



Kentucky Department for Public Health
KY17-089 - Acute Hepatitis A Outbreak Weekly Report
Morbidity and Mortality Weekly Report (MMWR) Week 12, 2019
March 17, 2019 – March 23, 2019

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 12:		Total Case Counts: 8/1/2017 – 3/23/2019:	
Number of new cases (n=28):	Confirmed[^] - 0 Probable - 18 Suspected - 10	Total number of cases (n=4419):	Confirmed[^] - 629 Probable - 2560 Suspected - 1230
Number of counties with new cases:	19	Total number of counties with cases:	105 (87.5% 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:	672 (15%)
Number of cases with genotype IB among those with genotype testing:	0	Total number of cases with genotype IB among those with genotype testing:	613 (91% of those tested)
Number of Hospitalizations:	20	Total Number of Hospitalizations:	2136 (48%)
Number of deaths Reported[†]:	0	Total number of deaths reported[†]:	52 (1.2%)

* 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 – March 23, 2019*^#					
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	44	4	28	12	210.2
Anderson	22	0	15	7	97.6
Ballard	12	4	5	3	149.3
Barren	16	1	15	0	36.5
Bath	37	1	14	22	298.9
Bell	41	0	27	14	152.5
Boone	57	4	31	22	43.6
Bourbon	11	0	9	2	54.9
Boyd	171	101	43	27	356.4
Boyle	29	0	17	12	96.9
Bracken	5	0	3	2	60.5
Breathitt	28	0	22	6	216.3
Bullitt	64	32	23	9	79.8
Butler	9	0	5	4	70.1
Campbell	68	2	56	10	73.5
Carlisle	1	0	1	0	20.6
Carroll	7	1	3	3	65.3
Carter	127	43	62	22	467.9
Casey	5	1	3	1	31.7
Christian	53	1	45	7	75.3
Clark	93	0	57	36	258.0

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – March 23, 2019*^#**

County	Total number of cases reported	Number of confirmed cases	Number of probable cases	Number of suspected cases	Incident Rate per 100,000 population
Clay	76	0	37	39	373.2
Crittenden	2	0	1	1	22.0
Daviess	4	0	2	2	4.0
Edmonson	1	0	1	0	8.2
Elliott	23	4	4	15	305.7
Estill	15	0	13	2	105.1
Fayette	192	4	142	46	59.6
Fleming	4	0	0	4	27.7
Floyd	139	1	77	61	383.2
Franklin	56	1	42	13	110.9
Gallatin	7	0	5	2	79.8
Garrard	17	0	12	5	97.0
Grant	42	3	33	6	168.1
Grayson	30	2	25	3	113.8
Green	3	0	3	0	27.1
Greenup	61	30	19	12	171.7
Hardin	40	10	10	20	37.0
Harlan	14	0	8	6	52.4
Harrison	22	0	13	9	117.1
Hart	2	0	2	0	10.7
Henry	10	3	5	2	62.5
Hickman	1	0	0	1	22.1
Hopkins	11	0	8	3	24.2

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – March 23, 2019*^#**

County	Total number of cases reported	Number of confirmed cases	Number of probable cases	Number of suspected cases	Incident Rate per 100,000 population
Jackson	21	0	12	9	156.4
Jefferson	656	310	235	111	85.1
Jessamine	52	0	31	21	97.4
Johnson	80	0	44	36	354.1
Kenton	114	7	88	19	68.9
Knott	34	1	22	11	222.4
Knox	94	0	61	33	301.0
Larue	3	0	1	2	21.1
Laurel	212	0	158	54	352.3
Lawrence	24	3	14	7	152.7
Lee	33	0	31	2	502.3
Leslie	35	0	31	4	338.7
Letcher	7	0	5	2	31.3
Lewis	26	0	15	11	194.9
Lincoln	35	2	22	11	143.1
Logan	2	0	2	0	7.4
Madison	143	2	98	43	156.8
Magoffin	54	0	32	22	430.7
Marion	23	1	17	5	118.6
Marshall	2	0	1	1	6.4
Martin	40	0	29	11	349.3
Mason	22	0	14	8	128.1
McCracken	12	3	4	5	18.4

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 –March 23, 2019*^#**

County	Total number of cases reported	Number of confirmed cases	Number of probable cases	Number of suspected cases	Incident Rate per 100,000 population
McCreary	17	0	13	4	97.3
Meade	12	1	1	10	42.6
Menifee	17	0	11	6	263.4
Mercer	38	0	24	14	176.6
Metcalfe	2	0	1	1	19.8
Monroe	1	0	0	1	9.4
Montgomery	93	6	65	22	333.0
Morgan	23	1	18	4	174.4
Nelson	19	4	6	9	41.6
Nicholas	2	0	0	2	28.1
Ohio	6	0	3	3	24.8
Oldham	16	4	8	4	24.1
Owen	12	0	10	2	111.5
Owsley	10	0	8	2	225.5
Pendleton	23	0	16	7	157.8
Perry	83	0	60	23	312.6
Pike	75	0	55	20	127.4
Powell	48	0	30	18	387.9
Pulaski	53	0	36	17	82.2
Robertson	1	0	1	0	46.9
Rockcastle	20	0	11	9	119.8
Rowan	48	1	31	16	195.8
Russell	2	0	1	1	11.3

**KY17-089 Distribution Of Outbreak-Associated Acute Hepatitis A Cases,
by County, August 1, 2017 – March 23, 2019*^#**

County	Total number of cases reported	Number of confirmed cases	Number of probable cases	Number of suspected cases	Incident Rate per 100,000 population
Scott	21	0	13	8	38.3
Shelby	22	9	11	2	46.4
Simpson	6	0	6	0	33.1
Spencer	8	3	4	1	43.2
Taylor	50	2	35	13	196.3
Trigg	3	0	3	0	20.8
Union	2	0	1	1	13.6
Warren	42	9	25	8	32.6
Washington	9	0	6	3	74.2
Wayne	1	0	0	1	4.8
Webster [^]	1	0	1	0	7.7
Whitley	194	7	103	84	535.7
Wolfe	26	0	18	8	357.9
Woodford	14	0	10	4	53.1
Total Number of Cases:	4419	629	2560	1230	99.2

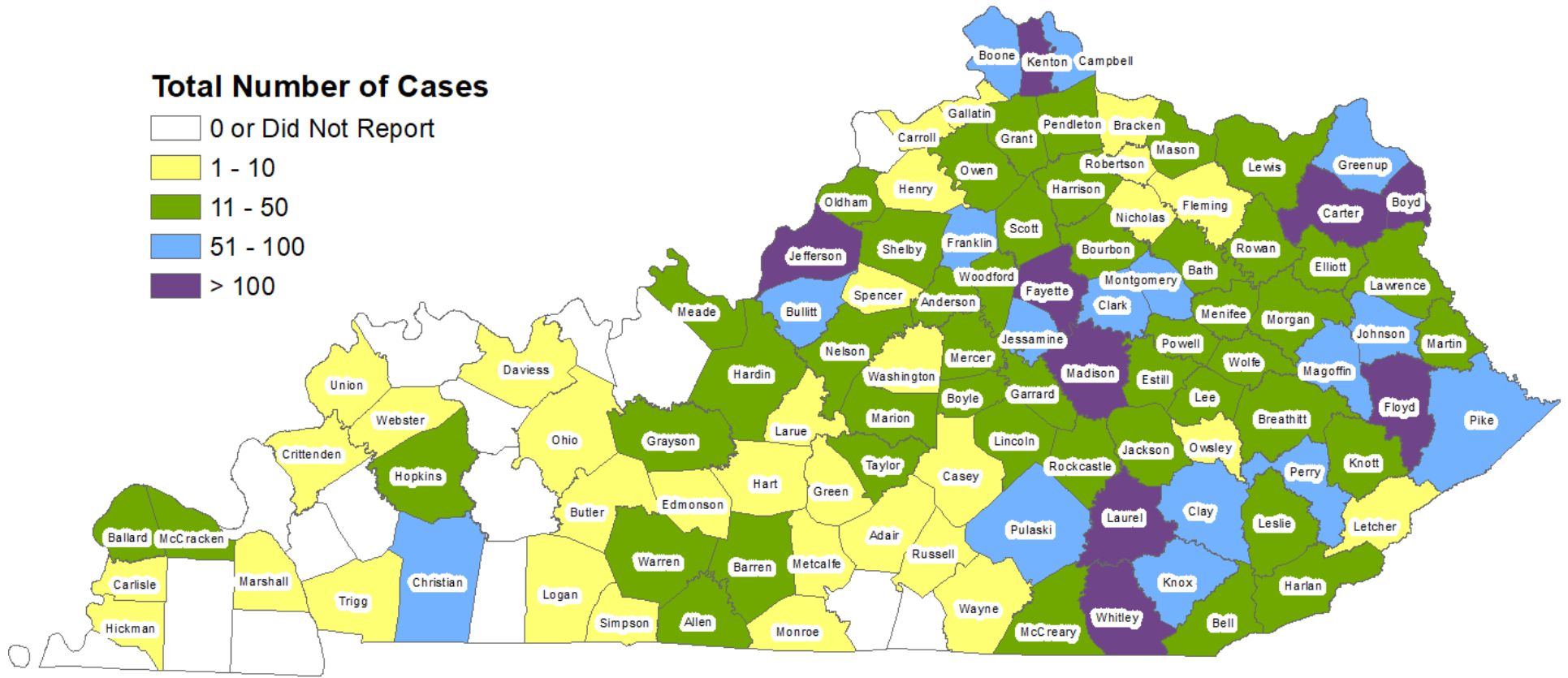
* Cases are reported based on date of specimen collection.

[^] 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 - March 23, 2019

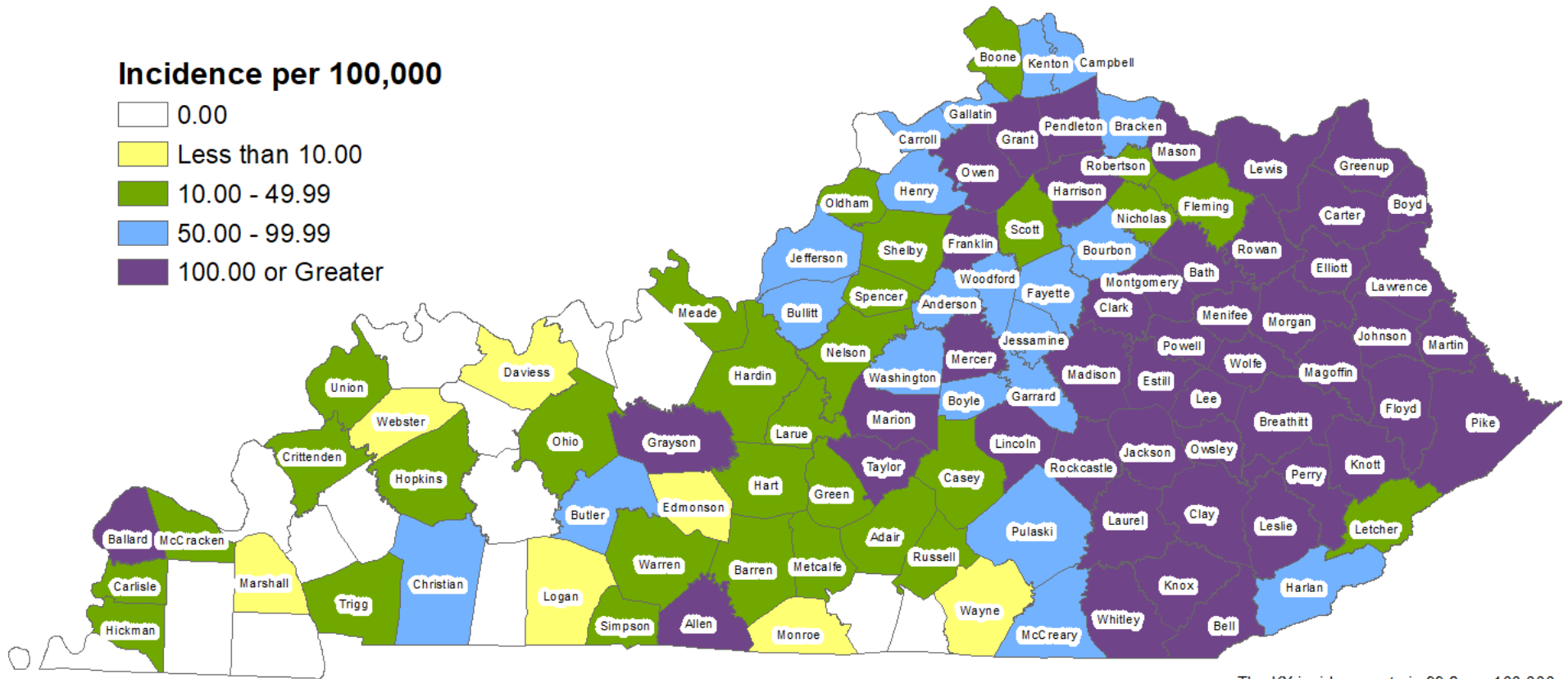


n = 105 counties with outbreak-associated cases

Counties where cases have not previously been identified: Webster.

Figure 2: Incidence of Outbreak-Associated Cases by County

KY17-089 Incidence of Outbreak-Associated Acute Hepatitis A Cases by County, August 1, 2017 - March 23, 2019



The KY incidence rate is 99.2 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 - March 23, 2019

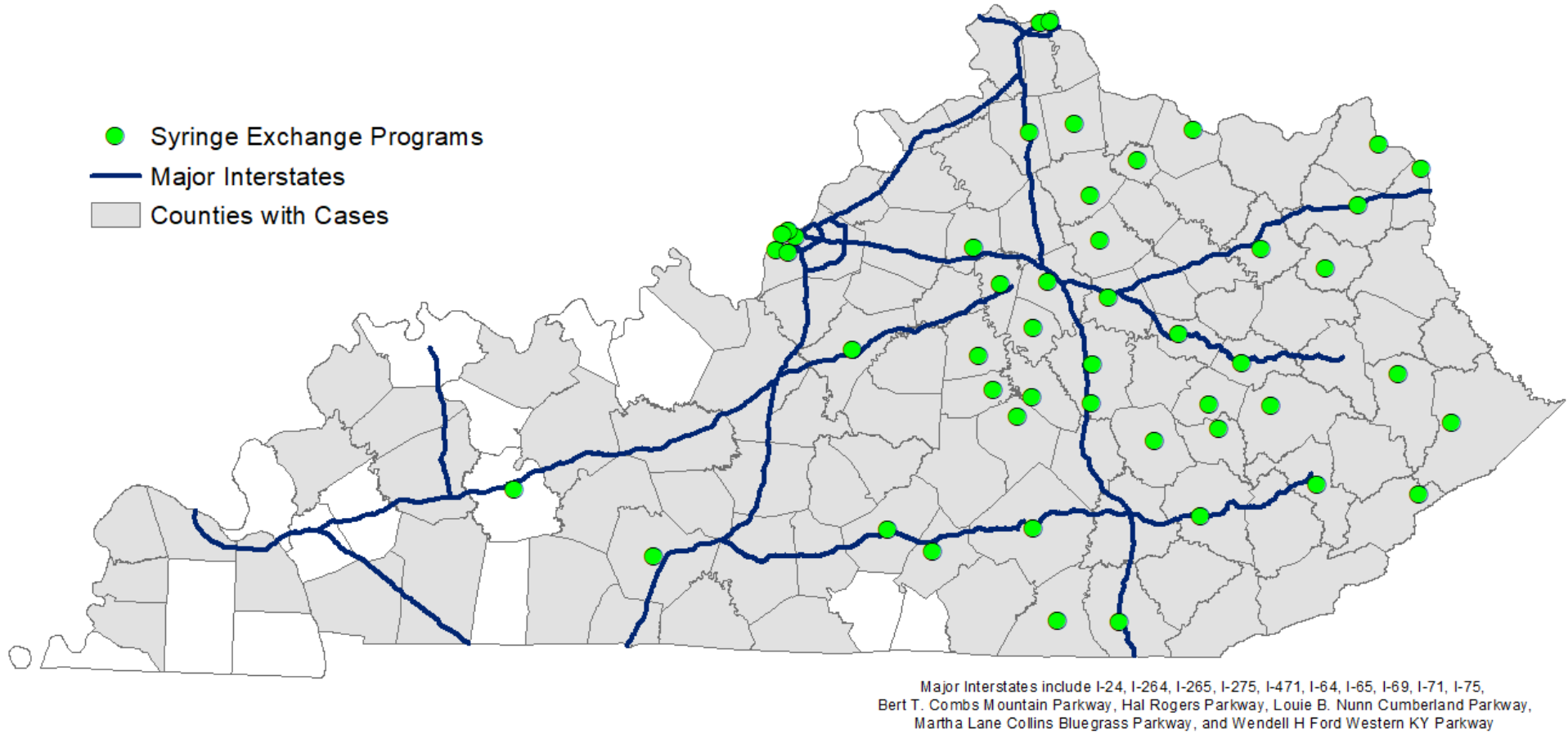
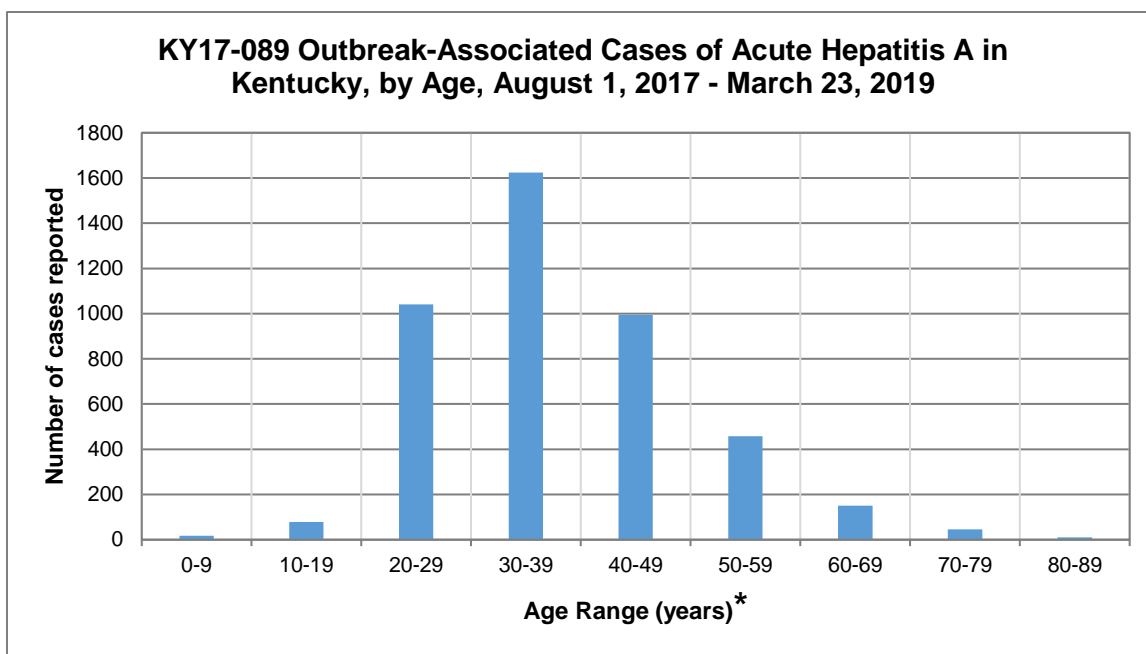


Figure 4: Outbreak-Associated Cases by Age



* The mean age of cases is 37.6 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 – March 23, 2019 ^{#^}	
Risk Factor	Number of Cases Reporting Risk Factor (n=3576) ^{* †}
Homelessness + No/Unk Illicit Drug Use	55 (1.5%)
Illicit Drug Use + No/Unk Homelessness	2554 (71%)
Homelessness + Illicit drug use	288 (8.1%)
No Outbreak-Related Risk Factors	679 (19%)

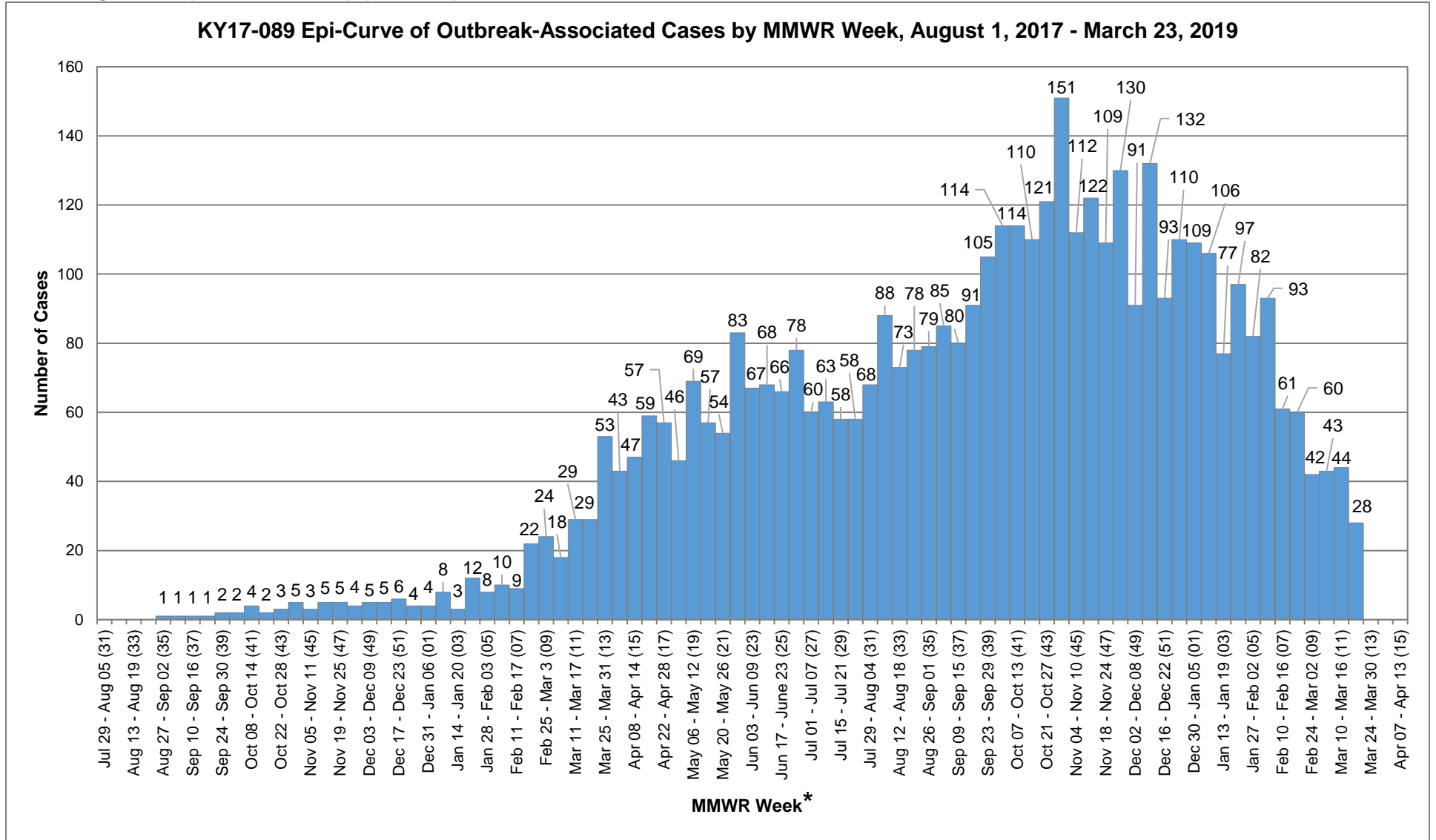
* Risk factor information is unavailable for 843 (19.1%) of all outbreak-associated cases.

† 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.

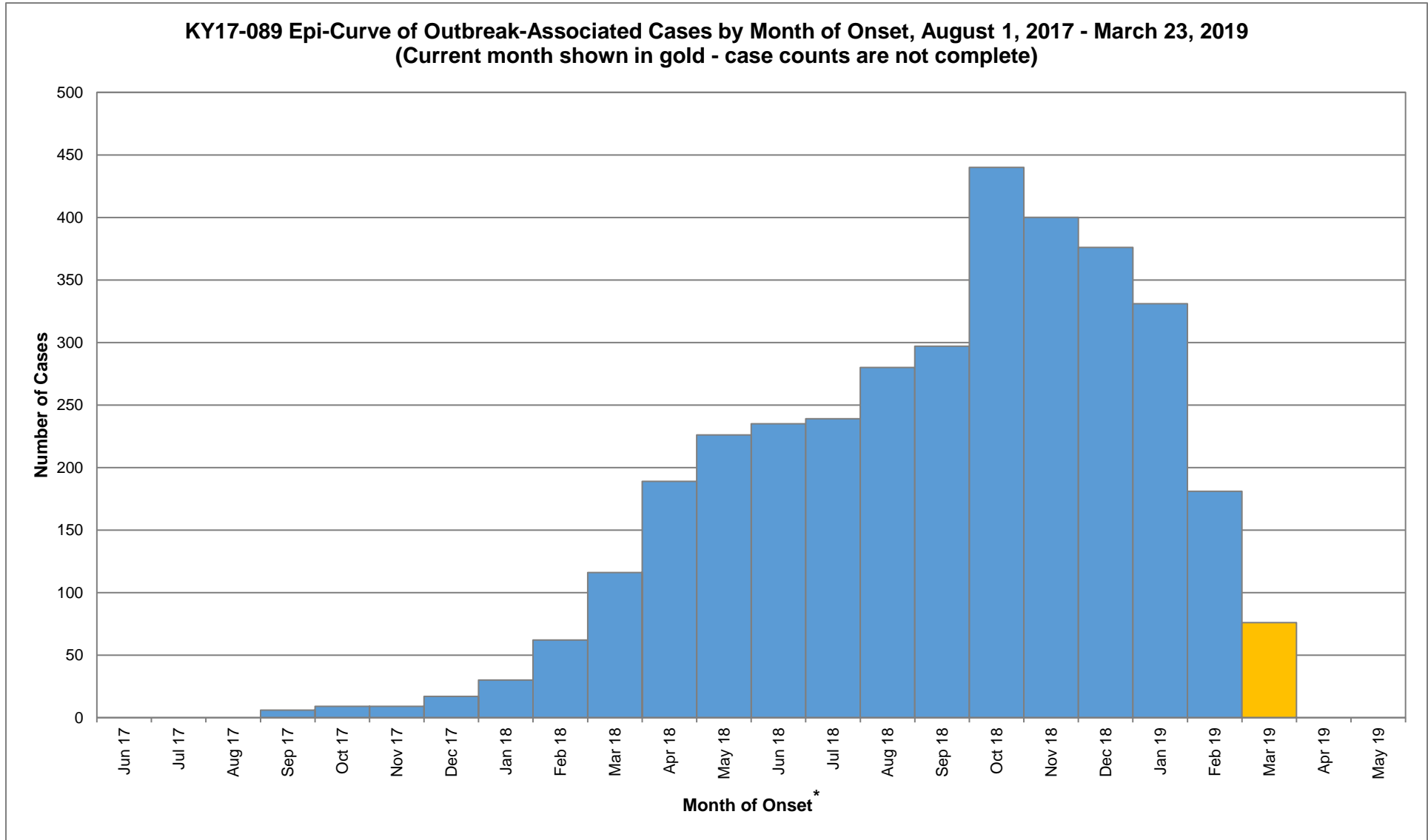
^ 35 MSM cases have been reported. Of those, 11 have reported no other risk factors.

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



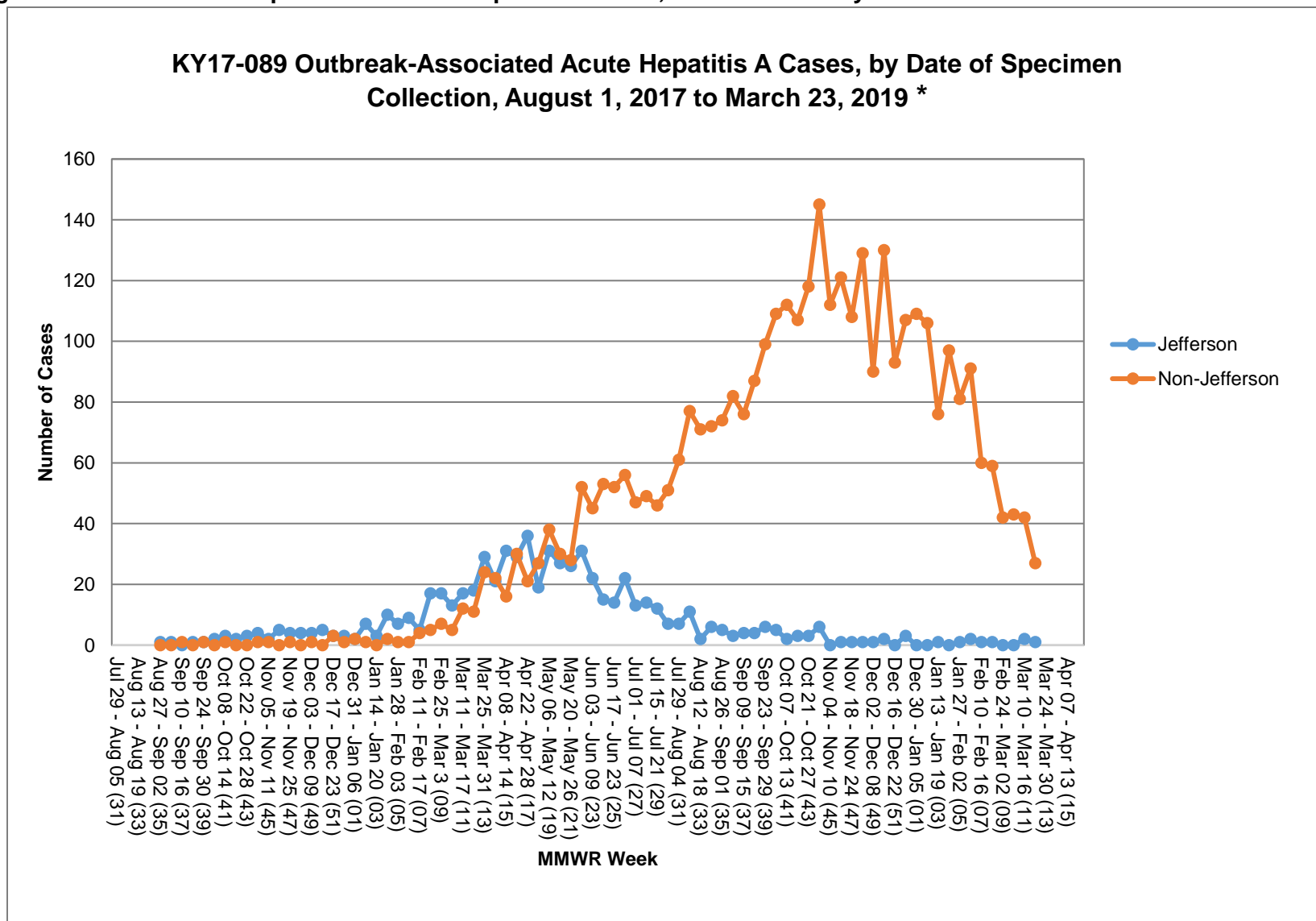
* MMWR weeks are based on date of specimen collection.

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



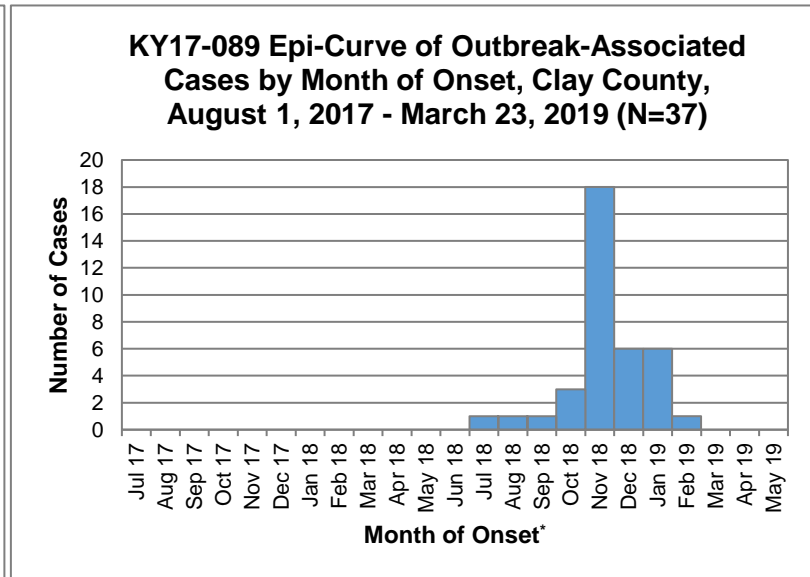
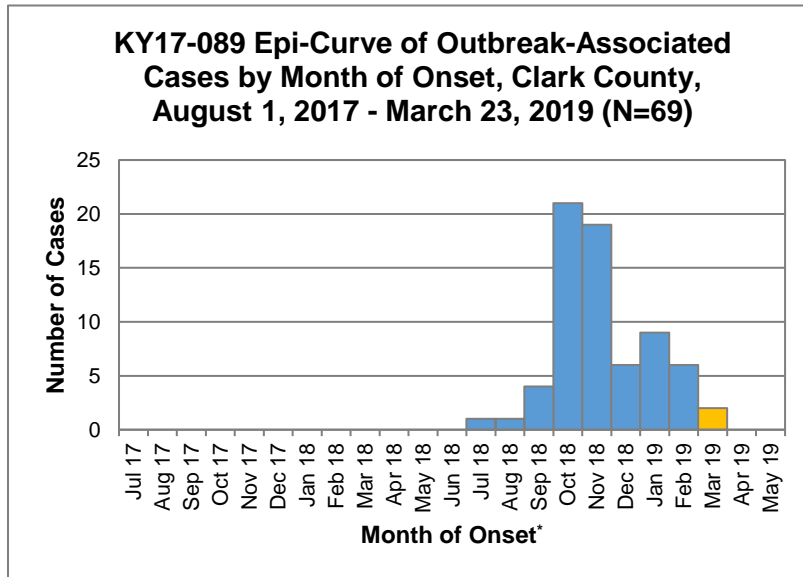
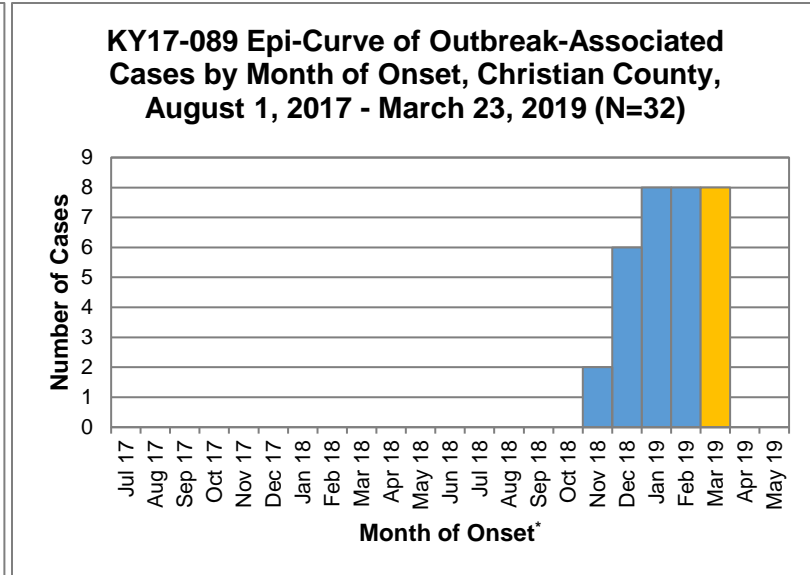
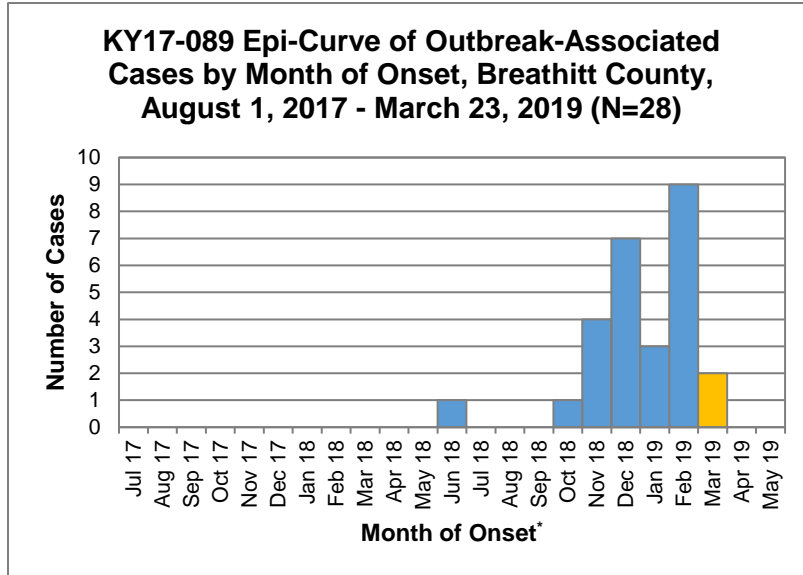
* Date of onset has been reported for 73.8% (or 3519/4419) of cases.

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

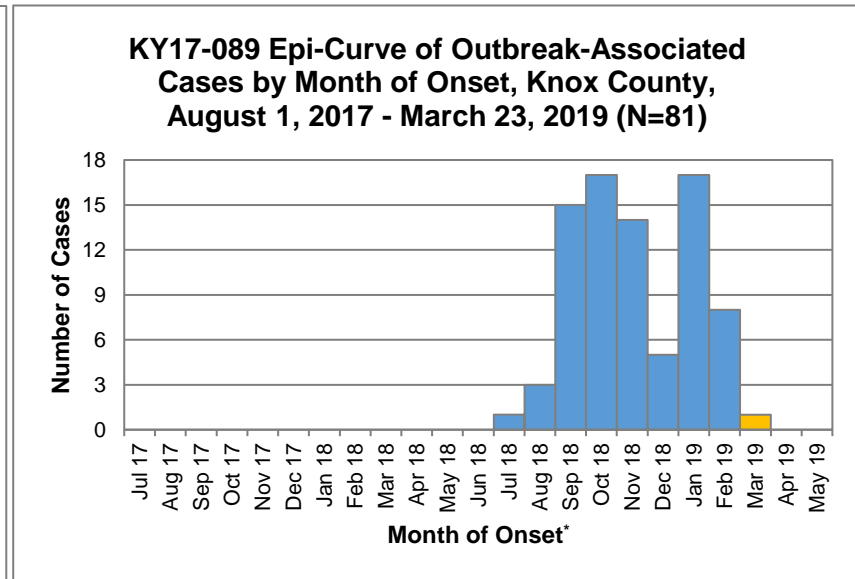
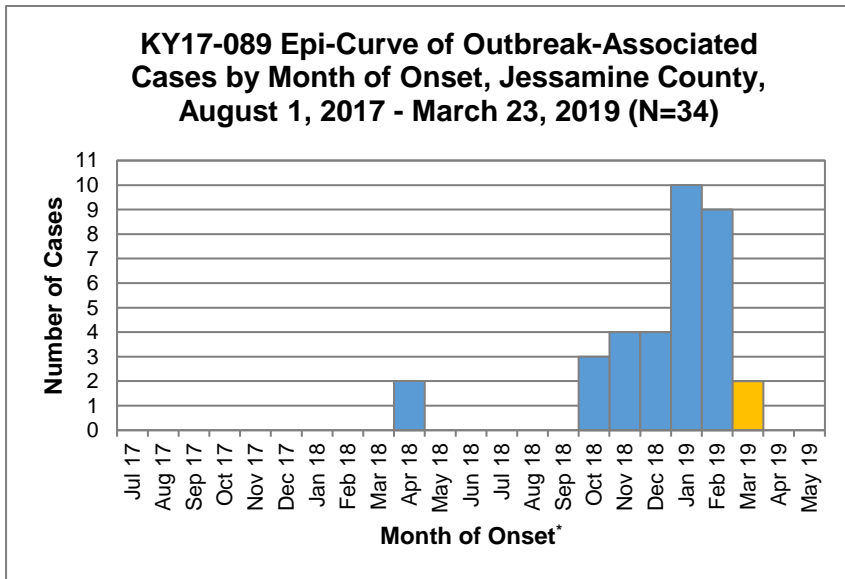
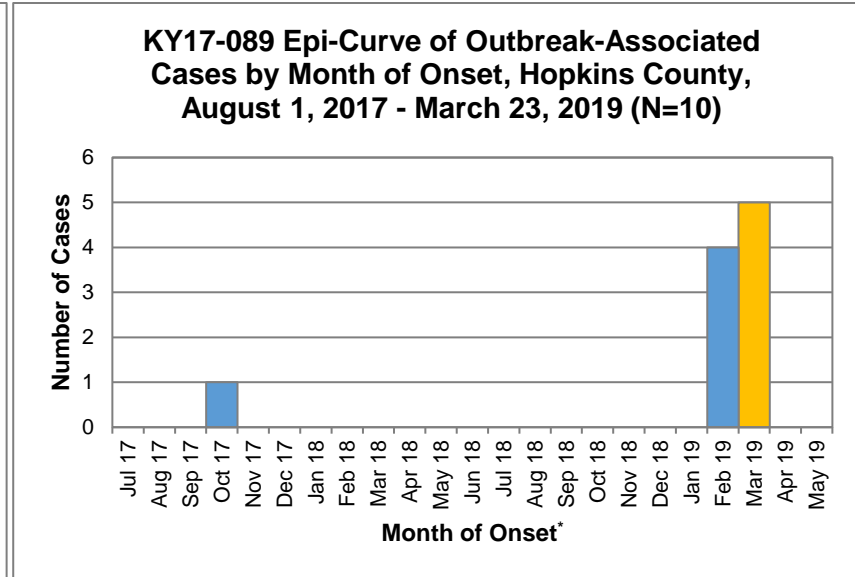
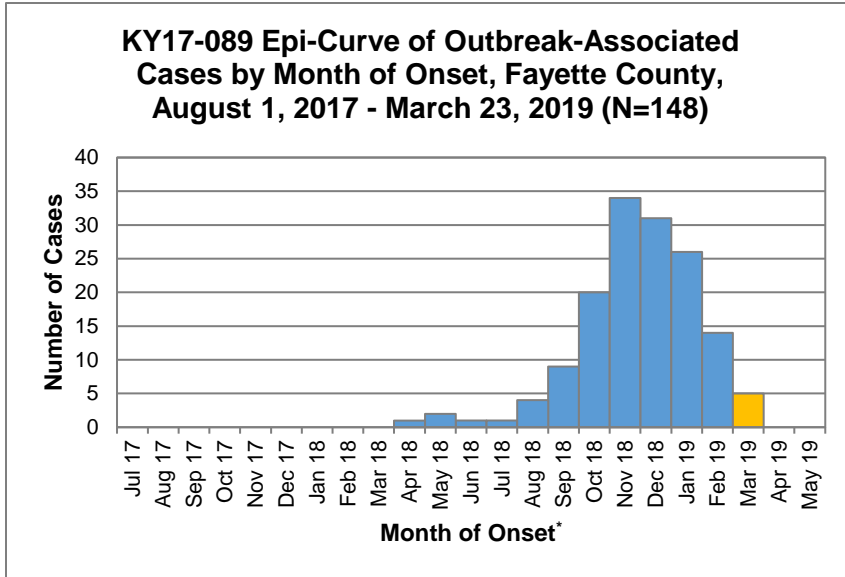


* MMWR weeks are based on date of specimen collection.

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 (Breathitt, Christian, 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, Hopkins, Jessamine, and Knox 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 (Laurel, Lincoln, Madison, and Perry Counties)

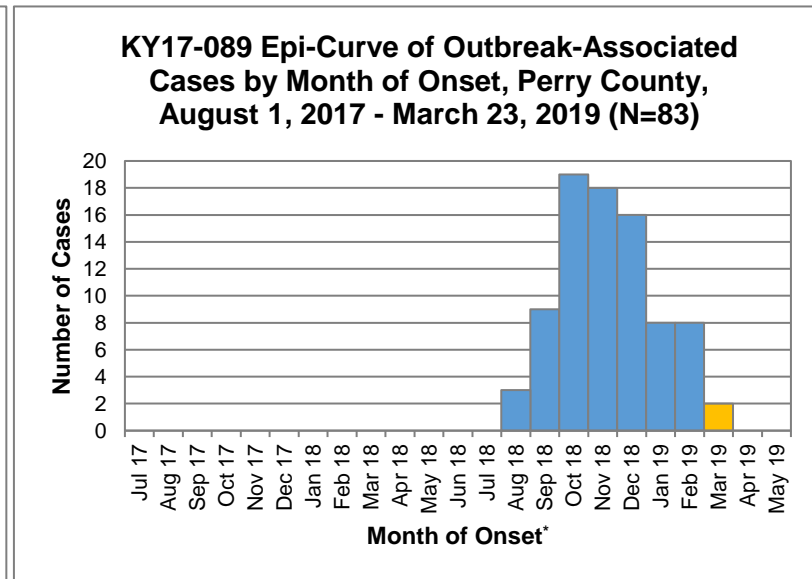
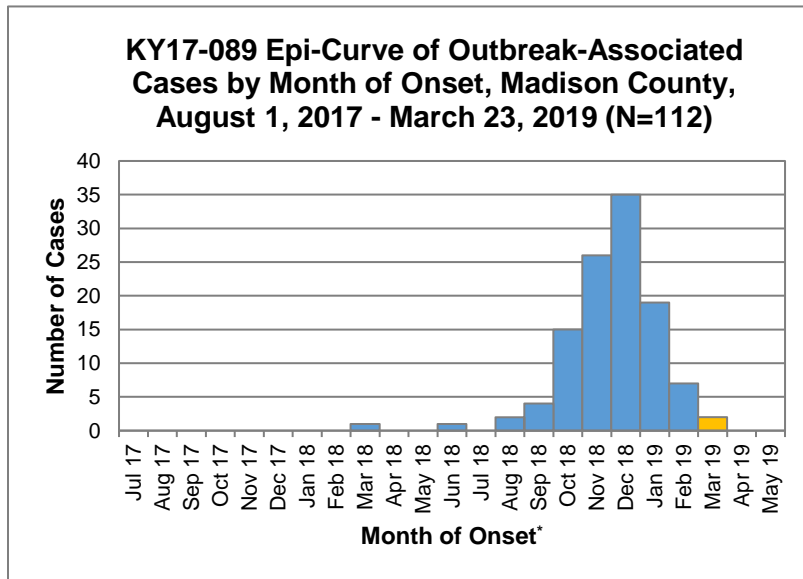
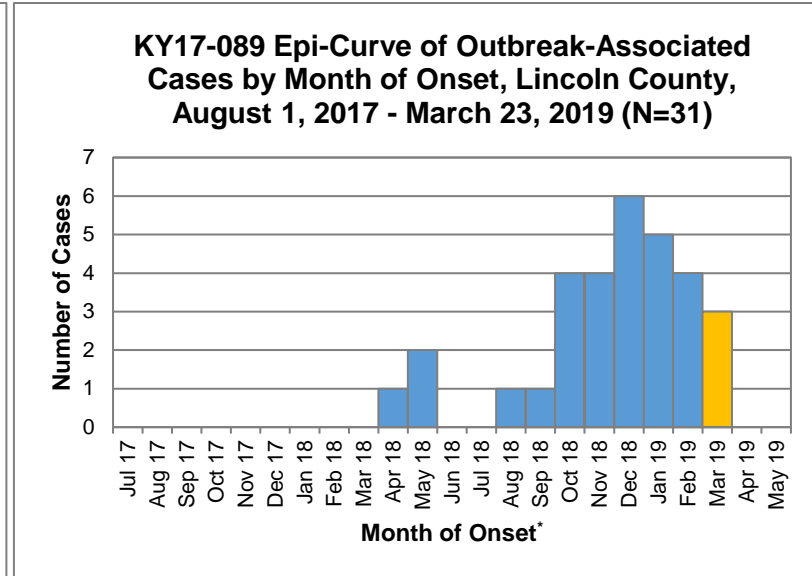
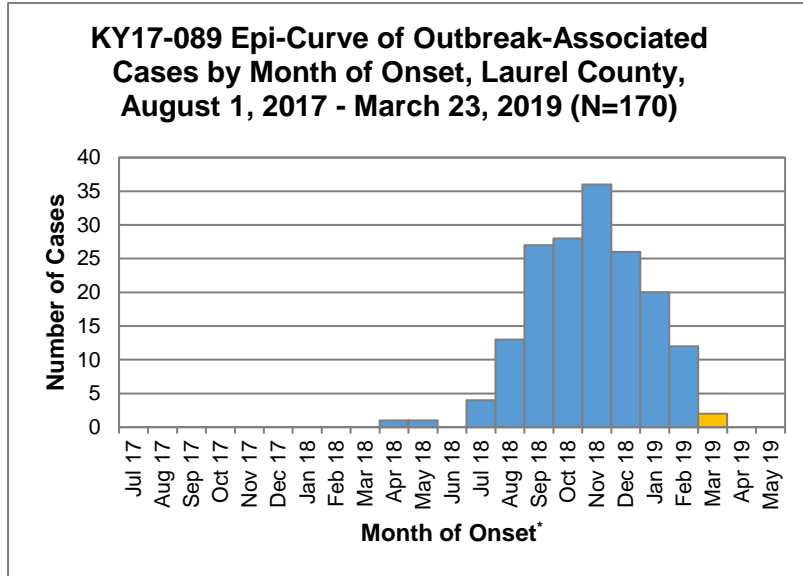


Figure 20: Epidemic-Curve (Epi-Curve) of Outbreak-Associated Cases in County with at least 10 Reported Cases in the Last 50 days, by Month of Onset (Pulaski County)

