



Kentucky Department for Public Health

KY17-089 - Acute Hepatitis A Outbreak Weekly Report

Morbidity and Mortality Weekly Report (MMWR) Week 52, 2018

December 23, 2018 – December 29, 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 52:		Total Case Counts: 8/1/2017 – 12/29/2018:	
Number of new cases (n=67):	Confirmed [^] - 0 Probable - 39 Suspected - 28	Total number of cases (n=3451):	Confirmed [^] - 587 Probable - 1963 Suspected - 901
Number of counties with new cases:	29	Total number of counties with cases:	100 (83% 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 (18%)
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:	1706 (49%)
Number of deaths Reported [†] :	0	Total number of deaths reported [†] :	21 (<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 – December 29, 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	30	4	21	5	143.3
Anderson	15	0	12	3	66.5
Ballard	10	4	3	3	124.4
Barren	11	1	10	0	25.1
Bath	28	0	12	16	226.2
Bell	18	0	12	6	66.9
Boone	40	4	22	14	30.6
Bourbon	8	0	8	0	39.9
Boyd	170	98	44	28	354.3
Boyle	24	0	14	10	80.2
Breathitt	6	0	6	0	46.3
Bullitt	64	30	24	10	79.8
Butler	6	0	2	4	46.8
Campbell	60	2	48	10	64.9
Carlisle	1	0	1	0	20.6
Carroll	6	1	2	3	56.0
Carter	126	41	63	22	464.2
Casey	5	1	3	1	31.7
Christian	5	1	3	1	7.1
Clark	66	0	42	24	183.1
Clay	52	0	28	24	255.3

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – December 29, 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	4	0	2	2	4.0
Edmonson	1	0	1	0	8.2
Elliott	23	4	4	15	305.7
Estill	11	0	9	2	77.0
Fayette	129	4	101	21	40.1
Fleming	4	0	0	4	27.7
Floyd	113	1	66	46	311.5
Franklin	49	0	37	12	97.1
Gallatin	3	0	2	1	34.2
Garrard	7	0	4	3	39.9
Grant	37	3	28	6	148.1
Grayson	27	2	22	3	102.4
Green	3	0	3	0	27.1
Greenup	61	28	20	13	171.7
Hardin	36	10	8	18	33.3
Harlan^	1	0	1	0	3.7
Harrison	15	0	8	7	79.9
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	14	0	7	7	104.2
Jefferson	646	292	241	113	83.8

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – December 29, 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
Jessamine	19	0	13	6	35.6
Johnson	66	0	38	28	292.1
Kenton	96	7	74	15	58.0
Knott	19	1	14	4	124.3
Knox	60	0	39	21	192.1
Larue	3	0	1	2	21.1
Laurel	157	0	127	30	260.9
Lawrence	24	3	14	7	152.7
Lee	16	0	16	0	243.5
Leslie	19	0	17	2	183.9
Letcher	3	0	2	1	13.4
Lewis	13	0	7	6	97.5
Lincoln	18	2	10	6	73.6
Logan	1	0	1	0	3.7
Madison	93	2	66	25	101.9
Magoffin	48	0	28	20	382.8
Marion	23	1	17	5	118.6
Marshall	2	0	1	1	6.4
Martin	38	0	28	10	331.8
Mason	9	0	8	1	52.4
McCracken	9	2	3	4	13.8
McCreary	9	0	9	0	51.5
Meade	12	1	1	10	42.6

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – December 29, 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
Menifee	17	0	11	6	263.4
Mercer	29	0	20	9	134.8
Metcalfe	2	0	1	1	19.8
Montgomery	83	5	61	17	297.2
Morgan	21	1	16	4	159.2
Nelson	19	4	6	9	41.6
Nicholas	2	0	0	2	28.1
Ohio	6	0	3	3	24.8
Oldham	14	3	8	3	21.1
Owen	7	0	6	1	65.0
Owsley	3	0	1	2	67.6
Pendleton	11	0	7	4	75.5
Perry	50	0	35	15	188.3
Pike	46	0	36	10	78.1
Powell	24	0	18	6	194.0
Pulaski	12	0	9	3	18.6
Robertson	1	0	1	0	46.9
Rockcastle	5	0	5	0	29.9
Rowan	46	0	30	16	187.6
Russell	2	0	1	1	11.3
Scott	11	0	7	4	20.0
Shelby	21	5	12	4	44.3
Simpson	6	0	6	0	33.1

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – December 29, 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	6	3	2	1	32.4
Taylor	48	2	34	12	188.4
Trigg	1	0	1	0	6.9
Warren	34	8	19	7	26.4
Washington	6	0	4	2	49.5
Wayne^	1	0	0	1	4.8
Whitley	179	3	97	79	494.3
Wolfe	23	0	16	7	316.6
Woodford	6	0	4	2	22.8
Total Number of Cases:	3451	587	1963	901	77.5

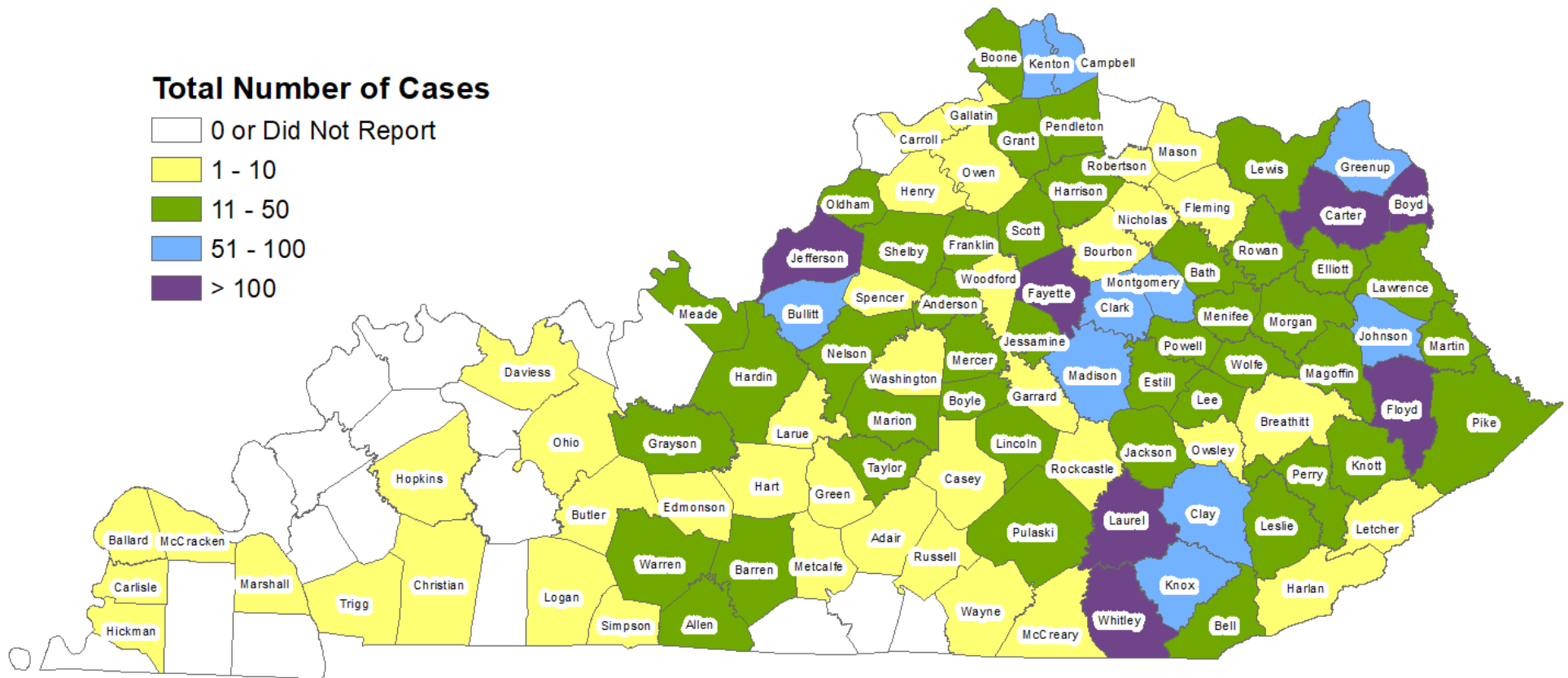
* Cases are reported based on date of specimen collection.

^ 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: 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 - December 29, 2018

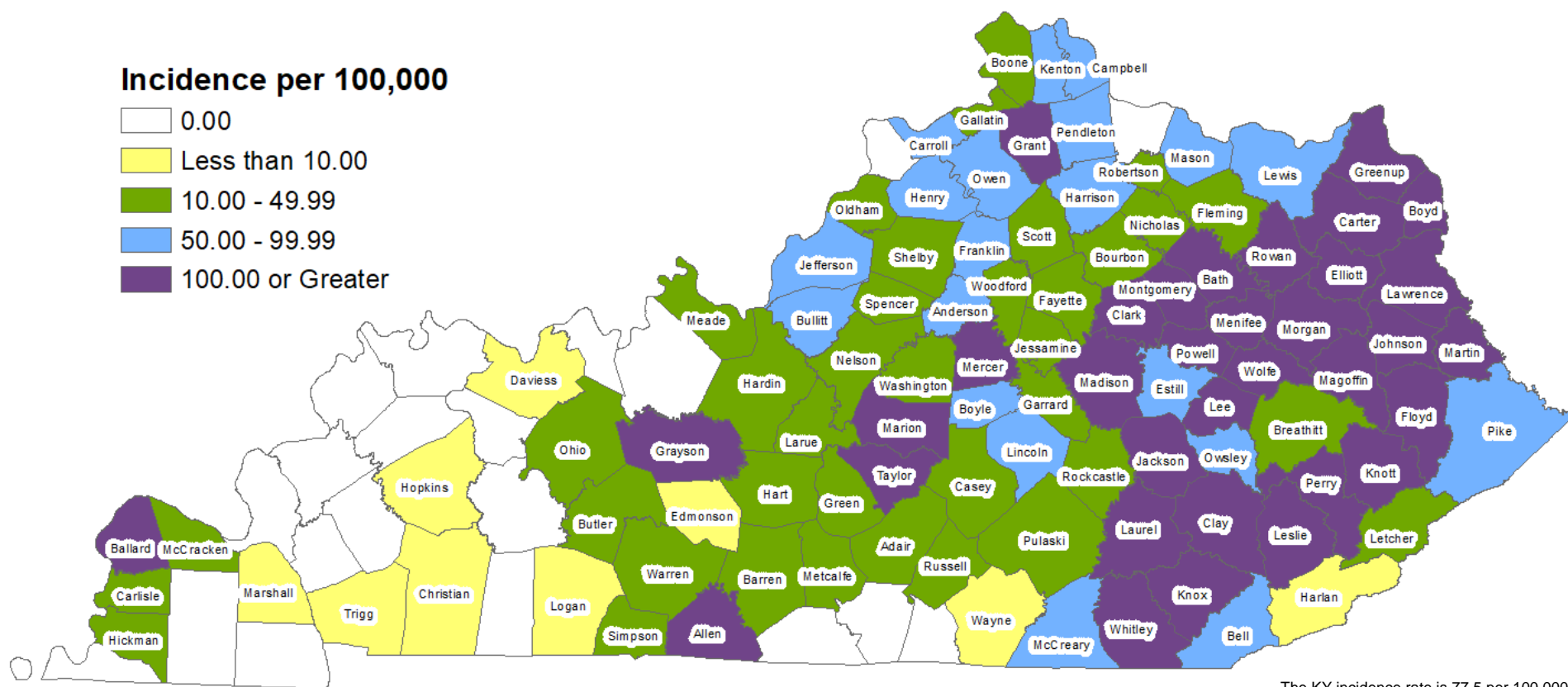


n = 100 counties with outbreak-associated cases

Counties where cases have not previously been identified: Harlan, Wayne.

Figure 2: Incidence of Outbreak-Associated Cases by County

KY17-089 Incidence of Outbreak-Associated Acute Hepatitis A Cases by County, August 1, 2017 - December 29, 2018



The KY incidence rate is 77.5 per 100,000.

Note: Rates calculated from numerators less than 20 may not be reliably used to determine trends.

KY17-089 Major Interstates and Syringe Exchange Programs in Counties Reporting Outbreak-Associated Acute Hepatitis A Cases, August 1, 2017 - December 29, 2018

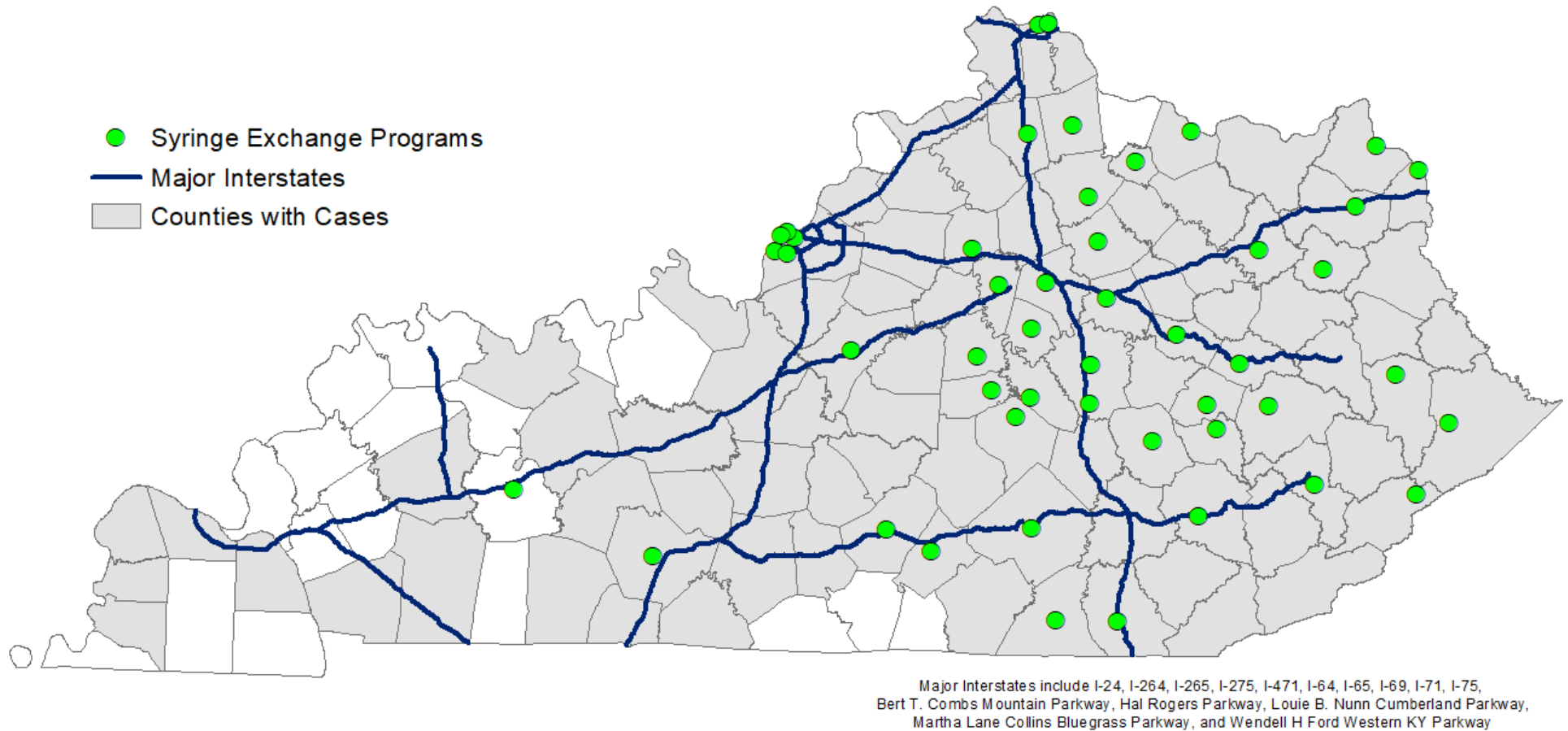
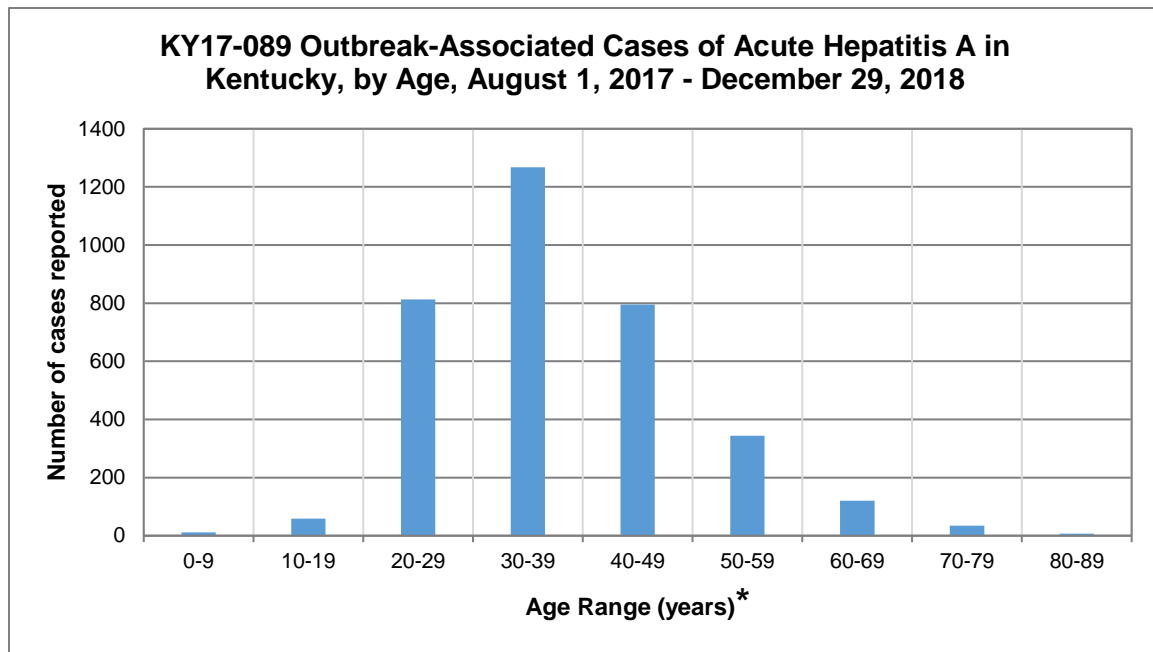


Figure 4: Outbreak-Associated Cases by Age



* The mean age of cases is 37.5 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 – December 29, 2018 ^{#^}	
Risk Factor	Number of Cases Reporting Risk Factor (n=2824) ^{* †}
Homelessness + No/Unk Illicit Drug Use	48 (1.7%)
Illicit Drug Use + No/Unk Homelessness	1973 (70%)
Homelessness + Illicit drug use	260 (9.2%)
No Outbreak-Related Risk Factors	543 (19%)

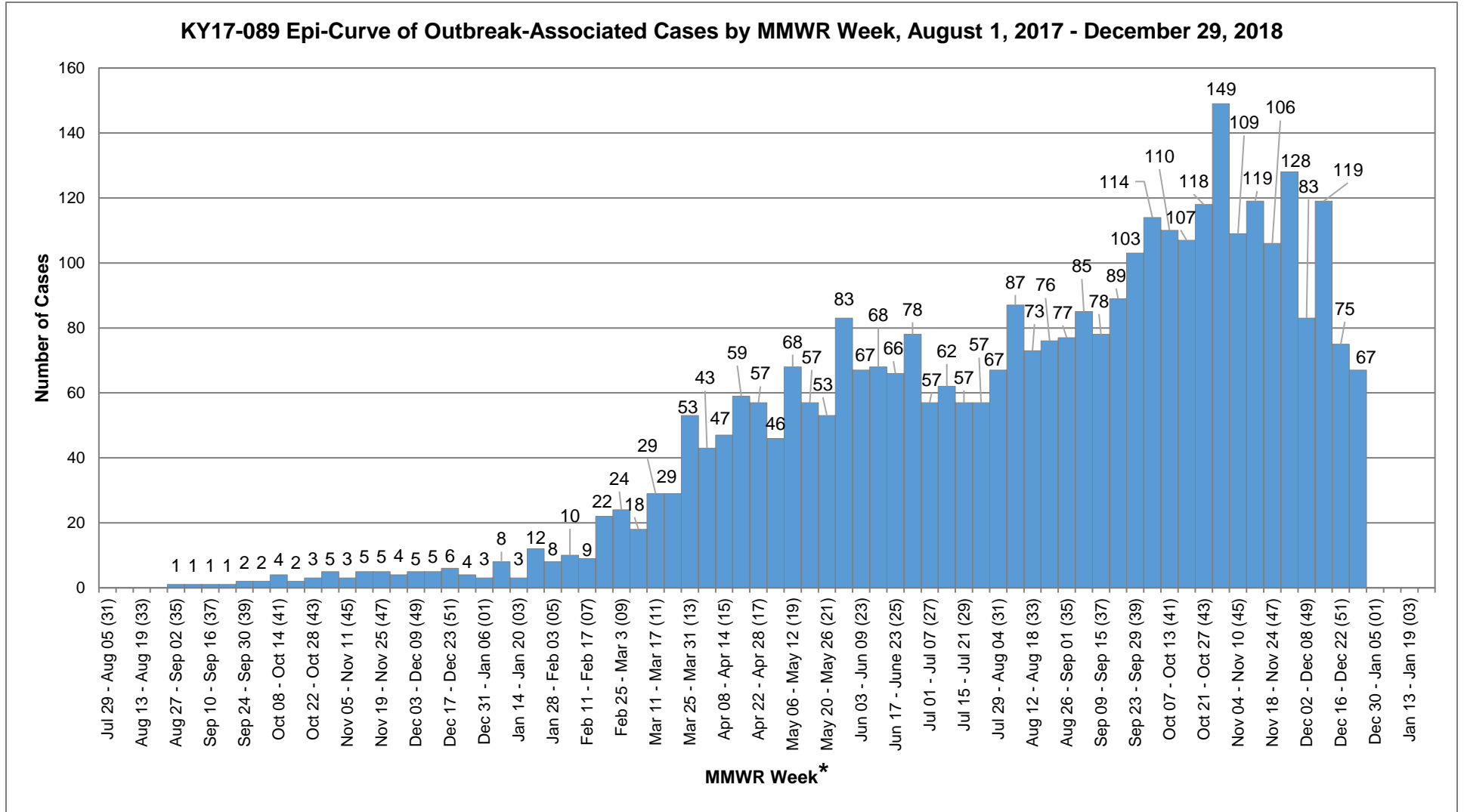
* Risk factor information is unavailable for 627 (18.2%) of all outbreak-associated cases.

† 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.

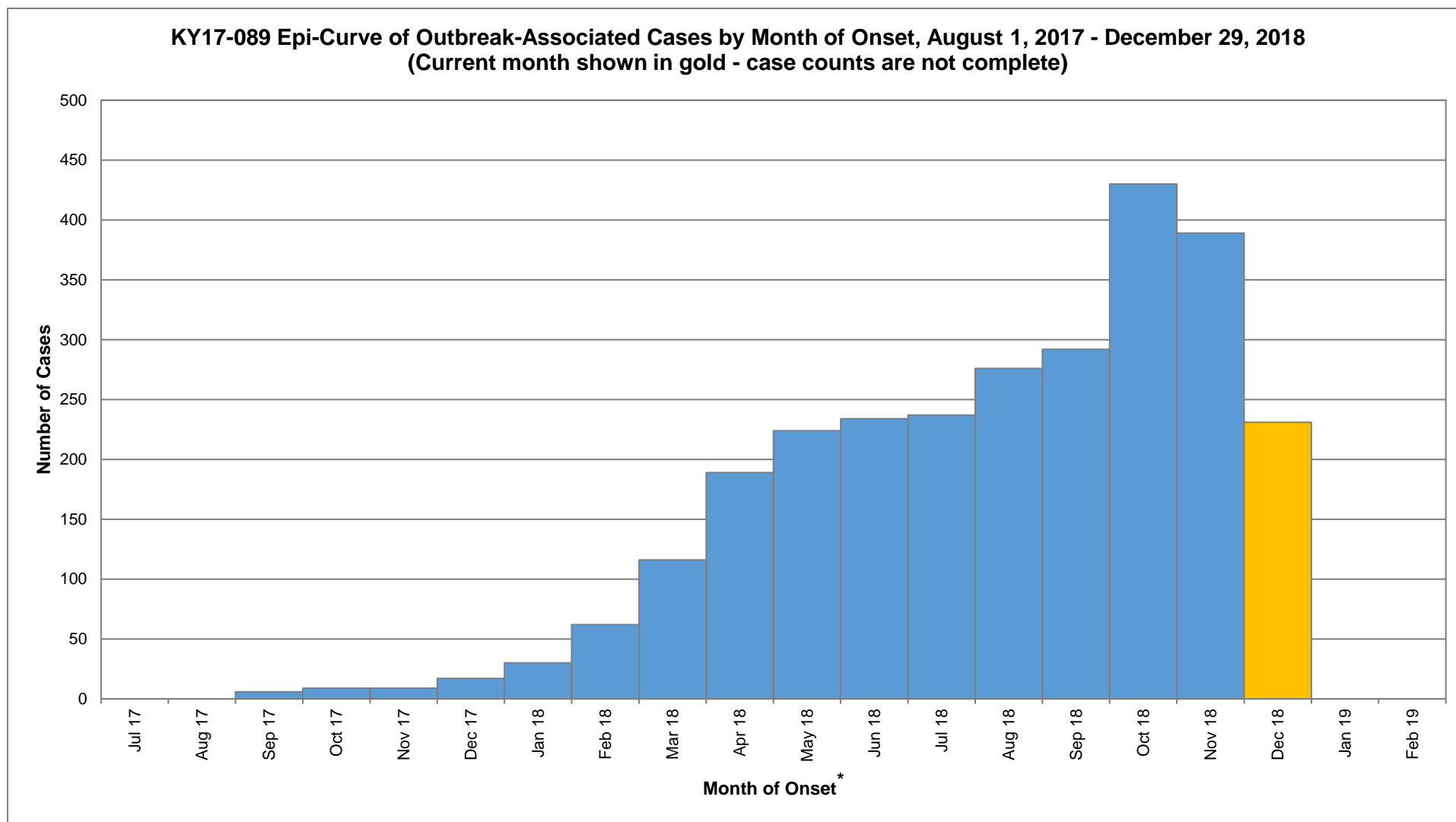
^ 35 MSM cases have been reported. Of those, 11 have reported no other risk factors.

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



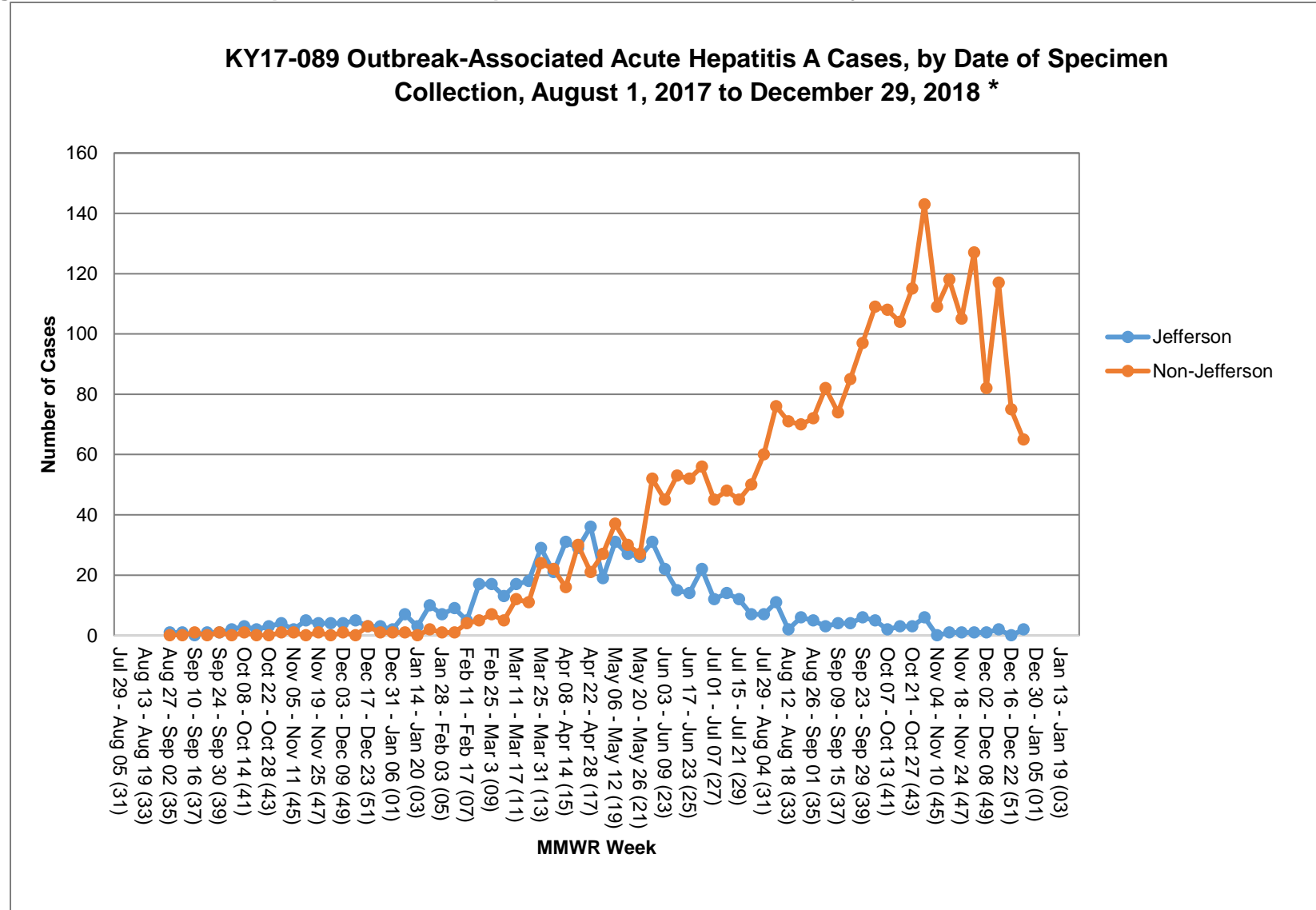
* MMWR weeks are based on date of specimen collection.

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



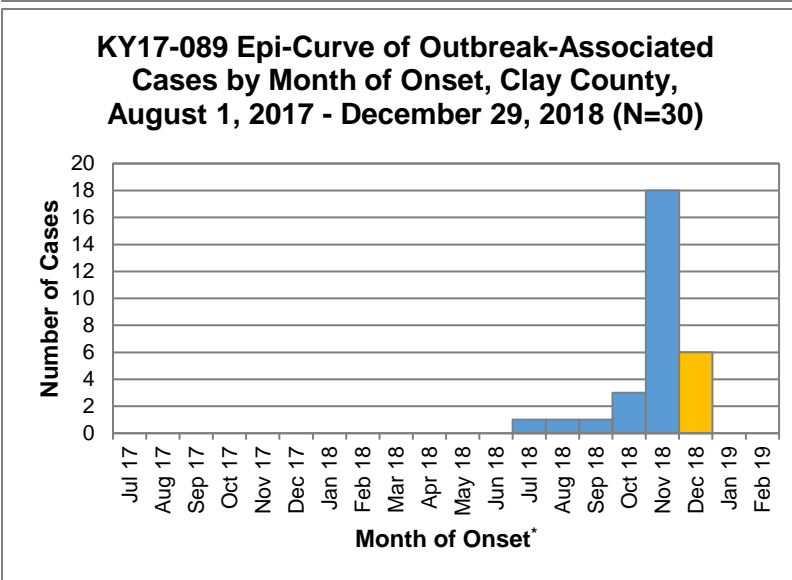
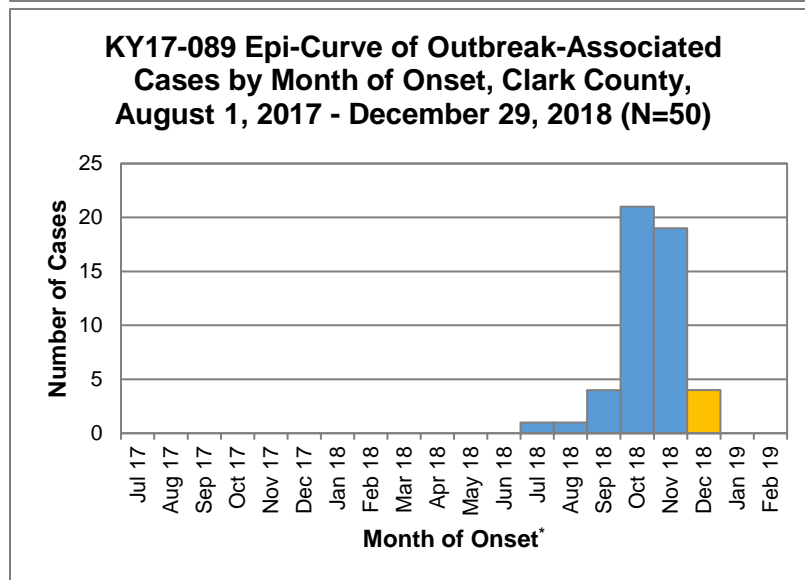
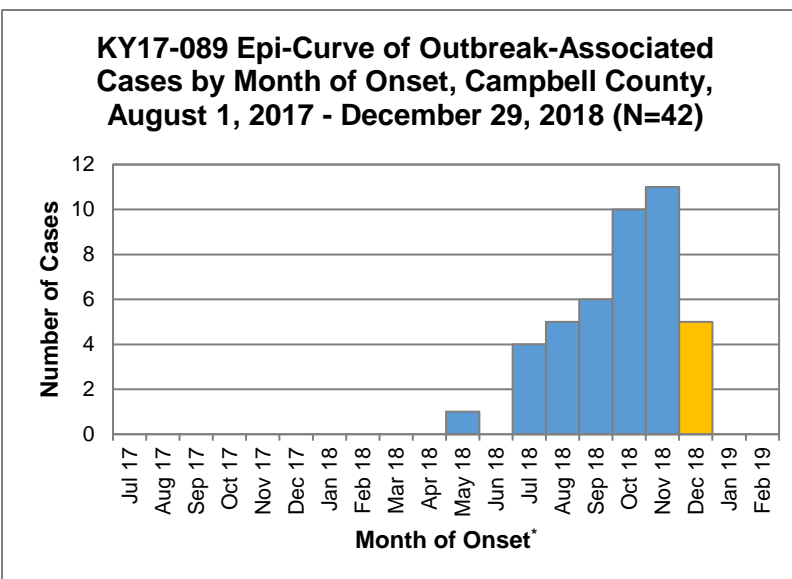
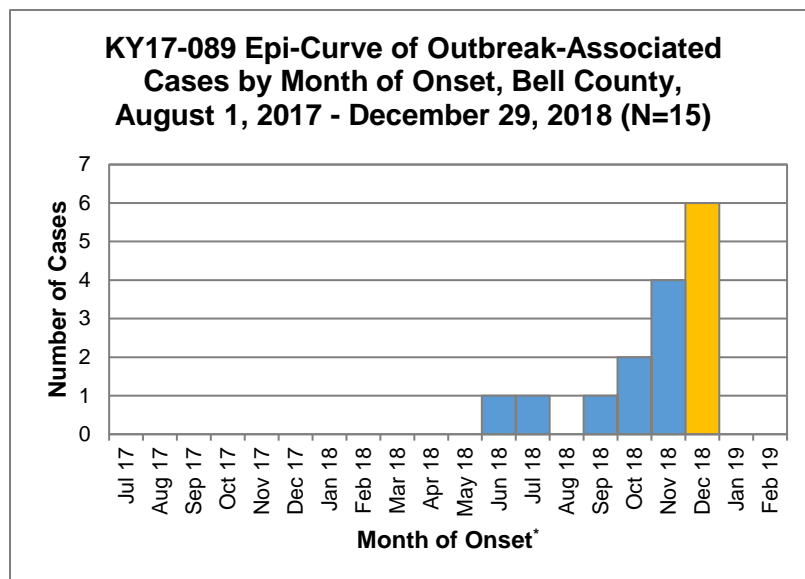
* Date of onset has been reported for 79.7% (or 2751/3451) of cases.

Figure 7: Case Count Comparison of Acute Hepatitis A cases, Jefferson County versus Non-Jefferson Counties

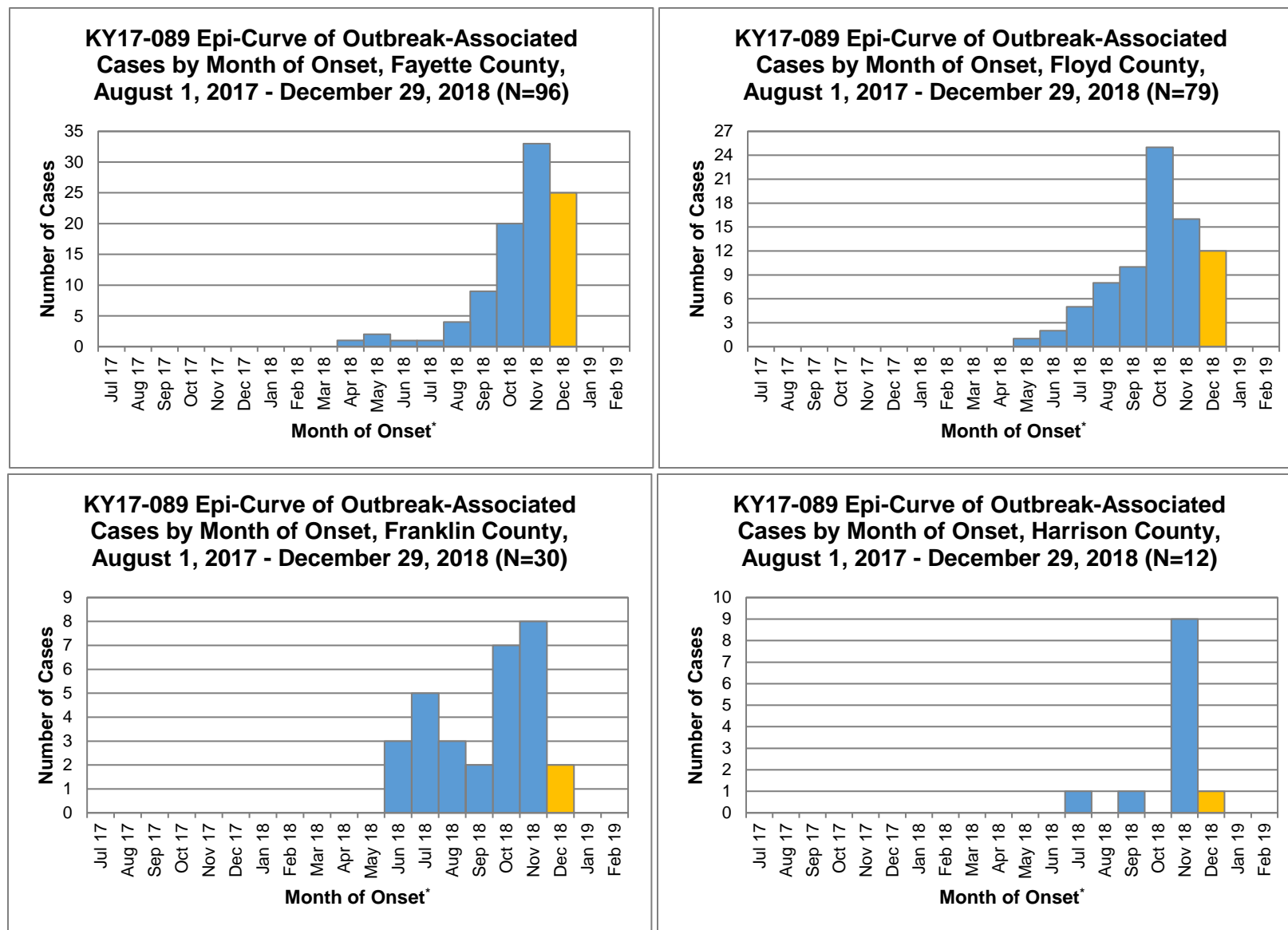


* MMWR weeks are based on date of specimen collection.

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 (Bell, Campbell, Clark, and Clay Counties)

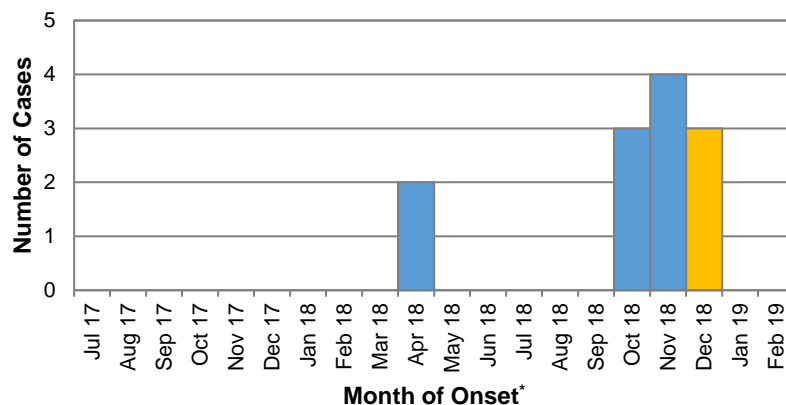


Figures 12-15: Epidemic-Curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 Reported Cases in the Last 50 days, by Month of Onset (Fayette, Floyd, Franklin, and Harrison Counties)

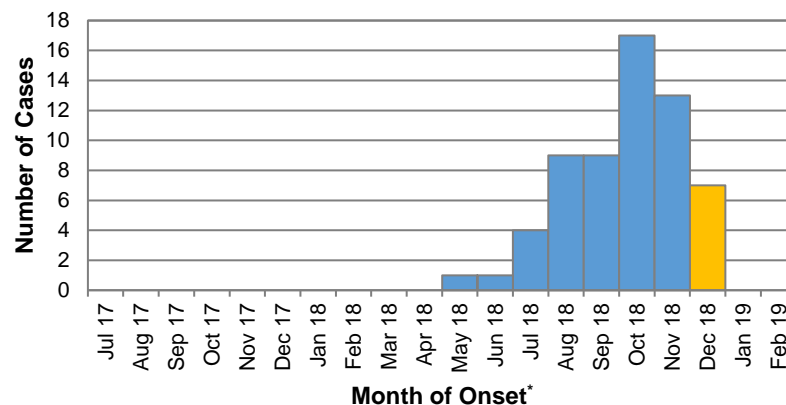


Figures 16-19: Epidemic-Curves (Epi-Curves) of Outbreak-Associated Cases in Counties with at least 10 Reported Cases in the Last 50 days, by Month of Onset (Jessamine, Johnson, Kenton, and Knox Counties)

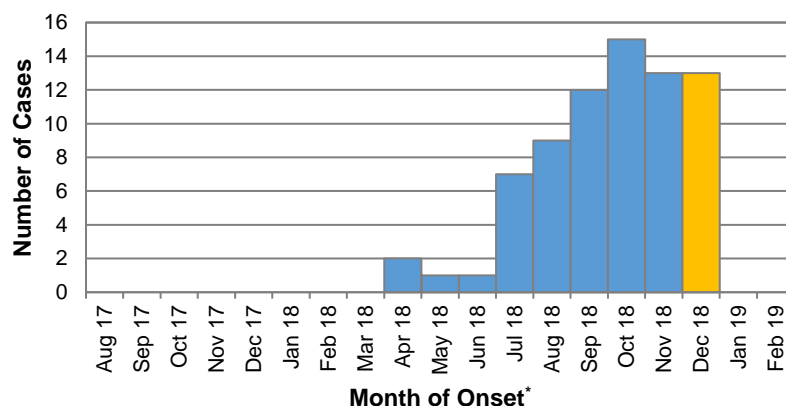
KY17-089 Epi-Curve of Outbreak-Associated Cases by Month of Onset, Jessamine County, August 1, 2017 - December 29, 2018 (N=12)



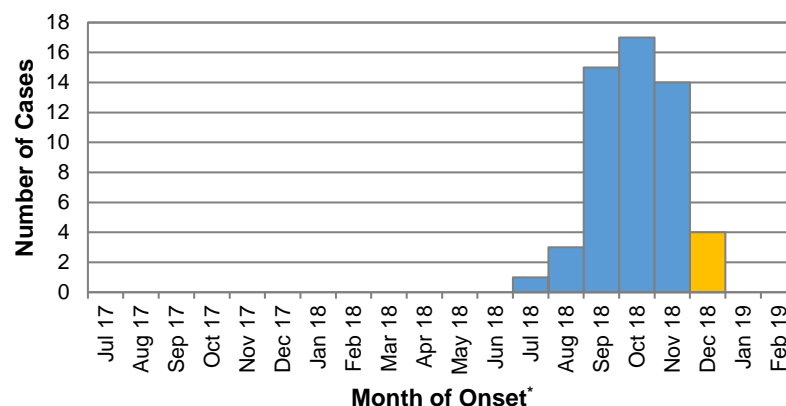
KY17-089 Epi-Curve of Outbreak-Associated Cases by Month of Onset, Johnson County, August 1, 2017 - December 29, 2018 (N=61)



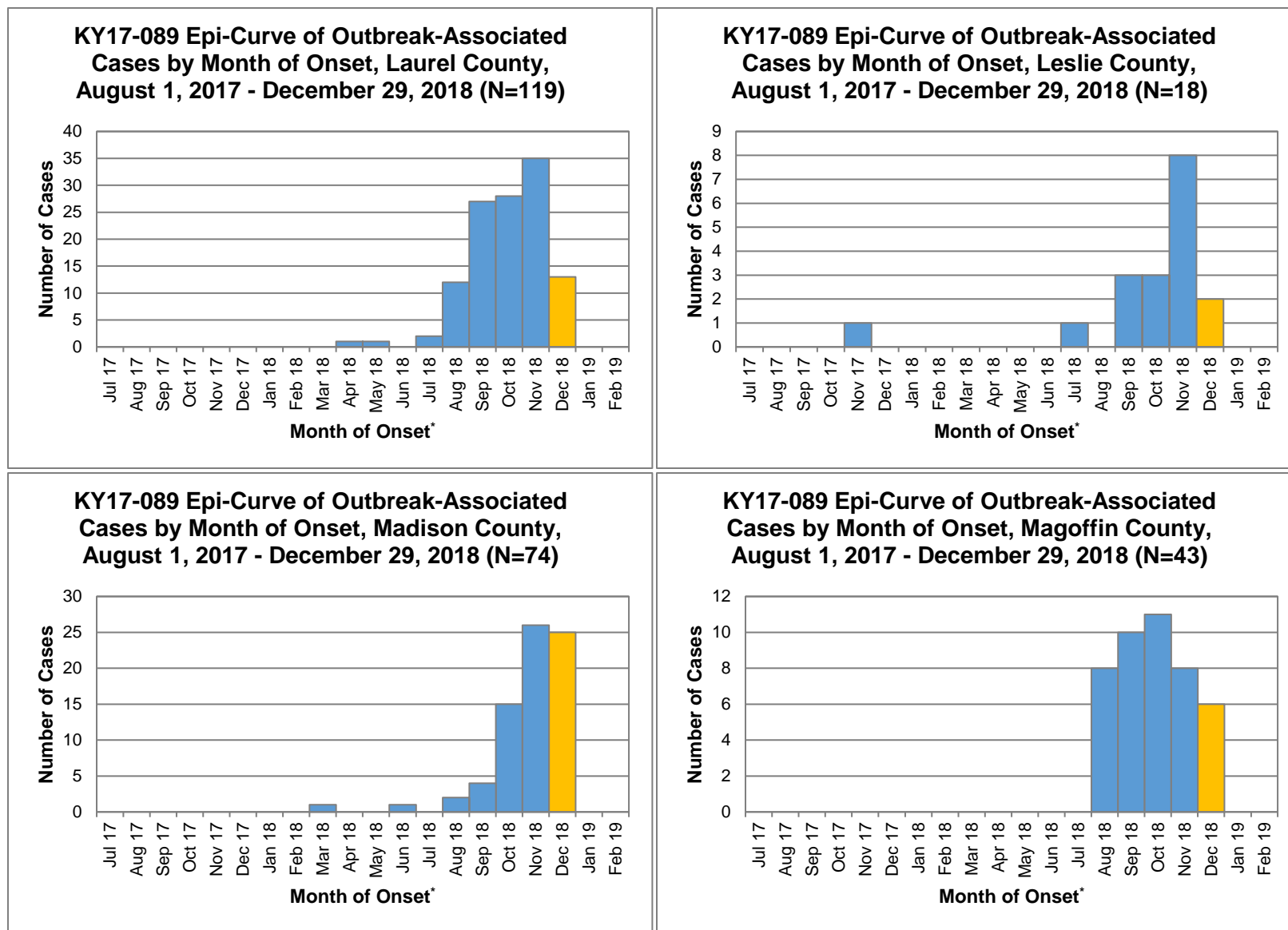
KY17-089 Epi-Curve of Outbreak-Associated Cases by Month of Onset, Kenton County, August 1, 2017 - December 29, 2018 (N=73)



KY17-089 Epi-Curve of Outbreak-Associated Cases by Month of Onset, Knox County, August 1, 2017 - December 29, 2018 (N=54)



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, Leslie, Madison, and Magoffin 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 (Perry, Pike, Whitley, and Wolfe Counties)

