



Kentucky Department for Public Health KY17-089 - Acute Hepatitis A Outbreak Weekly Report Morbidity and Mortality Weekly Report (MMWR) Week 29, 2018 July 15, 2018 – July 21, 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 homelessness and illicit drug use. 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.

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 29:		Total Case Counts: 8/1/2017 – 7/21/2018:	
Number of new cases (n=40):	Confirmed - 0 Probable - 26 Suspect - 14	Total number of cases (n=1221):	Confirmed - 432 Probable - 516 Suspected - 273
Number of counties with new cases:	20	Total number of counties with cases:	73 (61% of KY counties)
Number of cases with specimens submitted for genotyping where results are available:	0	Number of cases with specimens submitted for genotyping where results are available:	455 (37%)
Number of cases with genotype IB among those with genotype testing:	0	Total number of cases with genotype IB among those with genotype testing:	414 (91% of those tested)
Number of Hospitalizations:	20	Total Number of Hospitalizations:	687 (56%)
Number of deaths Reported [†] :	0	Total number of deaths reported [†] :	8 (<1%)

* Cases are reported based on date of specimen collection

[†] 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 – July 21, 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	3	0	3	0	14.3
Anderson	3	0	2	1	13.3
Ballard	7	3	2	2	87.1
Barren	1	1	0	0	2.3
Bell	3	0	1	2	11.2
Boone	5	0	5	0	3.8
Bourbon	2	0	2	0	10.0
Boyd	141	77	35	29	293.9
Boyle	3	0	1	2	10.0
Breathitt	1	0	1	0	7.7
Bullitt	45	23	17	5	56.1
Butler	1	0	0	1	7.8
Campbell	4	1	2	1	4.3
Carlisle	1	0	1	0	20.6
Carroll	1	0	0	1	9.3
Carter	98	27	52	19	361.0
Casey	1	1	0	0	6.3
Christian	1	1	0	0	1.4
Clark	1	0	1	0	2.8
Daviess	1	0	0	1	1.0
Edmonson	1	0	1	0	8.2

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – July 21, 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
Elliott	7	0	2	5	93.0
Estill	1	0	1	0	7.0
Fayette	6	1	3	2	1.9
Fleming	3	0	0	3	20.8
Floyd	6	0	4	2	16.5
Franklin	8	0	5	3	15.8
Garrard	3	0	1	2	17.1
Grant	9	3	4	2	36.0
Grayson	6	2	3	1	22.8
Greenup	48	20	17	11	135.1
Hardin	22	5	5	12	20.4
Hart^	1	0	1	0	5.3
Henry	6	1	3	2	37.5
Hopkins	1	0	0	1	2.2
Jackson^	1	0	1	0	7.4
Jefferson	557	238	228	91	72.2
Jessamine	1	0	0	1	1.9
Johnson	5	0	2	3	22.1
Kenton	8	2	5	1	4.8
Knott	2	0	2	0	13.1
Knox^	1	0	0	1	3.2
Laurel	8	0	5	3	13.3
Lawrence	4	1	1	2	25.4

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – July 21, 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
Leslie	1	0	0	1	9.7
Lincoln	3	1	0	2	12.3
Logan	1	0	1	0	3.7
Madison	2	1	0	1	2.2
Marion	4	2	1	1	20.6
Marshall	2	0	1	1	6.4
Martin	3	0	0	3	26.2
McCracken	5	2	1	2	7.6
Meade	6	1	1	4	21.3
Menifee	2	0	0	2	31.0
Metcalfe [^]	1	0	1	0	9.9
Montgomery	37	1	26	10	132.5
Morgan	1	0	1	0	7.6
Nelson	14	3	6	5	30.7
Ohio	4	0	2	2	16.5
Oldham	6	3	2	1	9.0
Pendleton	1	0	1	0	6.9
Powell	2	0	2	0	16.2
Pulaski	1	0	1	0	1.6
Rowan	14	0	9	5	57.1
Russell	1	0	0	1	5.6
Shelby	13	2	8	3	27.4
Simpson [^]	1	0	1	0	5.5

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – July 21, 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
Spencer	4	3	1	0	21.6
Taylor	7	1	4	2	27.5
Warren	16	4	10	2	12.4
Washington	1	0	0	1	8.2
Whitley	28	1	16	11	77.3
Total Number of Cases:	1221	432	516	273	27.4

* Cases are reported based on date of specimen collection.

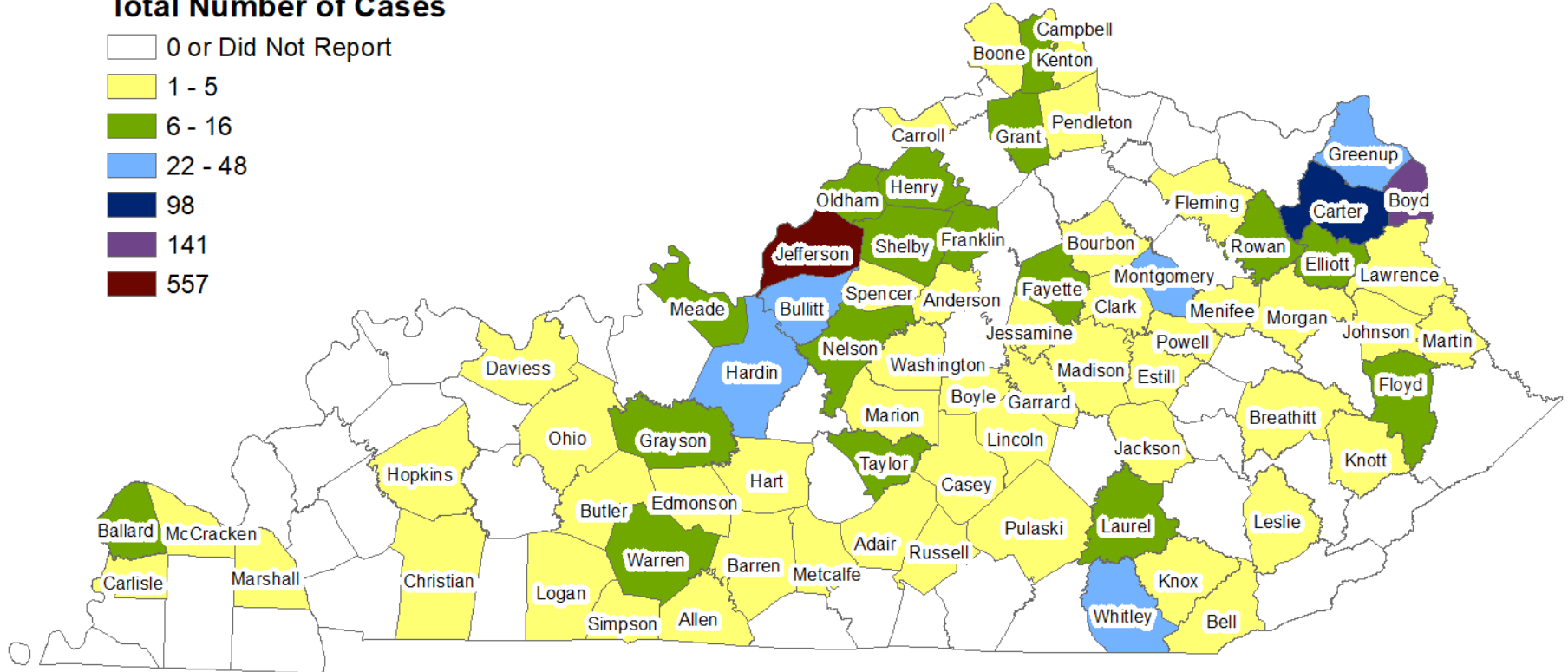
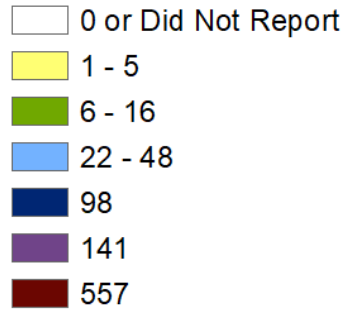
^ Denotes a county where cases have not been previously identified.

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 - July 21, 2018

Total Number of Cases

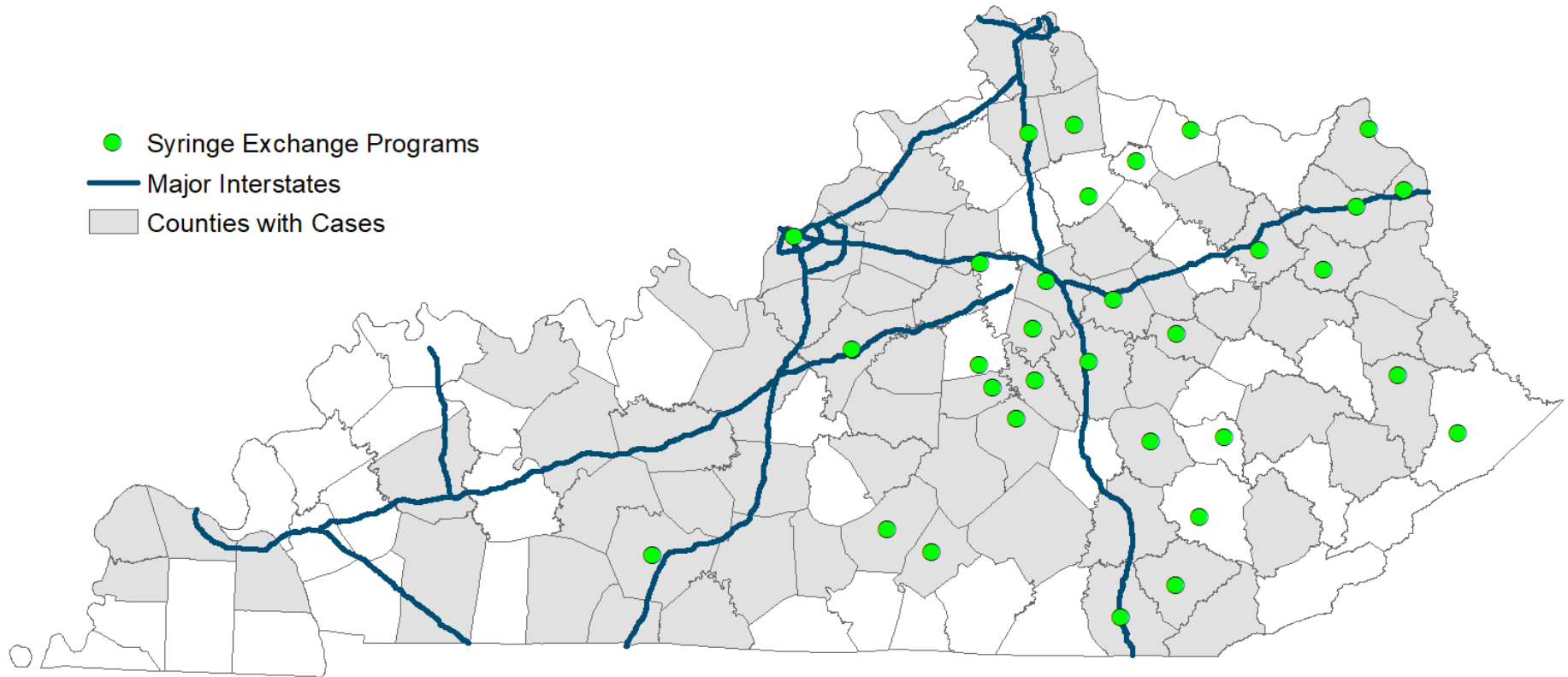


n = 73 counties with outbreak-associated cases

Counties where cases have not previously been identified: Hart, Jackson, Knox, Metcalfe, Simpson.

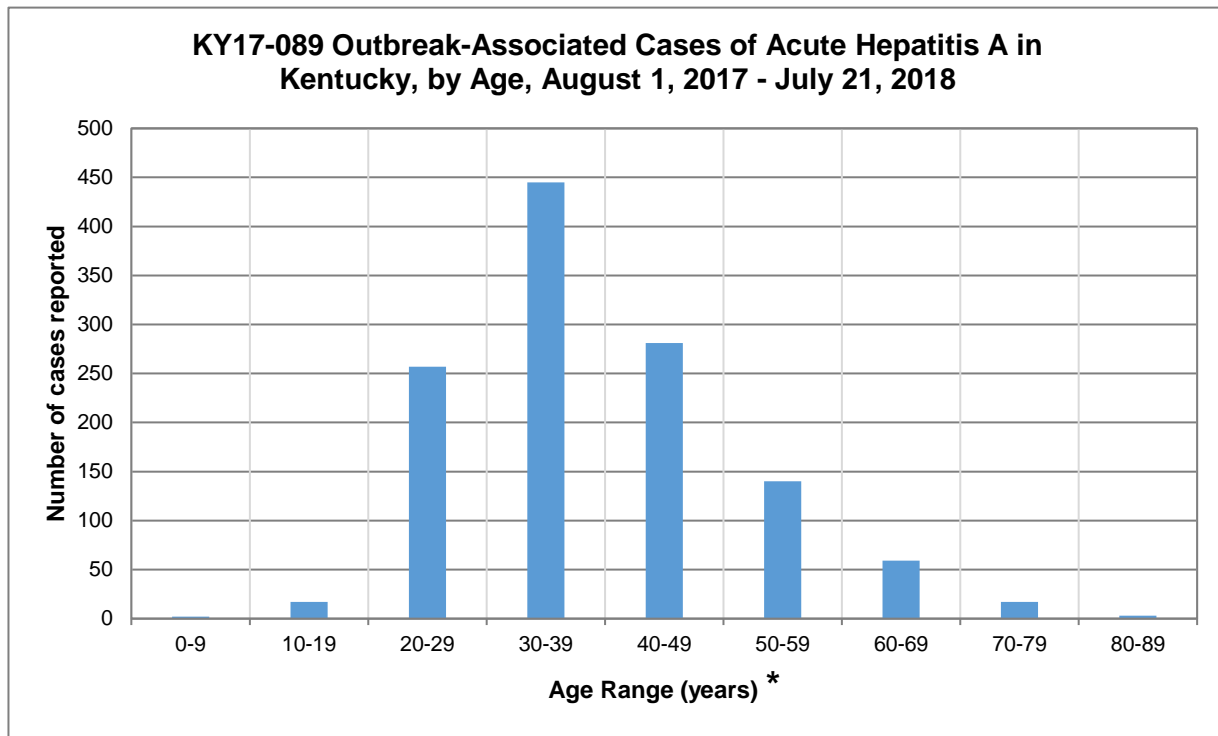
Figure 2: Major Interstates and Syringe Exchange Programs in Counties Reporting Outbreak-Associated Cases

**KY17-089 Major Interstates and Syringe Exchange Programs In
Counties Reporting Outbreak-Associated Acute Hepatitis A Cases,
August 1, 2017 - July 21, 2018**



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 38.6 years, and the median age is 37.0 years.

Table 3: Frequent Risk Factors of Outbreak-associated Cases

KY17-089 Risk Factors of Outbreak-Associated Acute Hepatitis A Cases, August 1, 2017 – July 21, 2018 ^{#^}	
Risk Factor	Number of Cases Reporting Risk Factor (n=1007) ^{* †}
Homelessness + No Illicit Drug Use	15 (1.5%)
Illicit Drug Use + No/Unk Homelessness	601 (60%)
Homelessness + Illicit drug use	146 (14.5%)
No Outbreak-Related Risk Factors	224 (22%)

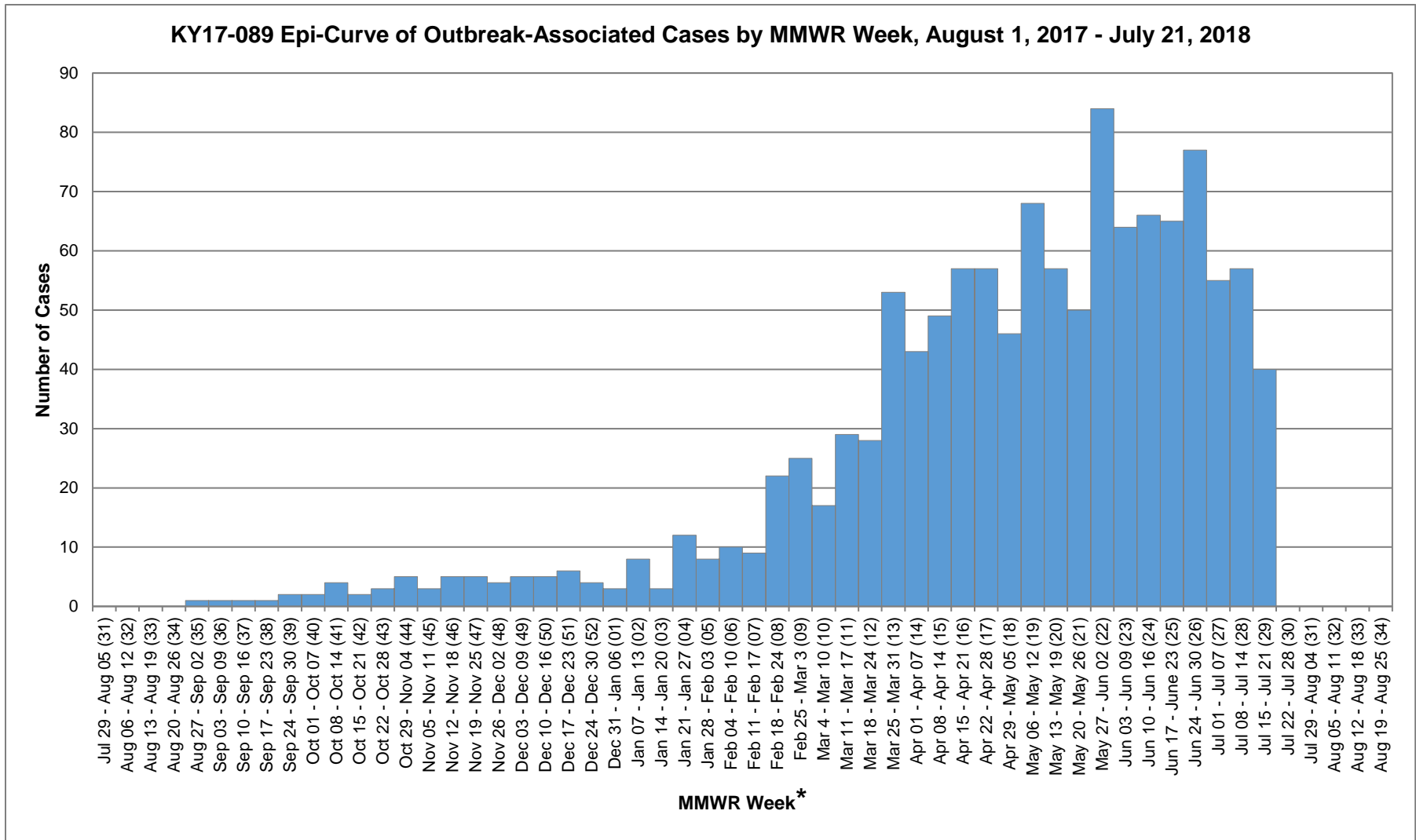
* Risk factor information is unavailable for 214 (17.5%) of all outbreak-associated cases.

† 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.

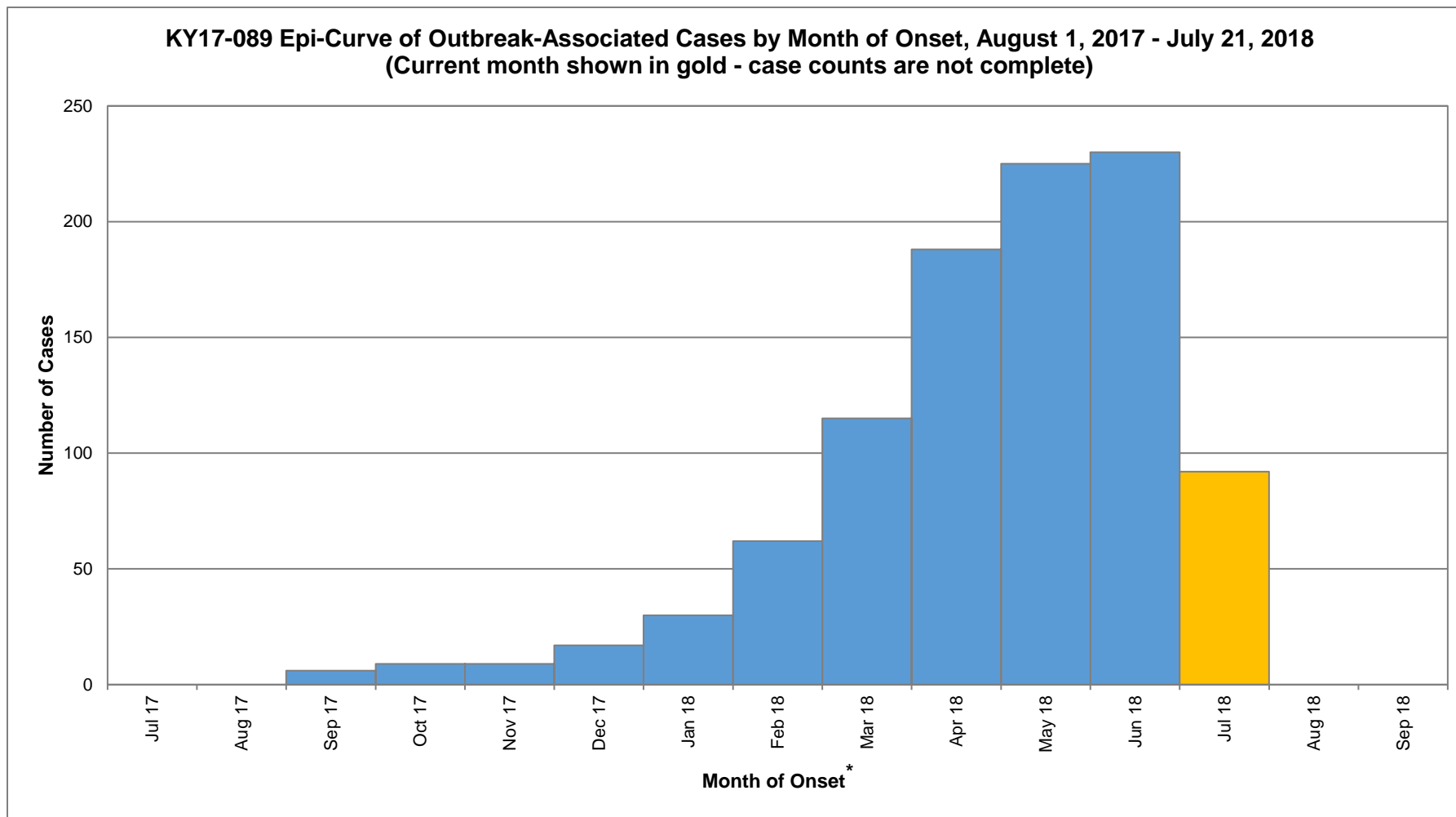
^ 21 MSM cases have been reported. Of those, 6 have reported no other risk factors.

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



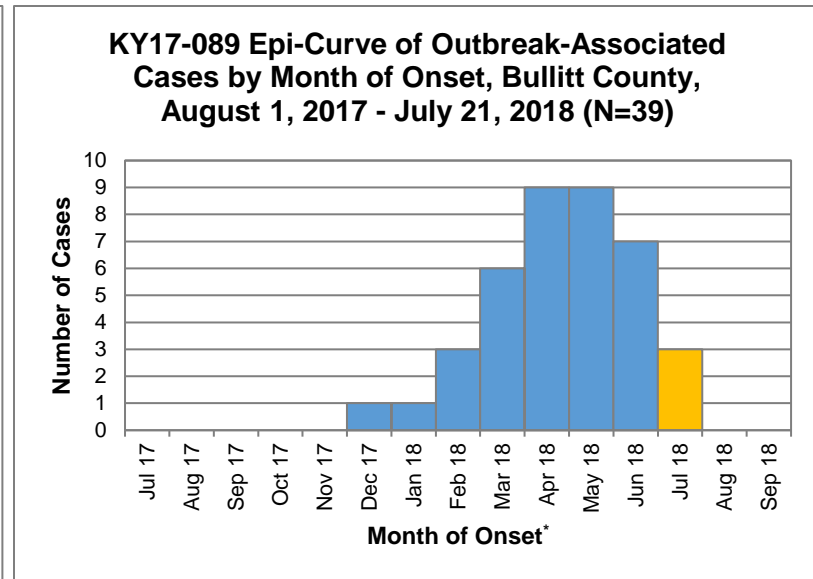
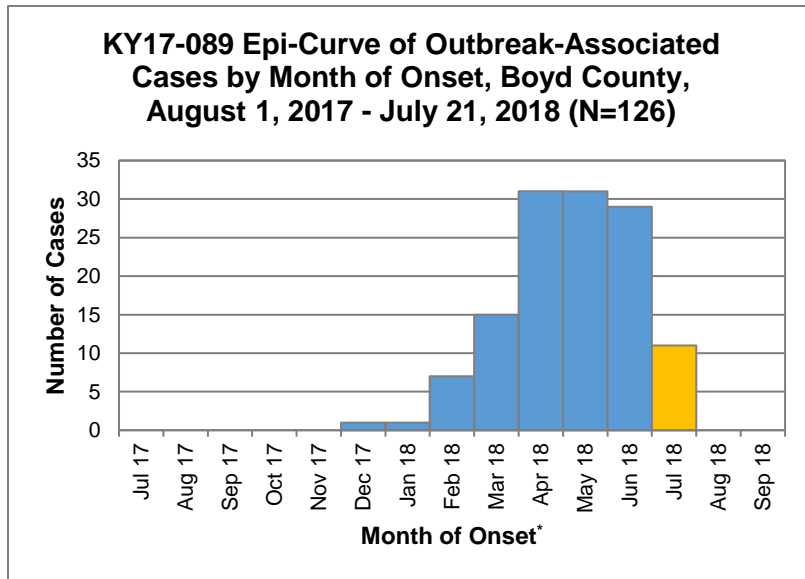
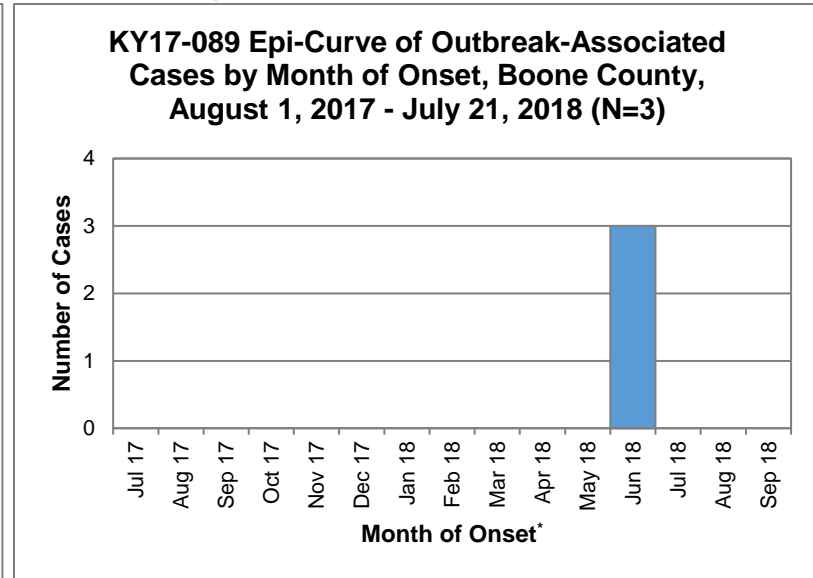
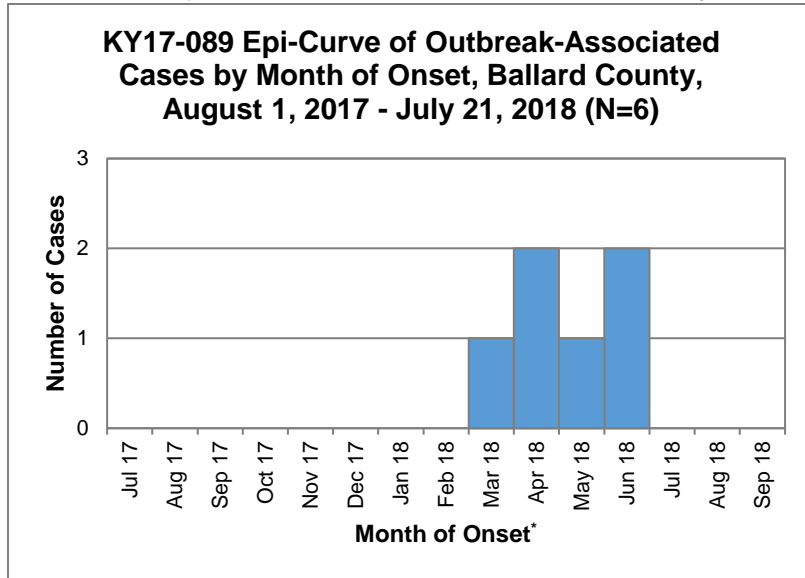
* MMWR weeks are based on date of specimen collection.

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

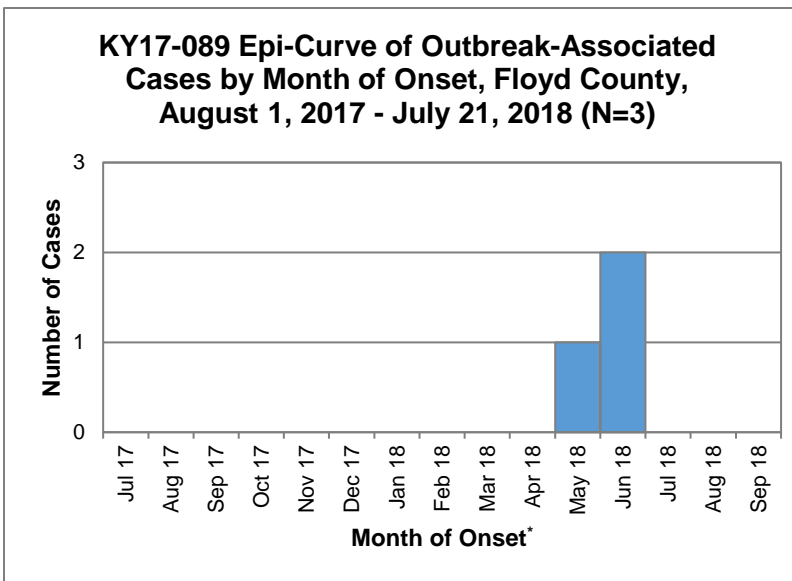
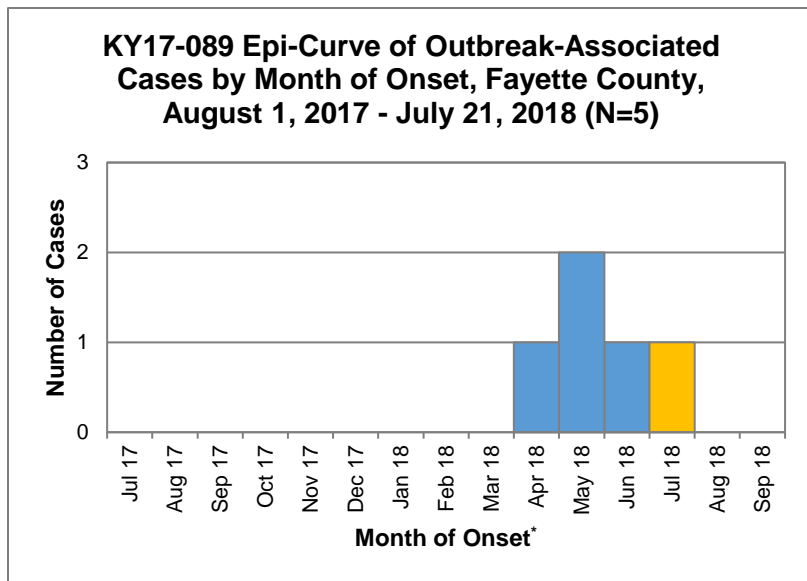
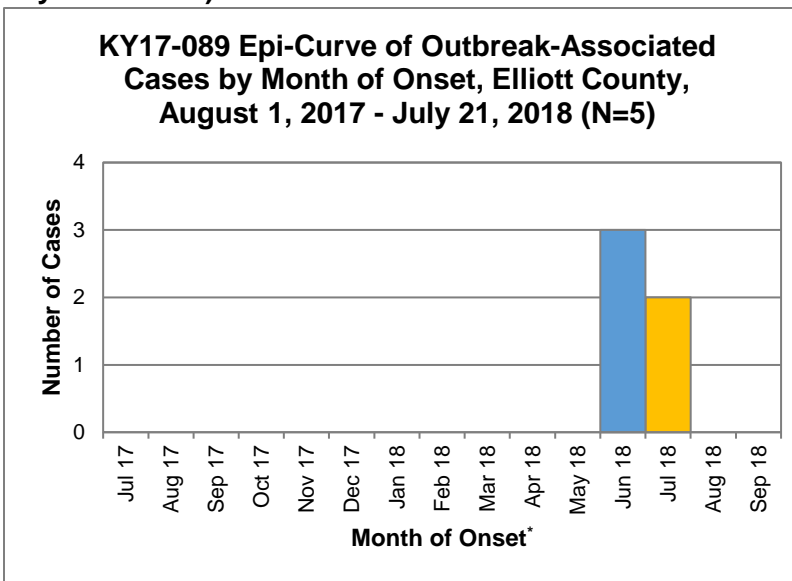
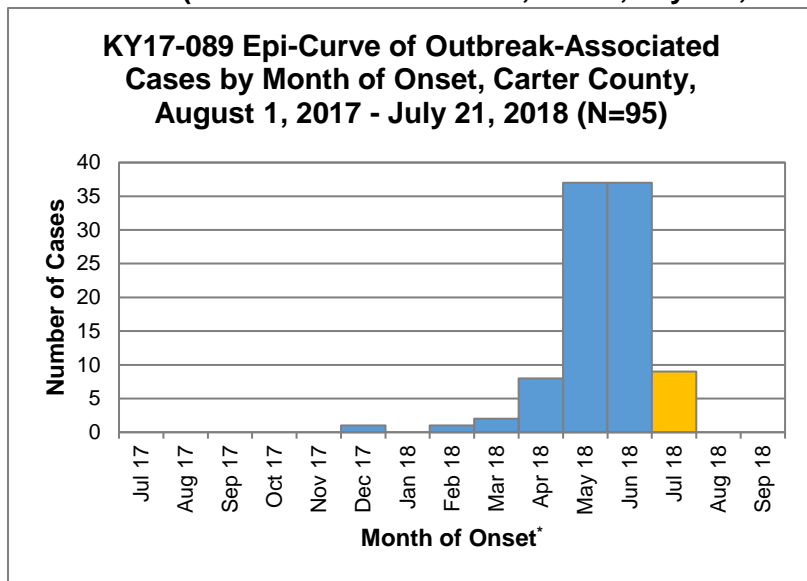


* Date of onset has been reported for 80.5% (or 983/1221) of cases.

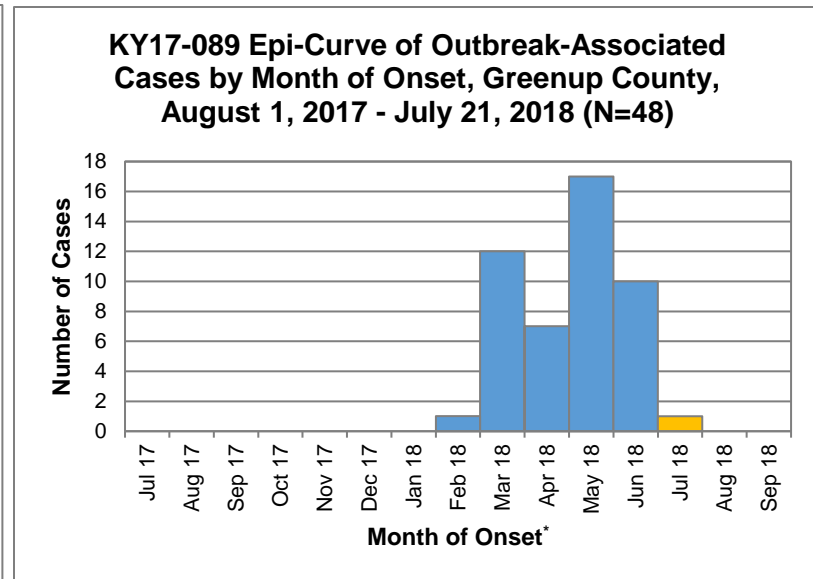
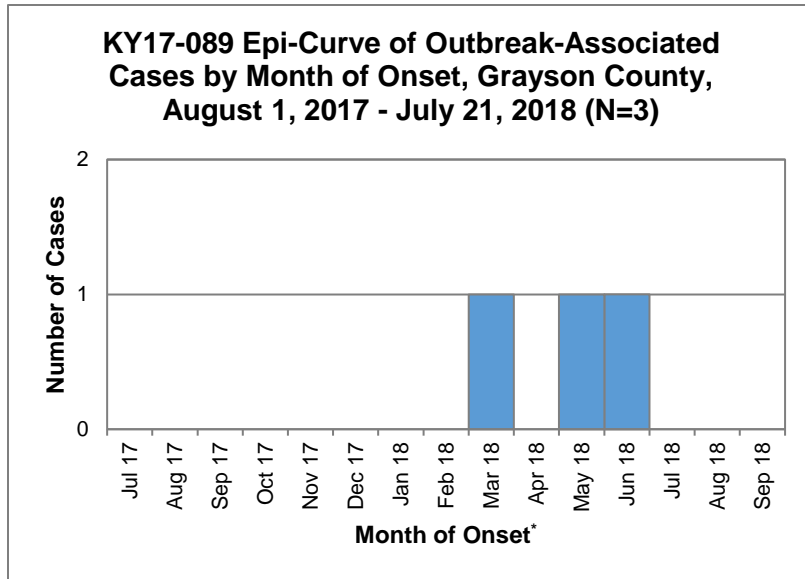
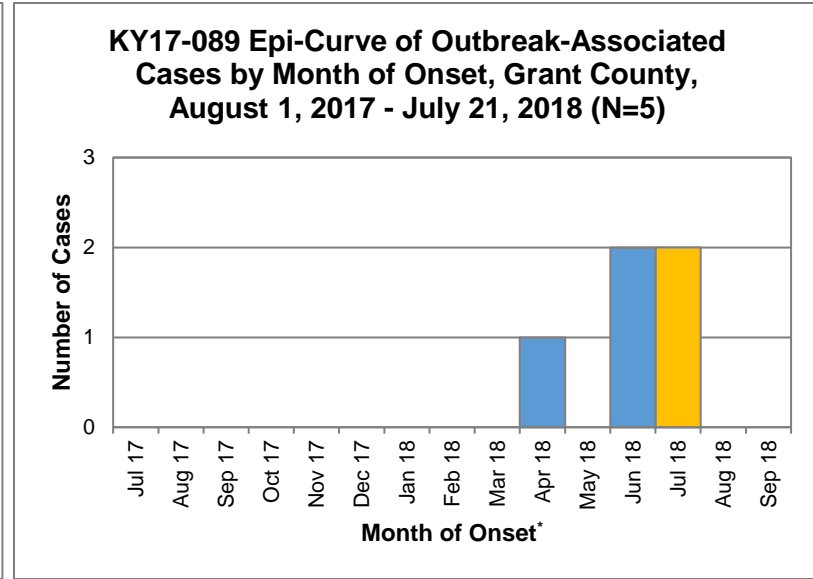
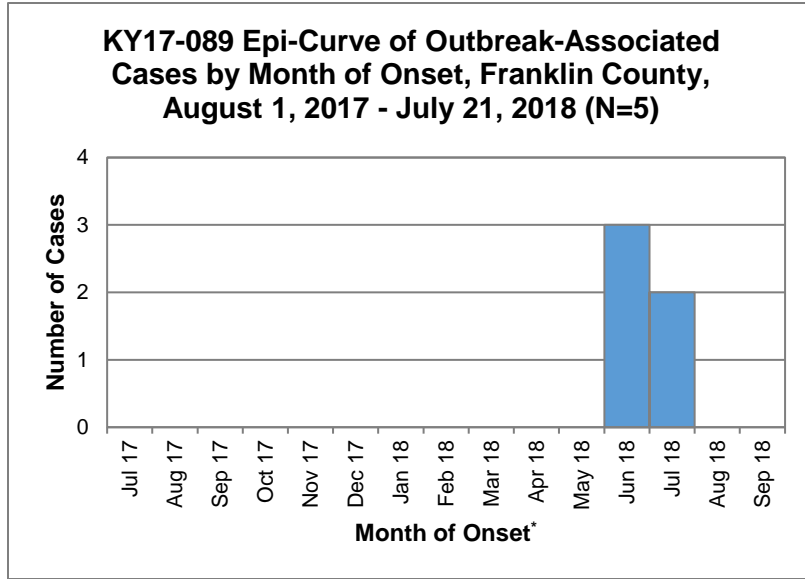
Figures 6-9: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 5 reported cases, by Month of Onset (Counties include Ballard, Boone, Boyd, and Bullitt Counties)



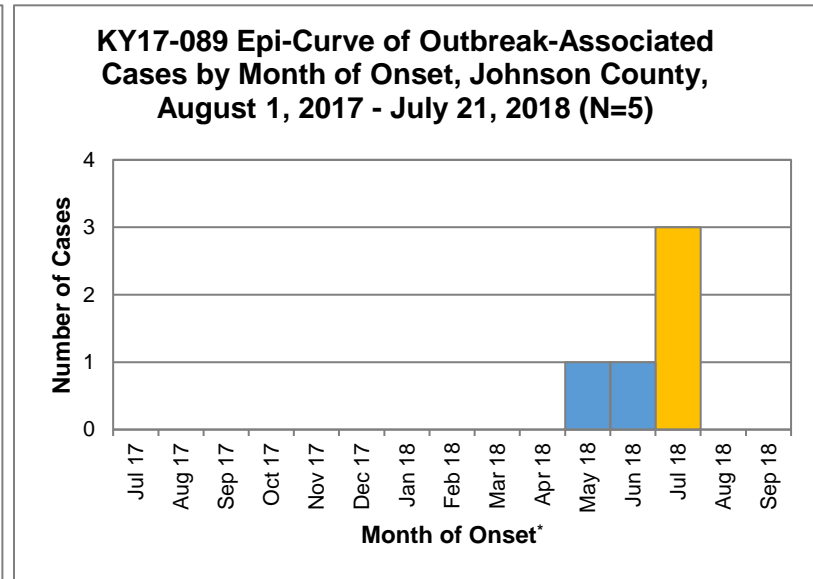
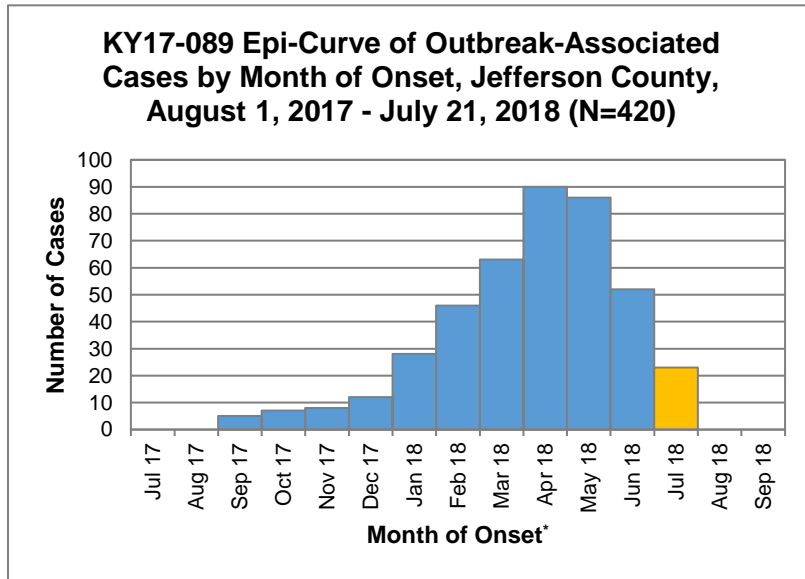
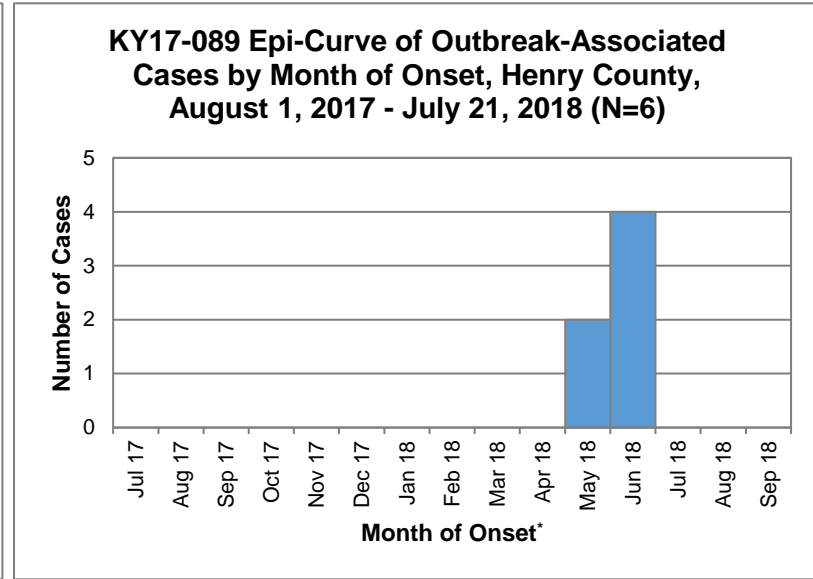
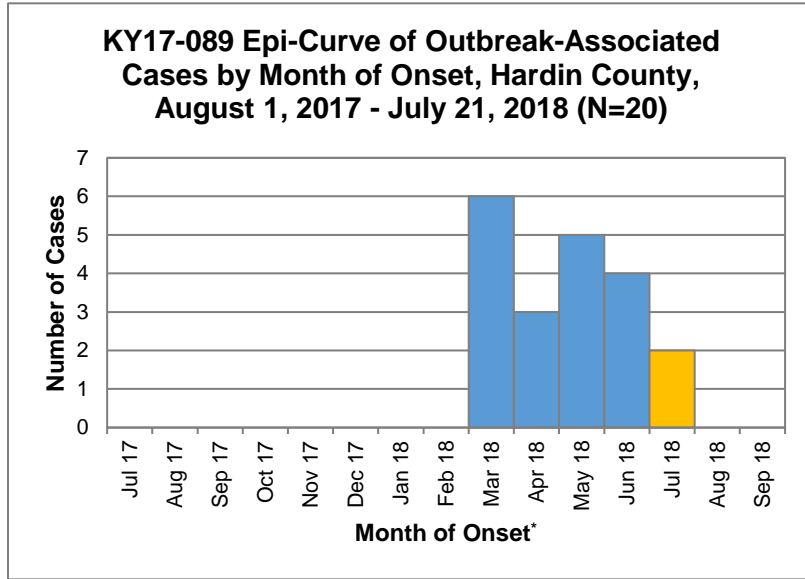
Figures 10-13: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 5 reported cases, by Month of Onset (Counties include Carter, Elliott, Fayette, and Floyd Counties)



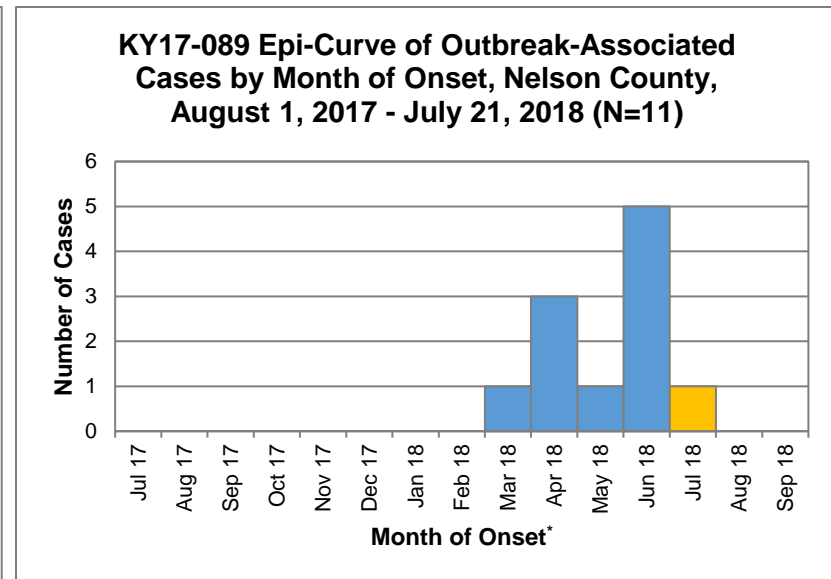
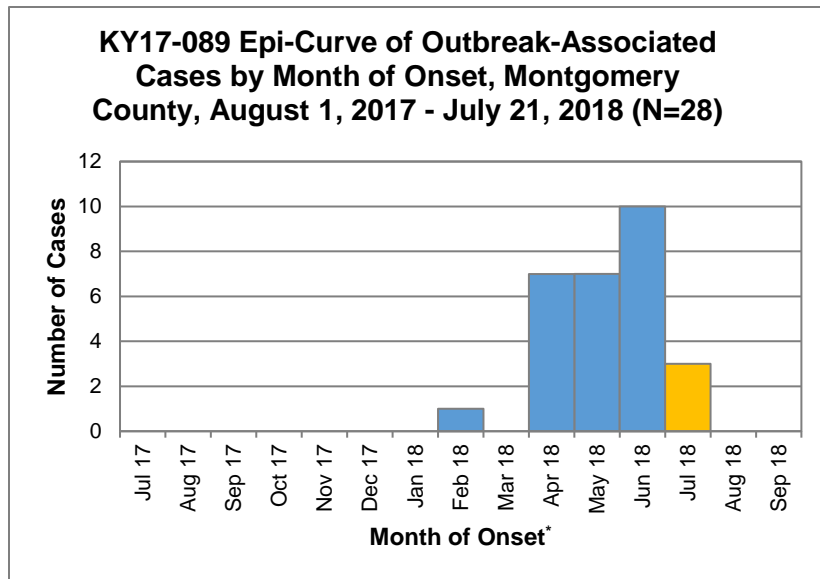
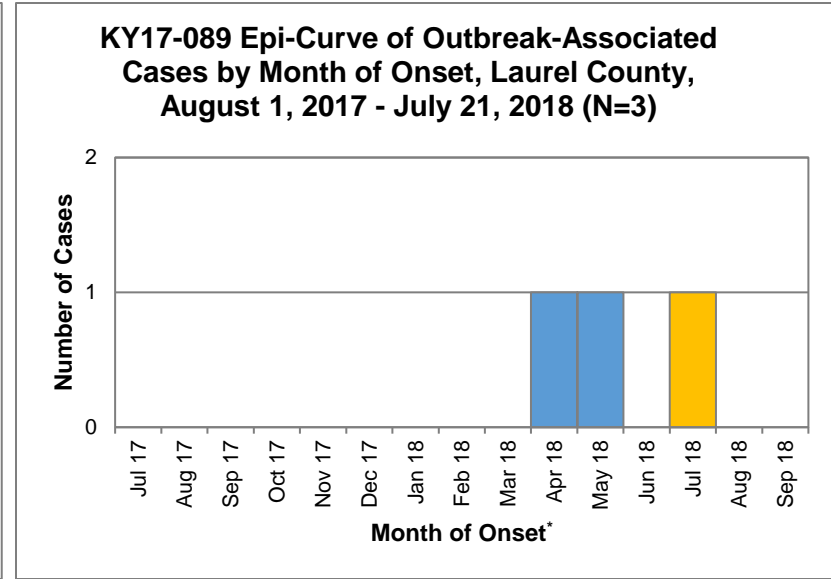
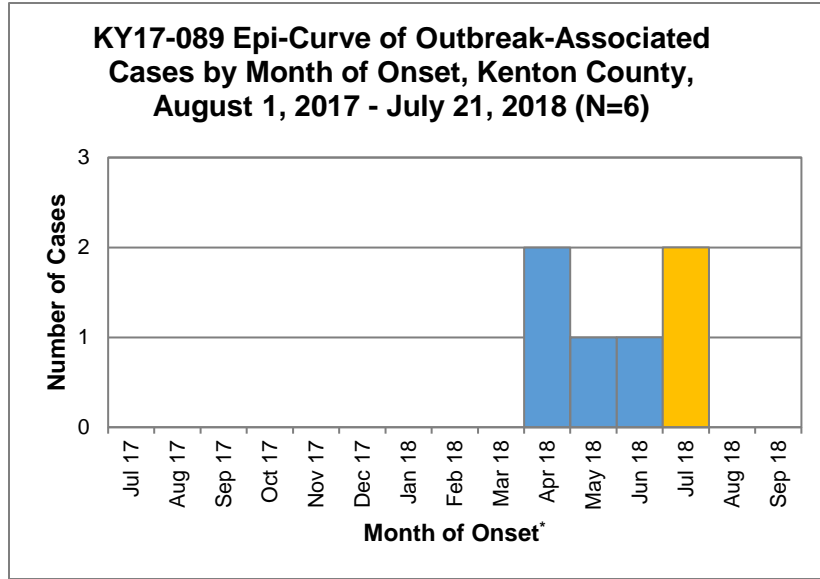
Figures 14-17: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 5 reported cases, by Month of Onset (Franklin, Grant, Grayson, and Greenup Counties)



Figures 18-21: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 5 reported cases, by Month of Onset (Hardin, Henry, Jefferson, and Johnson Counties)



Figures 22-25: Epidemic-curve (Epi-curve) of Outbreak-Associated Cases in Counties with at least 5 reported cases, by Month of Onset (Kenton, Laurel, Montgomery, and Nelson Counties)



Figures 26-29: Epidemic-curve (Epi-curve) of Outbreak-Associated Cases in Counties with at least 5 reported cases, by Month of Onset (Rowan, Shelby, Taylor, and Warren Counties)

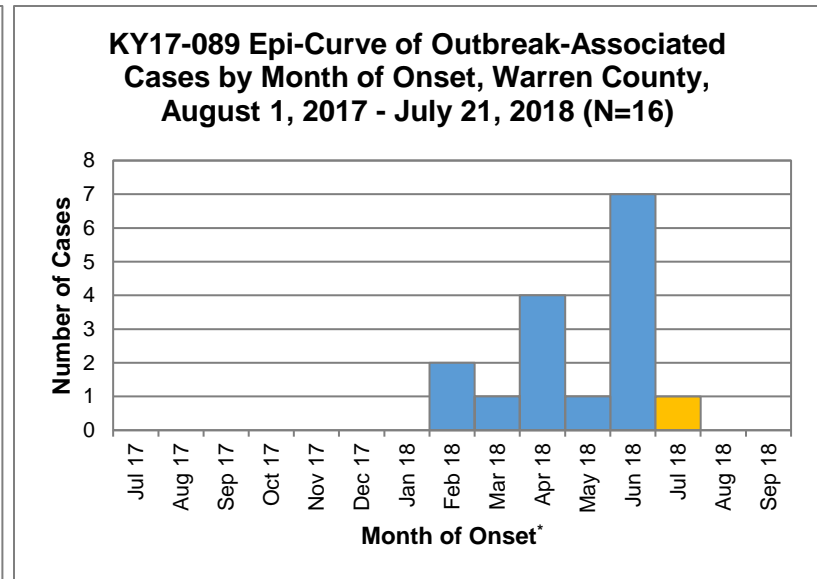
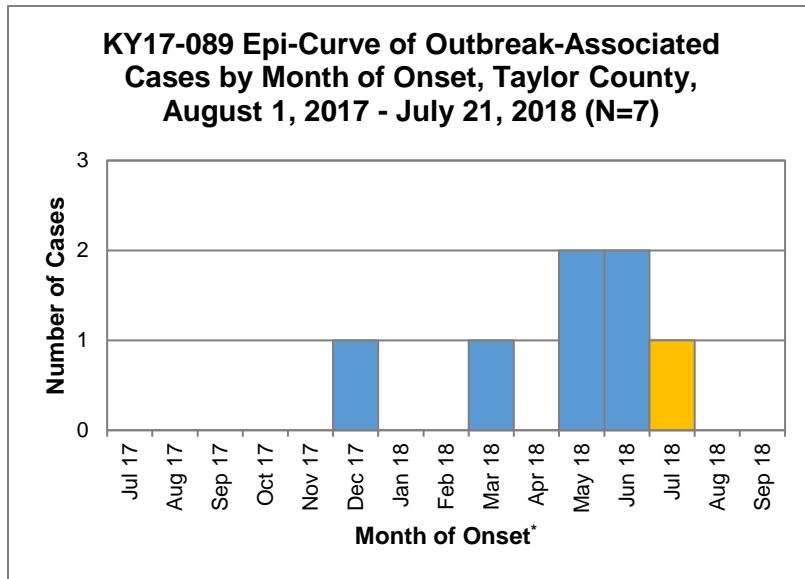
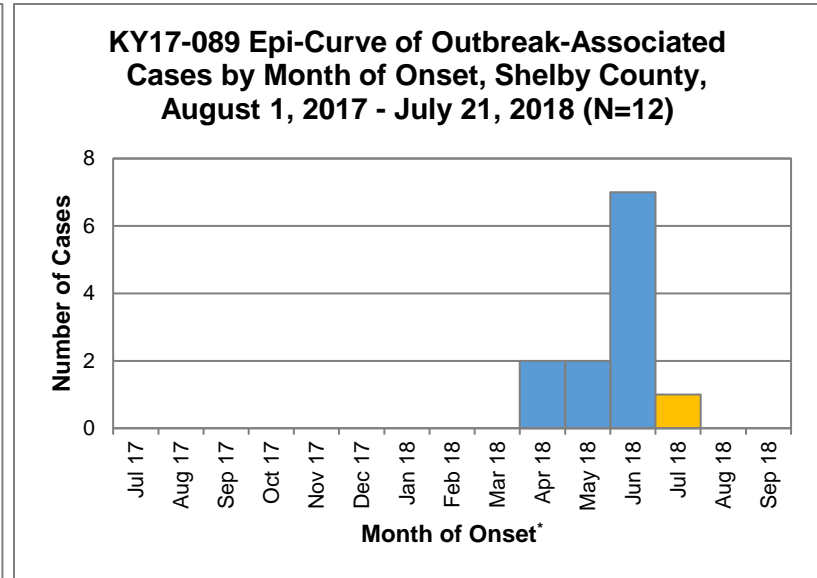
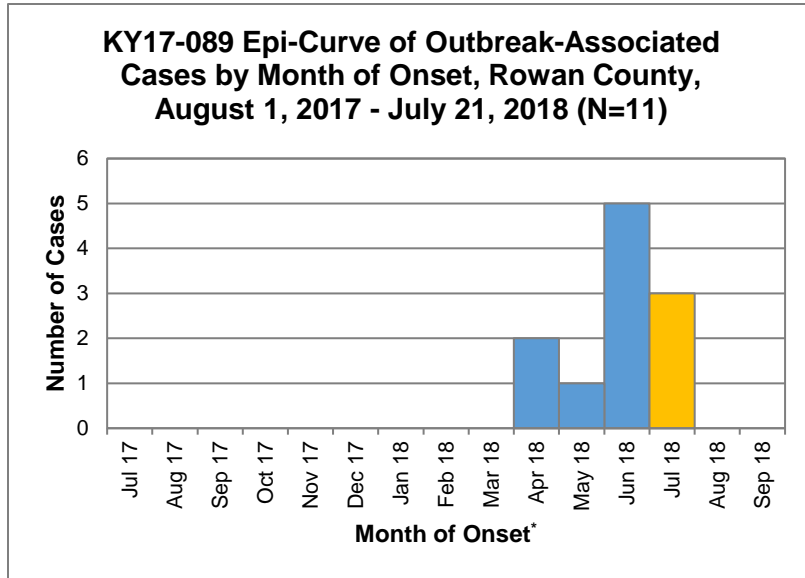


Figure 30: Epidemic-curve (Epi-curve) of Outbreak-Associated Cases in Counties with at least 5 reported cases, by Month of Onset (Whitley County)

