



**Kentucky Department for Public Health**  
**KY17-089 - Acute Hepatitis A Outbreak Weekly Report**  
**Morbidity and Mortality Weekly Report (MMWR) Week 43, 2018**  
**October 21, 2018 – October 27, 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 43:		Total Case Counts: 8/1/2017 – 10/27/2018:	
<b>Number of new cases (n=95):</b>	<b>Confirmed<sup>^</sup> - 0 Probable - 61 Suspected - 34</b>	<b>Total number of cases (n=2410):</b>	<b>Confirmed<sup>^</sup> - 585 Probable - 1213 Suspected - 612</b>
<b>Number of counties with new cases:</b>	<b>37</b>	<b>Total number of counties with cases:</b>	<b>94 (78% of KY counties)</b>
<b>Number of individuals with specimens submitted for genotyping where results are available:</b>	<b>20</b>	<b>Number of individuals with specimens submitted for genotyping where results are available:</b>	<b>625 (26%)</b>
<b>Number of cases with genotype IB among those with genotype testing:</b>	<b>20</b>	<b>Total number of cases with genotype IB among those with genotype testing:</b>	<b>571 (91% of those tested)</b>
<b>Number of Hospitalizations:</b>	<b>45</b>	<b>Total Number of Hospitalizations:</b>	<b>1267 (53%)</b>
<b>Number of deaths Reported<sup>†</sup>:</b>	<b>2</b>	<b>Total number of deaths reported<sup>†</sup>:</b>	<b>16 (&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 27, 2018*^#</b>					
<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>
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	23	0	9	14	185.8
Bell	5	0	2	3	18.6
Boone	30	4	16	10	22.9
Bourbon	4	0	4	0	20.0
Boyd	162	98	37	27	337.6
Boyle	8	0	2	6	26.7
Breathitt	1	0	1	0	7.7
Bullitt	63	30	23	10	78.5
Butler	3	0	1	2	23.4
Campbell	37	2	31	4	40.0
Carlisle	1	0	1	0	20.6
Carroll	3	1	0	2	28.0
Carter	126	41	63	22	464.2
Casey	5	1	3	1	31.7
Christian	1	1	0	0	1.4
Clark	25	0	16	9	49.9
Clay	10	0	5	5	49.1

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,  
by County, August 1, 2017 – October 27, 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>
Daviess	3	0	2	1	3.0
Edmonson	1	0	1	0	8.2
Elliott	22	4	4	14	292.4
Estill	4	0	3	1	28.0
Fayette	34	4	21	9	10.6
Fleming	3	0	0	3	20.8
Floyd	64	1	36	27	176.4
Franklin	30	0	24	6	59.4
Gallatin	3	0	2	1	34.2
Garrard	4	0	2	2	22.8
Grant	30	3	22	5	120.1
Grayson	26	2	21	3	98.6
Green	3	0	3	0	27.1
Greenup	57	28	18	11	160.5
Hardin	31	7	7	17	28.7
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	5	0	3	2	37.2
Jefferson	632	292	229	111	82.0
Jessamine	5	0	2	3	9.4

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,  
by County, August 1, 2017 – October 27, 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>
Johnson	40	0	20	20	177.0
Kenton	57	7	46	4	34.5
Knott	13	1	9	3	85.0
Knox	38	0	24	14	121.7
Larue	3	0	1	2	21.1
Laurel	60	0	48	12	99.7
Lawrence	19	3	11	5	120.9
Lee	7	0	7	0	106.5
Leslie	6	0	4	2	58.1
Letcher	2	0	1	1	9.0
Lewis	5	0	3	2	37.5
Lincoln	7	2	3	2	28.6
Logan	1	0	1	0	3.7
Madison	25	2	18	5	27.4
Magoffin	31	0	19	12	247.2
Marion	19	2	13	4	98.0
Marshall	2	0	1	1	6.4
Martin	31	0	21	10	270.7
Mason	3	0	2	1	17.5
McCracken	8	2	3	3	12.2
Meade	12	1	1	10	42.6
Menifee	16	0	11	5	247.9
Mercer	16	0	11	5	74.3

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,  
by County, August 1, 2017 – October 27, 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>
Metcalfe	1	0	1	0	9.9
Montgomery	68	5	48	15	243.5
Morgan	14	1	10	3	106.2
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	25	0	15	10	94.2
Pike	16	0	14	2	27.2
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	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	39	2	28	9	153.1
Warren	27	8	15	4	21.0
Washington	5	0	3	2	41.2

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,  
by County, August 1, 2017 – October 27, 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>
Whitley	116	3	63	50	320.3
Wolfe	10	0	8	2	137.7
Woodford	1	0	0	1	3.8
<b>Total Number of Cases:</b>	<b>2410</b>	<b>585</b>	<b>1213</b>	<b>612</b>	<b>54.1</b>

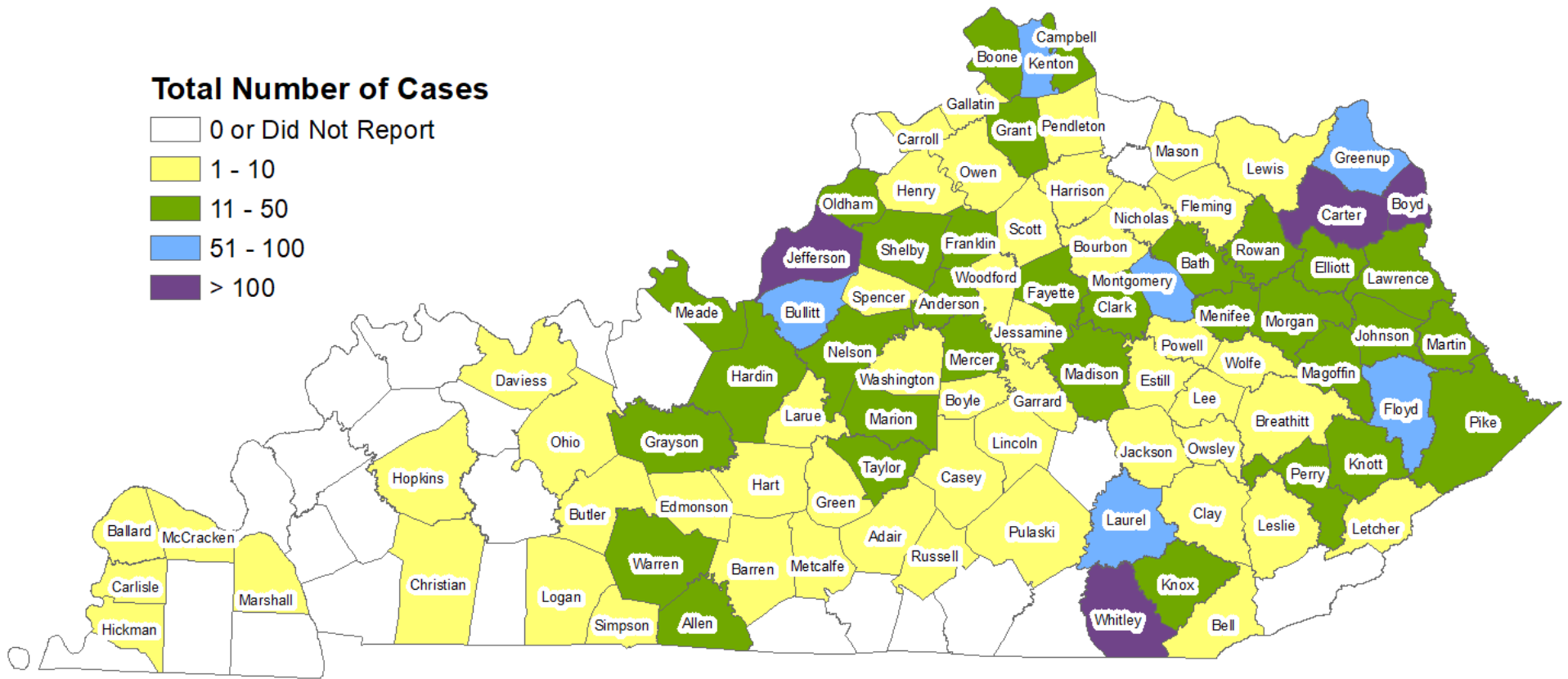
\* Cases are reported based on date of specimen collection.

<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 27, 2018

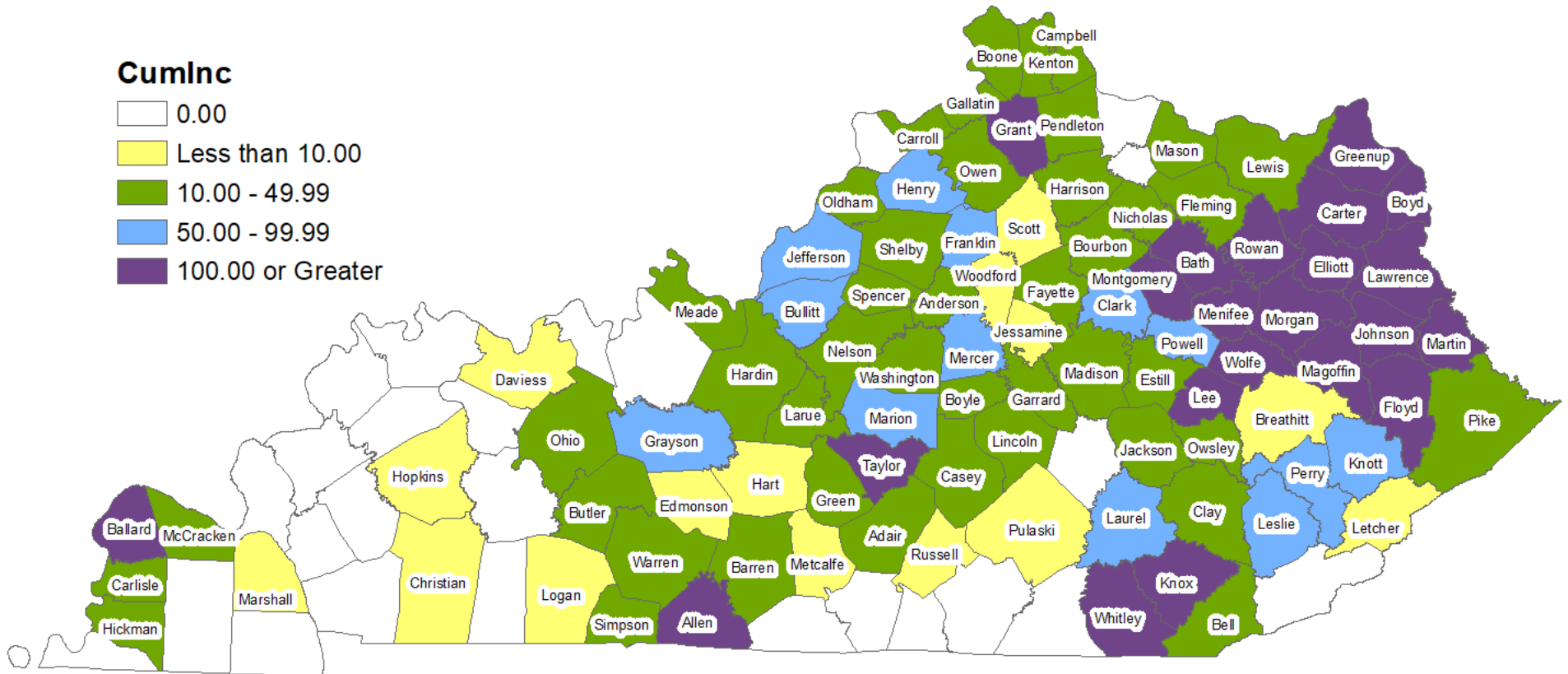


n = 94 counties with outbreak-associated cases

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 - October 27, 2018

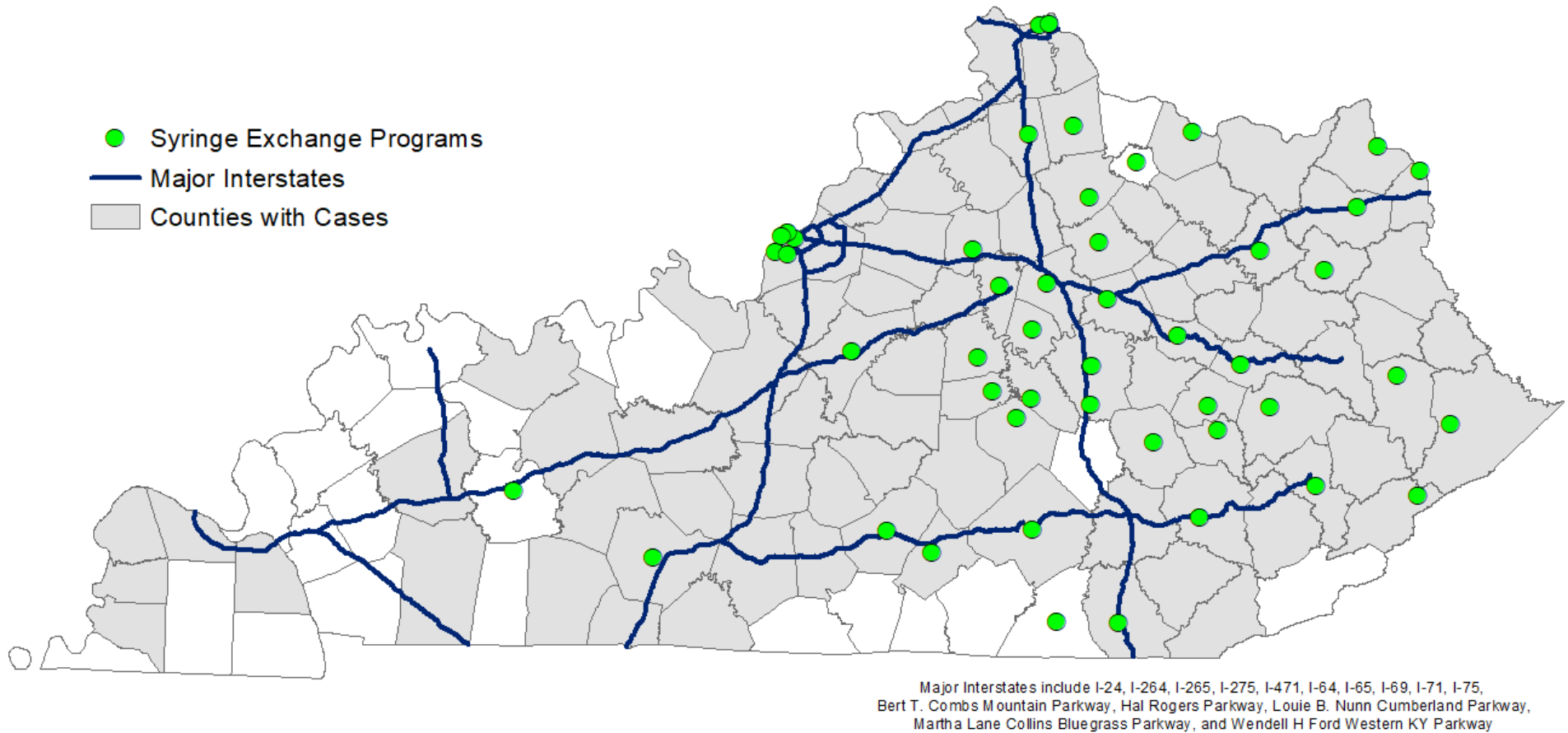


The KY incidence rate is 54.1 per 100,000.  
 Note: Rates calculated from numerators less than 20 may not be reliably used to determine trends.

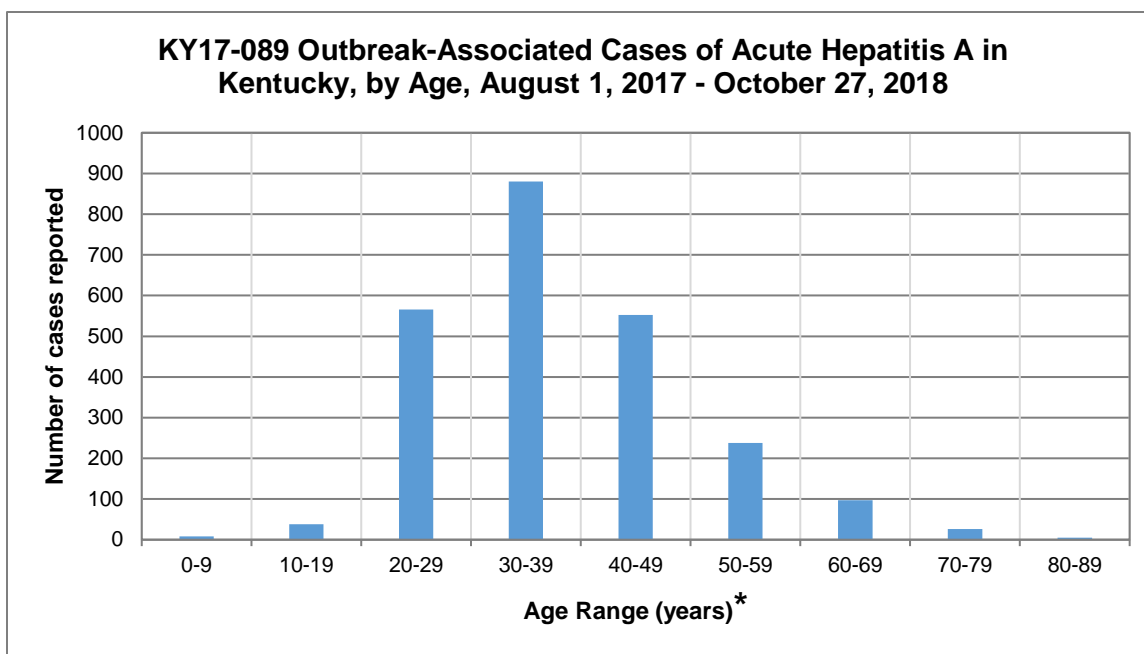


Figure 3: Major Interstates and Syringe Exchange Programs in Counties Reporting Outbreak-Associated Cases

# KY17-089 Major Interstates and Syringe Exchange Programs in Counties Reporting Outbreak-Associated Acute Hepatitis A Cases, August 1, 2017 - October 27, 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 – October 27, 2018 <sup>#^</sup>	
Risk Factor	Number of Cases Reporting Risk Factor (n=1972) <sup>* †</sup>
Homelessness + No/Unk Illicit Drug Use	41 (2.1%)
Illicit Drug Use + No/Unk Homelessness	1291 (65%)
Homelessness + Illicit drug use	218 (11%)
No Outbreak-Related Risk Factors	422 (21%)

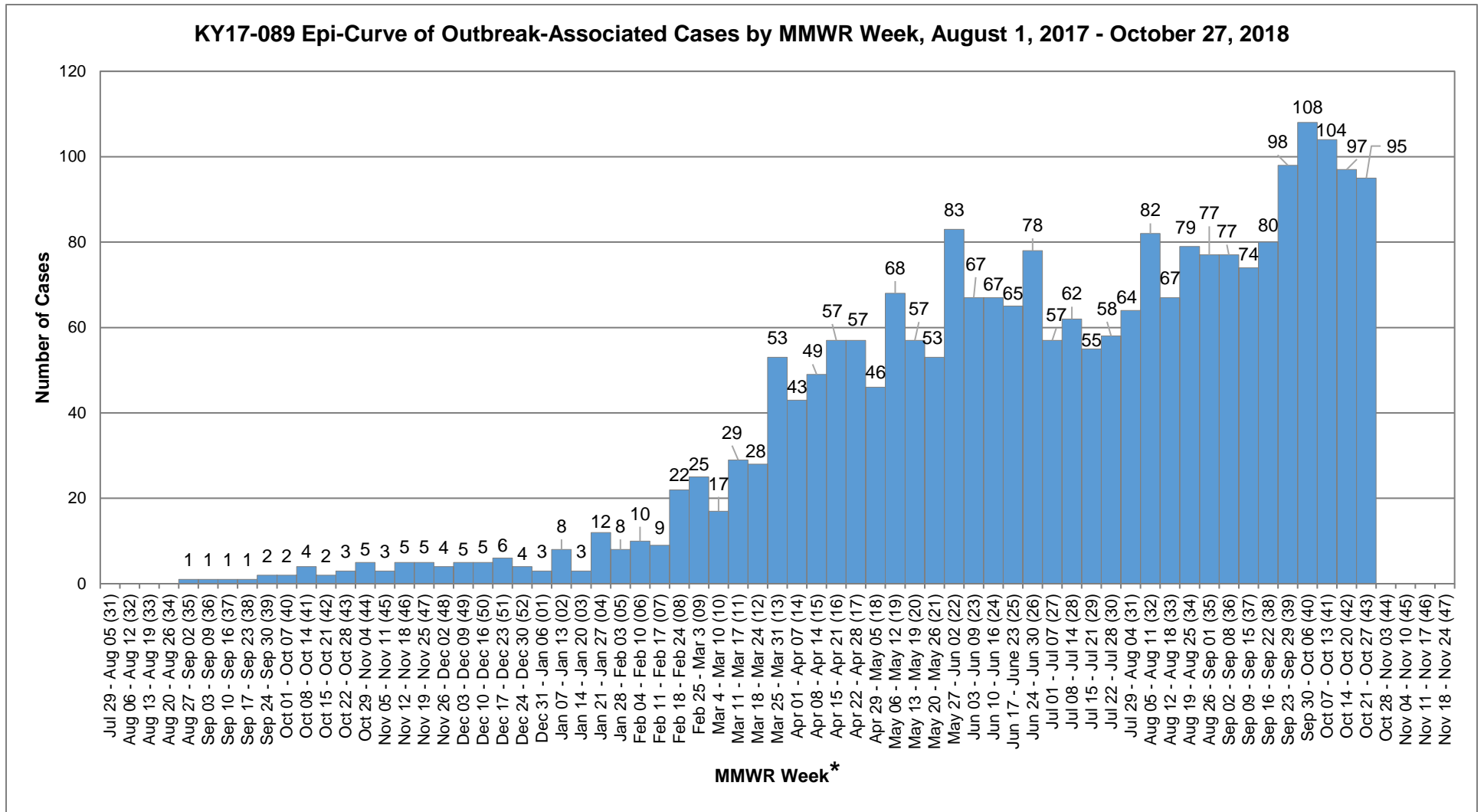
\* Risk factor information is unavailable for 438 (18.2%) of all outbreak-associated cases.

† 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.

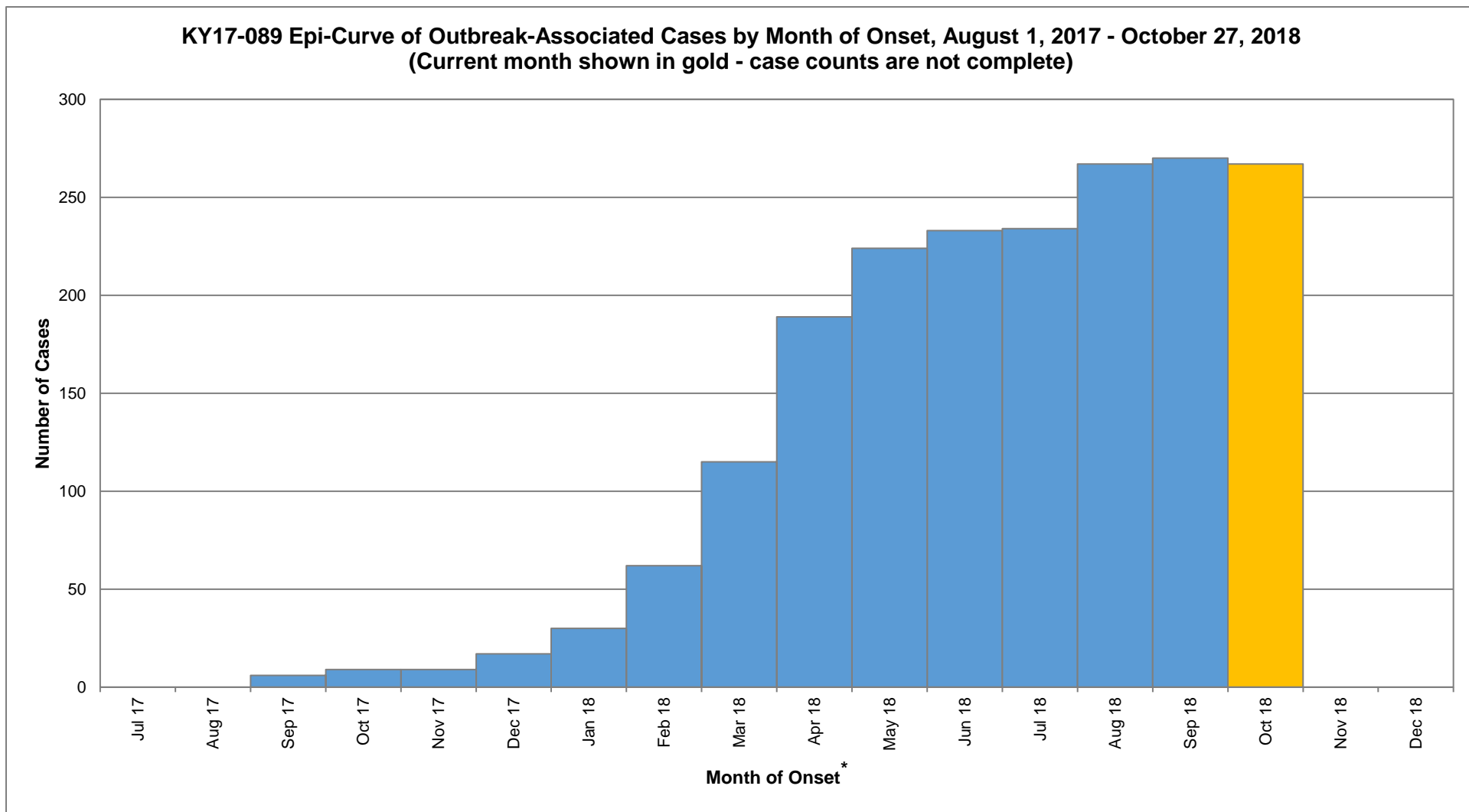
^ 31 MSM cases have been reported. Of those, 9 have reported no other risk factors.

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



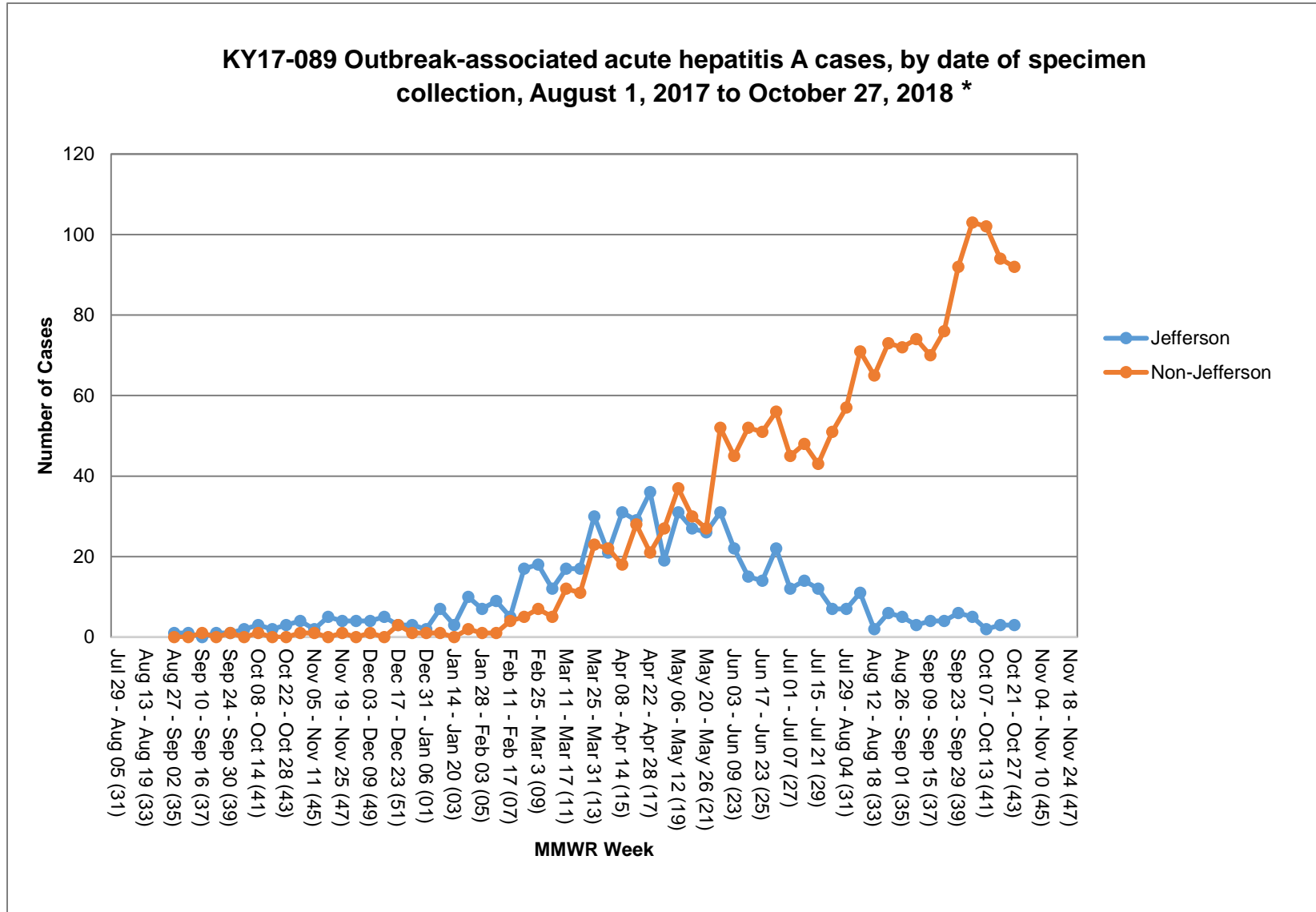
\* MMWR weeks are based on date of specimen collection.

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



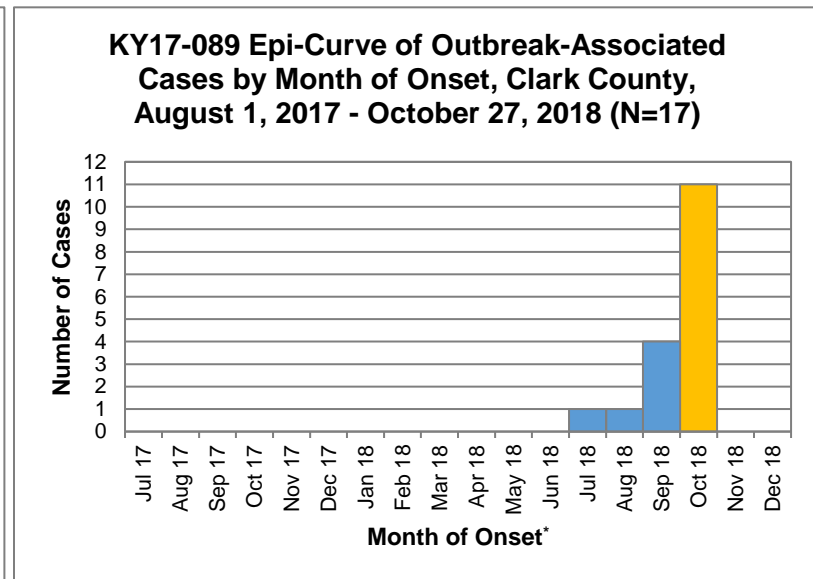
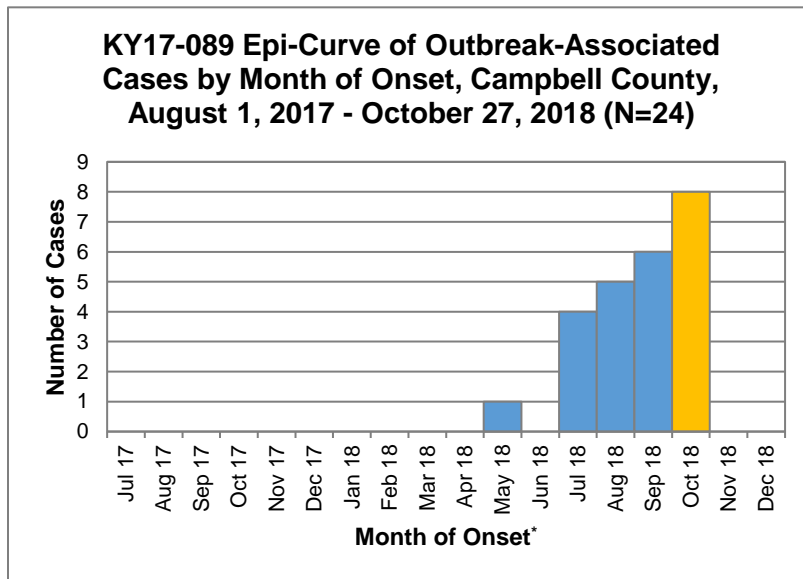
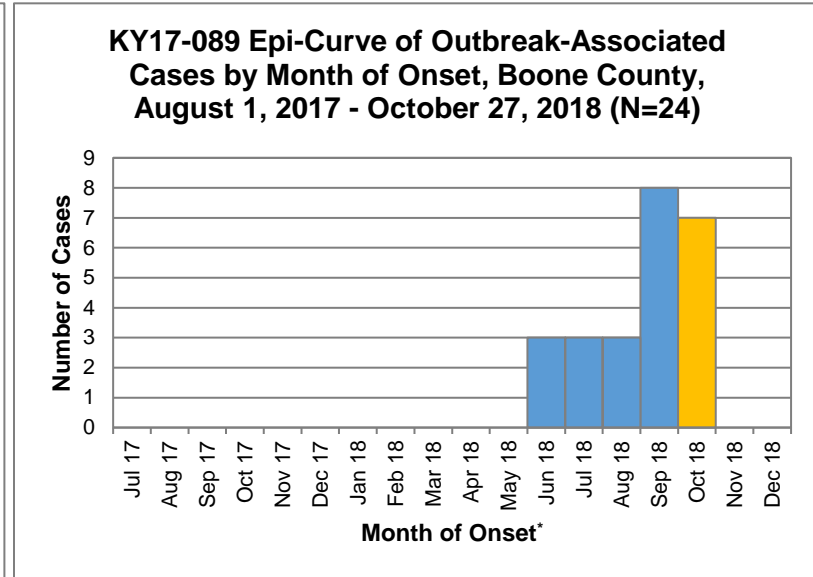
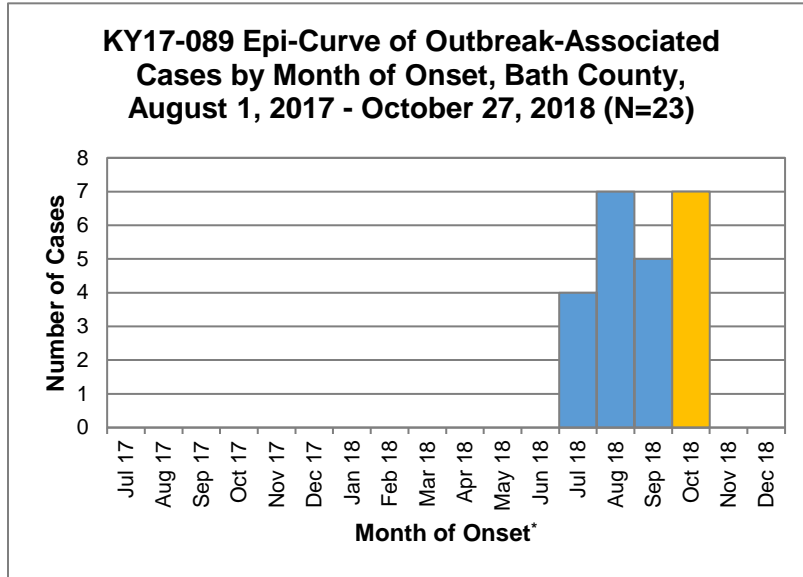
\* Date of onset has been reported for 80.2% (or 1932/2410) of cases.

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

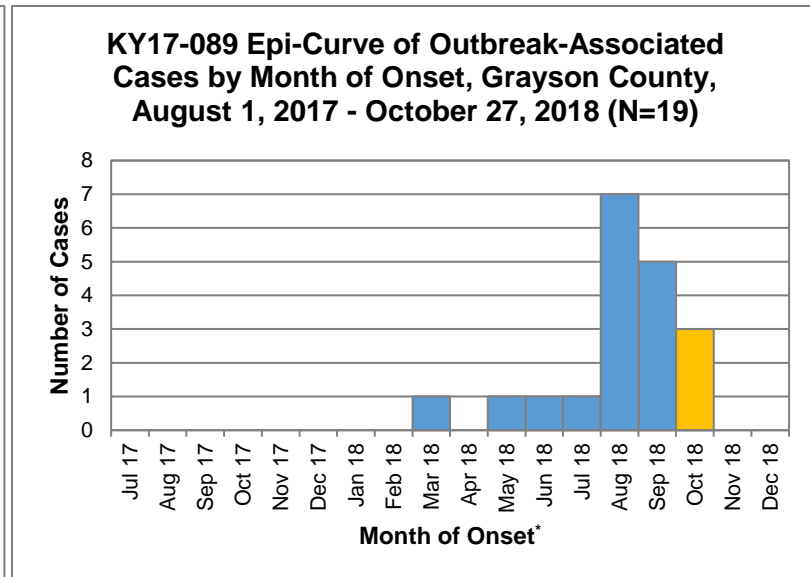
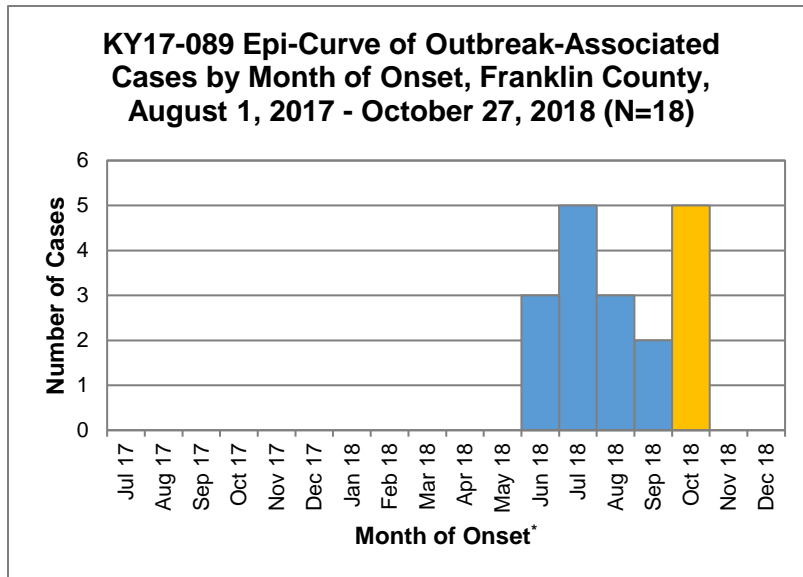
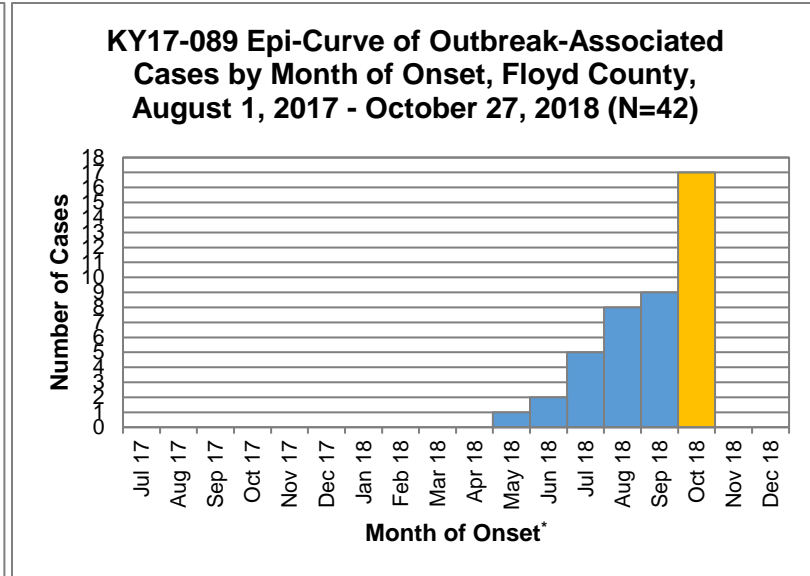
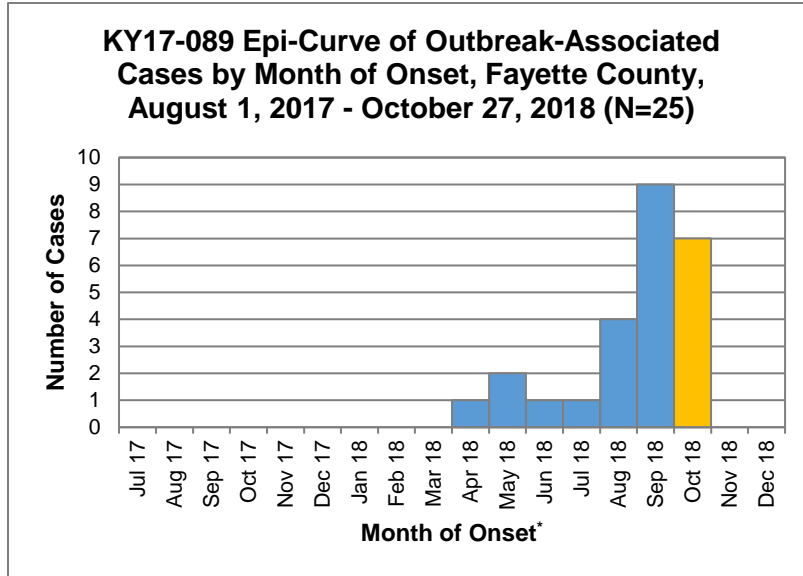


\* MMWR weeks are based on date of specimen collection.

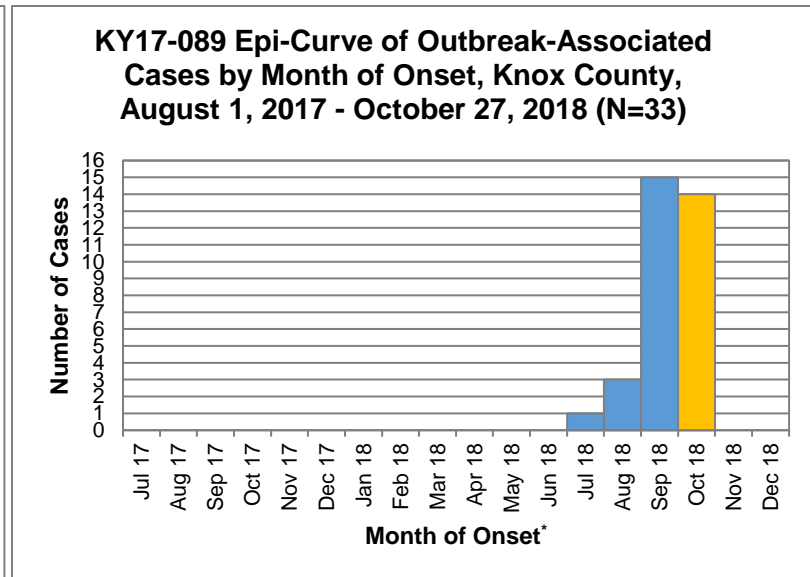
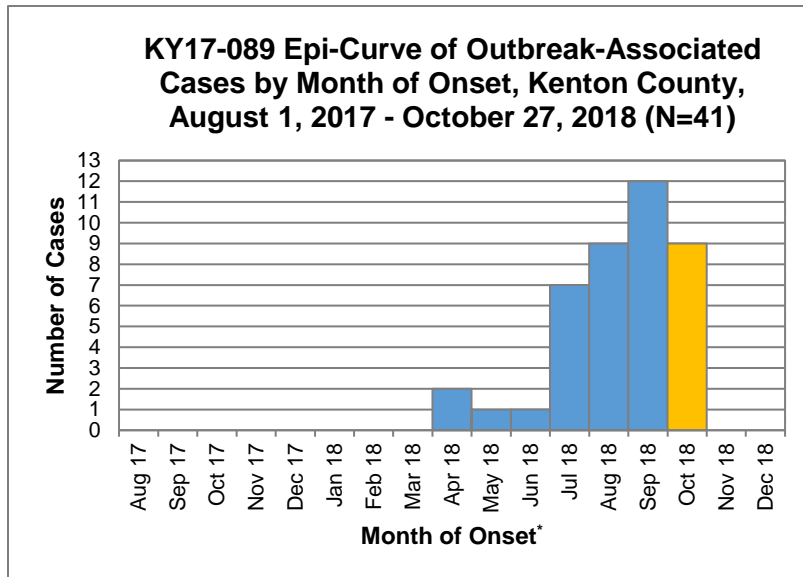
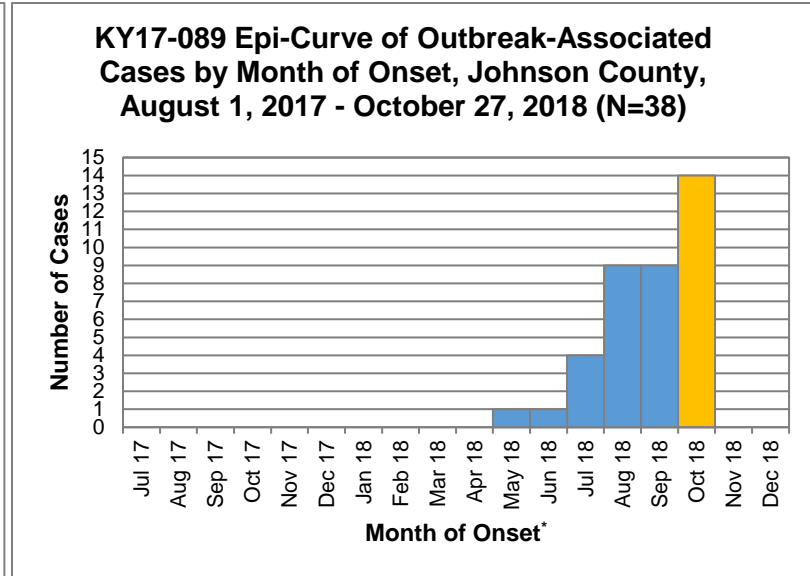
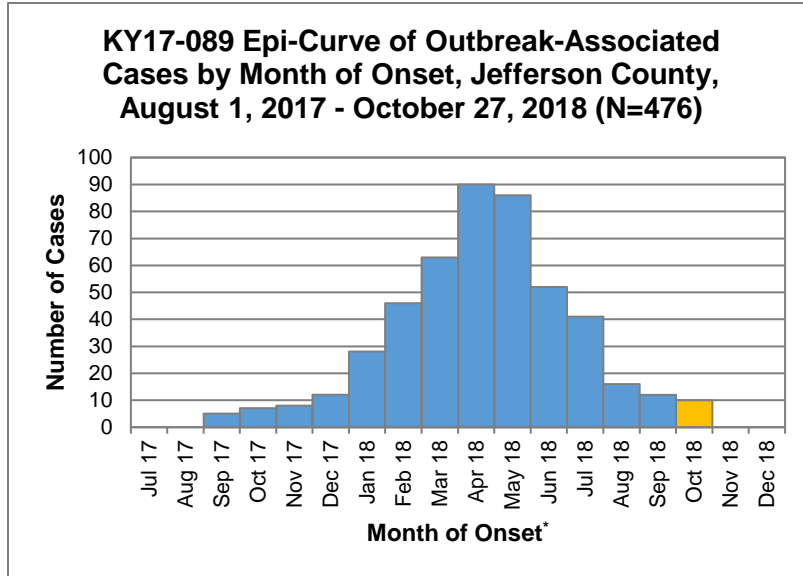
**Figures 8-11: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Bath, Boone, Campbell, and Clark Counties)**



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 Grayson Counties)

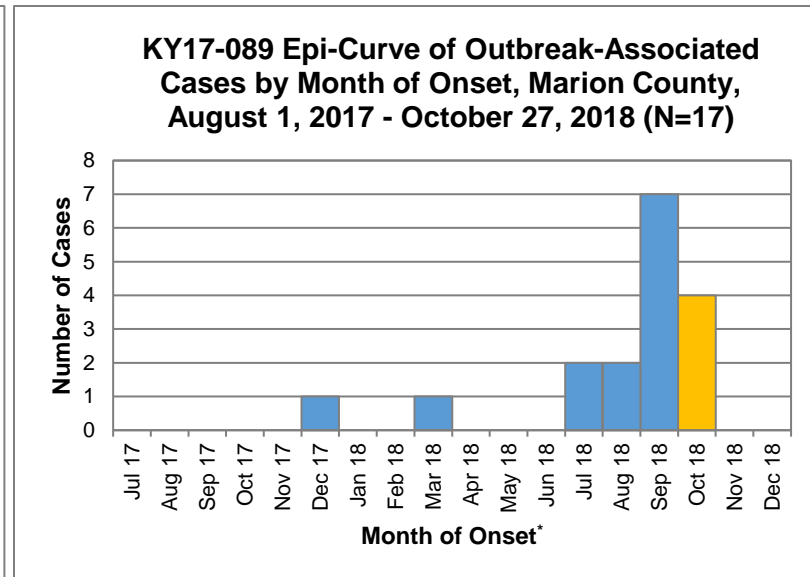
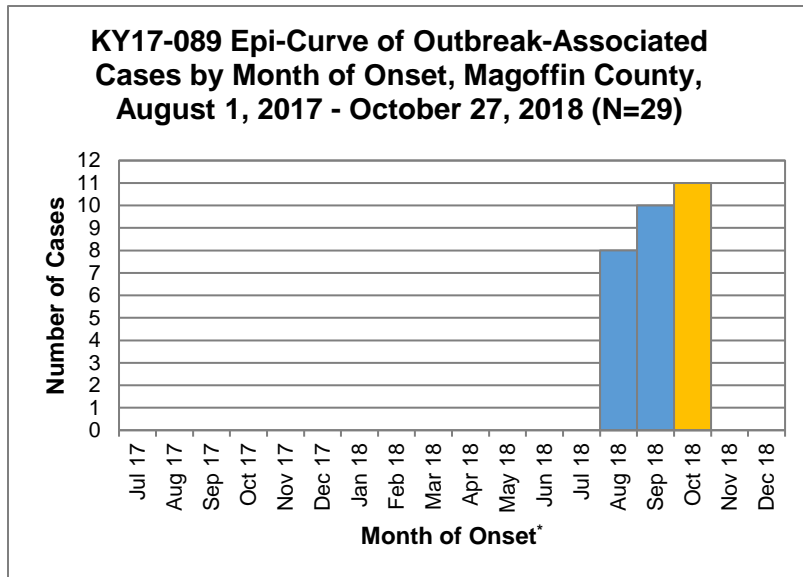
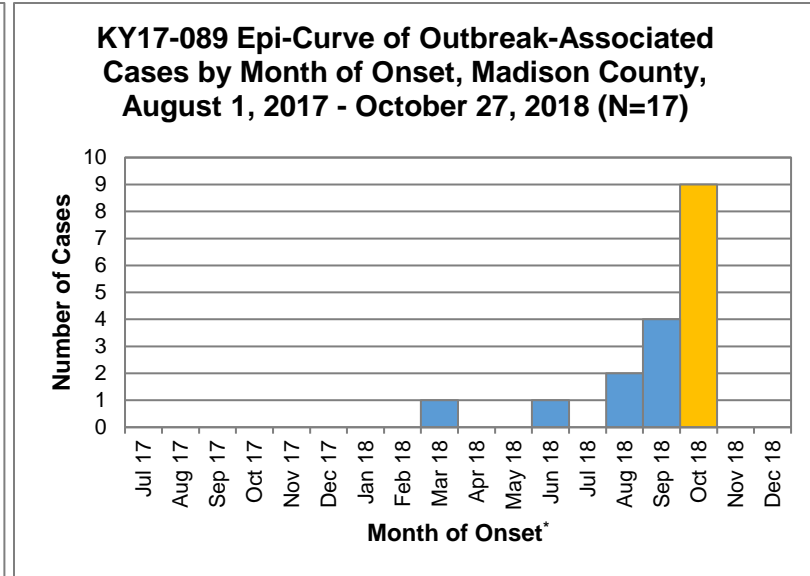
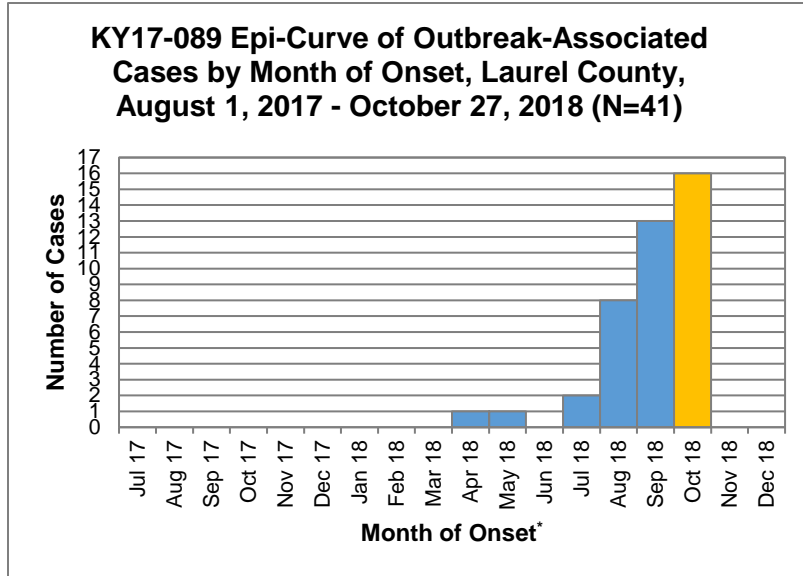


Figures 16-19: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Jefferson, Johnson, Kenton, and Knox Counties)

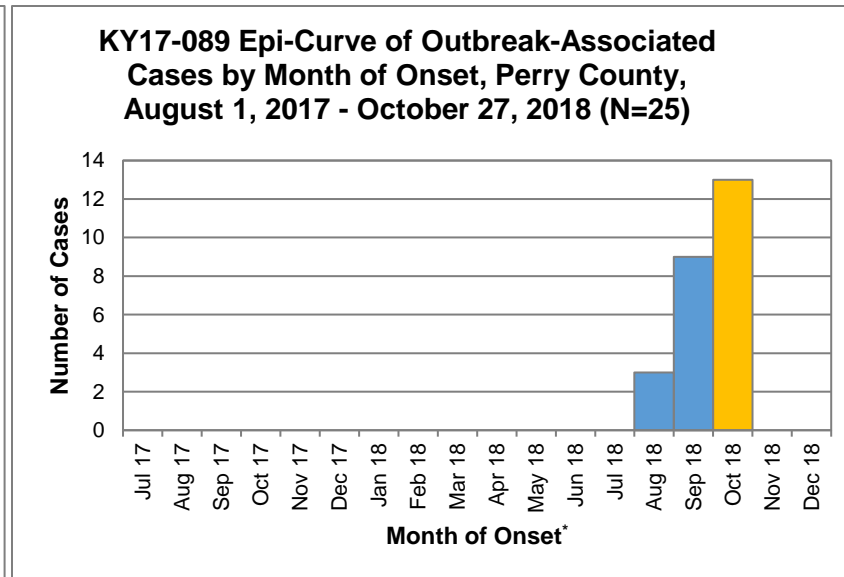
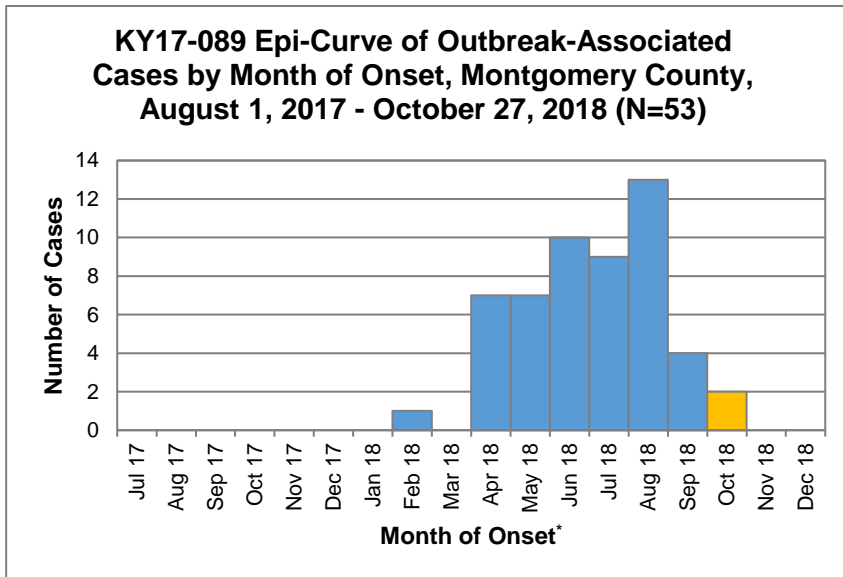
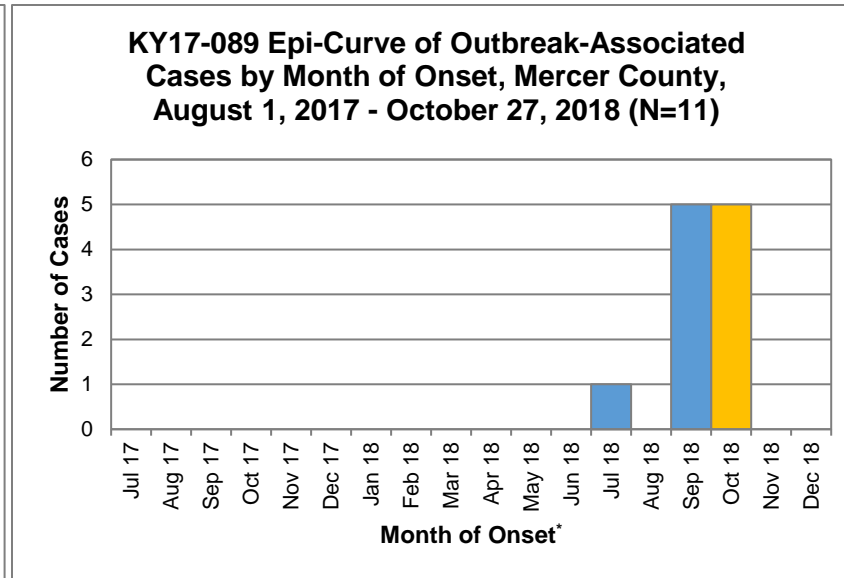
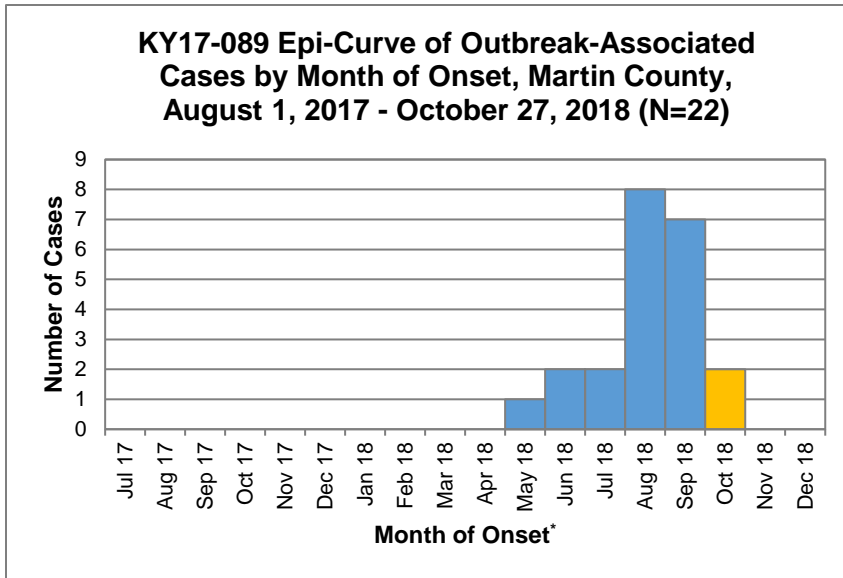




Figures 20-23: Epidemic-curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 reported cases in the last 50 days, by Month of Onset (Laurel, Madison, Magoffin, and Marion Counties)



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 28-30: 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 (Rowan, Taylor, and Whitley Counties)

