



**Kentucky Department for Public Health**  
**KY17-089 - Acute Hepatitis A Outbreak Weekly Report**  
**Morbidity and Mortality Weekly Report (MMWR) Week 40, 2018**  
**September 30, 2018 – October 6, 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 40:		Total Case Counts: 8/1/2017 – 10/6/2018:	
<b>Number of new cases (n=83):</b>	<b>Confirmed<sup>^</sup> - 0 Probable - 57 Suspected - 26</b>	<b>Total number of cases (n=2050):</b>	<b>Confirmed<sup>^</sup> - 546 Probable - 987 Suspected - 517</b>
<b>Number of counties with new cases:</b>	<b>40</b>	<b>Total number of counties with cases:</b>	<b>91 (76% of KY counties)</b>
<b>Number of individuals with specimens submitted for genotyping where results are available:</b>	<b>0</b>	<b>Number of individuals with specimens submitted for genotyping where results are available:</b>	<b>583 (28%)</b>
<b>Number of cases with genotype IB among those with genotype testing:</b>	<b>0</b>	<b>Total number of cases with genotype IB among those with genotype testing:</b>	<b>530 (91% of those tested)</b>
<b>Number of Hospitalizations:</b>	<b>45</b>	<b>Total Number of Hospitalizations:</b>	<b>1126 (55%)</b>
<b>Number of deaths Reported<sup>†</sup>:</b>	<b>0</b>	<b>Total number of deaths reported<sup>†</sup>:</b>	<b>14 (&lt;1%)</b>

\* Cases are reported based on date of specimen collection

<sup>^</sup> Cases are generally confirmed weeks after submission for testing, so will only be reflected in total case counts.

<sup>†</sup> 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**

<b>KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,                      by County, August 1, 2017 – October 6, 2018* ^#</b>					
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	19	1	14	4	90.8
Anderson	9	0	8	1	39.9
Ballard	9	3	2	4	112.0
Barren	4	1	3	0	9.1
Bath	14	0	5	9	113.1
Bell	4	0	1	3	14.9
Boone	24	1	14	9	18.4
Bourbon	3	0	3	0	15.0
Boyd	158	91	36	31	329.3
Boyle	5	0	1	4	16.7
Breathitt	1	0	1	0	7.7
Bullitt	62	28	25	9	77.3
Butler	3	0	1	2	23.4
Campbell	28	1	23	4	30.3
Carlisle	1	0	1	0	20.6
Carroll	3	0	0	3	28.0
Carter	126	39	63	24	464.2
Casey	2	1	0	1	12.7
Christian	1	1	0	0	1.4
Clark	8	0	6	2	22.2
Clay	5	0	3	2	24.6
Daviess	2	0	1	1	2.0

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,  
by County, August 1, 2017 – October 6, 2018\*^#**

<b>County</b>	<b>Total number of cases reported</b>	<b>Number of confirmed cases</b>	<b>Number of probable cases</b>	<b>Number of suspected cases</b>	<b>Incident Rate per 100,000 population</b>
Edmonson	1	0	1	0	8.2
Elliott	17	1	4	12	226.0
Estill	4	0	3	1	28.0
Fayette	25	2	17	6	7.8
Fleming	3	0	0	3	20.8
Floyd	41	0	23	18	113.0
Franklin	23	0	17	6	45.6
Gallatin	2	0	1	1	22.8
Garrard	4	0	2	2	22.8
Grant	27	3	19	5	108.1
Grayson	20	2	16	2	75.9
Green	2	0	2	0	18.1
Greenup	56	28	17	11	157.7
Hardin	28	7	5	16	25.9
Harrison	2	0	2	0	10.6
Hart	1	0	1	0	5.3
Henry	10	2	5	3	62.5
Hickman	1	0	0	1	22.1
Hopkins	1	0	0	1	2.2
Jackson	4	0	3	1	29.8
Jefferson	624	289	227	108	80.9
Jessamine	2	0	0	2	3.7
Johnson	26	0	13	13	115.1
Kenton	42	2	38	2	25.4

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,  
by County, August 1, 2017 – October 6, 2018\*^#**

<b>County</b>	<b>Total number of cases reported</b>	<b>Number of confirmed cases</b>	<b>Number of probable cases</b>	<b>Number of suspected cases</b>	<b>Incident Rate per 100,000 population</b>
Knott	12	0	10	2	78.5
Knox	22	0	12	10	70.5
LaRue	2	0	1	1	14.1
Laurel	31	0	25	6	51.5
Lawrence	18	3	10	5	114.5
Lee	4	0	4	0	60.9
Leslie	5	0	3	2	48.4
Letcher <sup>^</sup>	1	0	0	1	4.5
Lewis	5	0	3	2	37.5
Lincoln	5	2	2	1	20.4
Logan	1	0	1	0	3.7
Madison	13	1	9	3	14.3
Magoffin	22	0	14	8	175.5
Marion	14	2	9	3	72.2
Marshall	2	0	1	1	6.4
Martin	25	0	16	9	218.3
Mason <sup>^</sup>	1	0	1	0	5.8
McCracken	8	2	3	3	12.2
Meade	12	1	1	10	42.6
Menifee	12	0	8	4	185.9
Mercer	6	0	3	3	27.9
Metcalfe	1	0	1	0	9.9
Montgomery	57	5	40	12	204.1
Morgan	9	0	7	2	68.2

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,  
by County, August 1, 2017 – October 6, 2018\*<sup>^</sup>#**

<b>County</b>	<b>Total number of cases reported</b>	<b>Number of confirmed cases</b>	<b>Number of probable cases</b>	<b>Number of suspected cases</b>	<b>Incident Rate per 100,000 population</b>
Nelson	14	4	5	5	30.7
Ohio	6	0	3	3	24.8
Oldham	8	3	3	2	12.0
Owen	3	0	3	0	27.9
Pendleton	4	0	2	2	27.4
Perry	13	0	5	8	49.0
Pike	10	0	9	1	17.0
Powell	7	0	5	2	56.6
Pulaski	3	0	1	2	4.7
Rowan	42	0	26	16	171.3
Russell	1	0	0	1	5.6
Scott	2	0	0	2	3.6
Shelby	20	5	11	4	42.2
Simpson	6	0	6	0	33.1
Spencer	5	3	1	1	27.0
Taylor	35	2	26	7	137.4
Warren	23	7	12	4	17.9
Washington	5	0	3	2	41.2
Whitley	91	3	51	37	251.3
Wolfe	5	0	3	2	68.8
<b>Total Number of Cases:</b>	<b>2050</b>	<b>546</b>	<b>987</b>	<b>517</b>	<b>46.0</b>

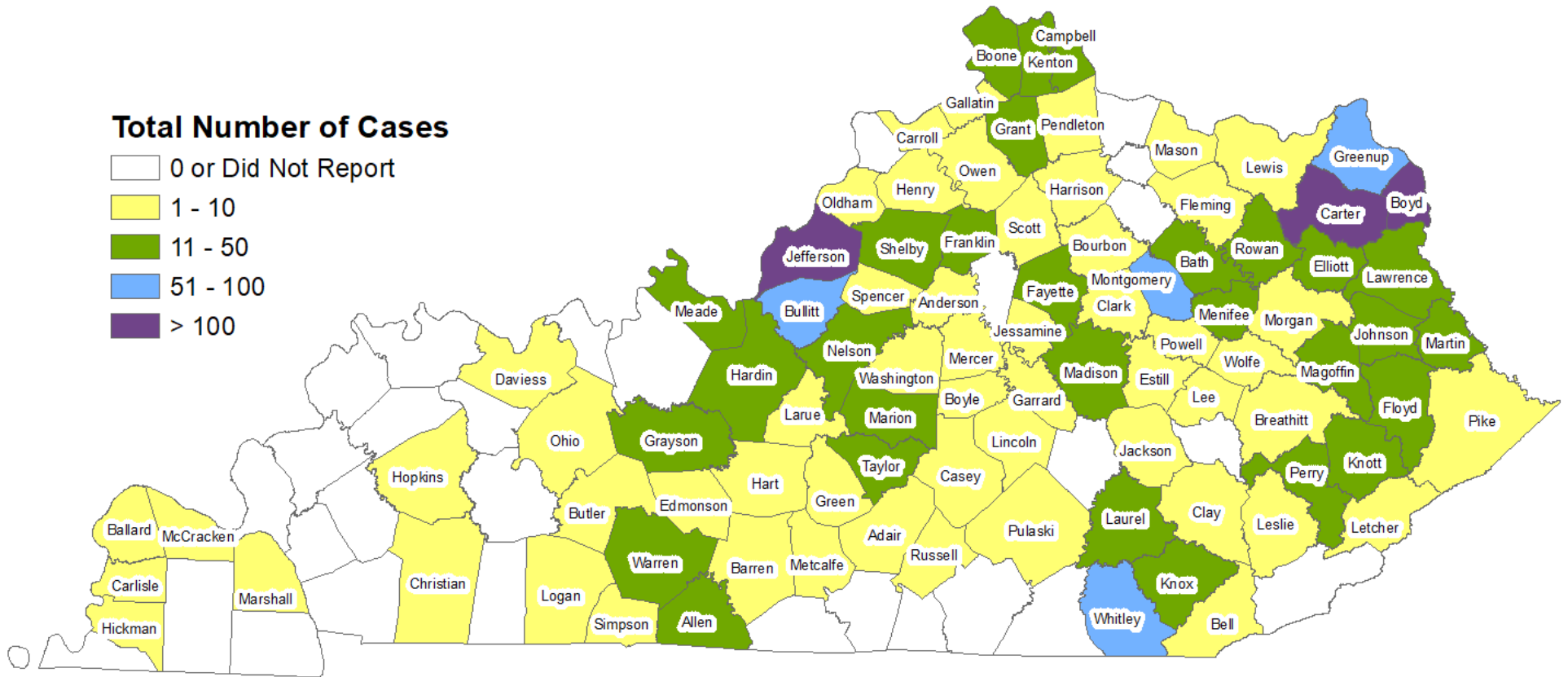
\* Cases are reported based on date of specimen collection.

<sup>^</sup> 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 - October 6, 2018

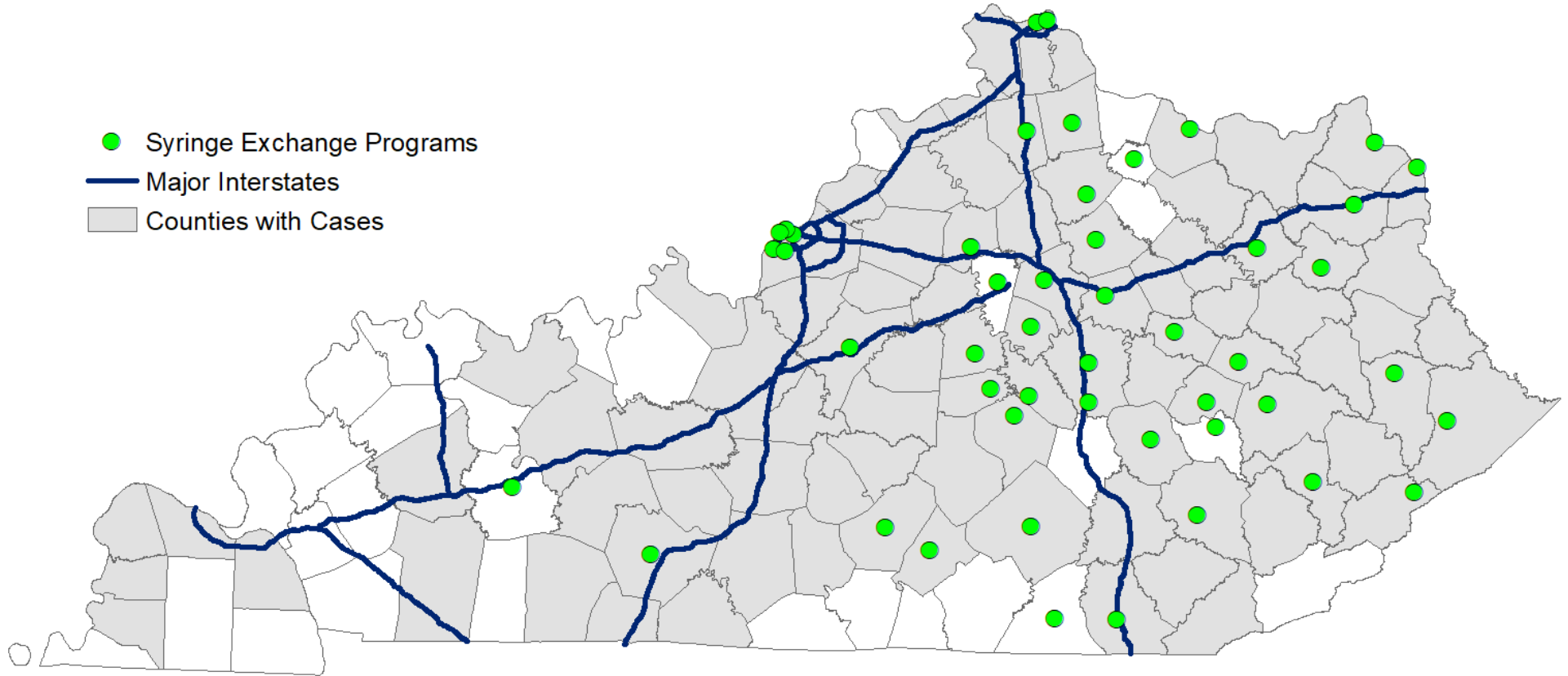


**n = 91 counties with outbreak-associated cases**

**Counties where cases have not previously been identified: Letcher, Mason.**

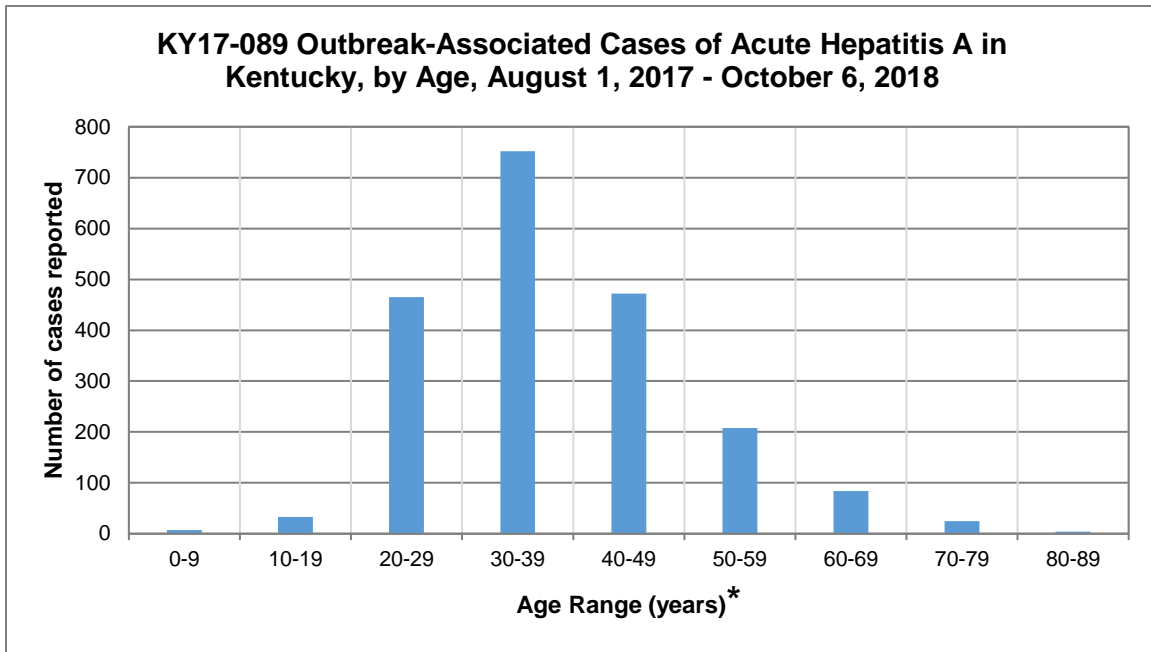
Figure 2: Major Interstates and Syringe Exchange Programs in Counties Reporting Outbreak-Associated Cases

### KY17-089 Major Interstates and Syringe Exchange Programs In Counties Reporting Outbreak-Associated Acute Hepatitis A Cases, August 1, 2017 - October 6, 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 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 6, 2018 <sup>#^</sup>	
Risk Factor	Number of Cases Reporting Risk Factor (n=1684) <sup>* †</sup>
Homelessness + No Illicit Drug Use	18 (1.1%)
Illicit Drug Use + No/Unk Homelessness	1071 (64%)
Homelessness + Illicit drug use	198 (12%)
No Outbreak-Related Risk Factors	375 (22%)

\* Risk factor information is unavailable for 366 (17.9%) of all outbreak-associated cases.

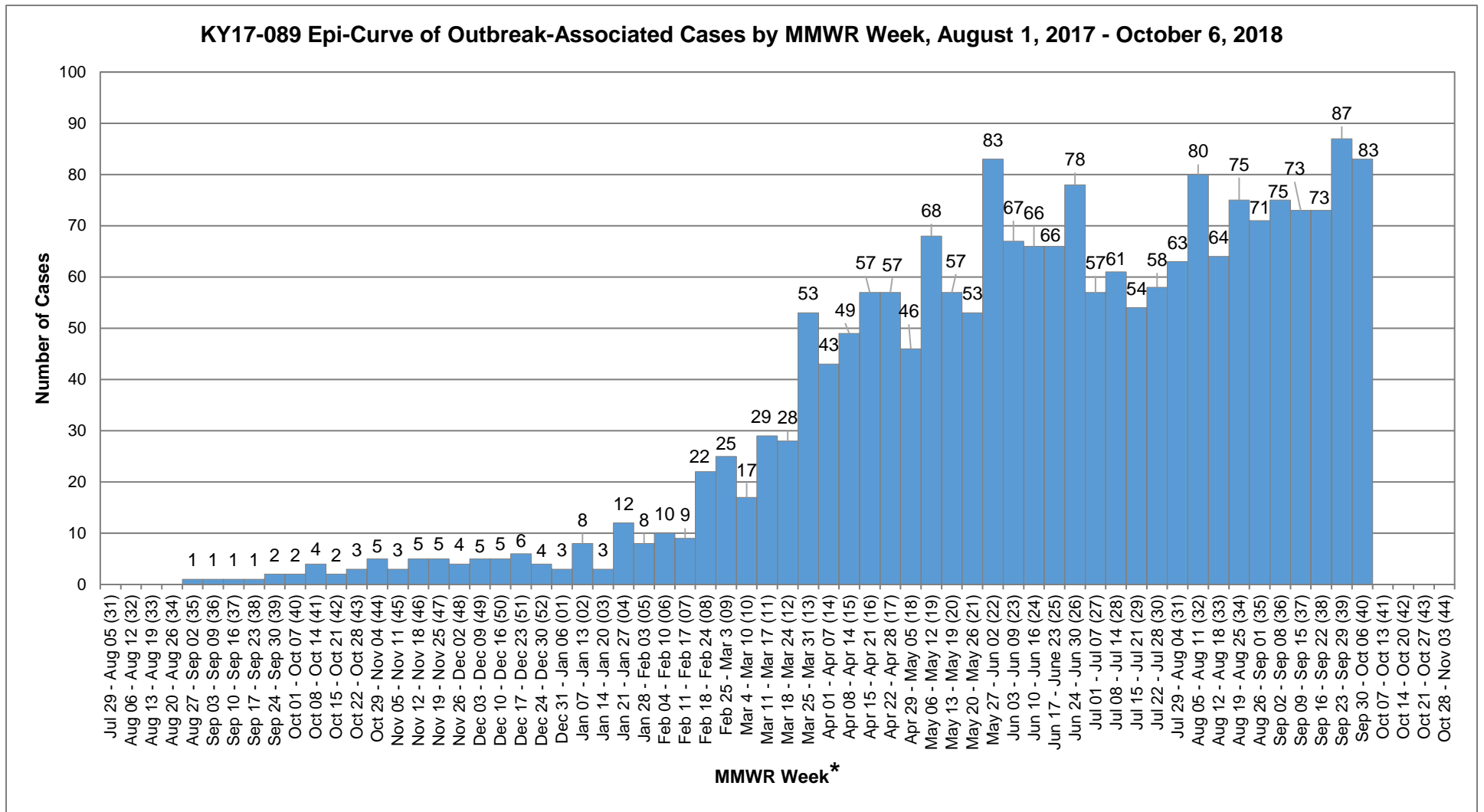
† The categories below do not add up to the total number in this count due to other possible risk factor combinations not shown in the table.

# 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.

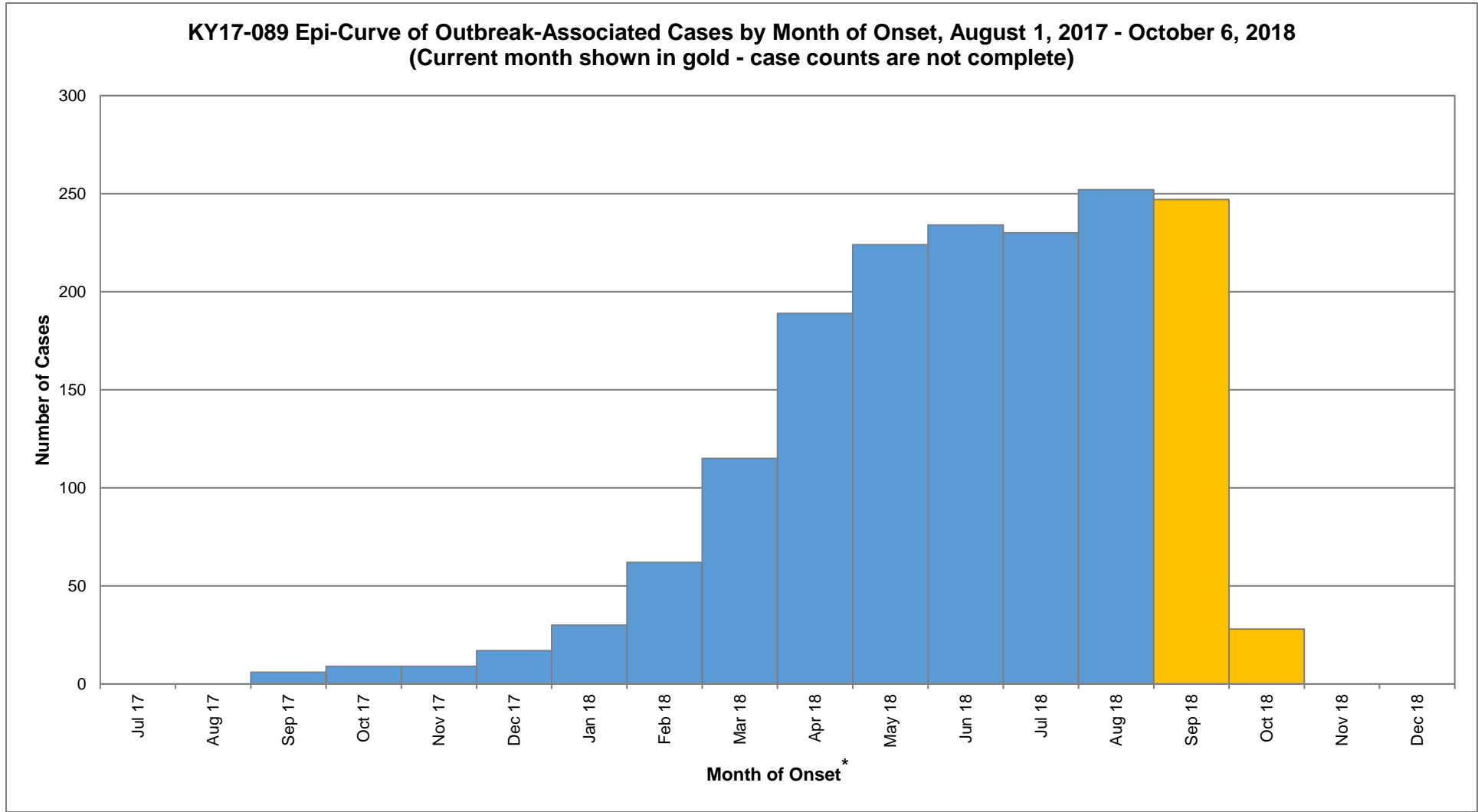


Figure 4: Epidemic-curve (Epi-Curve) of Outbreak-Associated Cases



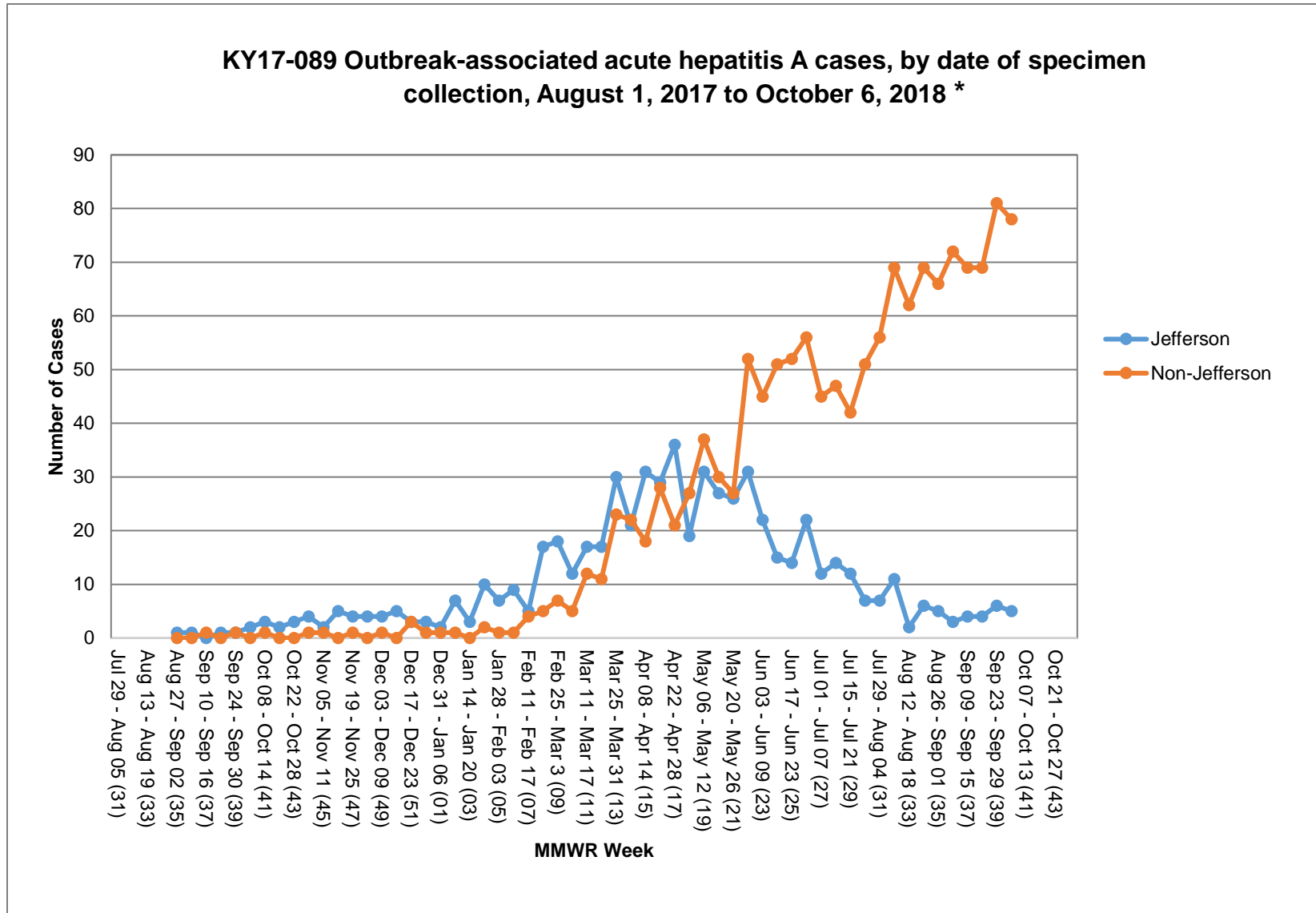
\* MMWR weeks are based on date of specimen collection.

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



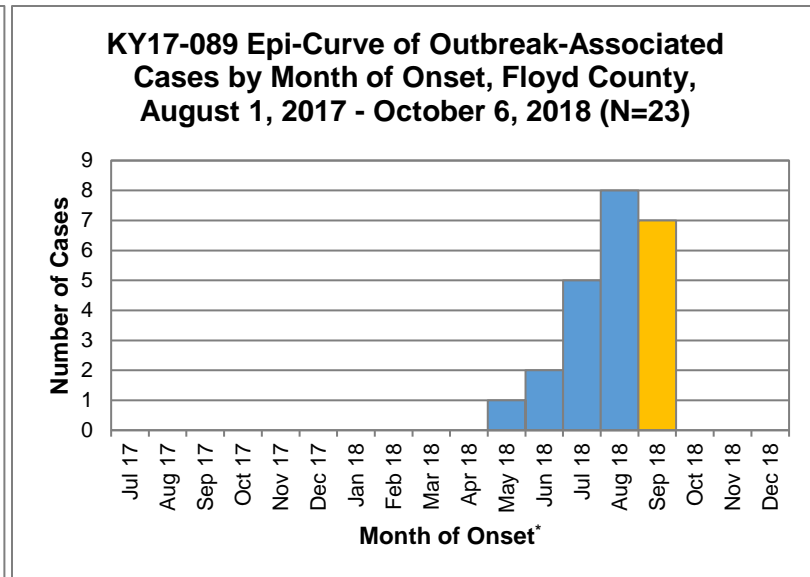
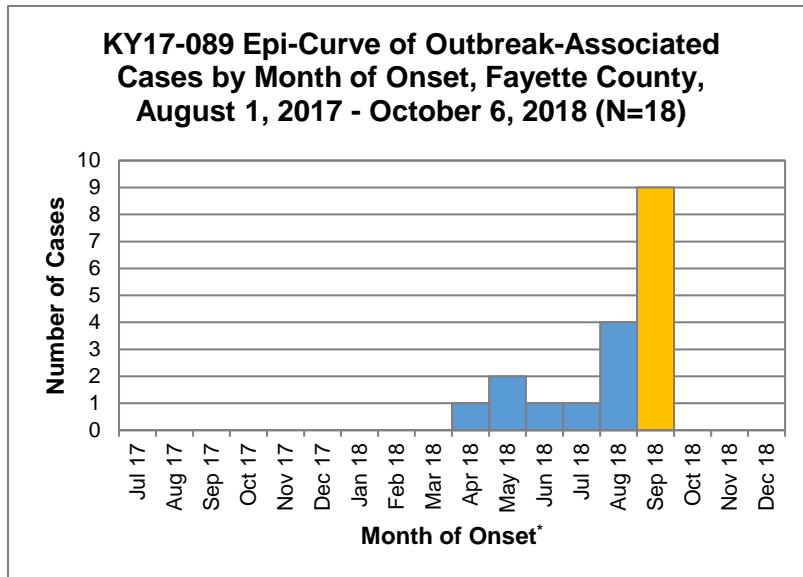
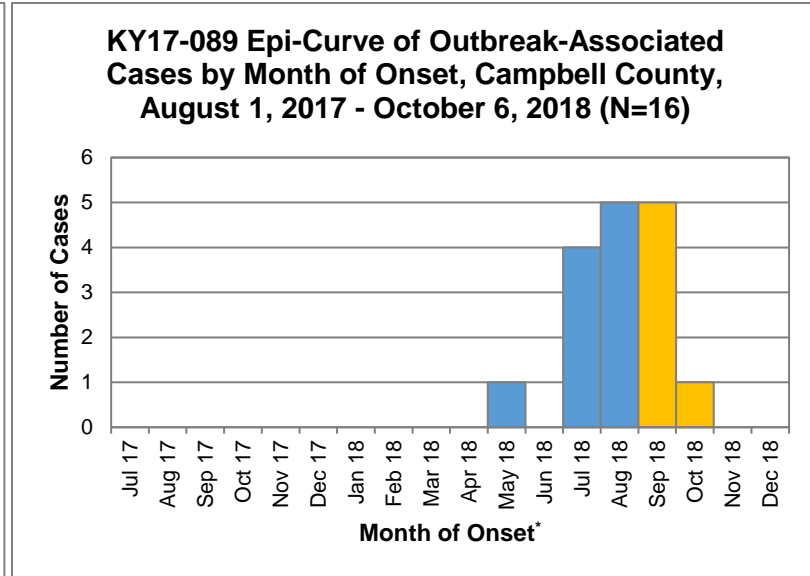
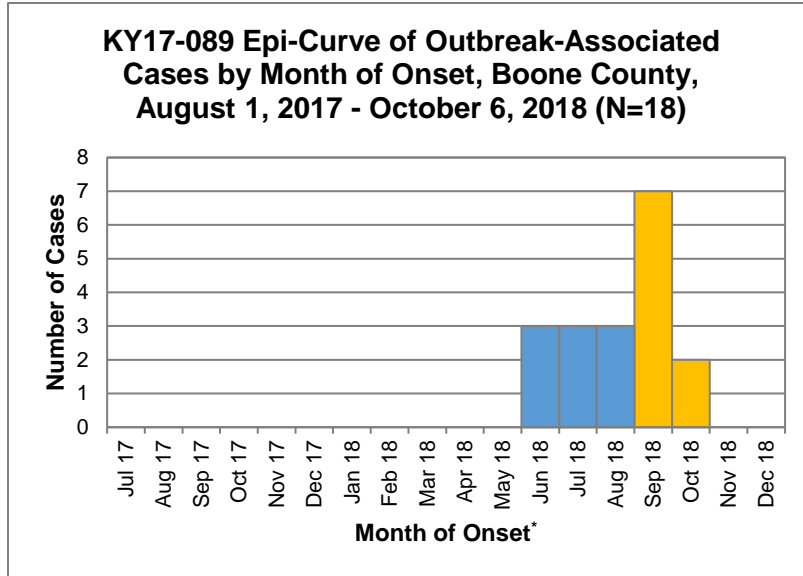
\* Date of onset has been reported for 79.2% (or 1624/2050) of cases.

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

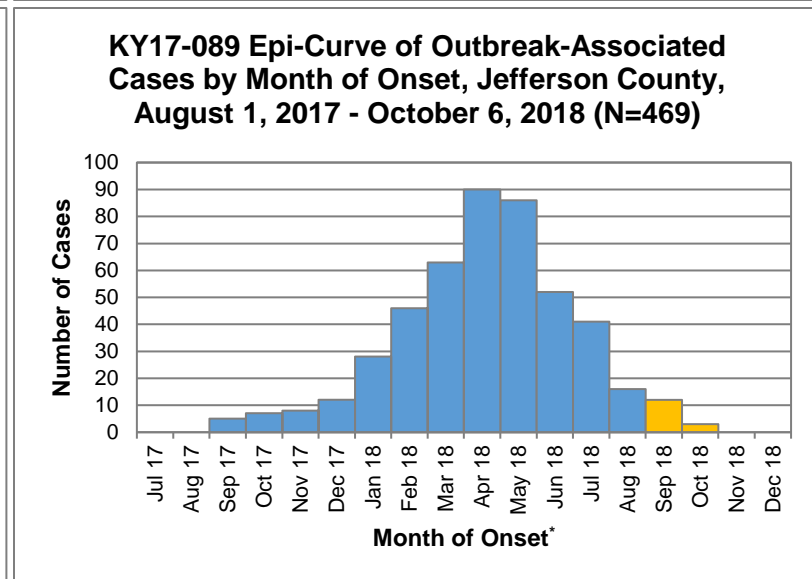
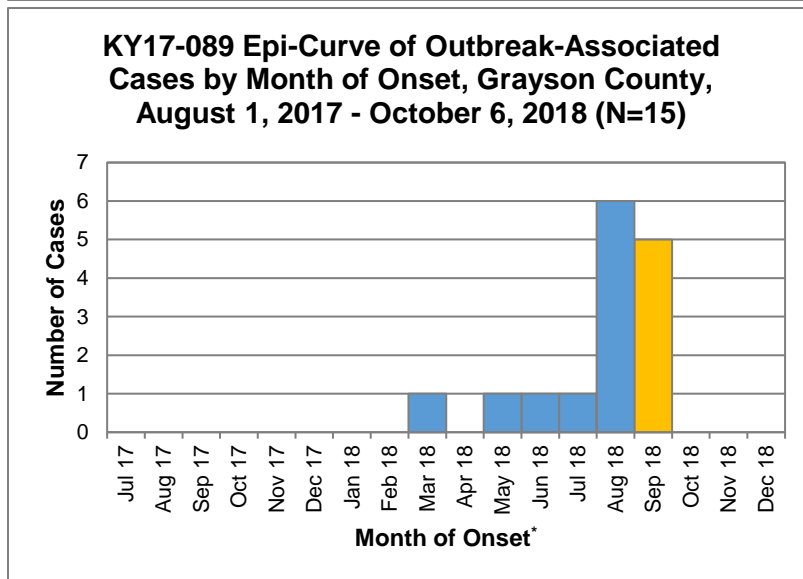
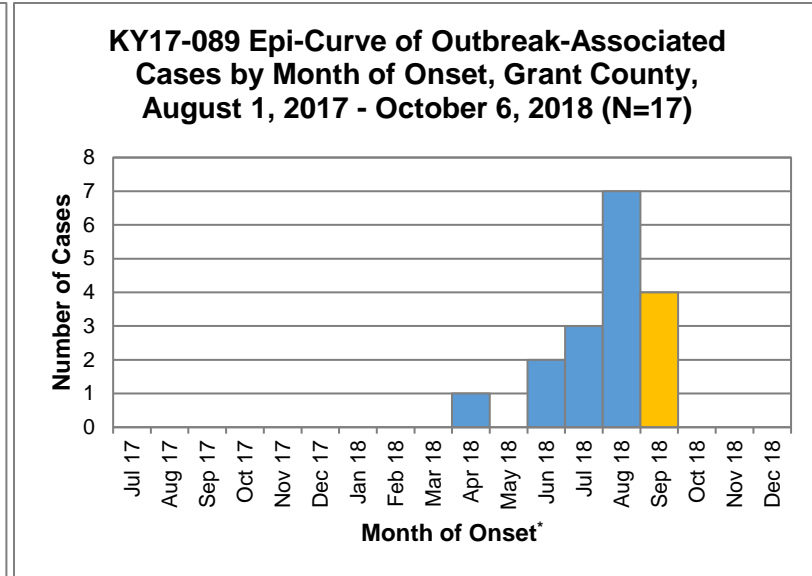
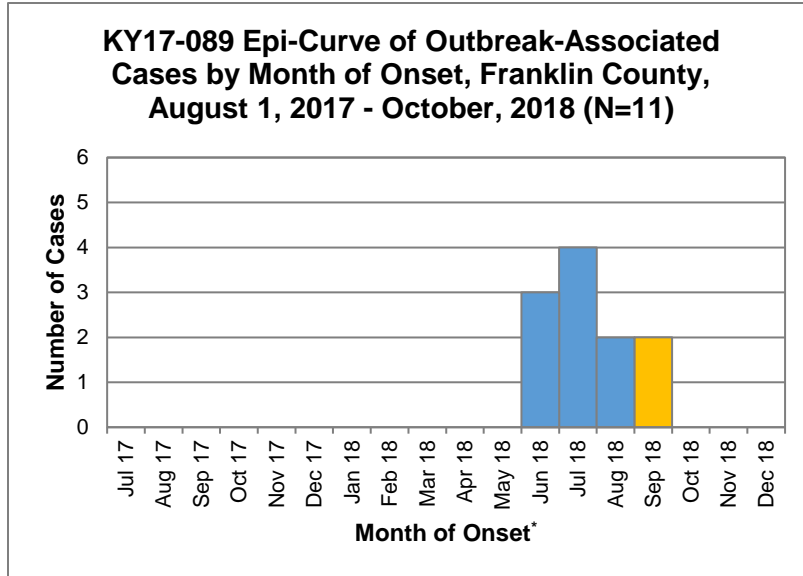


\* MMWR weeks are based on date of specimen collection.

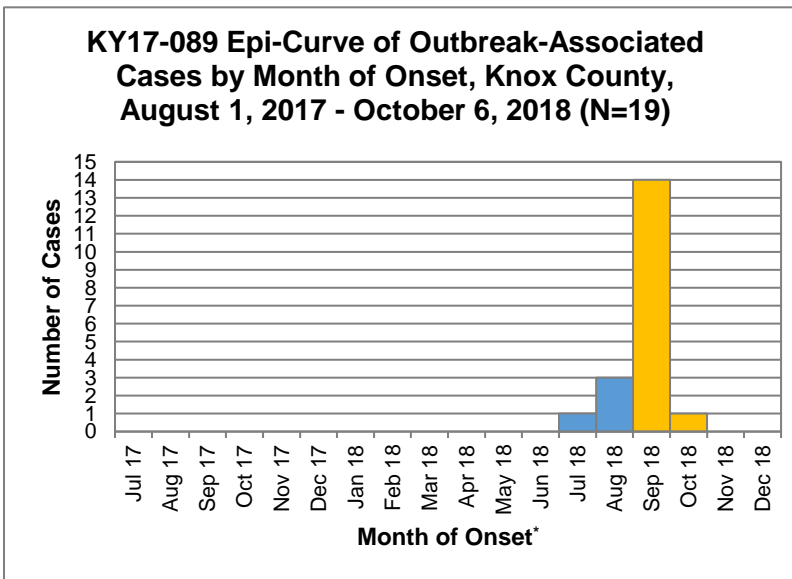
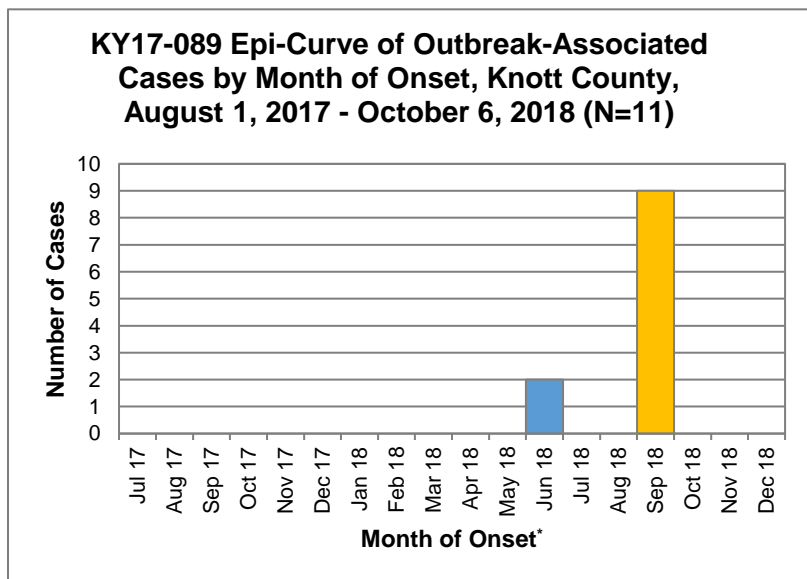
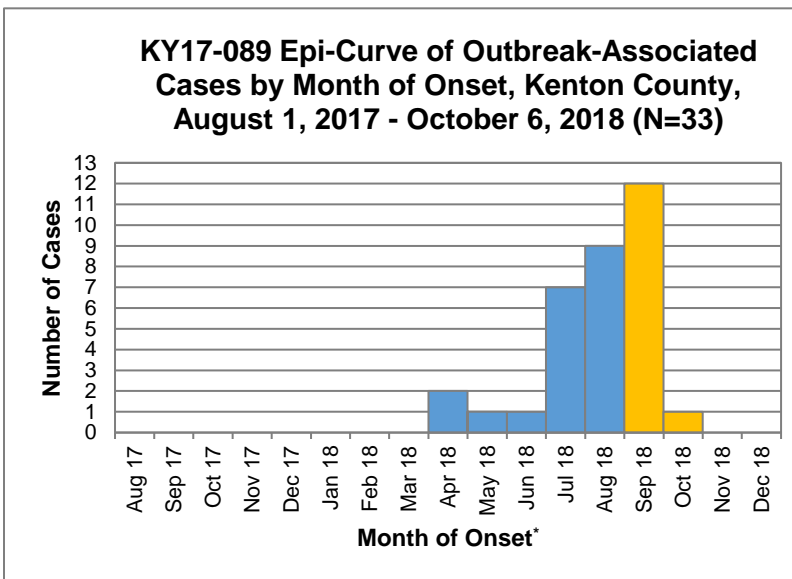
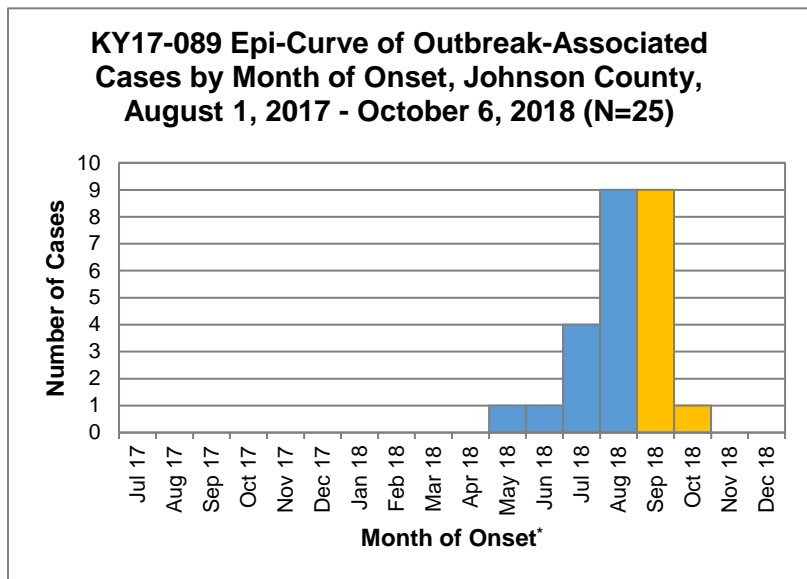
Figures 7-10: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Boone, Campbell, Fayette, and Floyd Counties)



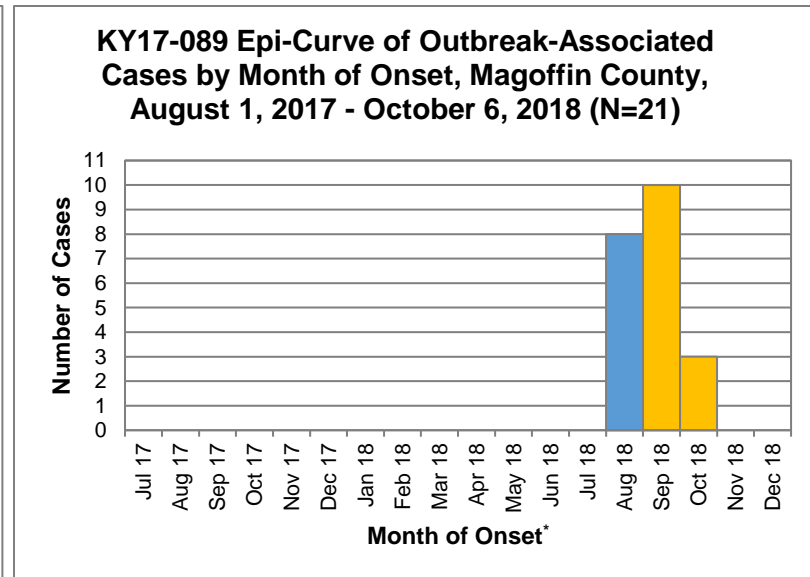
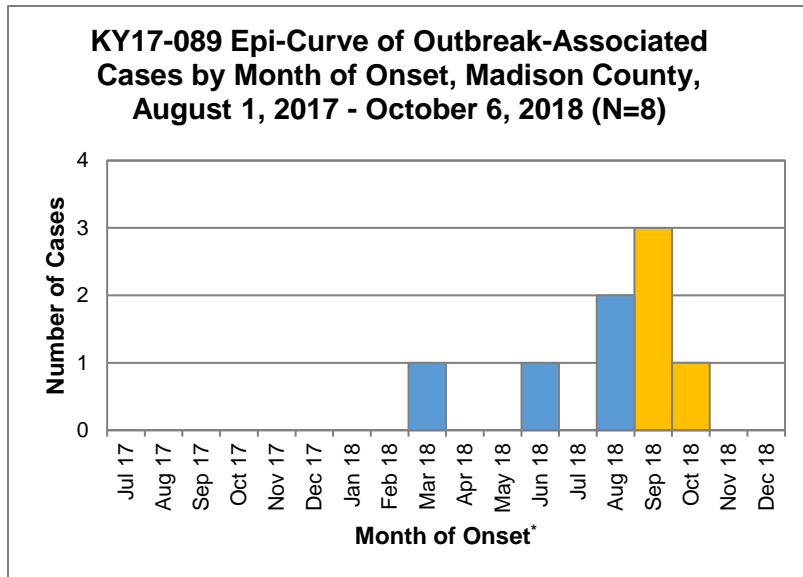
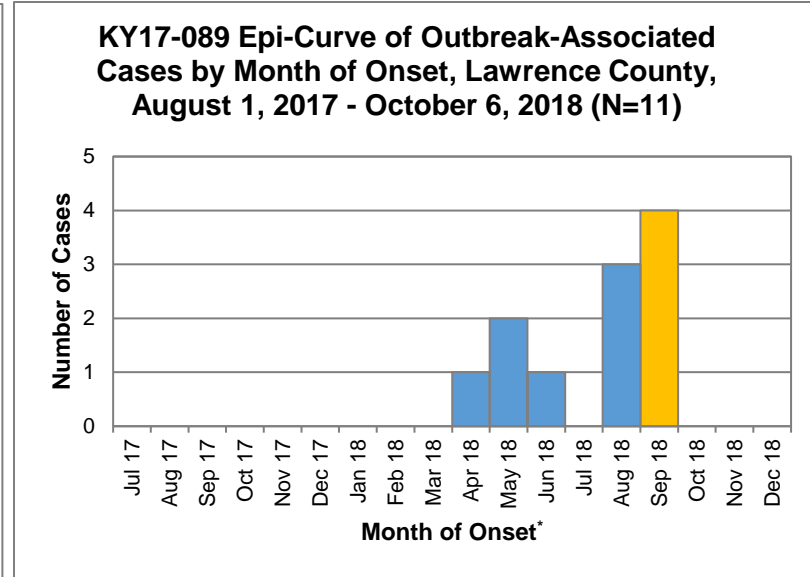
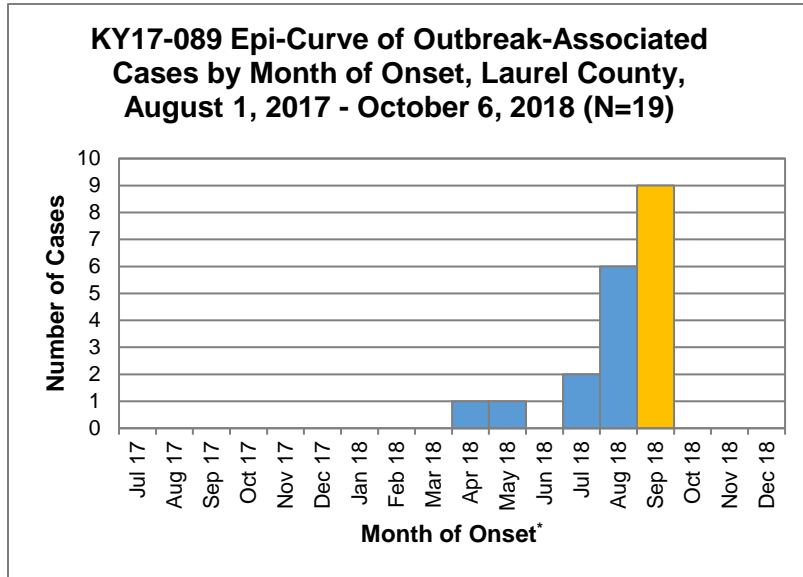
**Figures 11-14: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Franklin, Grant, Grayson, and Jefferson Counties)**



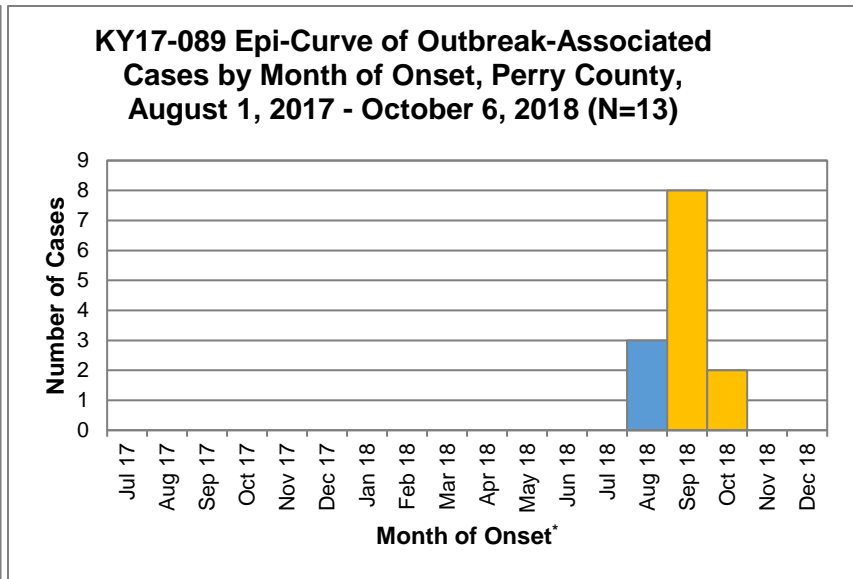
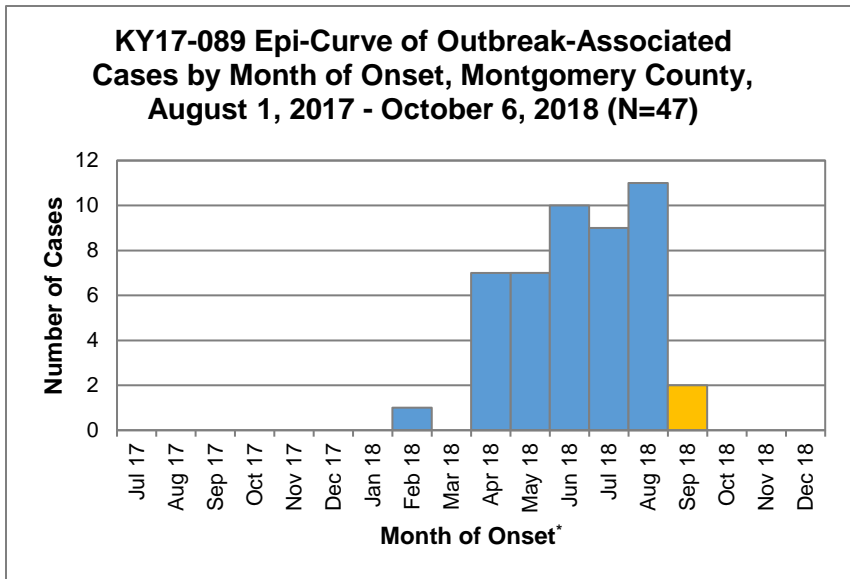
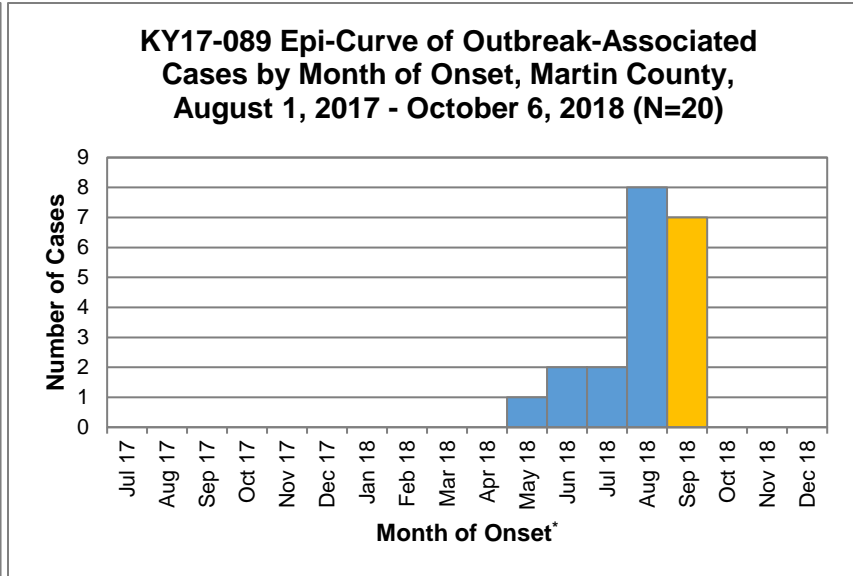
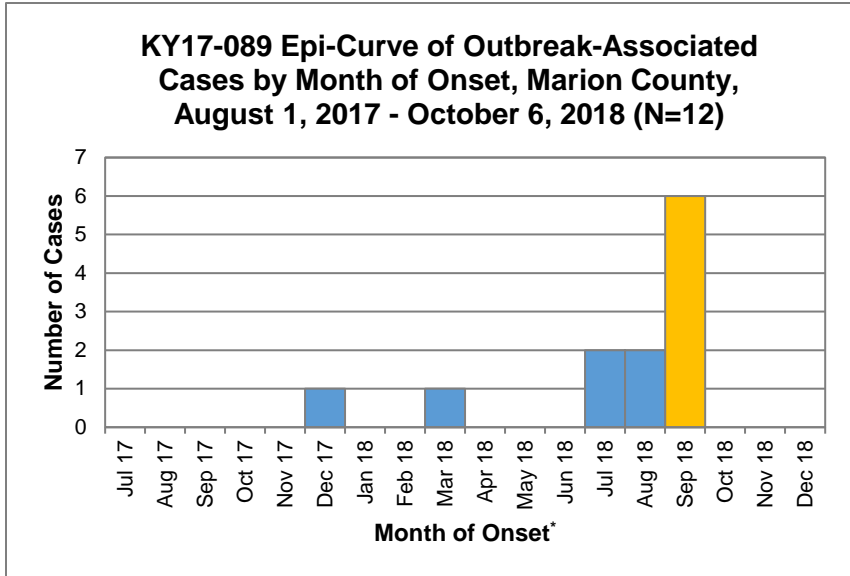
Figures 15-18: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Johnson, Kenton, Knott, and Knox Counties)



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





**Figures 27-29: 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 (Rowan, Taylor, and Whitley Counties)**

