



Kentucky Department for Public Health
KY17-089 - Acute Hepatitis A Outbreak Weekly Report
Morbidity and Mortality Weekly Report (MMWR) Week 41, 2018
October 7, 2018 – October 13, 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 41:		Total Case Counts: 8/1/2017 – 10/13/2018:	
Number of new cases (n=82):	Confirmed[^] - 0 Probable - 53 Suspected - 29	Total number of cases (n=2159):	Confirmed[^] - 565 Probable - 1051 Suspected - 543
Number of counties with new cases:	35	Total number of counties with cases:	92 (77% of KY counties)
Number of individuals with specimens submitted for genotyping where results are available:	22	Number of individuals with specimens submitted for genotyping where results are available:	605 (28%)
Number of cases with genotype IB among those with genotype testing:	21	Total number of cases with genotype IB among those with genotype testing:	551 (91% of those tested)
Number of Hospitalizations:	31	Total Number of Hospitalizations:	1166 (54%)
Number of deaths Reported[†]:	0	Total number of deaths reported[†]:	14 (<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 – October 13, 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	2	0	1	1	10.3
Allen	20	3	18	4	95.5
Anderson	9	0	8	1	39.9
Ballard	9	4	2	3	112.0
Barren	4	1	3	0	9.1
Bath	17	0	5	12	137.3
Bell	4	0	1	3	14.9
Boone	24	1	14	9	18.4
Bourbon	3	0	3	0	15.0
Boyd	159	98	35	26	331.4
Boyle	5	0	1	4	16.7
Breathitt	1	0	1	0	7.7
Bullitt	62	30	23	9	77.3
Butler	3	0	1	2	23.4
Campbell	34	1	29	4	36.8
Carlisle	1	0	1	0	20.6
Carroll	3	0	0	3	28.0
Carter	126	41	63	22	464.2
Casey	2	1	0	1	12.7
Christian	1	1	0	0	1.4
Clark	15	0	10	5	41.6
Clay	6	0	4	2	29.5

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – October 13, 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	17	1	4	12	226.0
Estill	4	0	3	1	28.0
Fayette	26	2	17	7	8.1
Fleming	3	0	0	3	20.8
Floyd	53	0	31	22	146.1
Franklin	25	0	19	6	49.5
Gallatin	2	0	1	1	22.8
Garrard	4	0	2	2	22.8
Grant	28	3	20	5	112.1
Grayson	21	2	17	2	79.7
Green	2	0	2	0	18.1
Greenup	57	28	18	11	160.5
Hardin	30	7	6	17	27.8
Harrison	2	0	2	0	10.6
Hart	1	0	1	0	5.3
Henry	10	3	5	2	62.5
Hickman	1	0	0	1	22.1
Hopkins	1	0	0	1	2.2
Jackson	4	0	3	1	29.8
Jefferson	626	292	226	108	81.2
Jessamine	2	0	0	2	3.7

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – October 13, 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	30	0	15	15	132.8
Kenton	44	2	39	3	26.6
Knott	13	1	9	3	85.0
Knox	26	0	16	10	83.3
LaRue	2	0	1	1	14.1
Laurel	35	0	28	7	58.2
Lawrence	18	3	10	5	114.5
Lee	4	0	4	0	60.9
Leslie	5	0	3	2	48.4
Letcher	2	0	1	1	9.0
Lewis	5	0	3	2	37.5
Lincoln	6	2	2	2	24.5
Logan	1	0	1	0	3.7
Madison	15	1	10	4	16.4
Magoffin	28	0	17	11	223.3
Marion	16	2	11	3	82.5
Marshall	2	0	1	1	6.4
Martin	29	0	20	9	253.2
Mason	2	0	2	0	11.6
McCracken	8	2	3	3	12.2
Meade	12	1	1	10	42.6
Menifee	13	0	9	4	201.4
Mercer	8	0	5	3	37.2

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – October 13, 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	63	5	43	15	225.6
Morgan	9	0	7	2	68.2
Nelson	14	4	5	5	30.7
Ohio	6	0	3	3	24.8
Oldham	9	3	3	3	13.6
Owen	4	0	4	0	37.2
Owsley [^]	1	0	1	0	22.5
Pendleton	4	0	2	2	27.4
Perry	21	0	11	10	79.1
Pike	11	0	10	1	18.7
Powell	7	0	5	2	56.6
Pulaski	4	0	2	2	6.2
Rowan	42	0	26	16	171.3
Russell	1	0	0	1	5.6
Scott	3	0	0	3	5.5
Shelby	20	5	11	4	42.2
Simpson	6	0	6	0	33.1
Spencer	5	3	1	1	27.0
Taylor	36	2	26	8	141.3
Warren	25	7	14	4	19.4
Washington	5	0	3	2	41.2
Whitley	99	3	54	42	273.4

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – October 13, 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
Wolfe	6	0	4	2	82.6
Total Number of Cases:	2159	565	1051	543	48.5

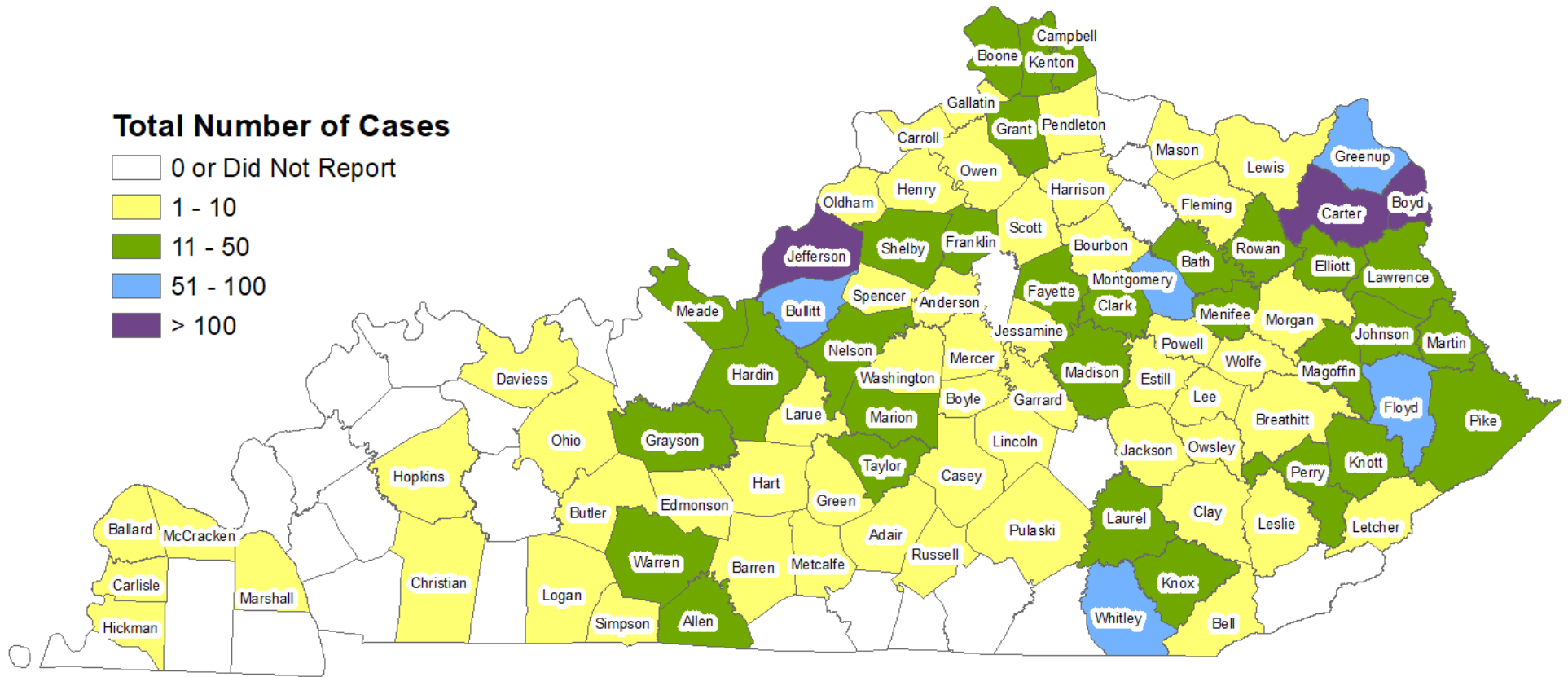
* Cases are reported based on date of specimen collection.

^ 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: Boyd.

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 - October 13, 2018

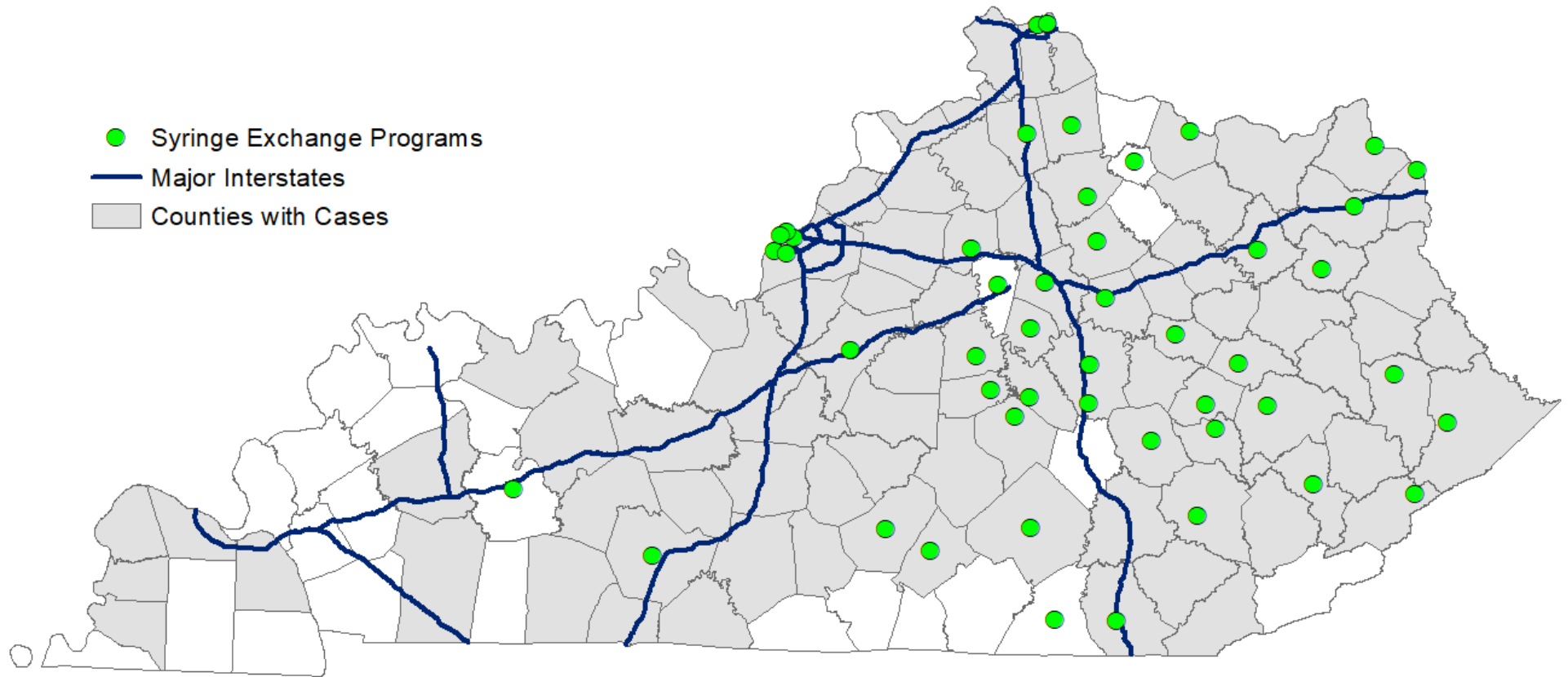


n = 92 counties with outbreak-associated cases

Counties where cases have not previously been identified: Owsley.

Figure 2: Major Interstates and Syringe Exchange Programs in Counties Reporting Outbreak-Associated Cases

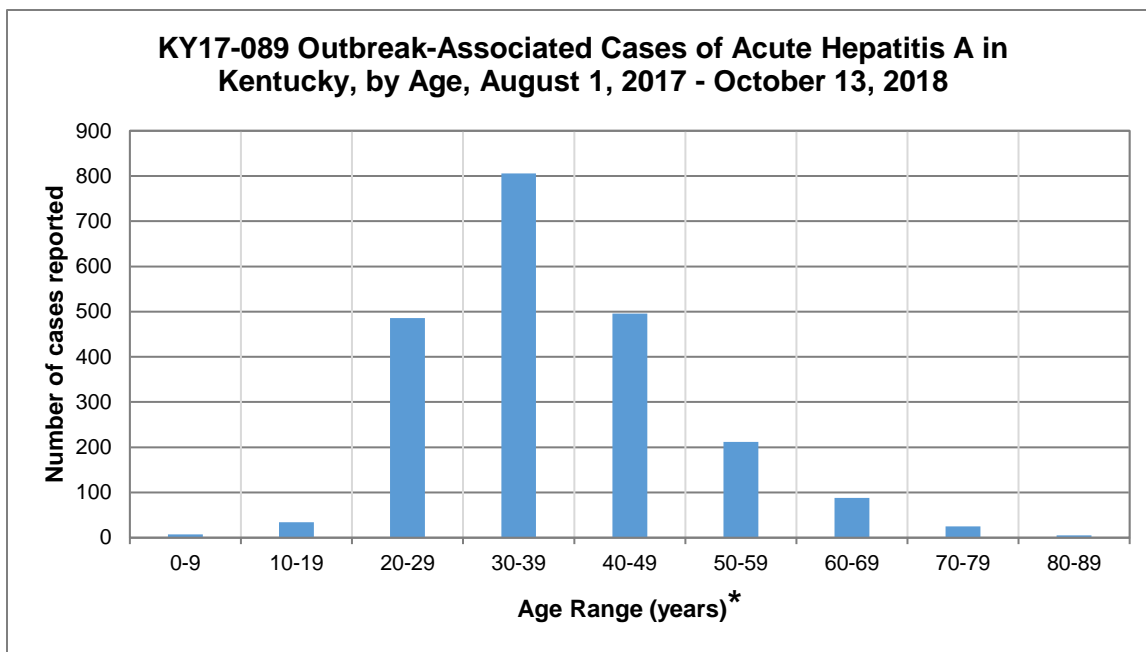
KY17-089 Major Interstates and Syringe Exchange Programs in Counties Reporting Outbreak-Associated Acute Hepatitis A Cases, August 1, 2017 - October 13, 2018



- Syringe Exchange Programs
- Major Interstates
- Counties with Cases

Major Interstates include I-24, I-264, I-265, I-275, I-471, I-64, I-65, I-69, I-71, I-75, Martha Lane Collins Bluegrass Parkway, and Wendell H Ford Western KY Parkway

Figure 3: Outbreak-Associated Cases by Age



* The mean age of cases is 37.9 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 – October 13, 2018 ^{#^}	
Risk Factor	Number of Cases Reporting Risk Factor (n=1770) ^{* †}
Homelessness + No Illicit Drug Use	18 (1%)
Illicit Drug Use + No/Unk Homelessness	1138 (64%)
Homelessness + Illicit drug use	205 (11.6%)
No Outbreak-Related Risk Factors	387 (22%)

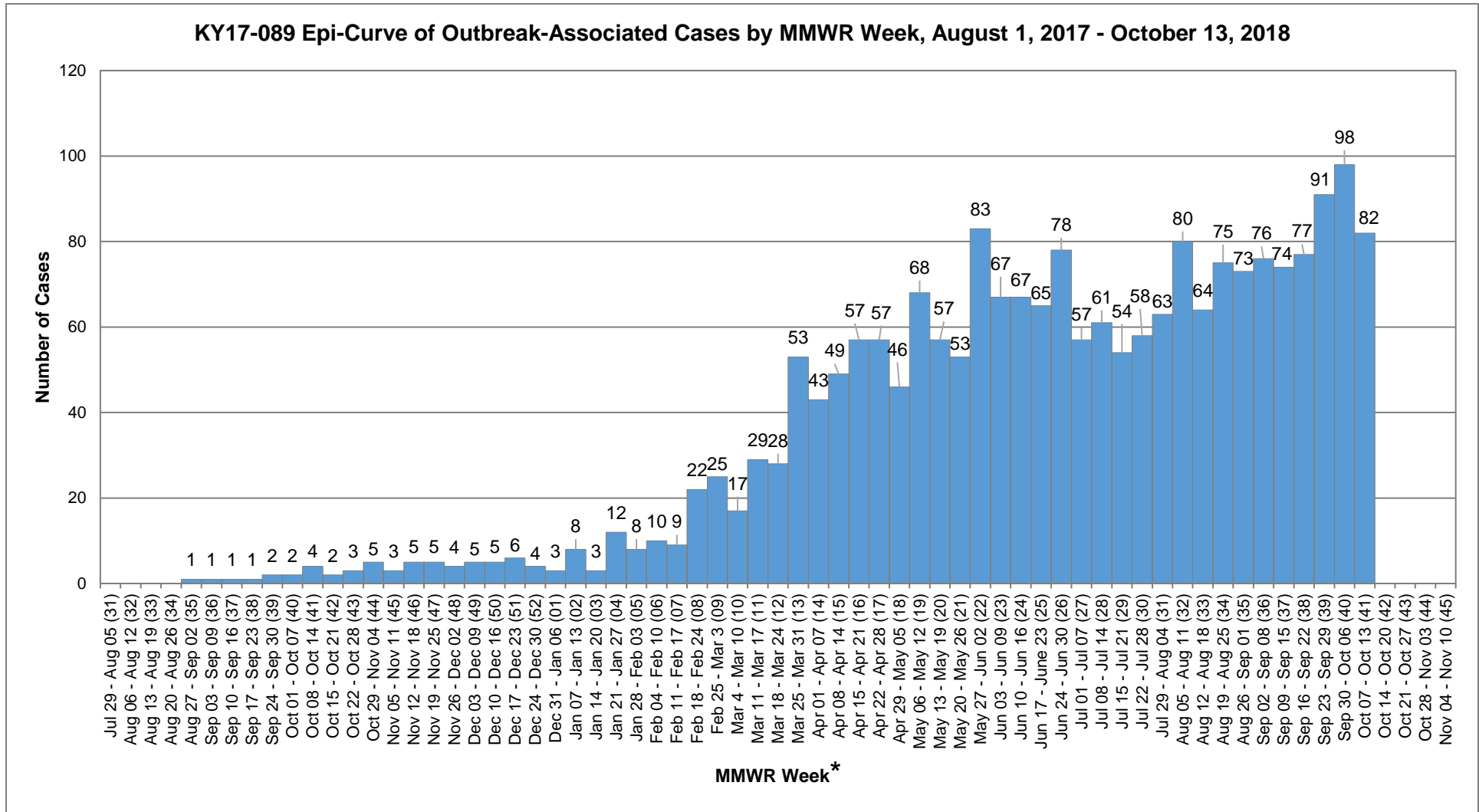
* Risk factor information is unavailable for 389 (18.0%) of all outbreak-associated cases.

† 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.

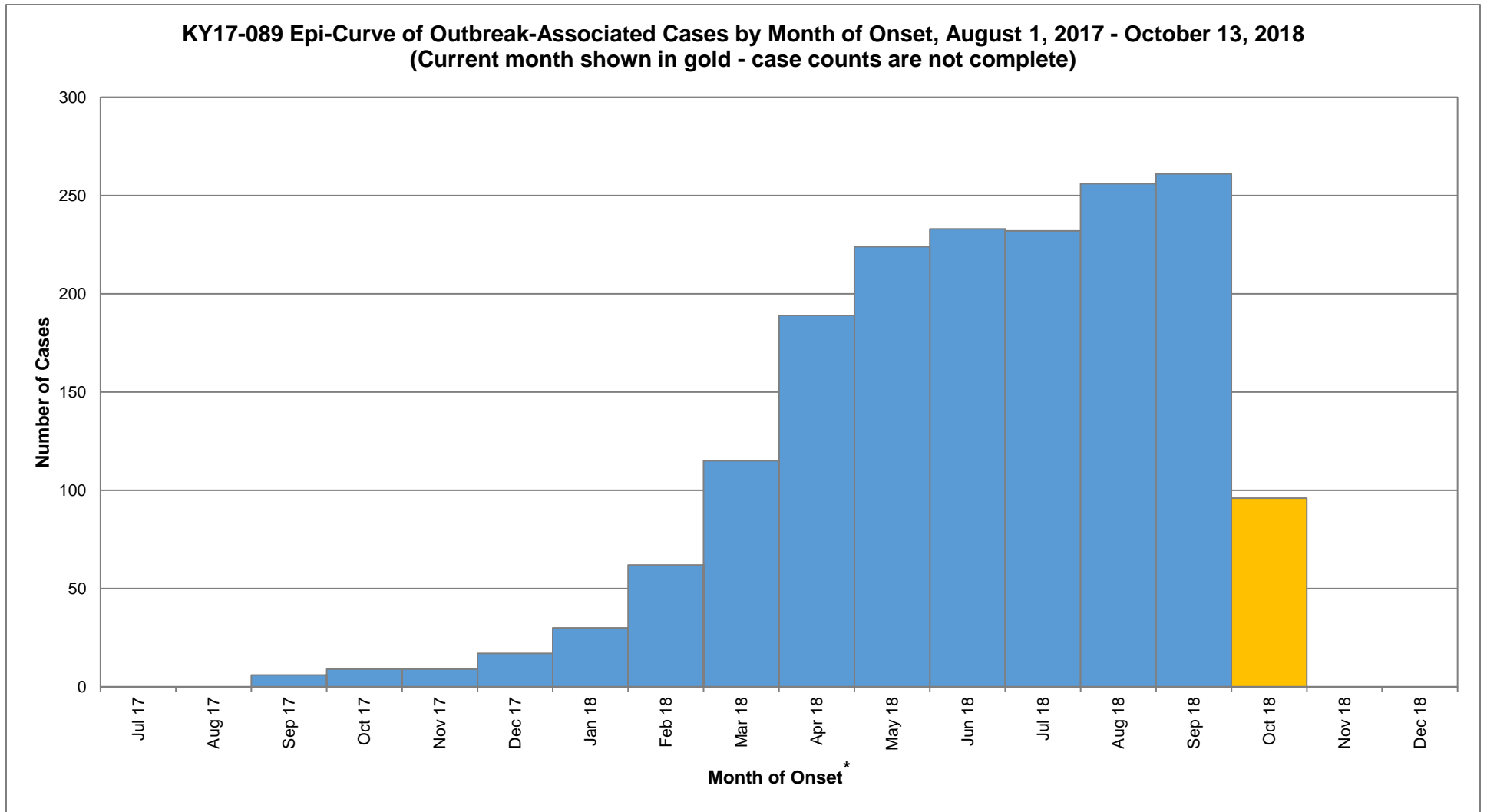
^ 31 MSM cases have been reported. Of those, 9 have reported no other risk factors.

Figure 4: Epidemic-curve (Epi-Curve) of Outbreak-Associated Cases



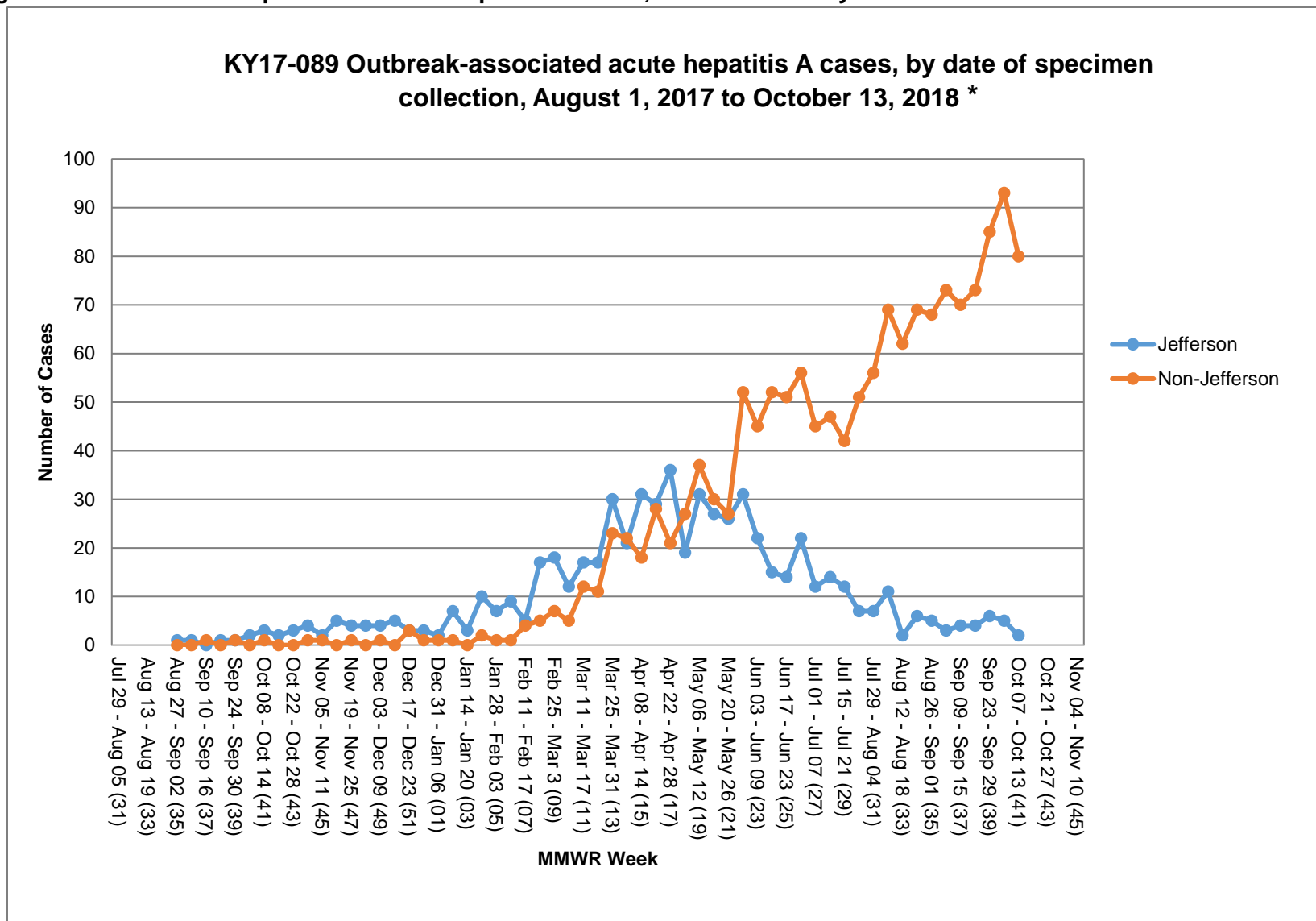
* MMWR weeks are based on date of specimen collection.

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

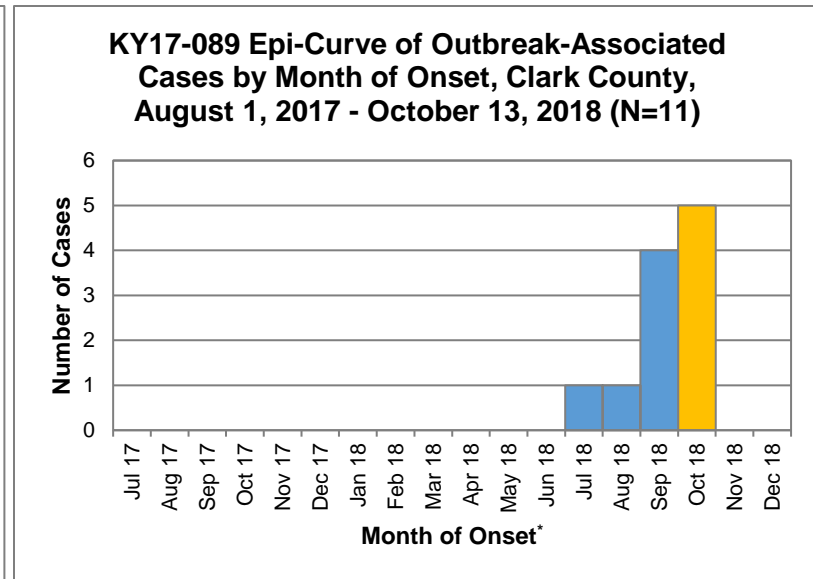
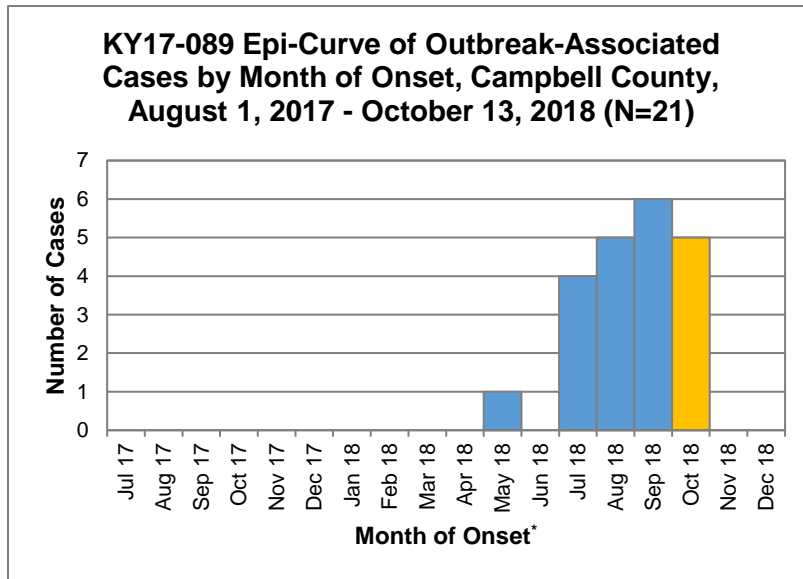
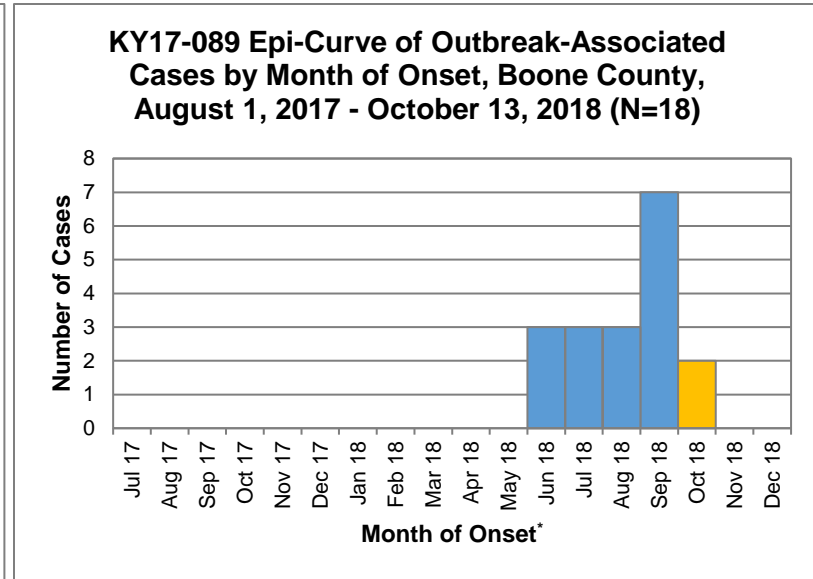
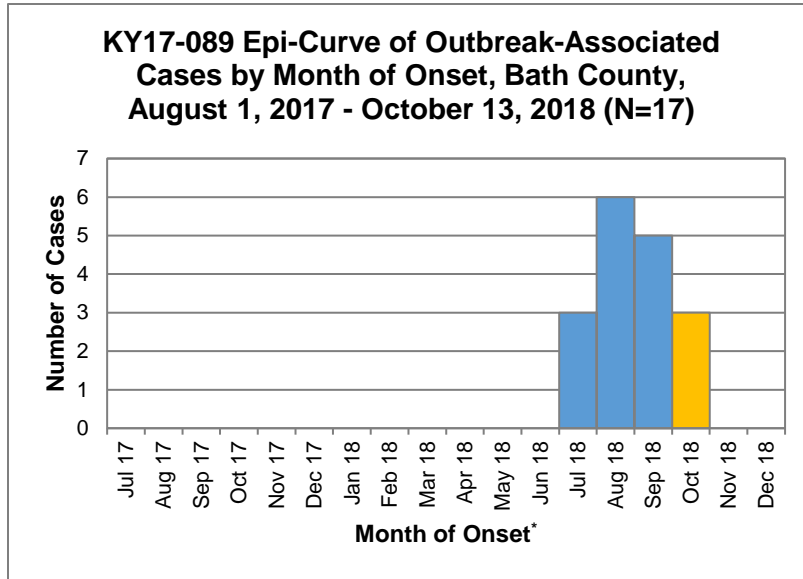


* Date of onset has been reported for 76.1% (or 1643/2159) of cases.

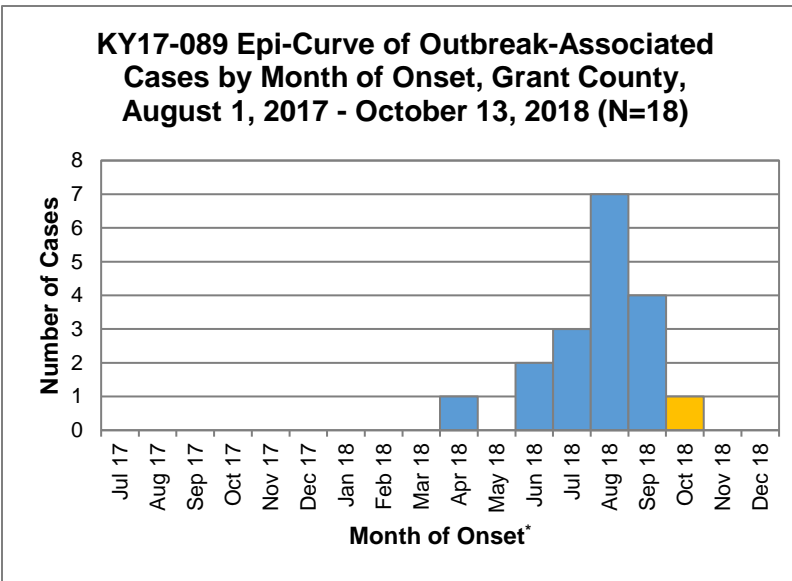
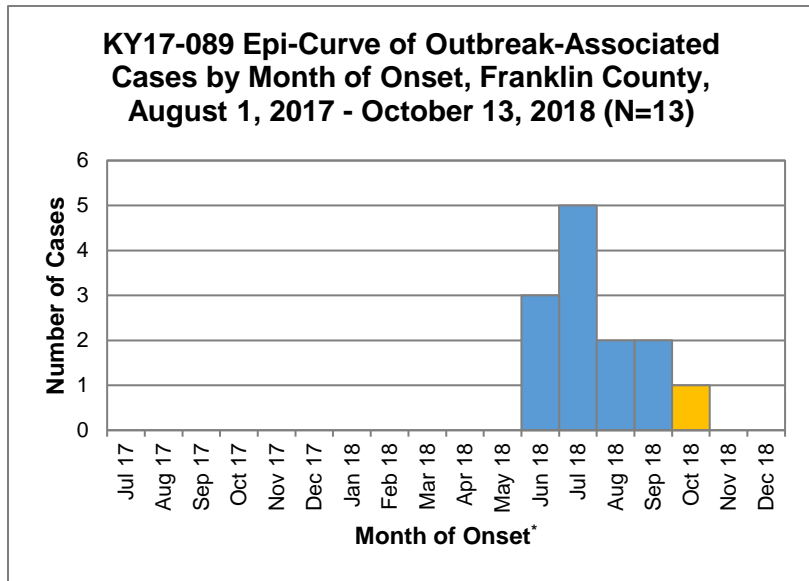
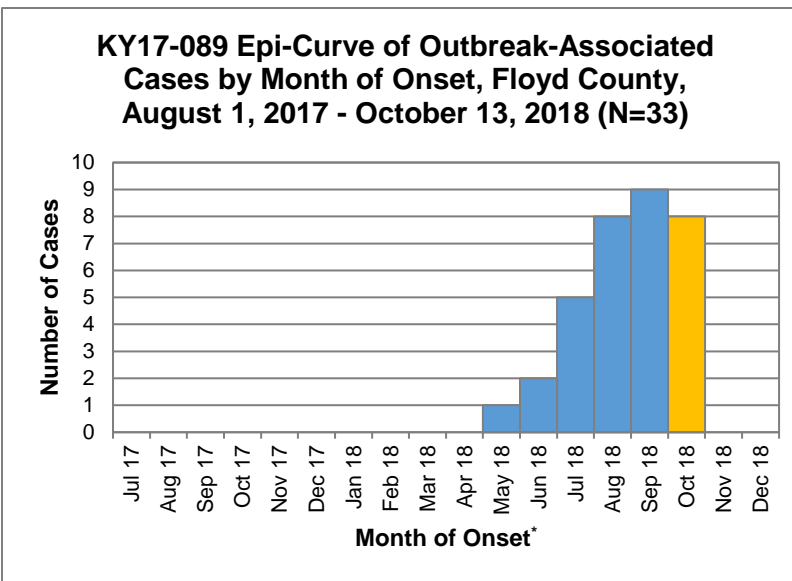
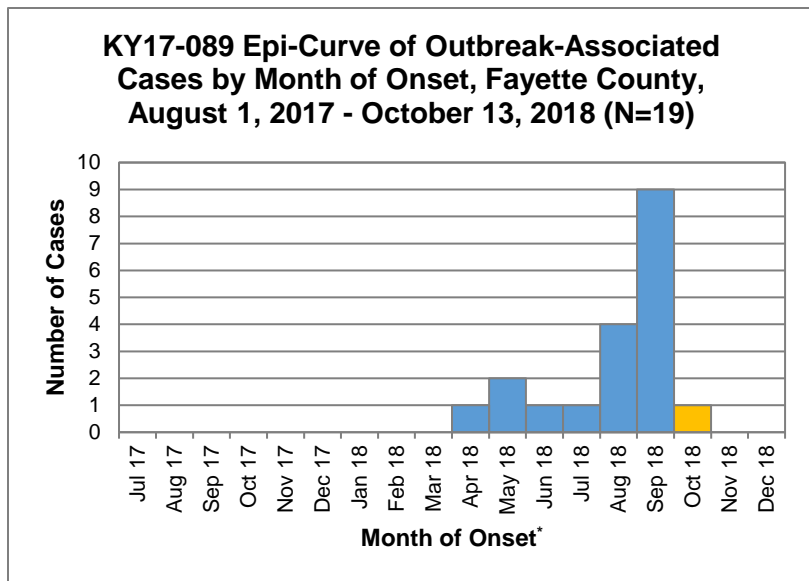
Figure 6: Case count comparison of acute hepatitis A cases, Jefferson County versus Non-Jefferson Counties



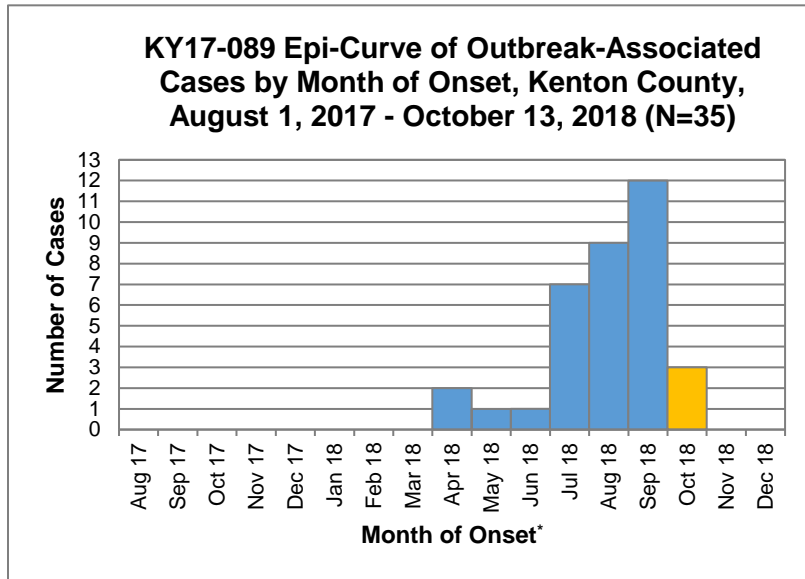
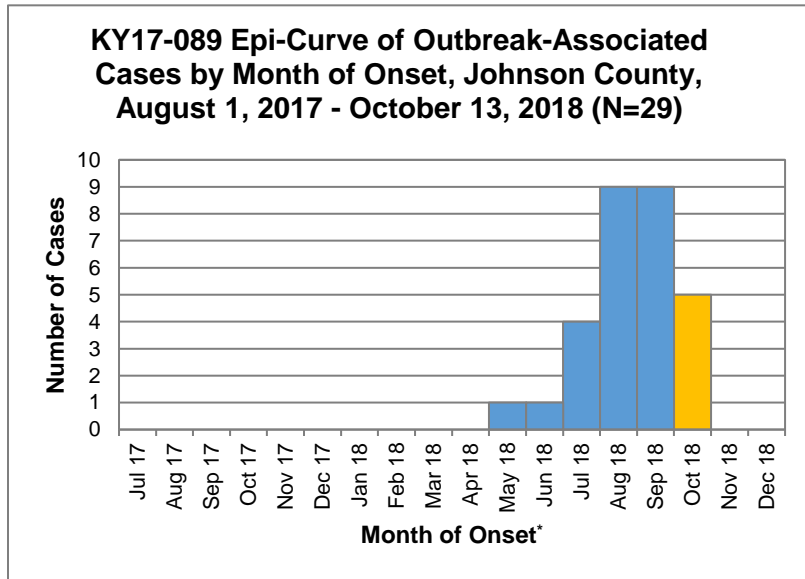
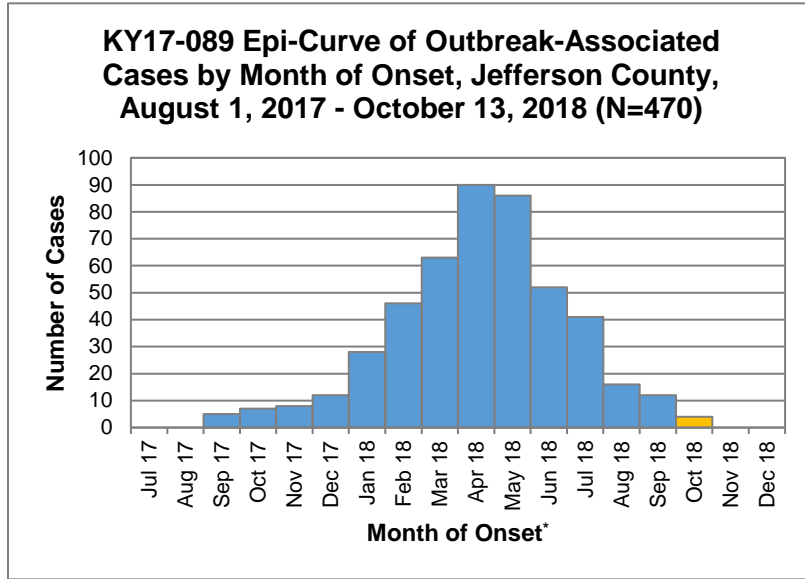
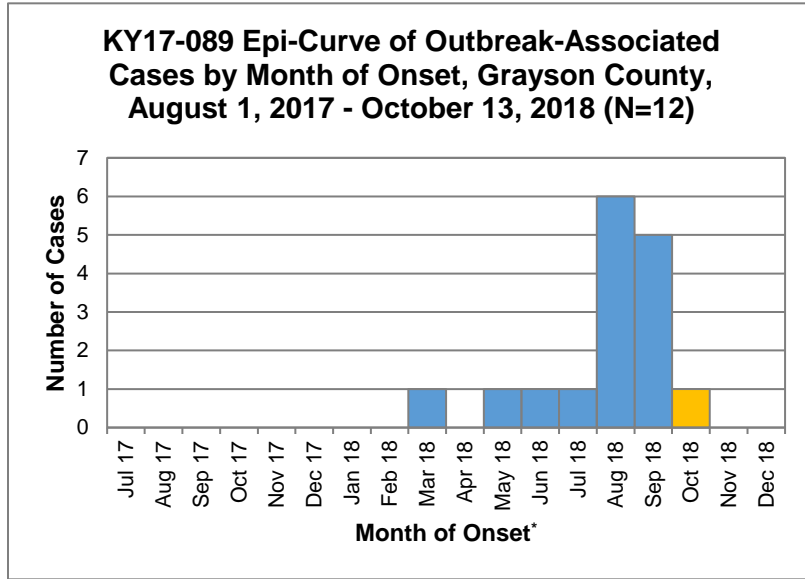
Figures 7-10: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Bath, Boone, Campbell, and Clark Counties)



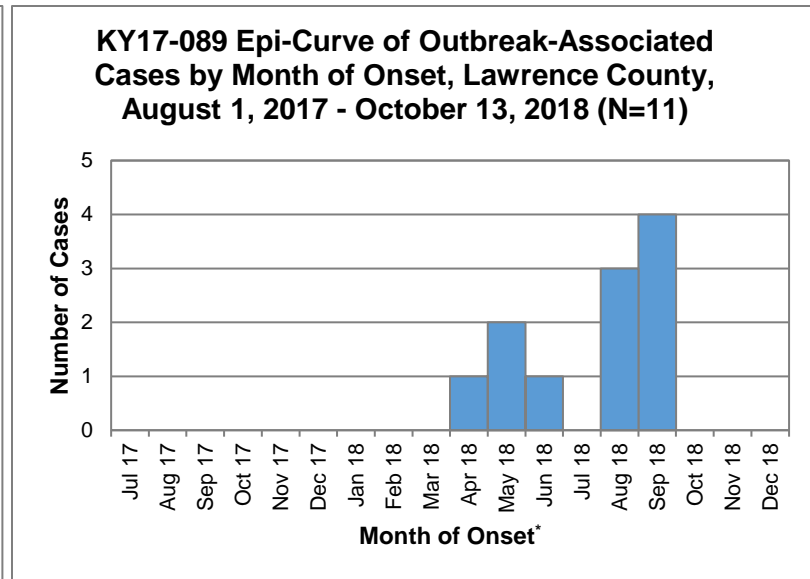
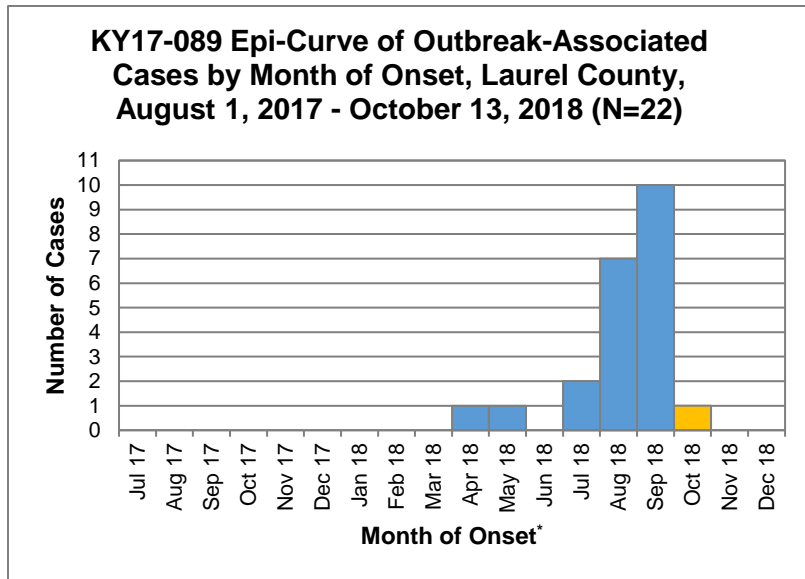
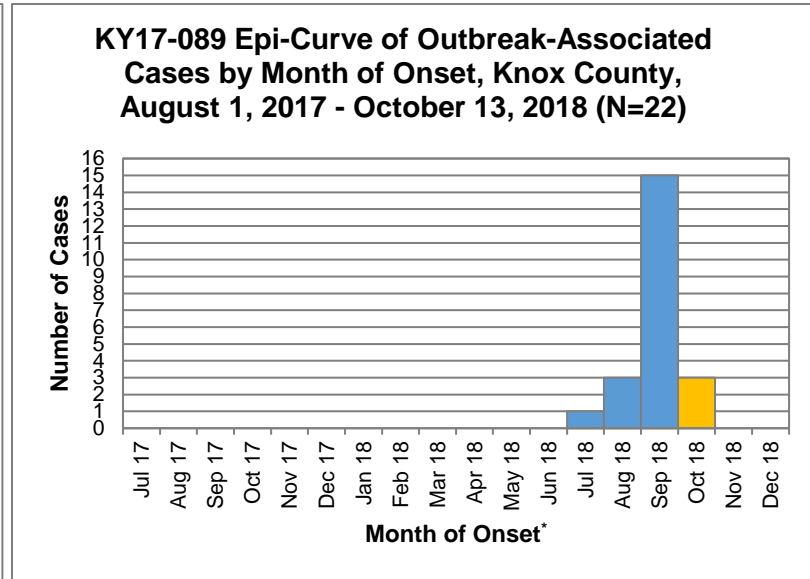
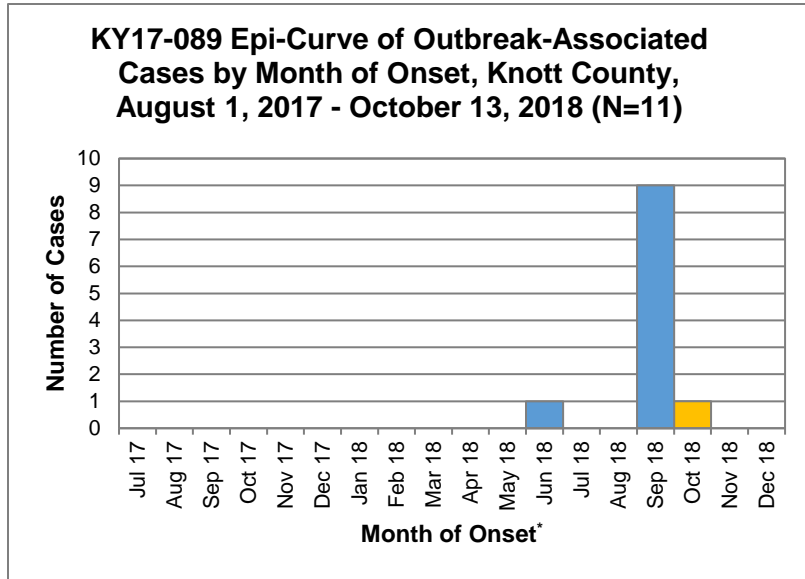
Figures 11-14: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Fayette, Floyd, Franklin, and Grant Counties)



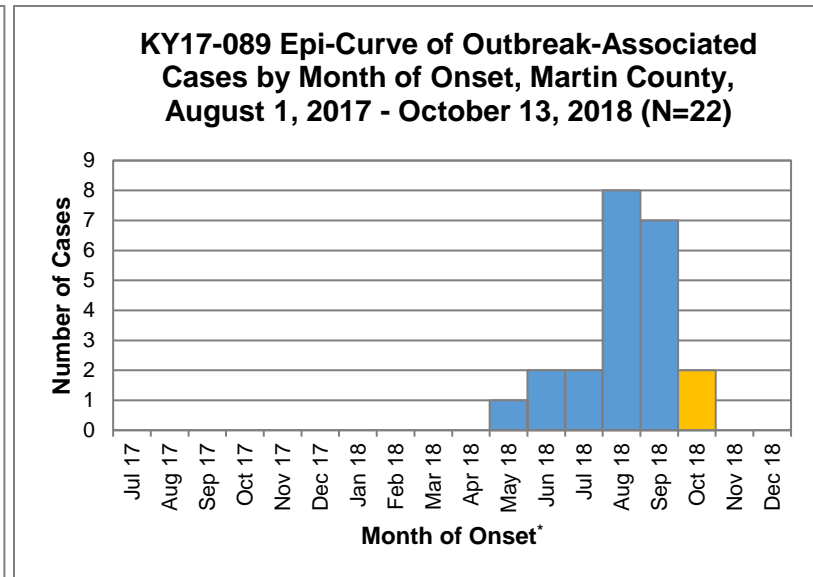
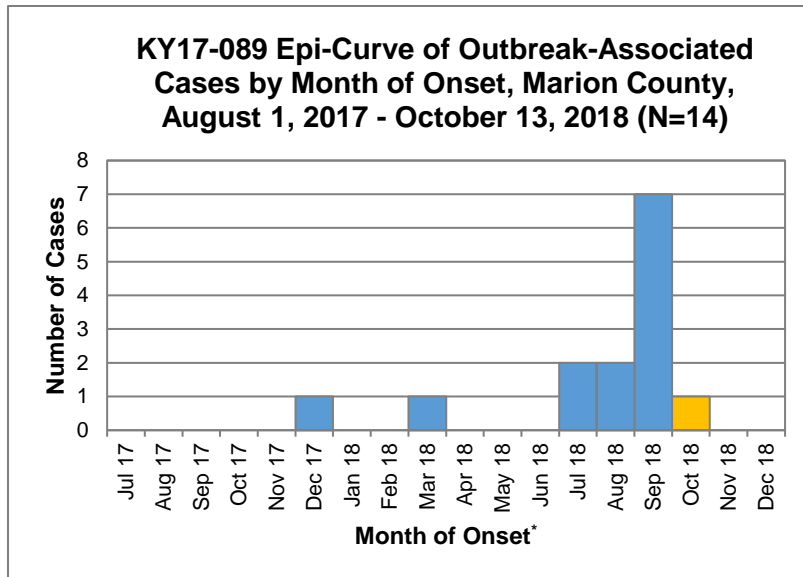
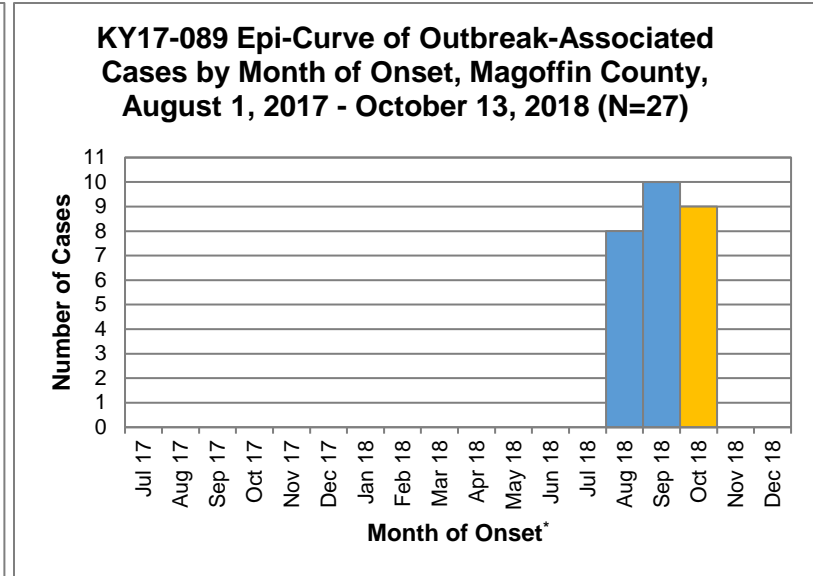
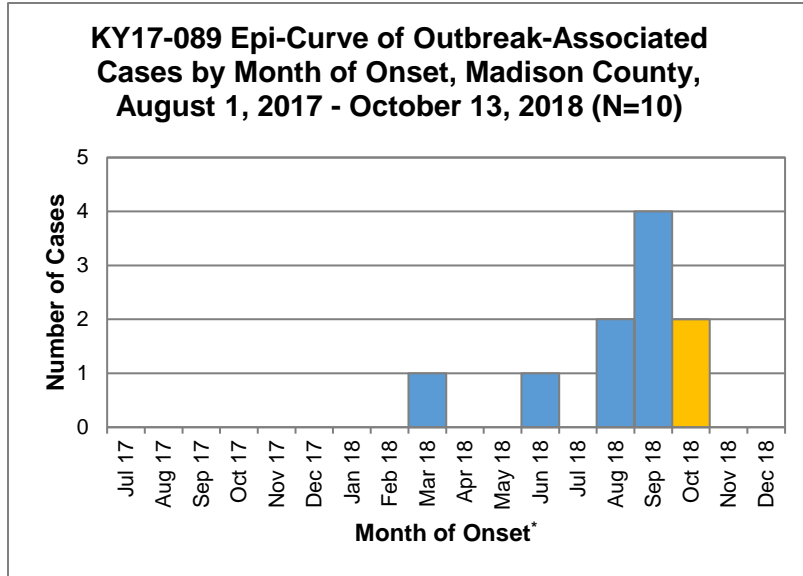
Figures 15-18: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Grayson, Jefferson, Johnson, and Kenton Counties)



Figures 19-22: 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 (Knott, Knox, Laurel, and Lawrence Counties)



Figures 23-26: 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 27-30: 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 (Montgomery, Perry, Rowan, and Taylor Counties)

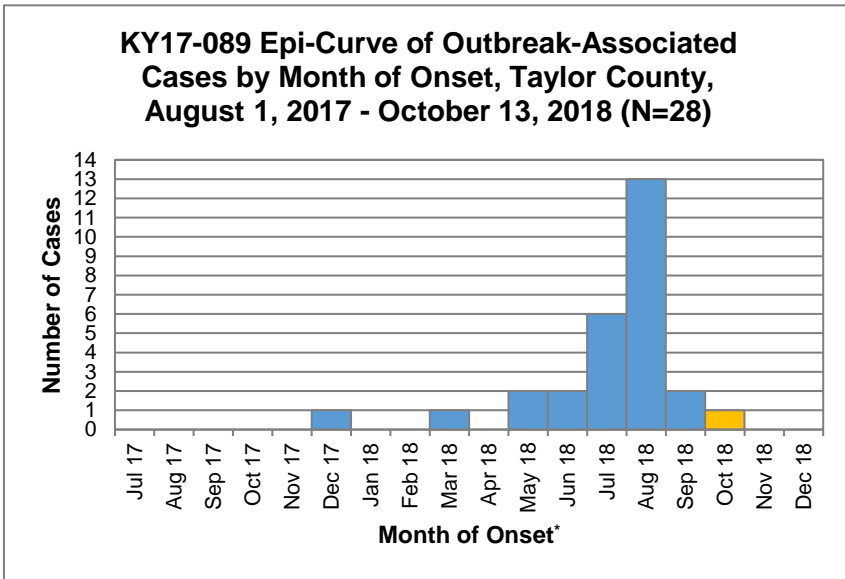
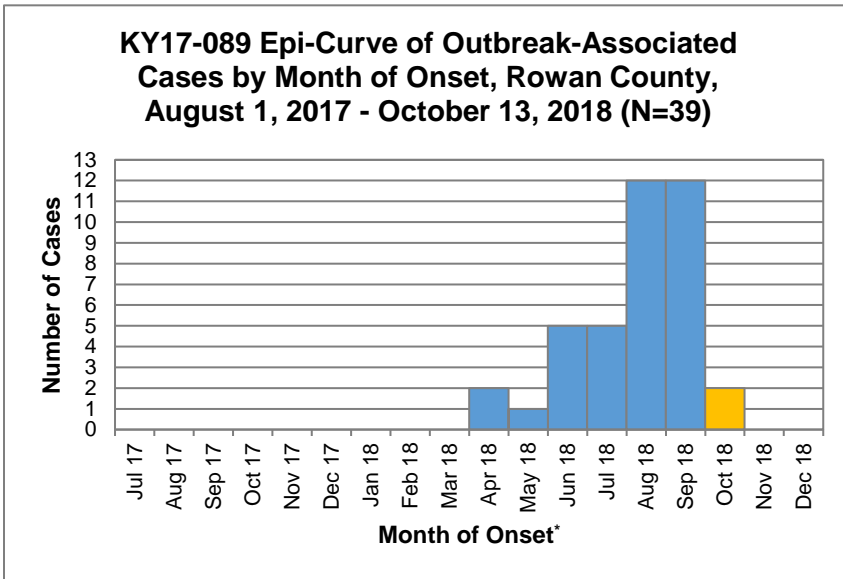
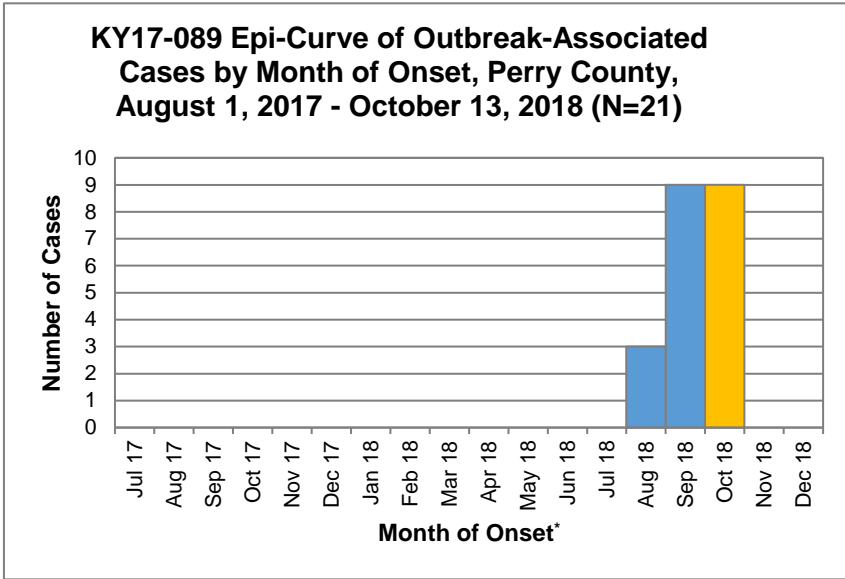
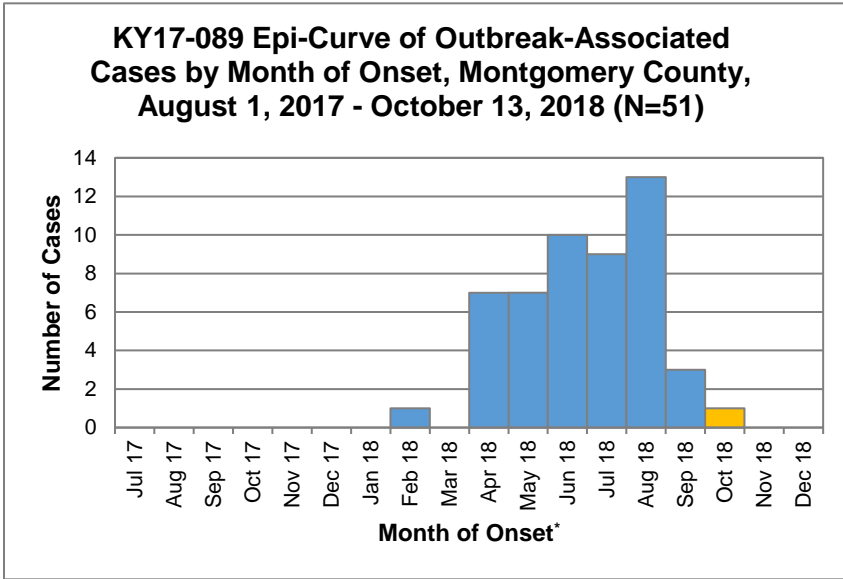


Figure 31: Epidemic-curve (Epi-Curve) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Whitley County)

