

Getting up the NREVSS: Piloting an Enhanced Sporadic Norovirus Surveillance Project in Tennessee

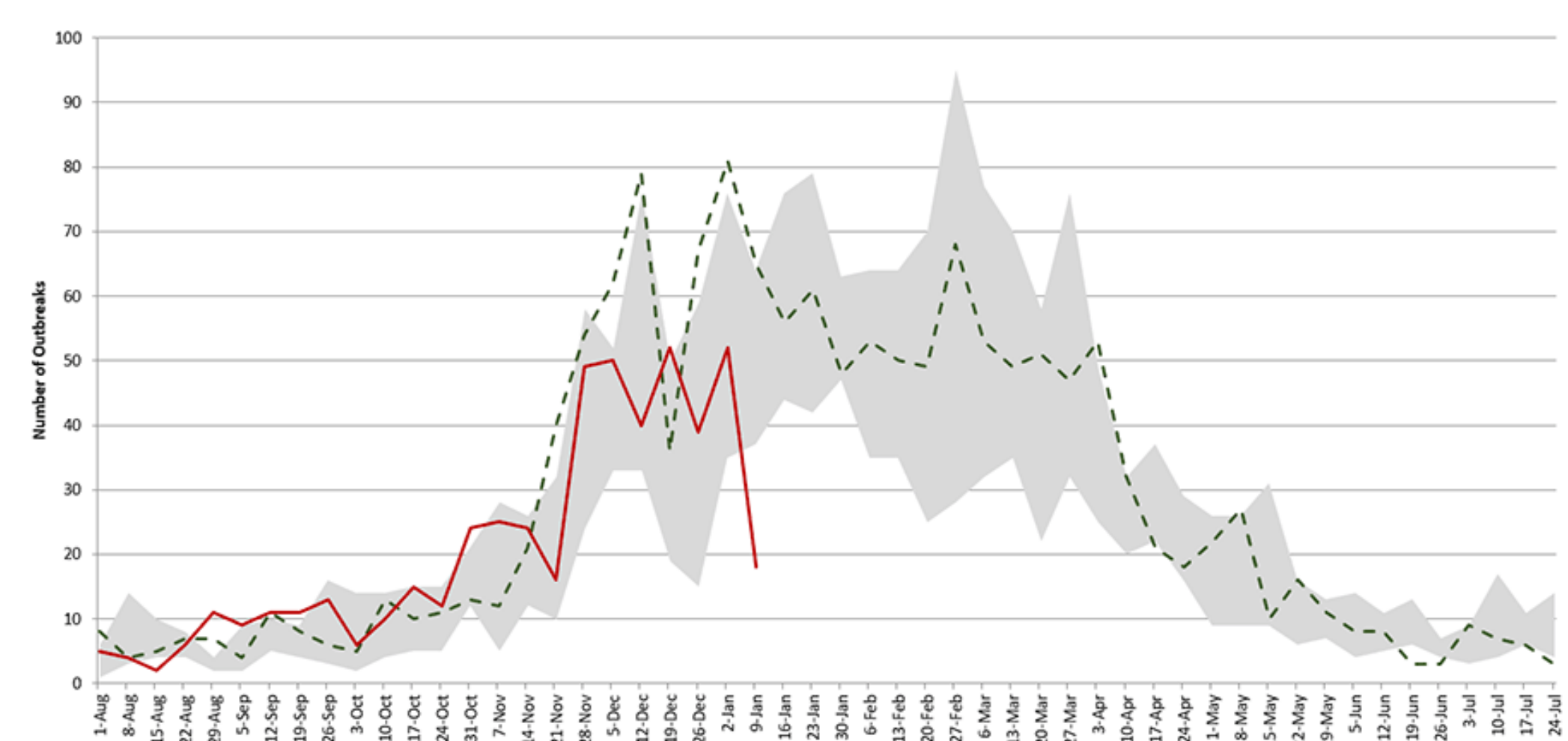
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BACKGROUND

- Norovirus is the leading cause of acute gastroenteritis in the United States with an estimated 20 million annual cases and over 50,000 hospitalizations.
- Public health surveillance of norovirus has historically been limited to monitoring and mitigating outbreaks rather than sporadic cases



Number of Suspected or Confirmed Norovirus Outbreaks Reported by Twelve NoroSTAT-Participating States, 2012 - 2020, CDC

- Beginning in 2018, the Tennessee (TN) Department of Health (TDH) participated as a pilot site in a CDC-sponsored project to enhance sporadic norovirus surveillance

OBJECTIVES

- Establish sporadic norovirus reporting from select sentinel clinical laboratories to the CDC National Respiratory and Enteric Virus Surveillance System (NREVSS)
- Use aggregated demographic and laboratory data to better understand characteristics of sporadic norovirus cases in TN

METHODS

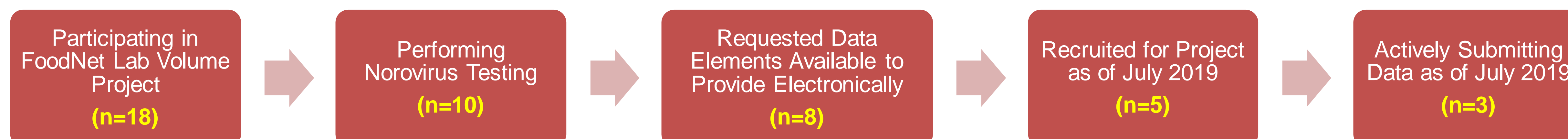
Recruitment of Laboratories

- We identified clinical laboratories performing a high volume of norovirus testing using available TN data from the Foodborne Diseases Active Surveillance Network (FoodNet) Laboratory Volume project for 2018
- Laboratories were prioritized for recruitment in descending order by norovirus testing volume. Recruitment was done by personal outreach

Data Collection and Reporting to NREVSS

- Laboratories were requested to submit the following data elements on a regular interval
 - Number and type of norovirus tests performed by week
 - Norovirus positive test results and collection dates
 - Limited demographic information for positive patients, including age group, sex, and county
- TDH enrolled clinical laboratories into the NREVSS system and reported data on behalf of laboratories

RESULTS



- Submitting laboratories represented testing from all 13 public health regions in TN
- All recruited laboratories tested for norovirus by polymerase chain reaction (PCR) using the BioFire FilmArray Gastrointestinal (GI) Panel
- Laboratories already submitting data electronically to TDH for the FoodNet Laboratory Volume project were able to onboard data submissions more rapidly than those who were not
- Laboratories able to develop an automatically generated report from their laboratory information management system were able to submit data more frequently (e.g., weekly)

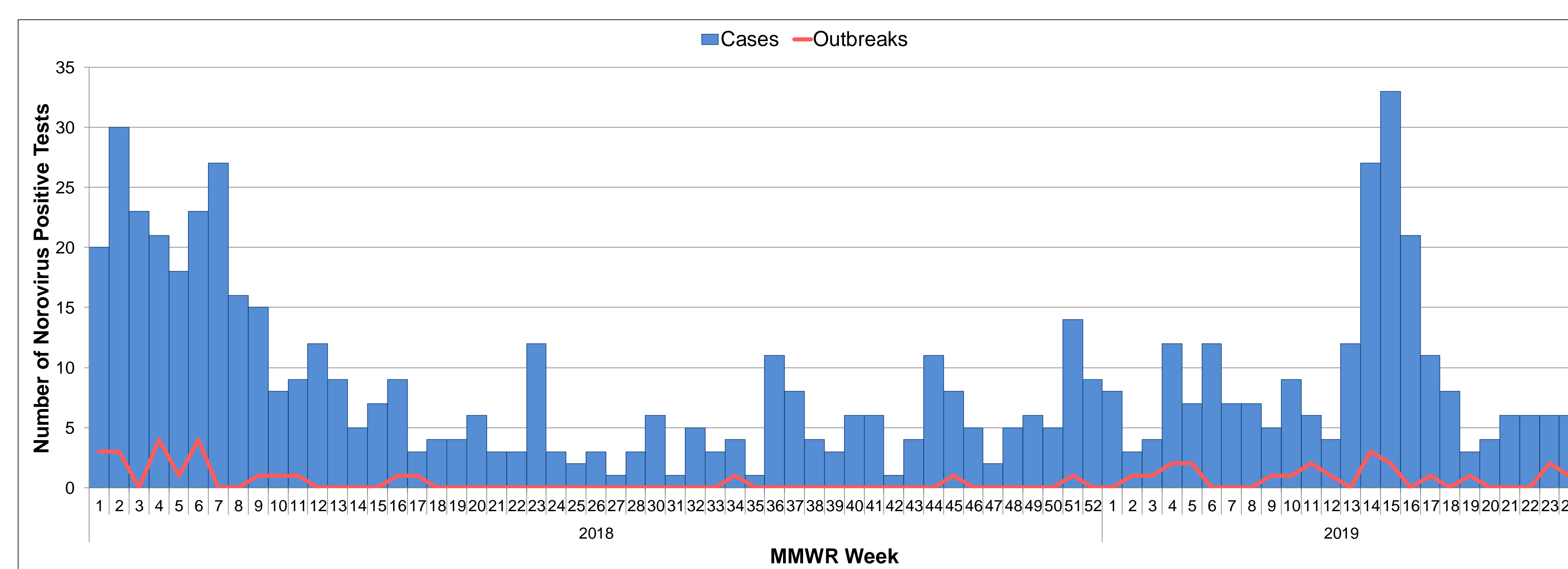


Figure 1. Sporadic Norovirus Positive Tests Compared to Confirmed Norovirus Outbreaks, TN, January 2018 – July 2019

- From January 2018 to July 2019, 654 tests were positive for norovirus by PCR [Figure 1].
- In this same period, 44 confirmed outbreaks of norovirus were reported statewide, mainly in long-term care facilities among older patients
- The majority of sporadic cases were under three years old (n=357, 55%) [Figure 2]; 131 (20%) were under one year old, 226 (35%) were 1-2 years old
- Of norovirus-positive cases, 321 (49%) were female and 333 (51%) were male

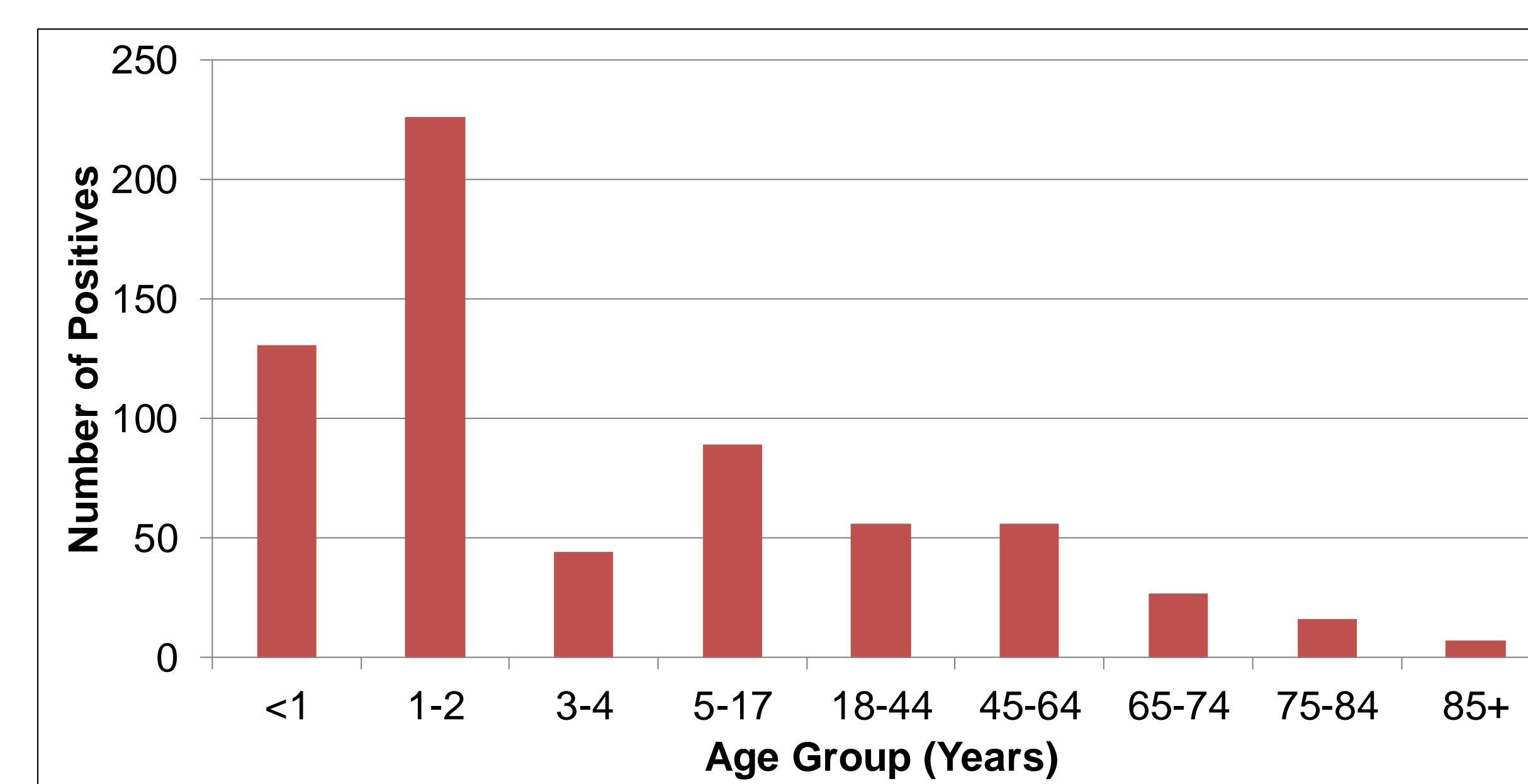


Figure 2. Distribution of Sporadic Norovirus Cases by Age Group, TN, 2018-2019

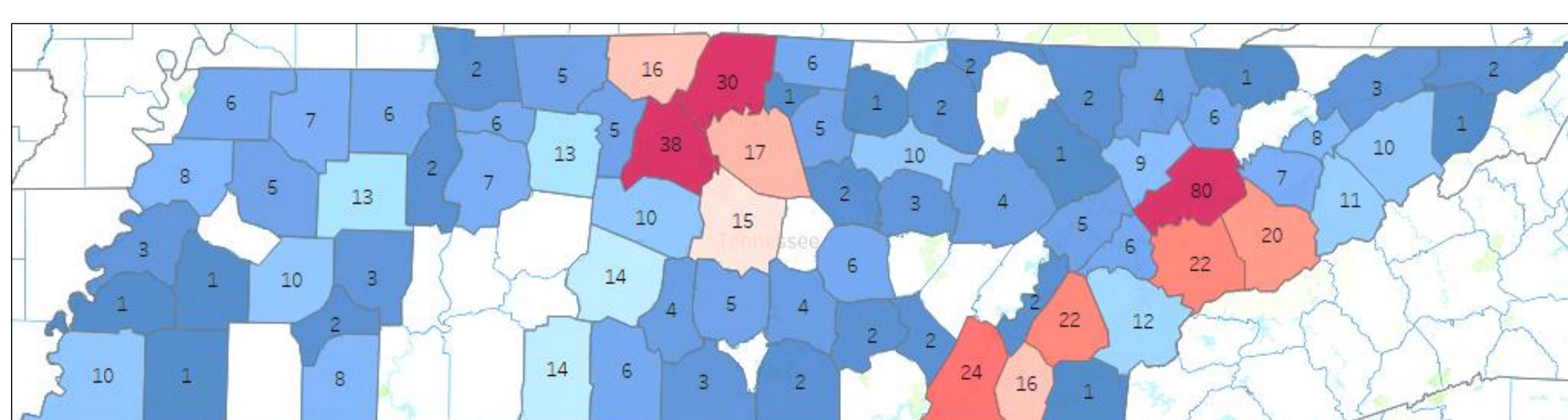


Figure 3. Sporadic Norovirus Cases by County, TN, 2018-2019 (N=654)

- Of data submitted to NREVSS from July 2018 to August 2019, 359 (5%) of 7461 BioFire PCR panel tests were positive for norovirus
- Norovirus positives represented cases from all 13 public health regions in TN and 74 (78%) counties [Figure 3]

CONCLUSIONS

- Data on sporadic norovirus surveillance was obtained through recruitment of and collaboration with clinical laboratories in TN
- Prioritizing recruitment of clinical laboratories with existing TDH partnerships allowed the prompt onboarding of facilities for this project
- Recruited clinical laboratories were representative of the general TN population by geography and sex, but not age in this pilot
- Predominant age groups differed between identified sporadic cases of norovirus and cases identified as part of outbreaks
- Additional clinical data on illness severity and reason for testing could explain the discordance in age between sporadic cases and outbreak cases
- Additional demographic and clinical decision-making information on panel-tested patients could help narrow focus to patients with a suspected viral etiology of illness

NEXT STEPS

- Continue to recruit clinical laboratories to participate in data submission to NREVSS
- Identify and recruit clinical laboratories to begin submitting norovirus-positive stool specimens to the TN State Public Health Laboratory for genotyping
- Assess the feasibility of collecting demographic data for all reported patients tested and clinical data for norovirus positive results
- Explore supplemental surveillance of sporadic norovirus in TN by establishing a syndromic surveillance query

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- Participating TN Laboratories
- TN State Public Health Laboratory Enterics, Molecular, and Sequencing Teams

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