

# INFECTIOUS DISEASE OUTBREAK SUMMARY REPORT

2012



## 2012 Infectious Disease Outbreak Summary Report

Arizona Department of Health Services  
Office of Infectious Disease Services

### **OVERVIEW**

Outbreak detection and response are key components of a state's capacity and are essential for prevention and control of illness in a population. To monitor Arizona's progress in detecting and responding to reported outbreaks, the Arizona Department of Health Services (ADHS) along with county health departments developed a standardized outbreak summary form based on Centers for Disease Control and Prevention (CDC) performance indicator variables. These indicators are meant to be used by state and local health agencies to evaluate the performance of their outbreak response and control programs and identify specific needs for improvement. The overall goal of outbreak surveillance and investigations in Arizona is to track and record outbreaks in a centralized and standardized manner and use the results as a tool to respond to outbreaks appropriately.

In Arizona, healthcare providers (HCP), healthcare institutions, correctional facilities, and administrators of schools and shelters are required to report outbreaks of infectious diseases to their county health department under [Arizona Administrative Code \(A.A.C.\) R9-6-202 and R9-6-203](#) and [Arizona Revised Statutes \(A.R.S.\) Title 36](#). Hotels, motels, and resorts are also required to report contagious or epidemic diseases occurring in their establishments within 24 hours under A.R.S. 36-622. Outbreaks are reportable to ADHS within one working day after a county health department receives a report (A.A.C. R9-6-206F). The information provided at time of report includes location/setting of outbreak, number of cases and suspect cases, the date reported, the disease suspected, and important contact information.

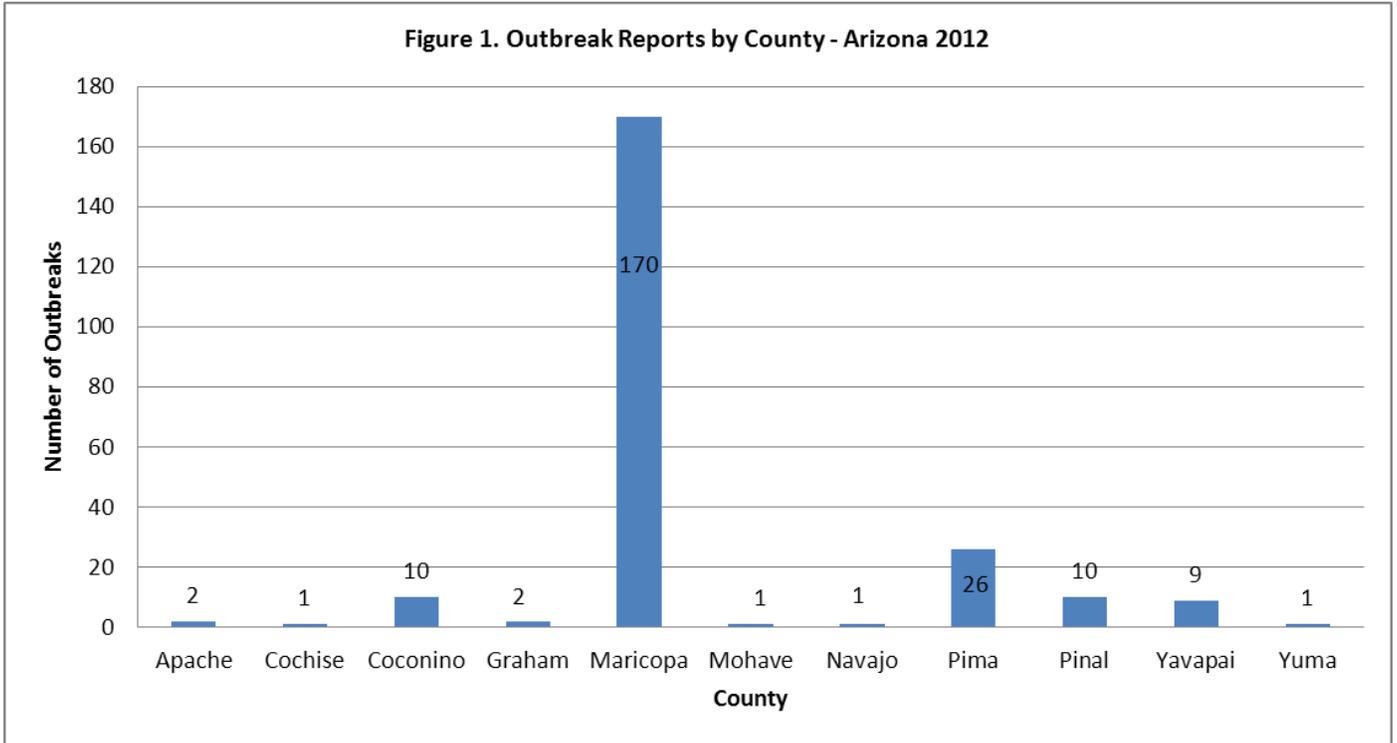
The performance goals for outbreak tracking and response in Arizona are as follows:

1.  $\geq 90\%$  of reported outbreaks will have an investigation initiated within 24 hours of receipt of report.
2.  $\geq 95\%$  of outbreaks will be reported to ADHS by the local health department within 24 hours of receipt of report.
3. Reports of 100% of investigations will be forwarded to ADHS within 30 days after completion of investigation

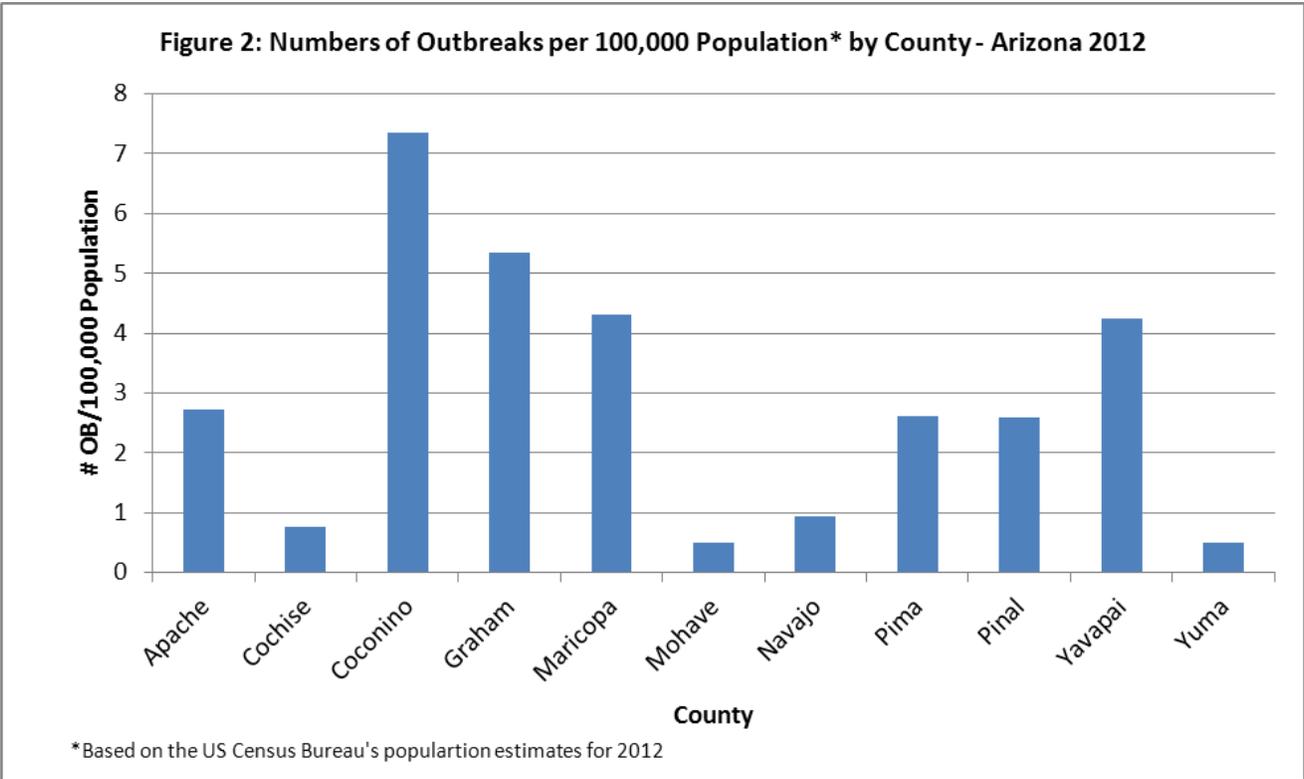
The outbreak descriptive epidemiology included in this report for 2012 is based on data from the state outbreak line list used to track and monitor outbreak reports and includes essential performance indicators included on the outbreak summary form.

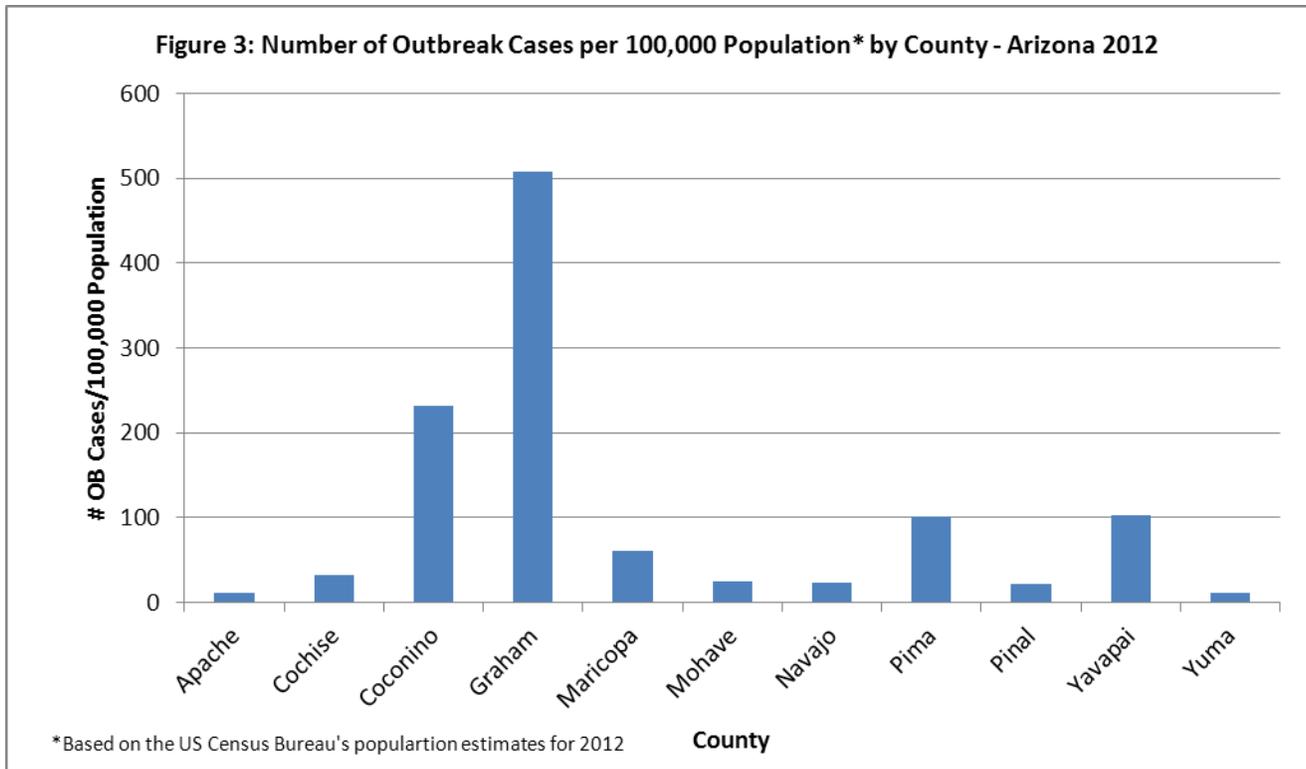
**RESULTS**

In 2012, 233 communicable disease outbreaks were reported and investigated from eleven county health departments in Arizona (Figure 1). Outbreaks were reported predominately in Maricopa County with 170 (73%). This is due to a larger population size.



However, when taking population size into account, Coconino County had the greatest number of reported outbreaks per 100,000 population in 2012 (7.35/100,000, Figure 2), and Graham County had the greatest number of outbreak cases reported per 100,000 population in 2012 (507.8/100,000, Figure 3).





The most outbreaks investigated were reported during the month of March with 31 (13%) outbreaks reported (Figure 4). The median and mean number of outbreaks reported each month was 16.5 and 19, respectively. Outbreaks were reported by the county health department to ADHS within 24 hours for 205 (88%) outbreaks. This did not meet our state performance goal of  $\geq 95\%$  of outbreaks reported to ADHS within 24 hours. It should be noted that 2 (1%) outbreaks were reported to the county health department by ADHS. Investigations were begun within 24 hours of receipt of report for 230 outbreaks (99%), which is above the performance indicator goal of 90%. Excluding outbreaks of lice and mites, strep throat, group A streptococcal infections, influenza or ILI, conjunctivitis or hand foot and mouth disease, there were 178 outbreaks for which an outbreak summary form should have been submitted to ADHS. For 61 (34%) of these outbreaks of selected disease agents, county health departments submitted an outbreak report to ADHS within 30 days of investigation closure. This is one area for improvement.

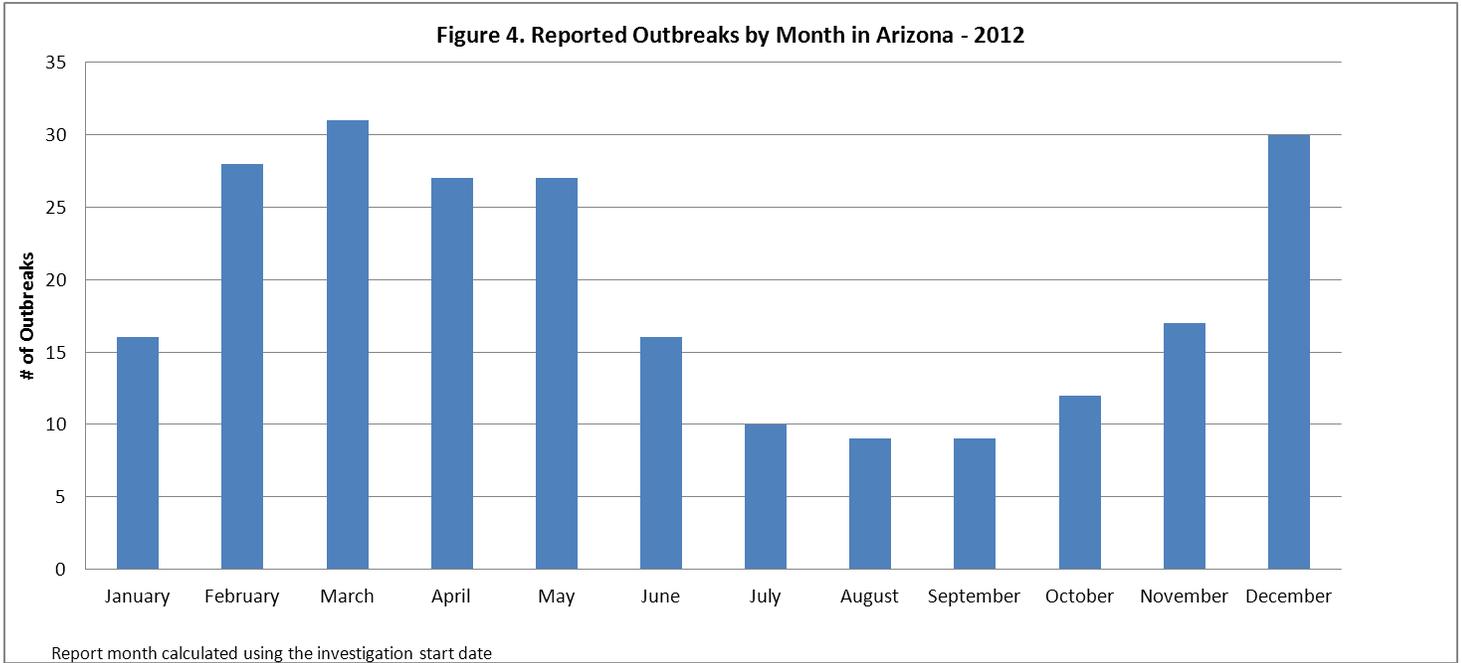
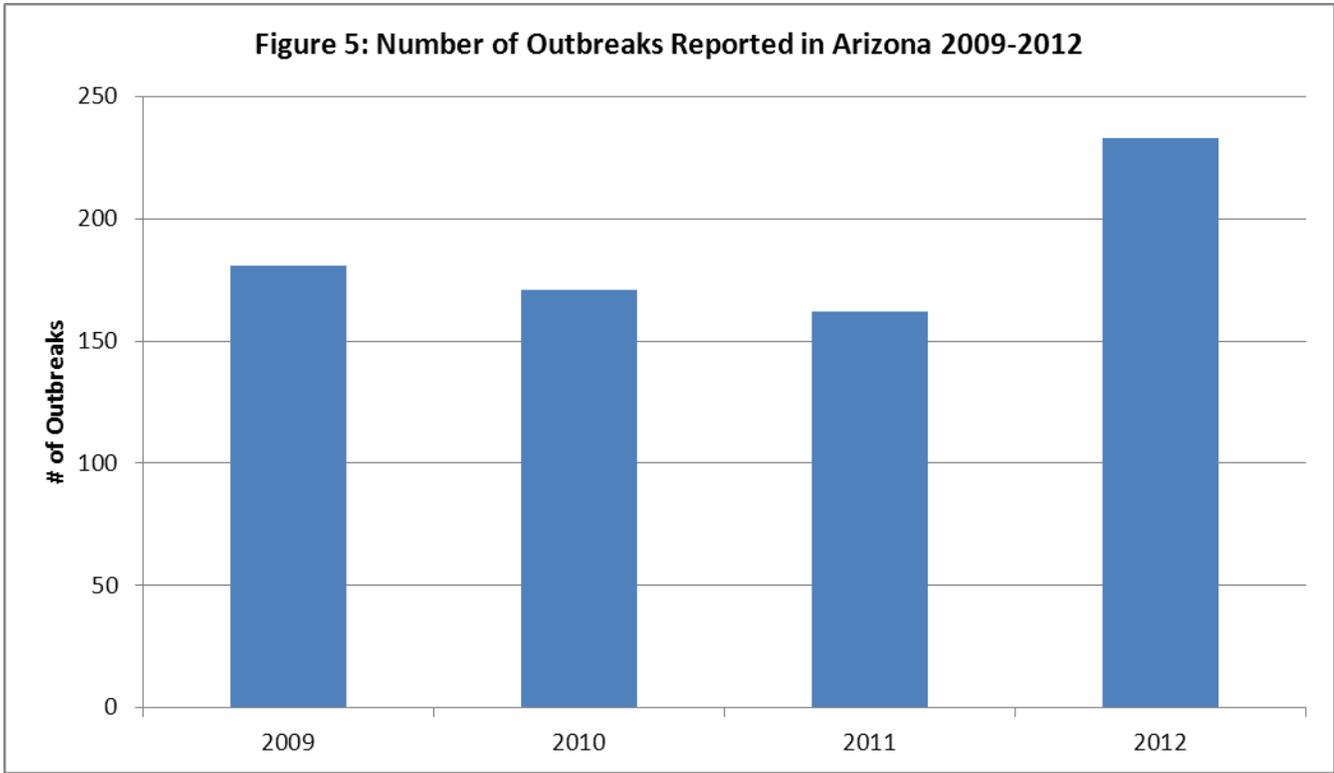
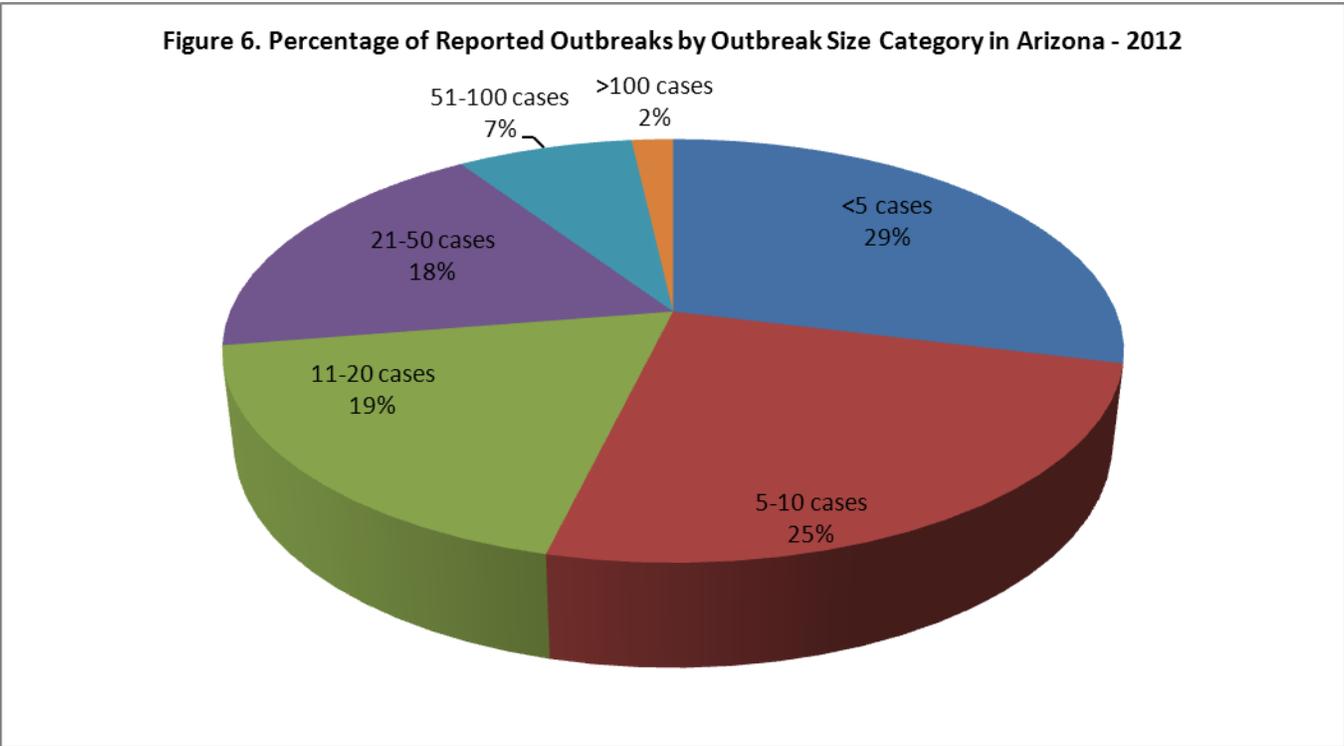


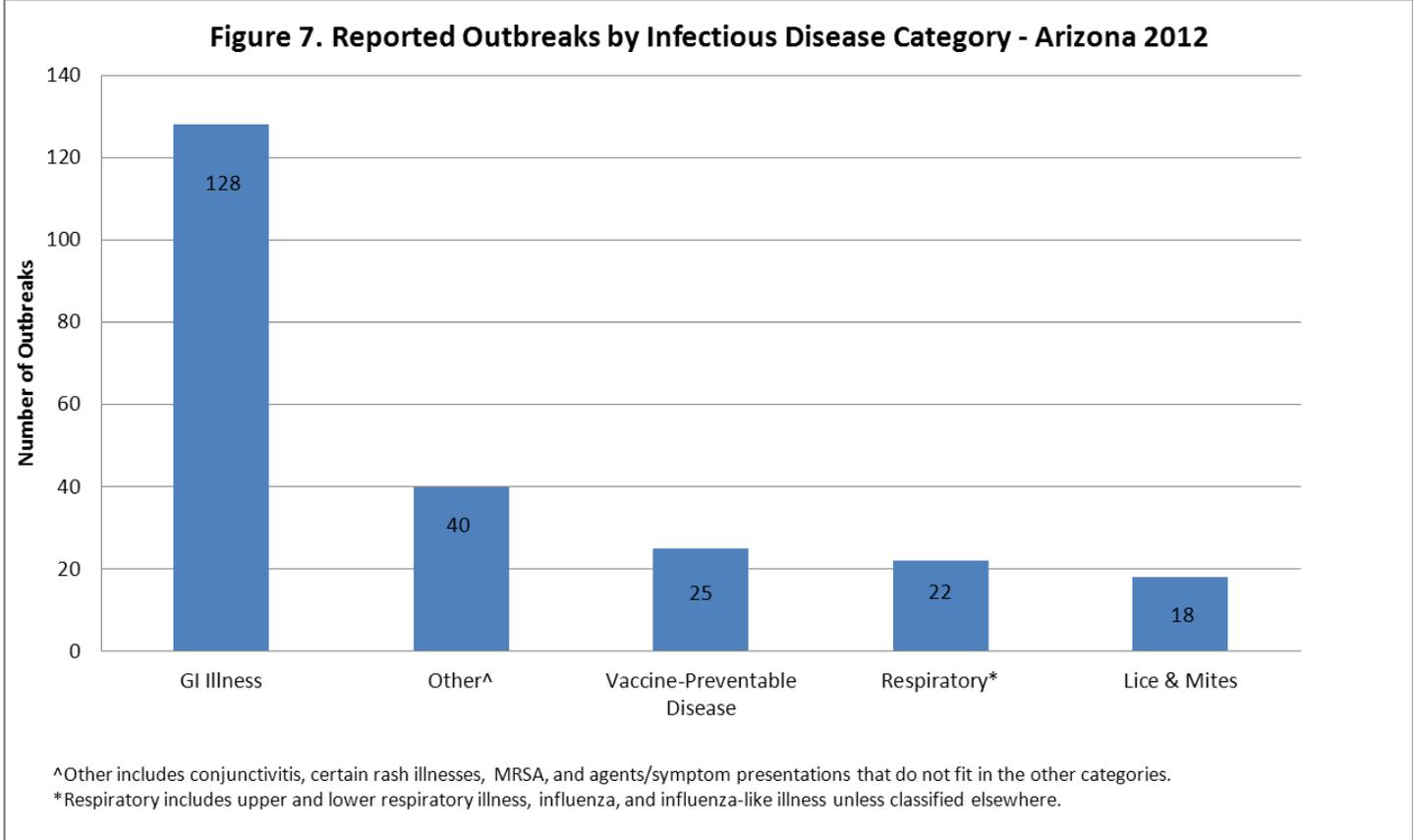
Figure 5 illustrates the number of outbreaks reported in Arizona for 2009-2012. There was a slight decrease in outbreaks reported from 2009-2011, with an increase in 2012. This may be due to increased surveillance and reporting of outbreaks or an actual increase in outbreaks during this time period.



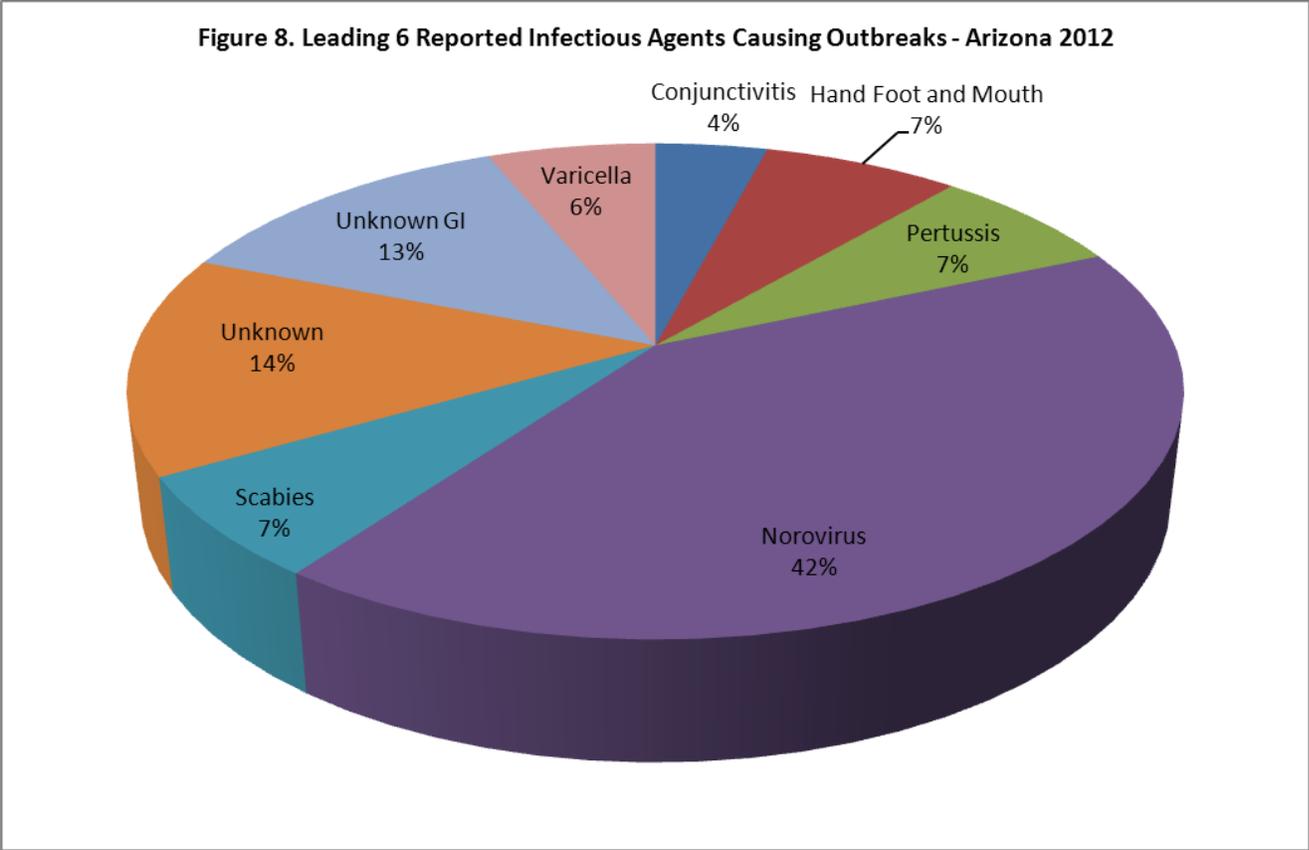
To characterize the reported outbreaks, analysis was conducted to describe the outbreak location category, mode of transmission, size, and infectious disease category. In 2012, most of the outbreaks contained 10 or fewer cases (121, 54%) and 204 (91%) outbreaks had 50 or fewer cases (Figure 6).



The most frequently reported type of outbreak was gastrointestinal illness representing 55% (128) reports. Other frequently reported outbreaks include vaccine-preventable diseases (25, 11%) and other (40, 17%) (Figure 7).



The top six reported infectious agents causing outbreaks in Arizona for 2012 were norovirus (81, 42%), pertussis (14, 7%), hand foot and mouth disease (14, 7%), scabies (13, 7%), varicella (12, 6%), and conjunctivitis (8, 4%) (Figure 8). For 27% (53) of outbreaks an infectious agent could not be determined. 13% (25) were unknown GI outbreaks, and 14% (28) were unknown outbreaks of other etiologies. A more detailed description of infectious agents identified as causing outbreaks in 2012 is shown in Table 1.

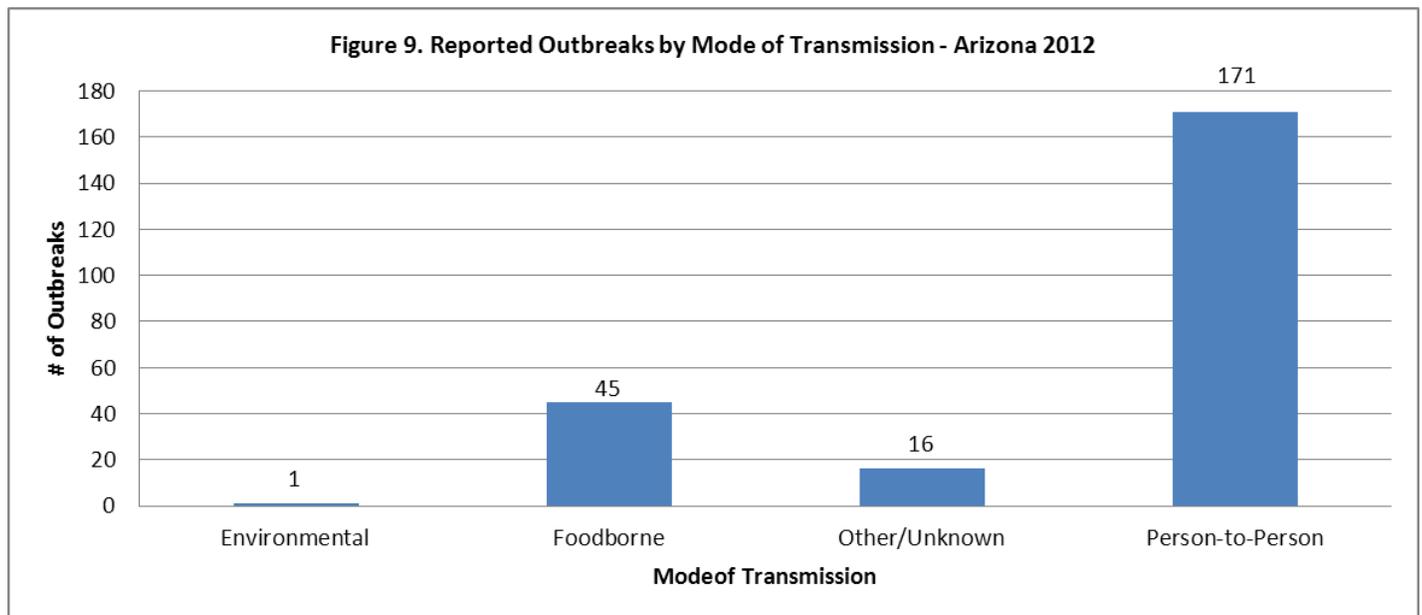


**Table 1:** Infectious Disease Agents Identified as causing an Outbreak in Arizona (N, %), 2012.

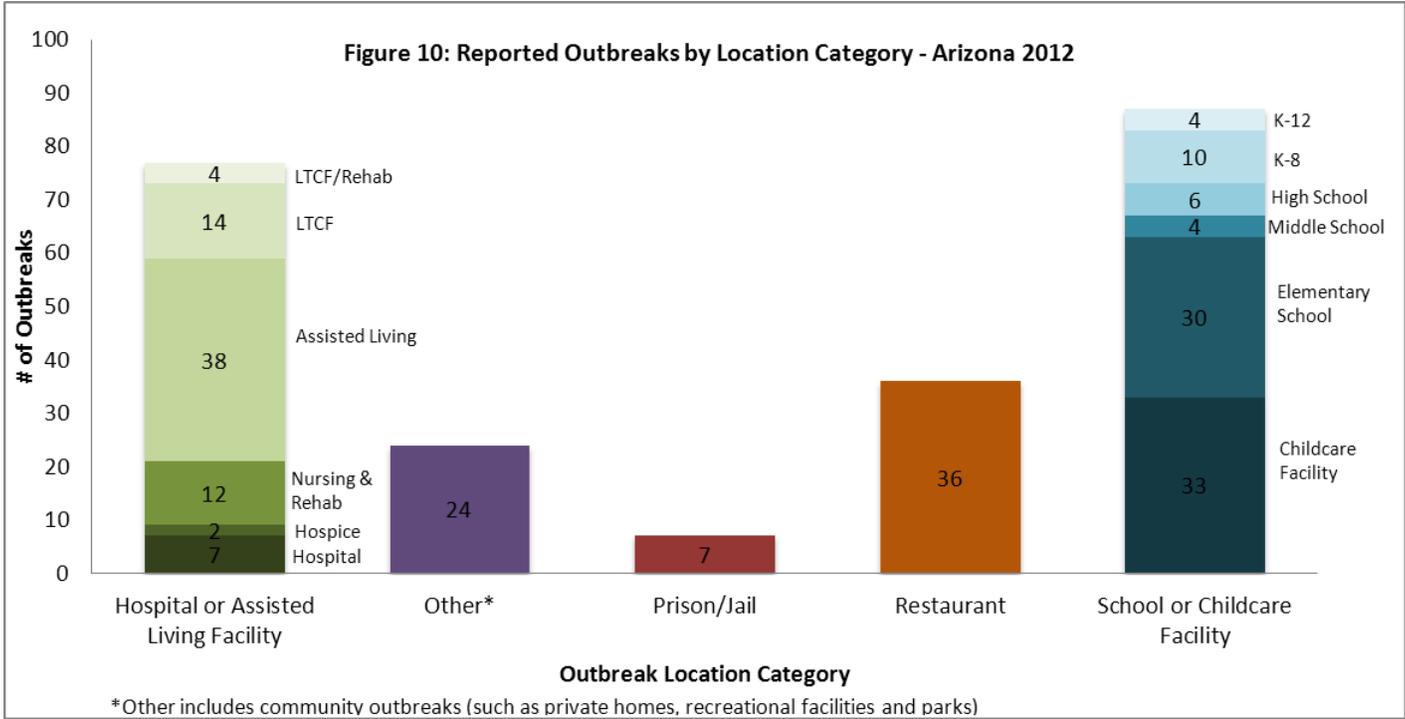
Agent/Condition	Frequency (N)	Percentage (%)
Botulism	2	0.9%
<i>C. perfringens</i>	1	0.4%
<i>Campylobacter</i> spp.	1	0.4%
Conjunctivitis	8	3.4%
Hand Foot and Mouth	14	6.0%
Hepatitis A	1	0.4%
Impetigo	1	0.4%
Influenza-like Illness (ILI)	2	0.9%
Influenza	4	1.7%
Lice	5	2.2%
Lye toxicity	1	0.4%

MRSA	2	0.9%
Mumps	1	0.4%
Norovirus	81	34.8%
Pertussis	14	6.0%
Pneumonia	2	0.9%
Rocky Mountain Spotted Fever (RMSF)	1	0.4%
RSV	3	1.3%
Ringworm	1	0.4%
Salmonella	1	0.4%
Scabies	13	5.6%
Scarlet Fever	1	0.4%
Scromboid poisoning	1	0.4%
Shigella	1	0.4%
Strep throat	5	2.2%
Suspect toxin	1	0.4%
Unknown	28	12.0%
Unknown GI	25	10.7%
Varicella	12	5.2%
<b>TOTAL</b>	<b>233</b>	<b>100.0%</b>

Person-to-person transmission was the most common mode of transmission identified for outbreaks in 2012, representing about 73% (171 outbreaks) of the total outbreaks reported (Figure 9). There were also 45 (19%) foodborne outbreaks reported.



Reported outbreaks were classified into five categories based on location: hospital or assisted living facility, prison or jail, restaurant, school or child care facility, and other. The most common outbreak location was a school or child care facility with 37% (87) of the reports (Figure 10). Within this category, the most common reported locations were childcare facility (33, 38%) and elementary school (30, 35%). The next most common outbreak location included hospital or assisted living facility with 34% (77) of outbreaks being reported from this type of facility. Within this category, the most common reported locations were assisted living facility (38, 49%), long term care facility (14, 18%), and nursing and rehabilitation facility (12, 16%). Awareness of reporting requirements and the number of facilities in the state may heavily influence these numbers; increased reporting from schools or healthcare facilities is expected as healthcare professionals located on-site may assist in identification of such outbreaks and outreach regarding reporting requirements is conducted by public health agencies whereas reporting of restaurant outbreaks relies on individual illness complaints and outreach to the public may be less effective. Reported outbreaks in prisons or jails may be lower because there are fewer facilities in the state, they have fewer infectious disease outbreaks, and/or facilities are unaware of reporting requirements.



Norovirus outbreaks alone were also classified into outbreak location categories (Figure 11). Most norovirus outbreaks (49, 60.5%) are occur in hospitals/assisted living facilities. Of these, most outbreaks occur in assisted living facilities (24, 49%), followed by nursing & rehab Facilities (9, 18.4%) and long term care facilities (LTCF) (7, 14.3%).

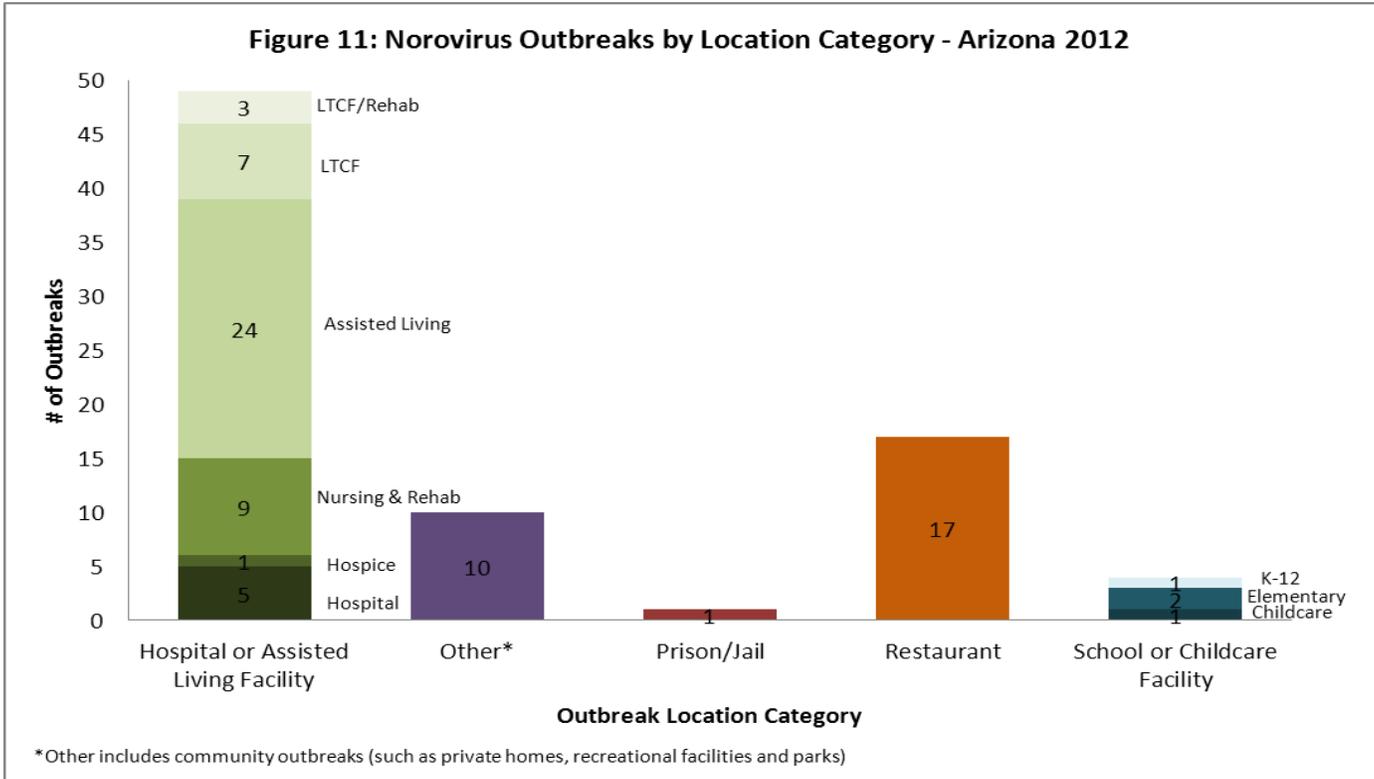
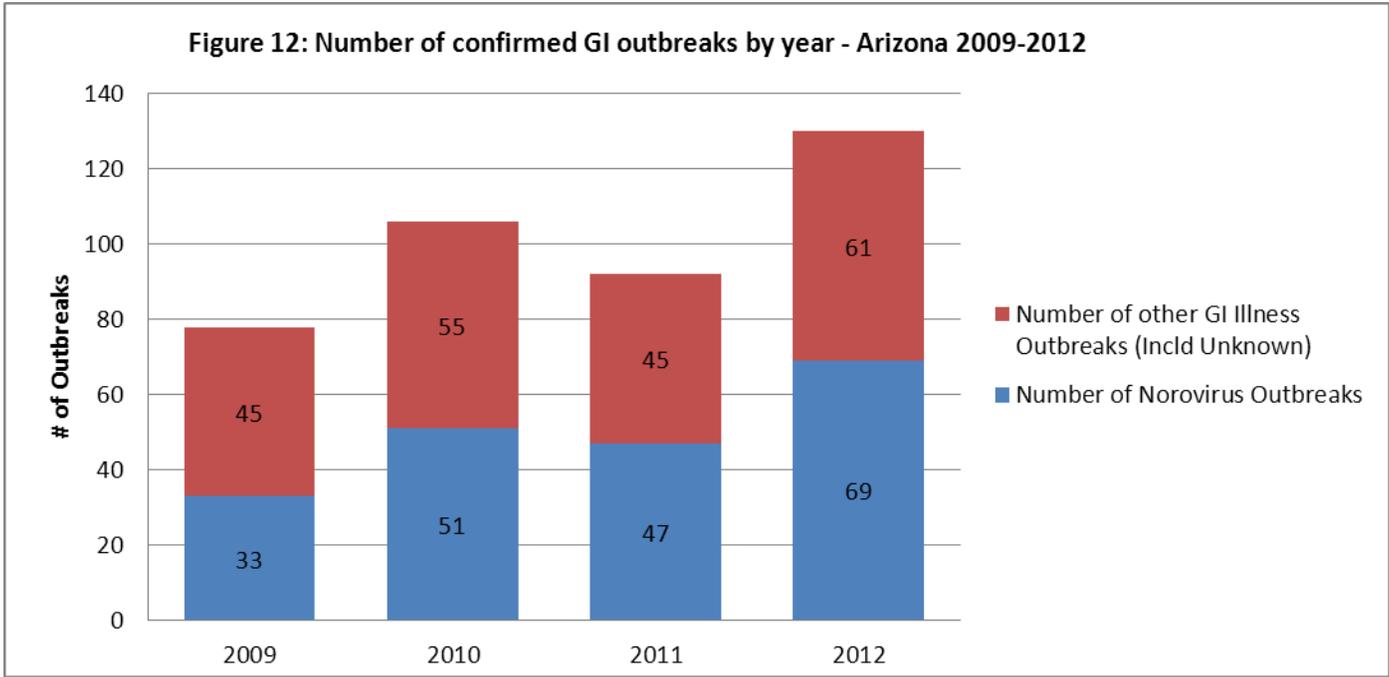
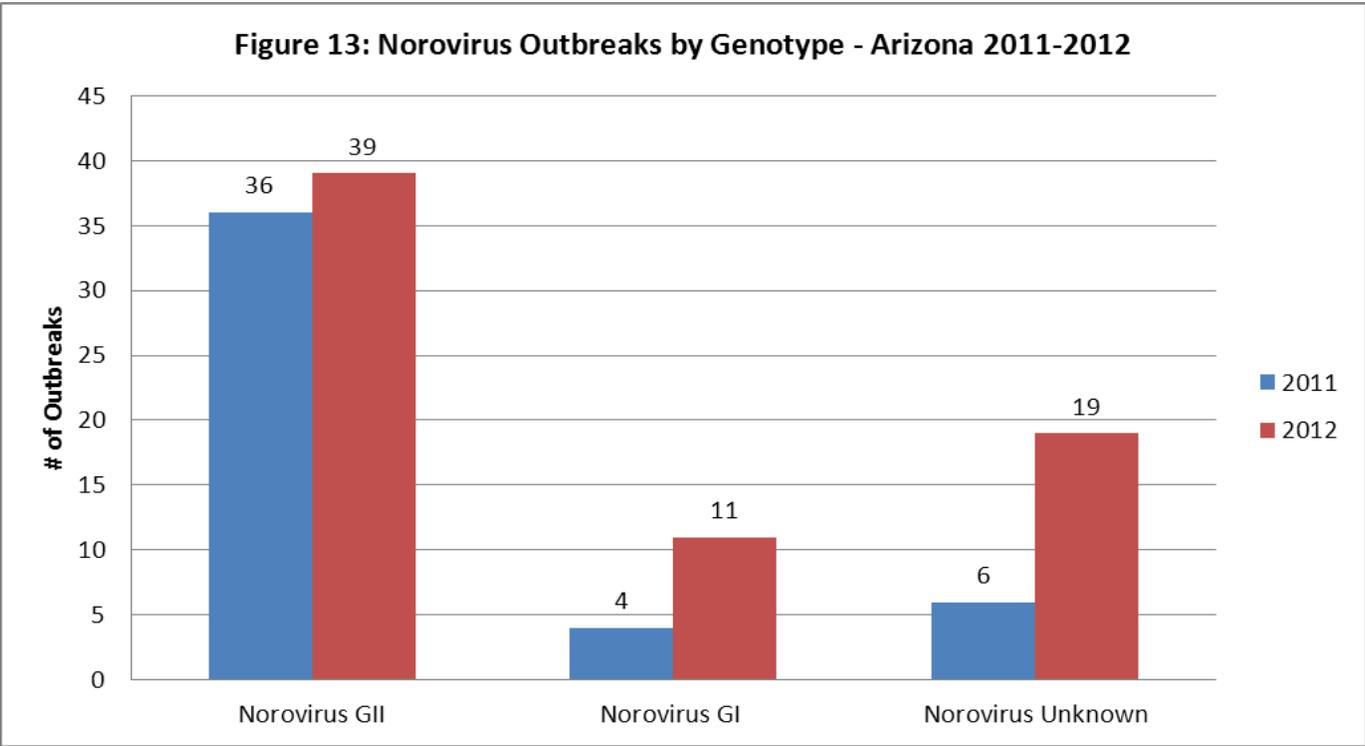


Figure 12 shows GI outbreaks from 2009-2012. Approximately half of GI outbreaks during this time period are attributed to norovirus, and since 2009 the number of GI outbreaks reported is increasing in Arizona, either due to an increase in reporting or an actual increase in GI illness outbreaks.

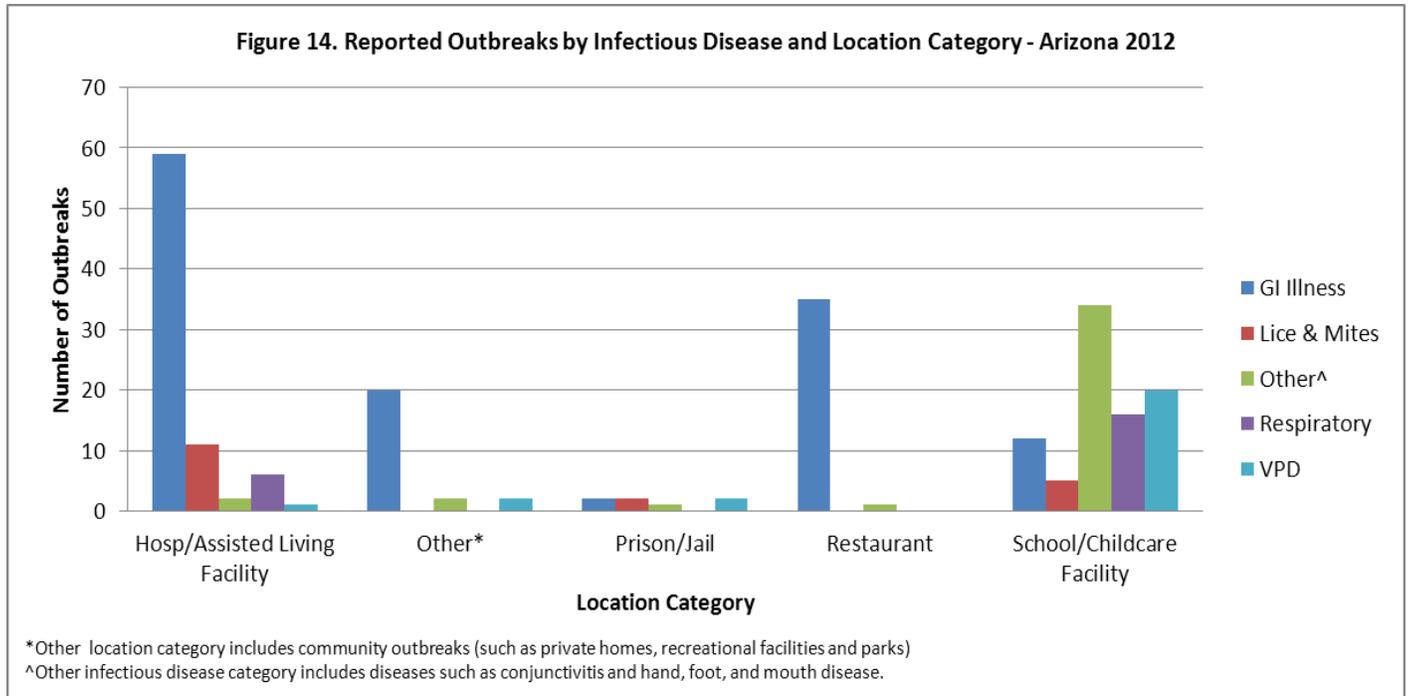


For norovirus outbreaks with a known genotype, most outbreaks are attributed to norovirus GII (Figure 13). In 2012, 56.5% (39) of norovirus outbreaks were norovirus GII, 15.9% (11) were norovirus GI, and 27.5% (19) were an unknown norovirus genotype.

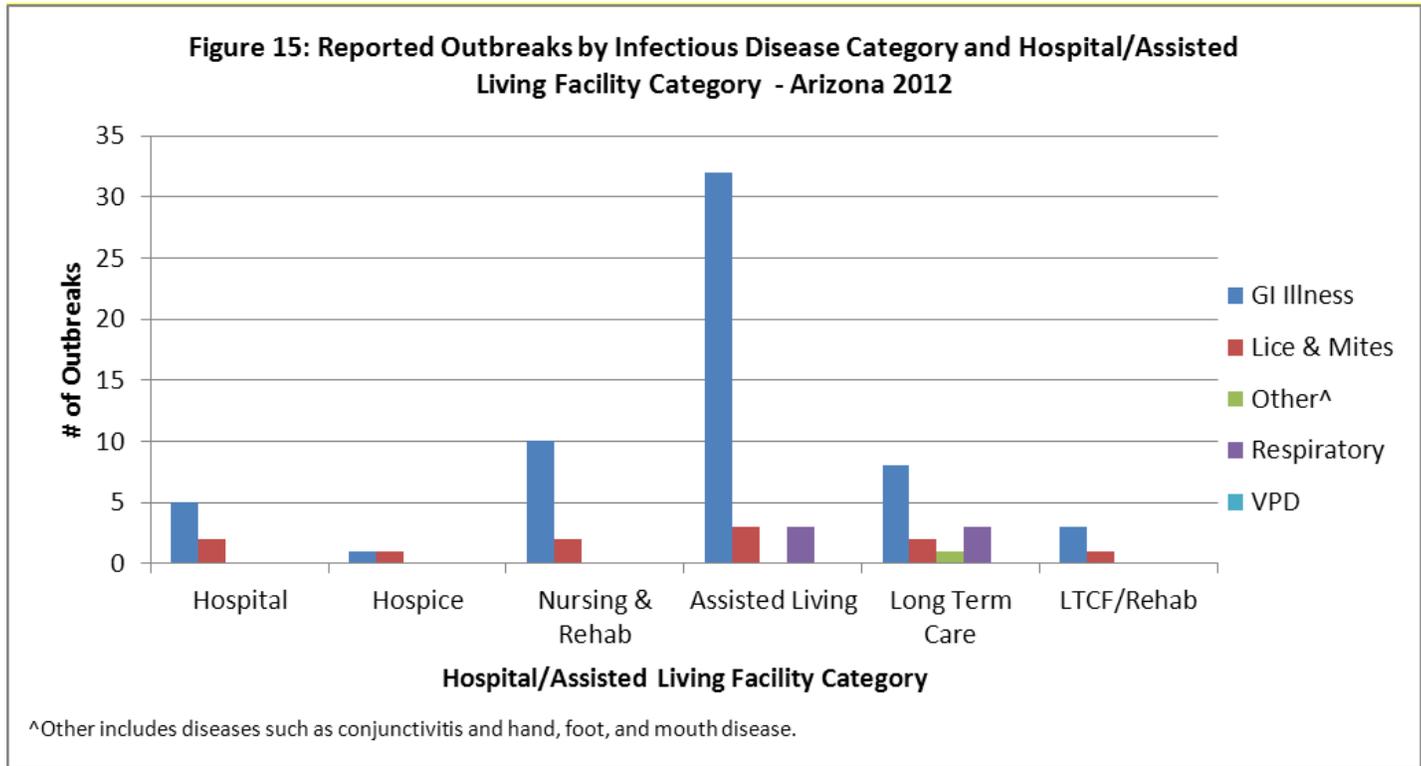


Outbreak locations were further characterized by infectious disease category. Gastrointestinal illness outbreaks were most frequently reported in hospital or assisted living facilities or restaurants with 59 (46%) and 35 (27%) reported outbreaks, respectively (Figure 14). For respiratory outbreaks, 16 (73%) were located at a school or childcare facility. For vaccine preventable diseases, 20 (80%) of the outbreaks were reported from a school or childcare facility. For lice and mites, 11 (61%) were reported in a hospital or assisted living facility and 5 (28%) were reported from schools or childcare facilities.

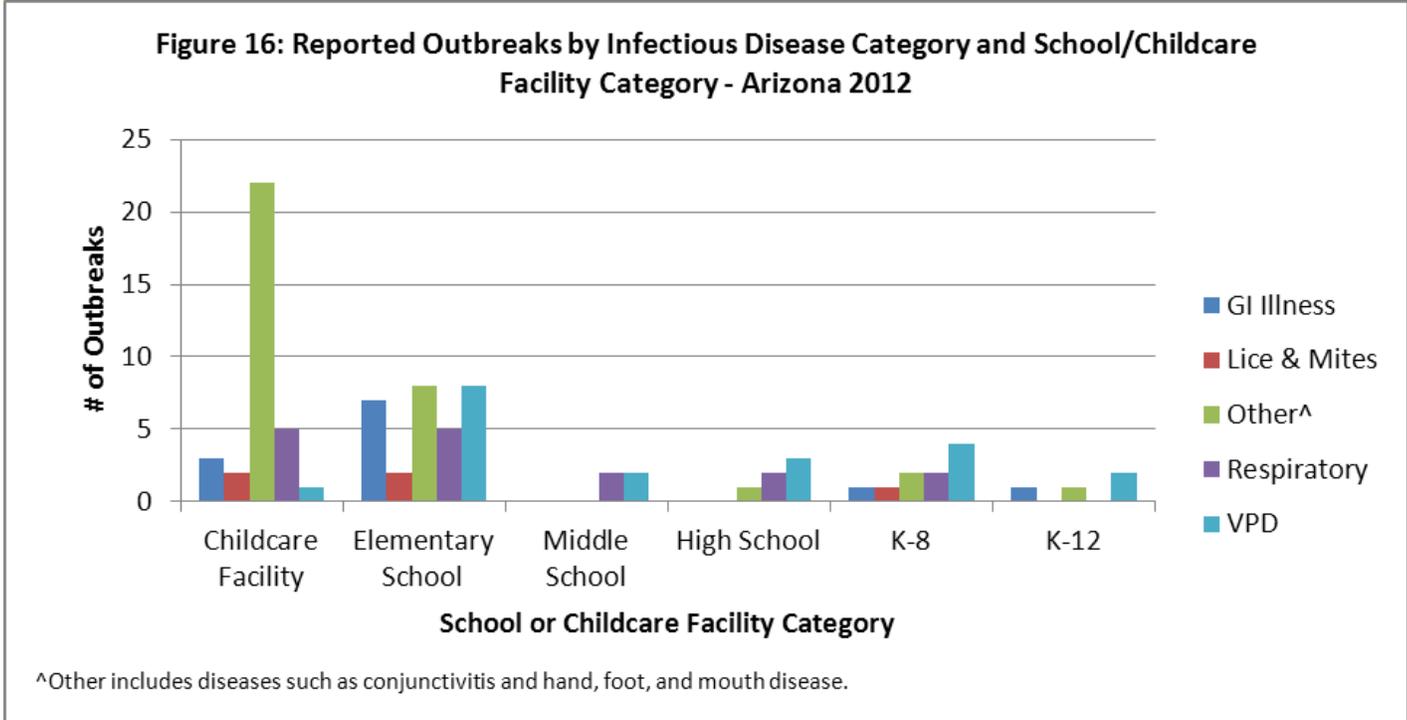
Restaurants, and hospitals and assisted living facilities mostly reported gastrointestinal outbreaks in 2012 (Figure 14). Prisons/jails, and schools and child care facilities reported a mix of outbreak types.



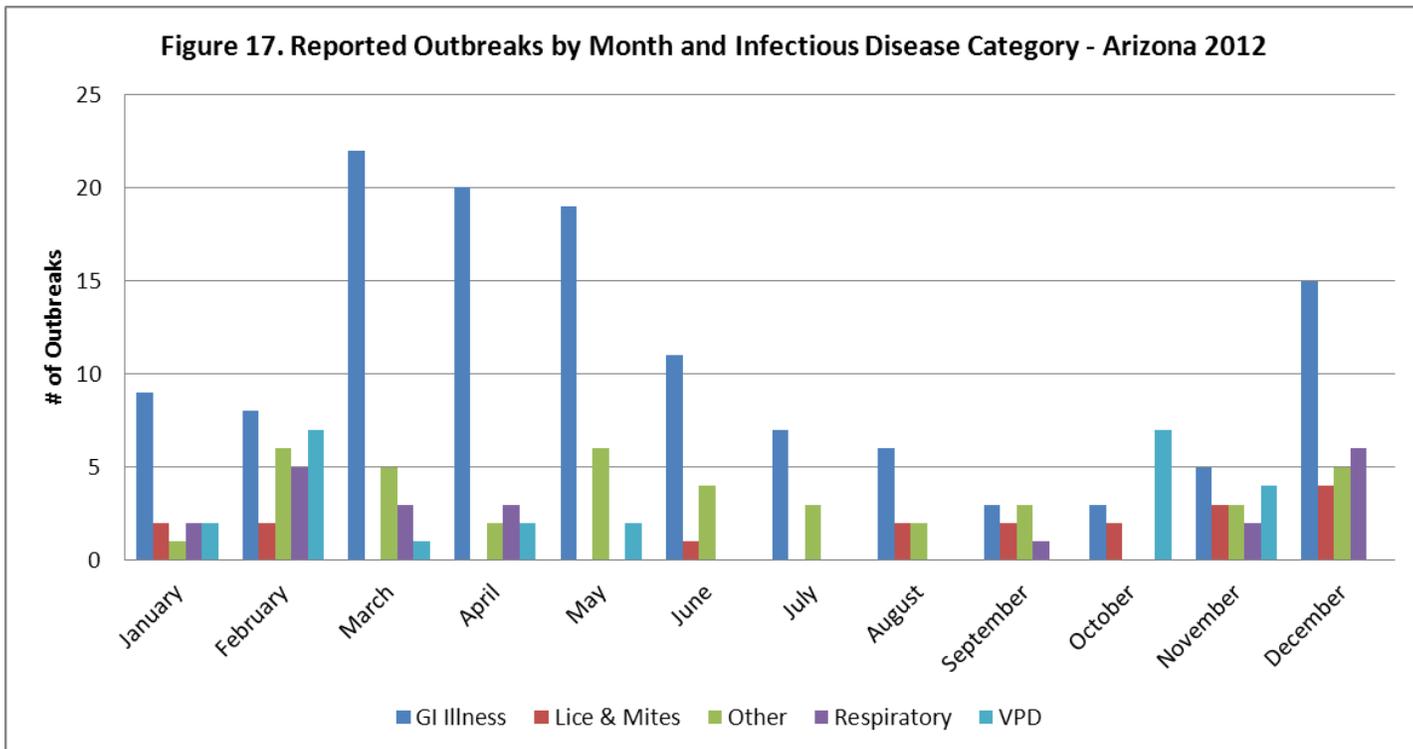
For outbreaks reported from hospitals/assisted living facilities, all types of facilities mostly experienced GI illness outbreaks, and assisted living facilities reported the highest number of GI illness outbreaks (Figure 15).



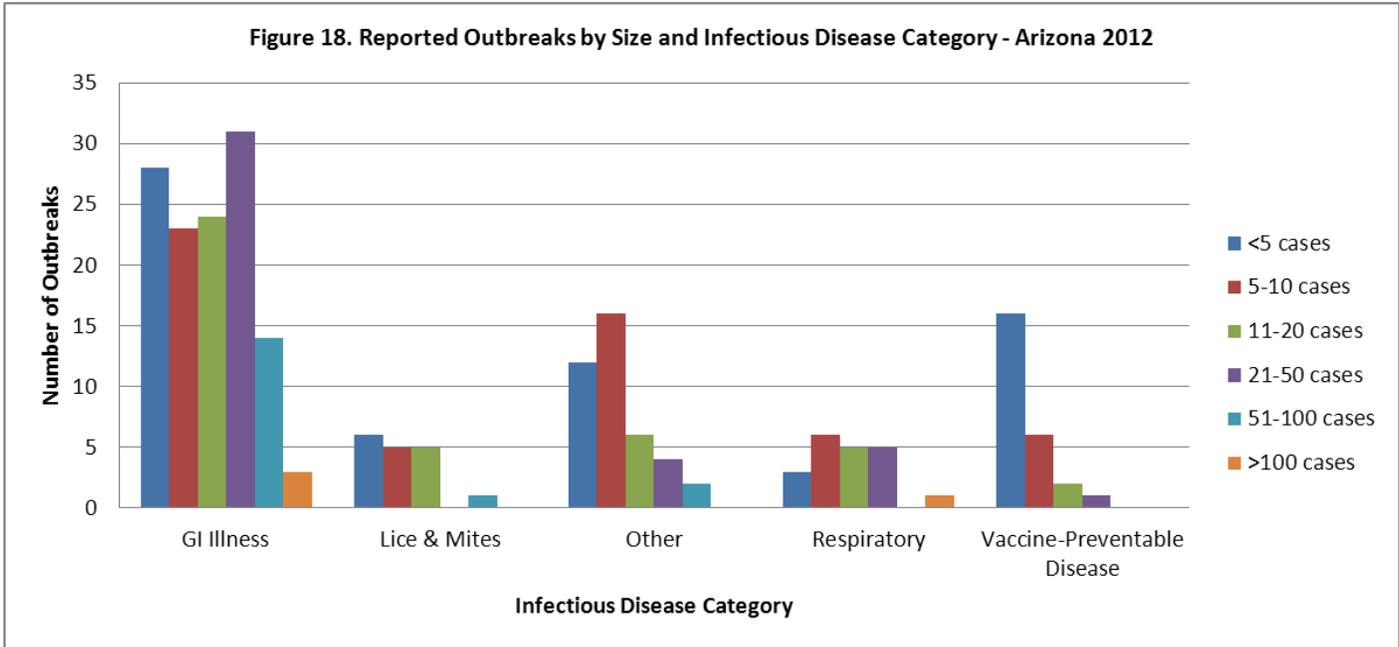
For outbreaks reported from schools/childcare facilities, different disease profiles were seen in different types of schools (Figure 16). Childcare facilities experienced mostly outbreaks classified as other (which includes diseases such as conjunctivitis and hand, foot, and mouth disease), while elementary schools experienced a mixture of all types of outbreaks. Fewer outbreaks were reported from middle, high, K-8, and K-12 schools.



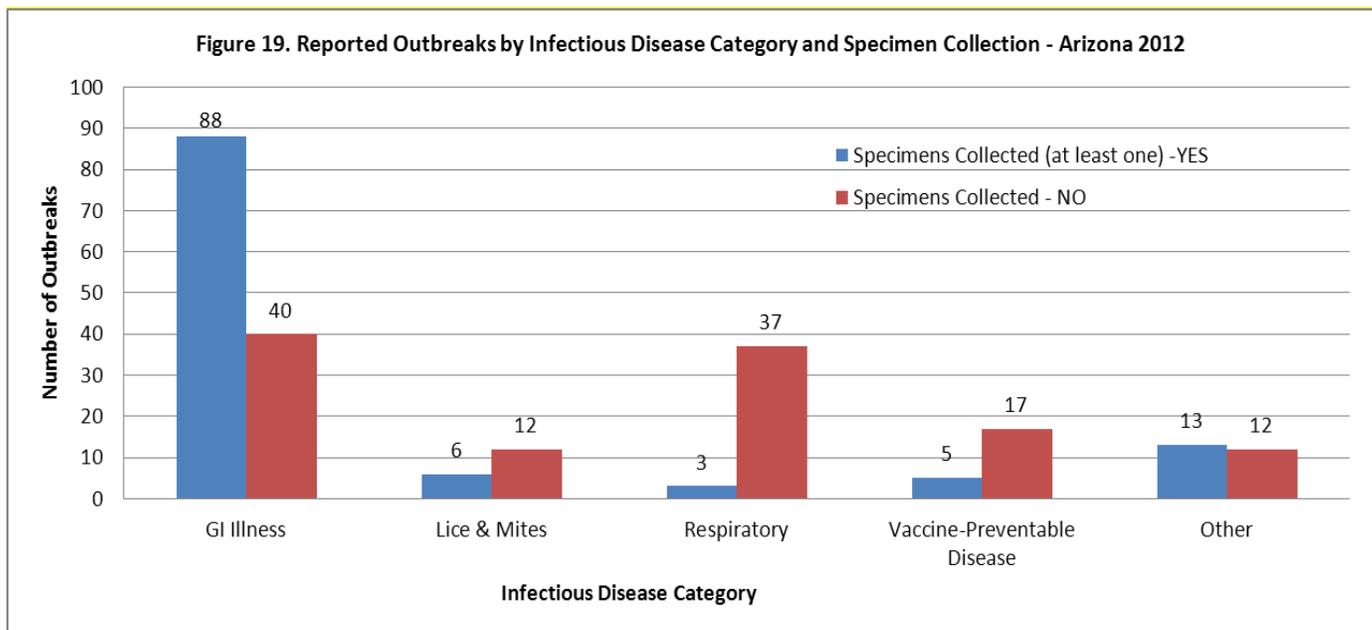
A description of infectious disease categories over time was conducted (Figure 17). As mentioned earlier, March had the most reported outbreaks with 31 (13%) of the total outbreaks. Gastrointestinal outbreaks were most frequent from March through June and in December, accounting for 68% (87) of the total gastrointestinal outbreaks for the year. Respiratory outbreaks occurred most often in December and February (11, 50%). Vaccine-preventable disease outbreaks tended to occur more frequently during the school year.



Vaccine-preventable disease, lice and mites and respiratory outbreaks were usually small with <5 people per outbreak report (Figure 18). Gastrointestinal illness outbreaks were of many different sizes, though most outbreaks had 50 or fewer cases (106, 89%).



One of the measured outcomes for outbreaks in Arizona is to determine if more than two specimens were collected for a particular outbreak. Specimens are not typically collected for outbreaks of lice and mites, strep throat, group A streptococcal infections, influenza or ILI, conjunctivitis or hand foot and mouth disease. Excluding these outbreaks, specimen collection was assessed in the remaining 141 outbreaks. Specimens were submitted for 100 (71%) of these outbreaks. Specimens were most frequently collected for gastrointestinal illness outbreaks (69%; 88 of 128) (Figure 19). In 77% (68 of 88) of the gastrointestinal outbreaks where specimens were collected, norovirus was determined to be the agent. Two or more specimens were collected in 83% (83 of 100) of the outbreaks where specimens were collected. All local health departments have a written outbreak protocol that details the process by which they will collect, package and ship specimens in the event of an outbreak. Facilities reporting outbreaks are encouraged to collect and submit two or more specimens to the Arizona State Public Health Laboratory to increase the opportunity for accurate laboratory detection of the agent of infection.



**MULTI-STATE CLUSTERS INVESTIGATIONS:**

In 2012, Arizona participated in 25 multi-state cluster investigations; multi-state investigations are not included in the above analyses. One of the clusters was identified as *Escherichia coli* O157:H7 while the remaining 24 clusters were identified as various *Salmonella* serotypes. Outbreaks were associated with:

- Attendance at a national convention
- Alfalfa sprouts
- Live poultry
- Fresh produce, potentially lettuce or cucumbers
- Turtles
- Snakes
- Peanut butter

## **HEALTHCARE ASSOCIATED INFECTION (HAI) INVESTIGATIONS**

In 2012 Arizona participated in nine HAI investigations involving potential exposures to HIV, hepatitis A, B and C, outbreaks of fungal meningitis, MRSA, and invasive Group A Streptococcus infections. Exposures occurred at healthcare facilities, a dental office, and a prison. Two of these investigations were multi-state. These investigations are not included in the above analysis.

## **CONCLUSION**

During outbreak investigations, local and state health departments work with the reporting facility to identify the causative agent as well as make recommendations for control and prevention of future cases. In 2012, 233 infectious disease outbreaks were reported to Arizona public health agencies. This number does not include HAI investigations or national outbreak investigations in which Arizona participated. Reported outbreaks were more likely to occur in Maricopa County (73%), in the month of March (13%), in a school/child care facility (37%), involve symptoms consistent with gastrointestinal illness (55%), be spread person-to-person (73%) and involve 50 or fewer people (91%). The causative agent identified in the most outbreaks (35%) in 2012 was norovirus. For 2012, 88% of outbreaks were reported to ADHS within 24 hours, which was below the performance goal set of  $\geq 95\%$ . Only 34% of outbreak reports were submitted to ADHS within 30 days of investigation closure. This is well below the performance goal set at the beginning of the calendar year and will be further evaluated to determine why our goal was not met, but likely explanations include limited resources and accuracy of documenting when the investigation was closed. However, 99% of all outbreaks were investigated within 24 hours of receipt of report at the local health department. Further efforts will need to be taken to examine outbreak tracking and management to help accomplish the outbreak goals for the state.