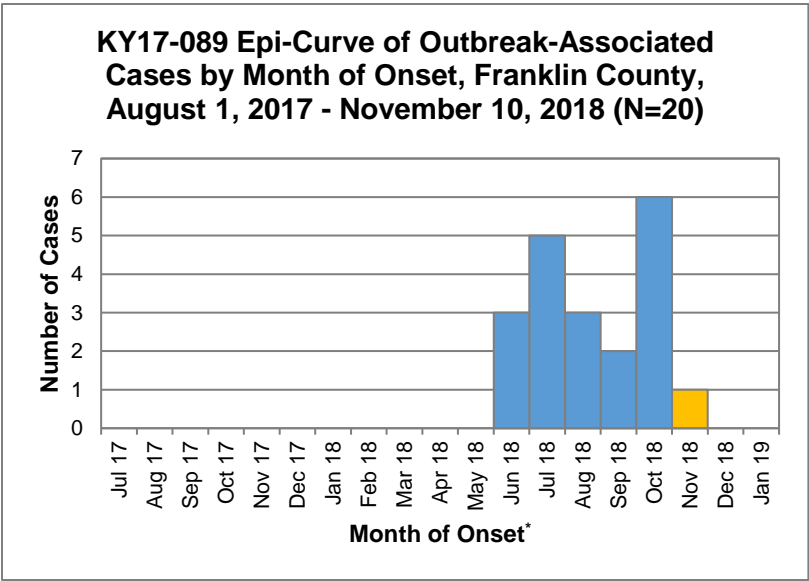
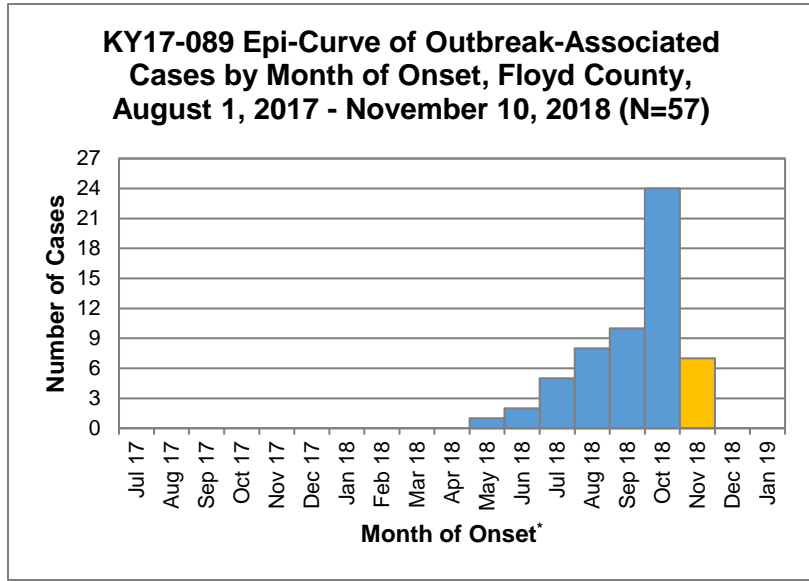
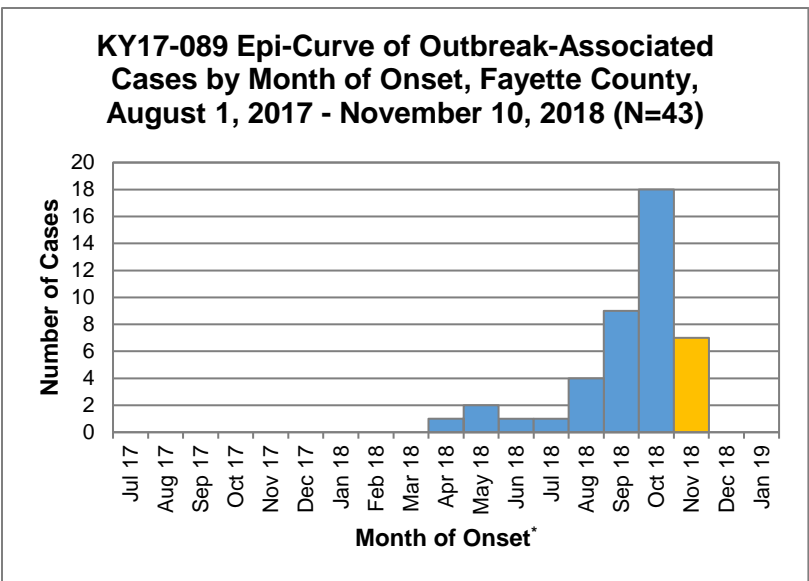
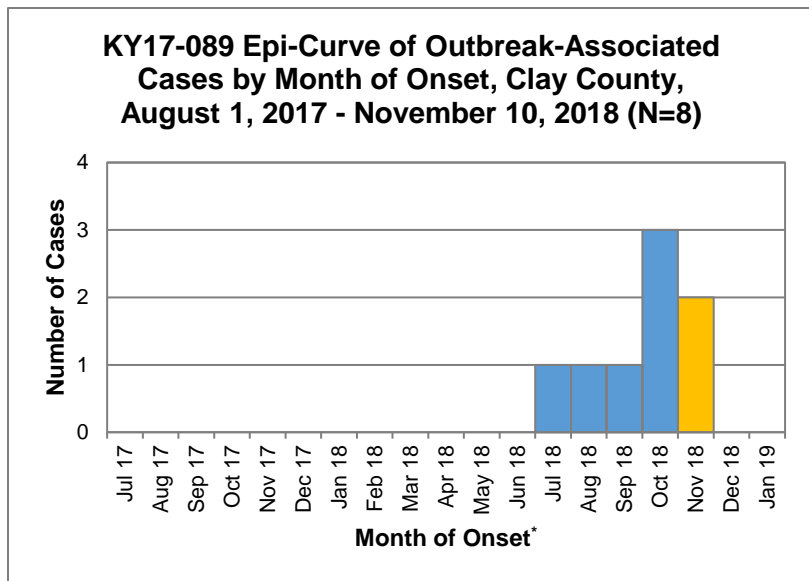


* MMWR weeks are based on date of specimen collection.

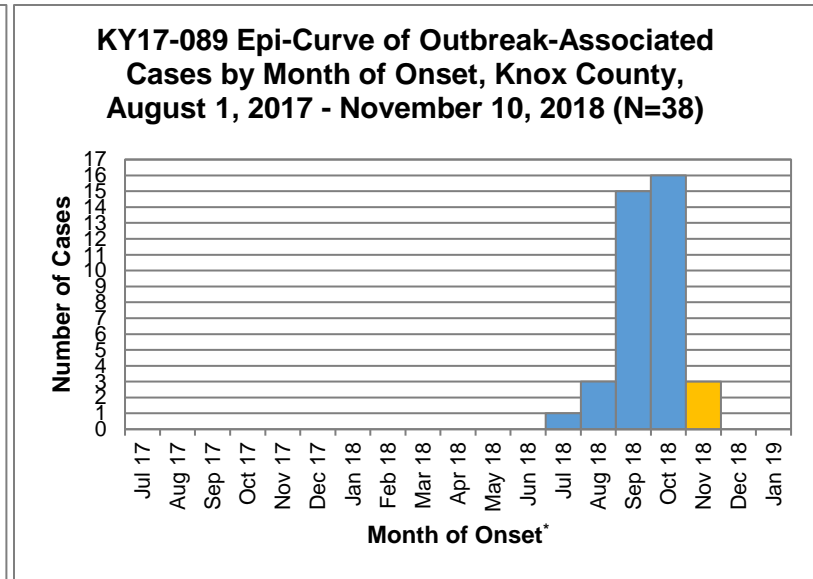
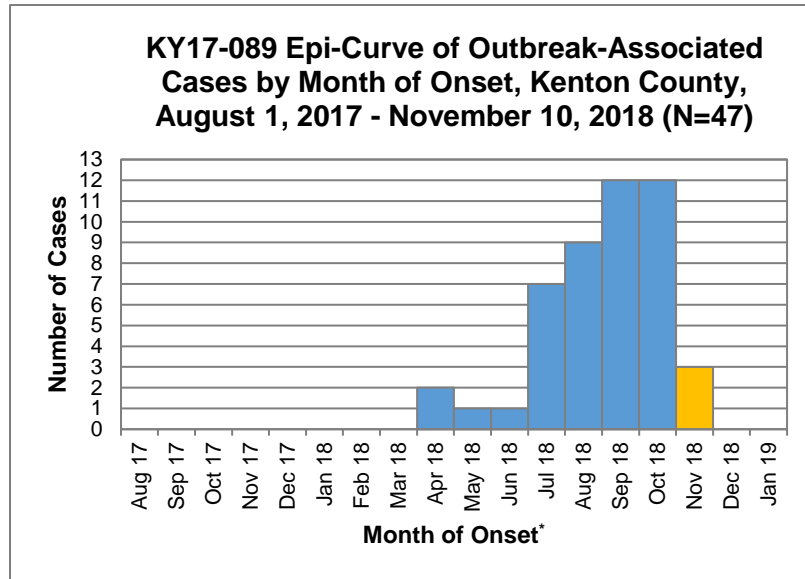
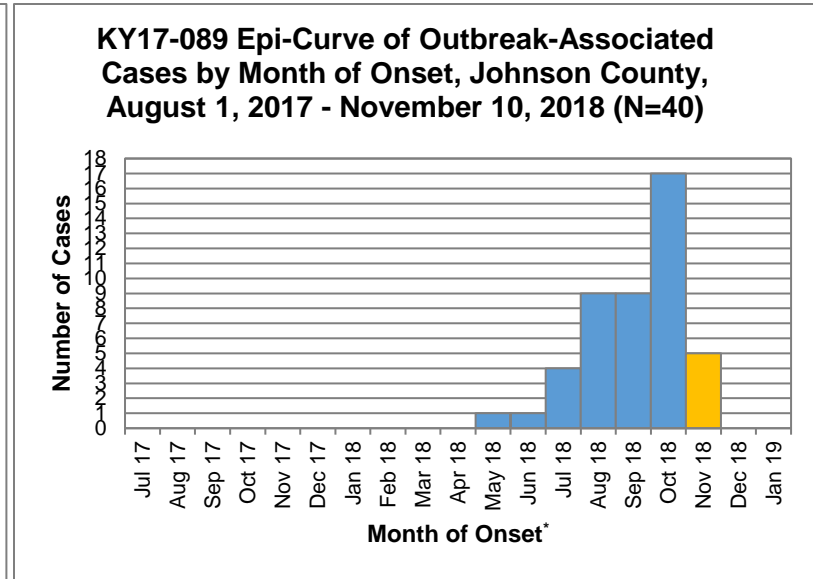
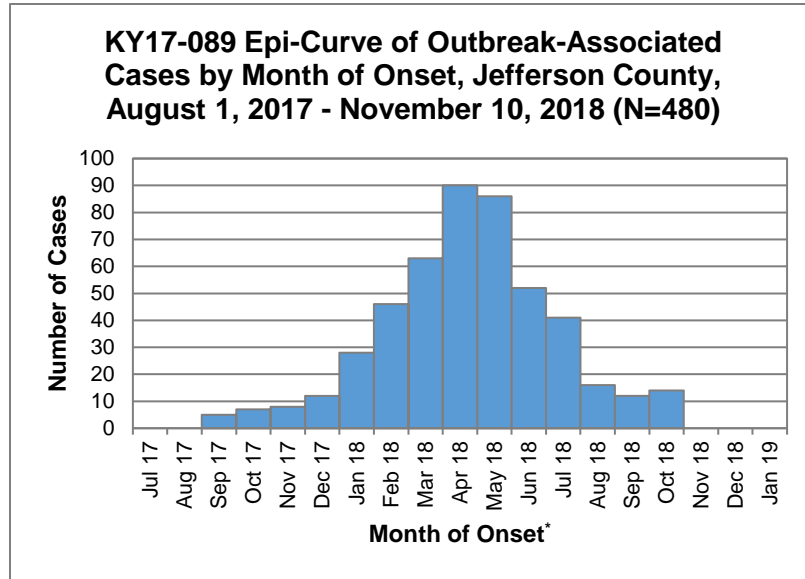
Figures 8-11: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Bath, Boone, Campbell, and Clark Counties)



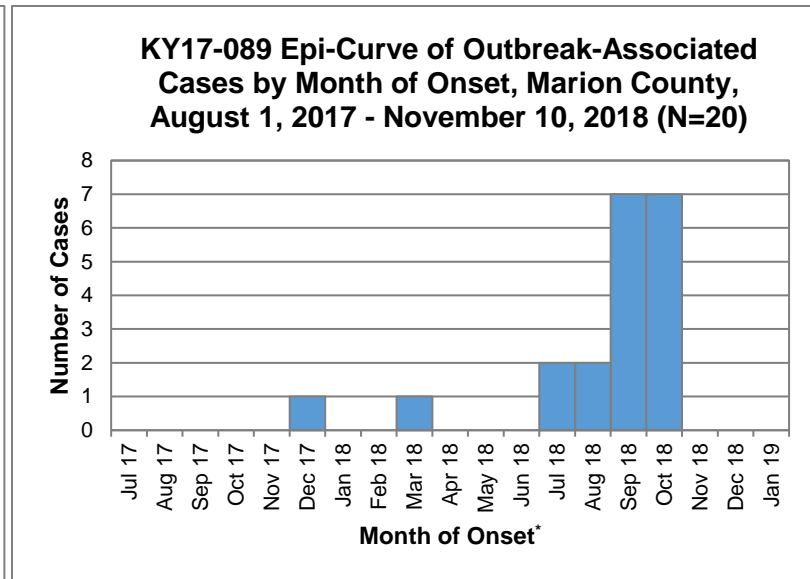
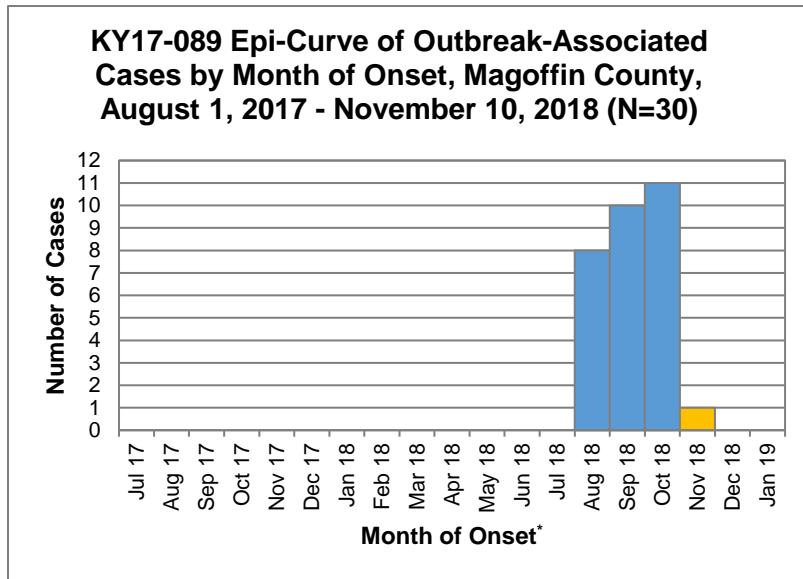
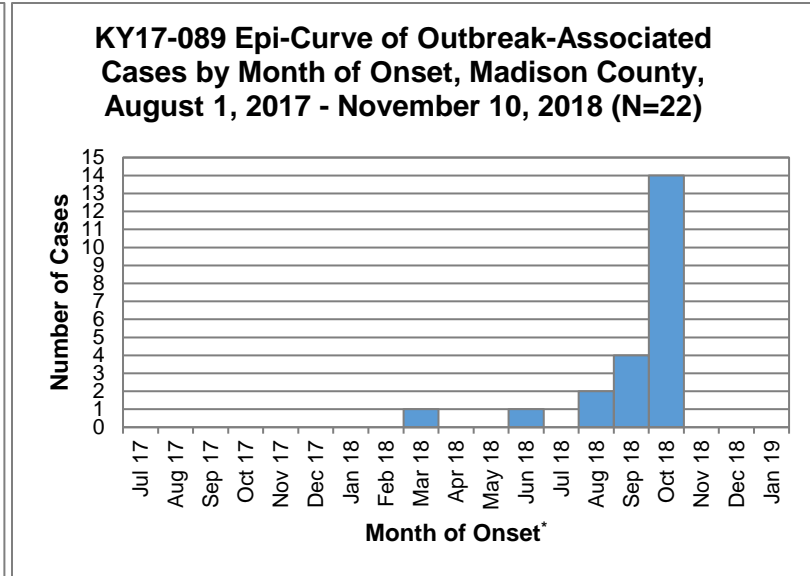
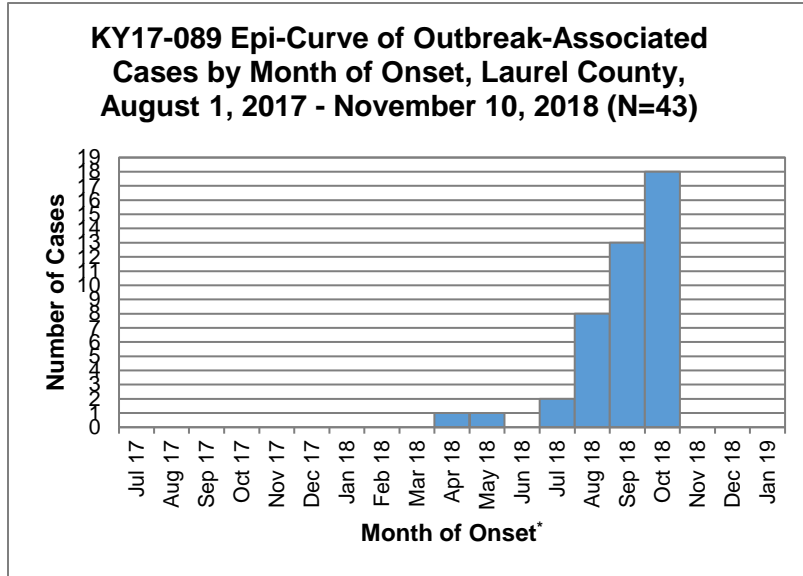
Figures 12-15: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Clay, Fayette, Floyd, and Franklin Counties)



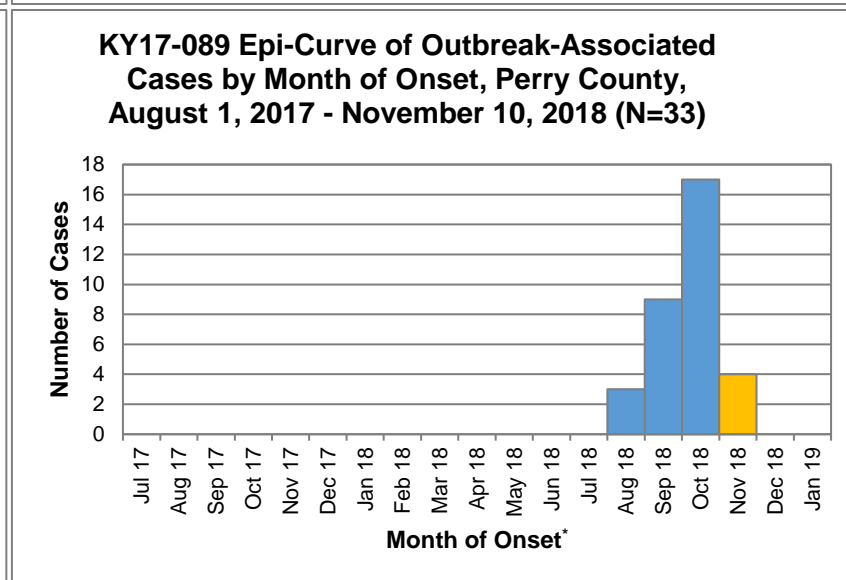
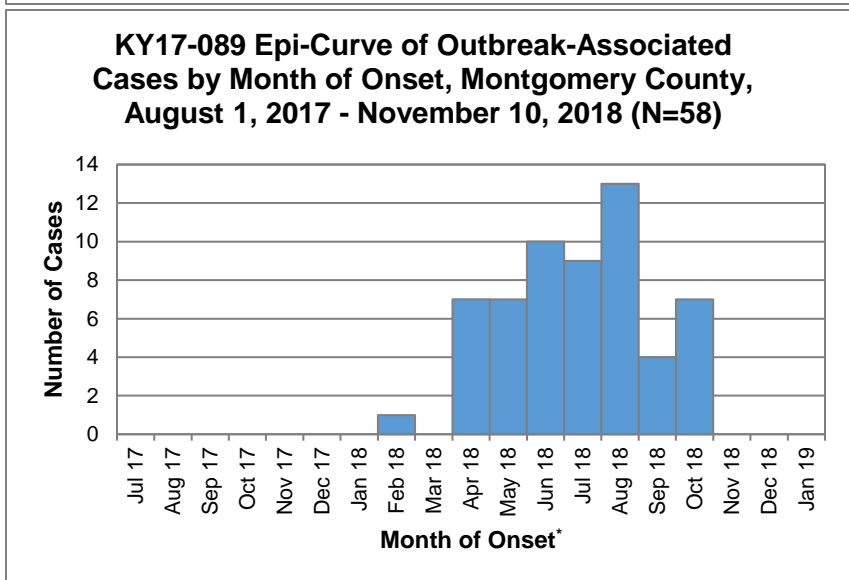
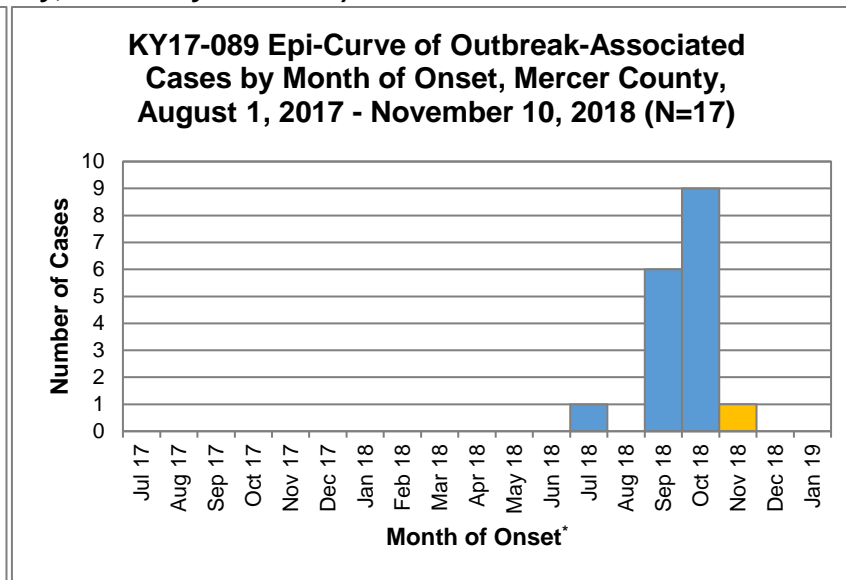
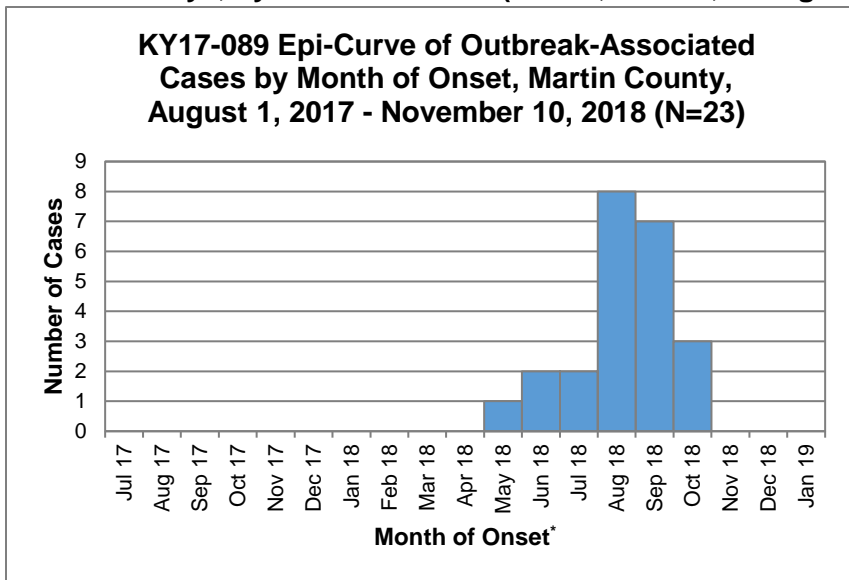
Figures 16-19: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Jefferson, Johnson, Kenton, and Knox Counties)



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 (Laurel, Madison, Magoffin, and Marion 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 (Martin, Mercer, Montgomery, and Perry Counties)



Figures 28-31: 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 (Pike, Rowan, Taylor, and Whitley Counties)

