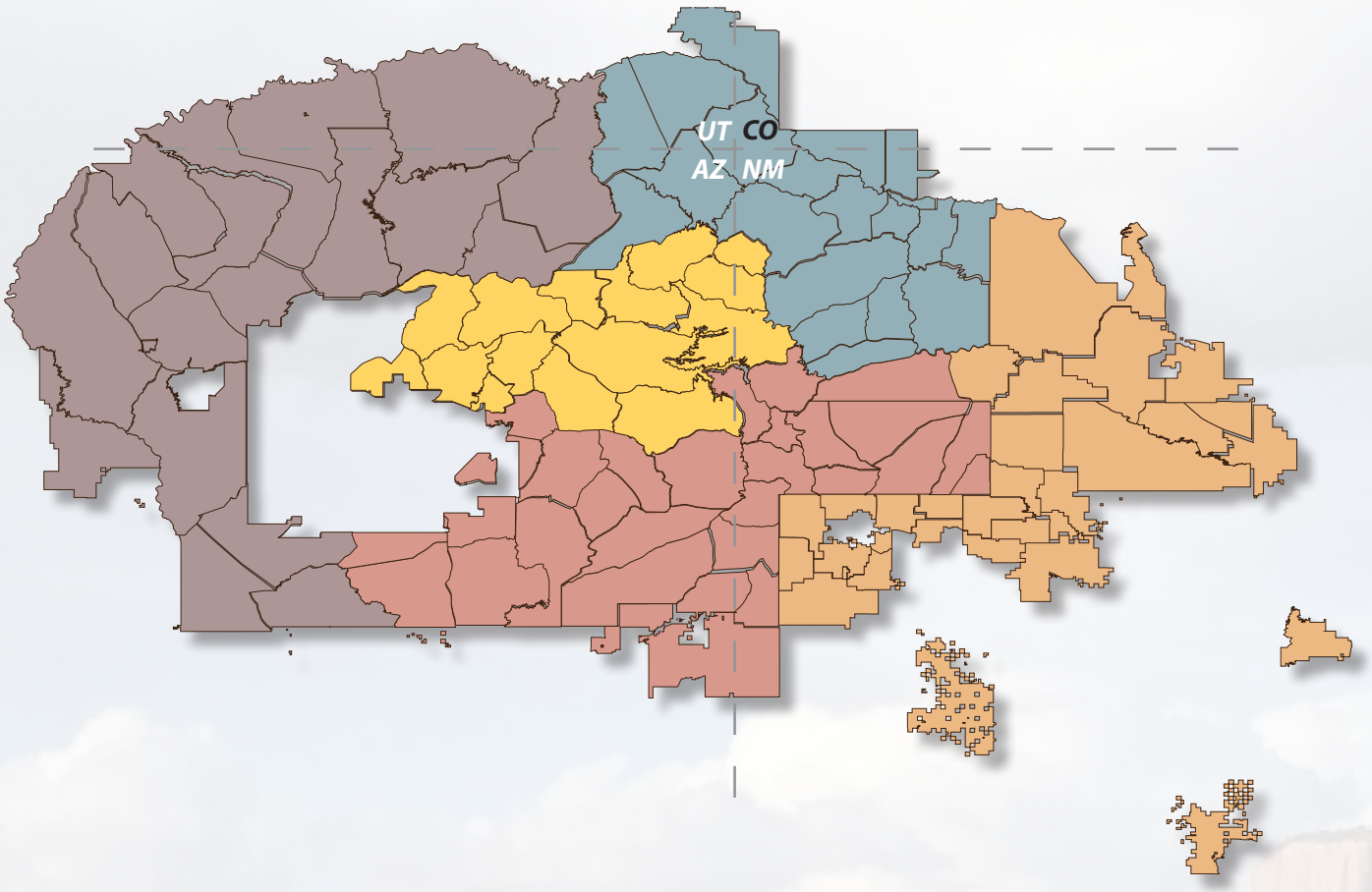
Navajo Nation Active Bacterial Surveillance Report
September 29, 2023



In partnership with the Johns Hopkins Center for Indigenous Health

Active Bacterial Surveillance

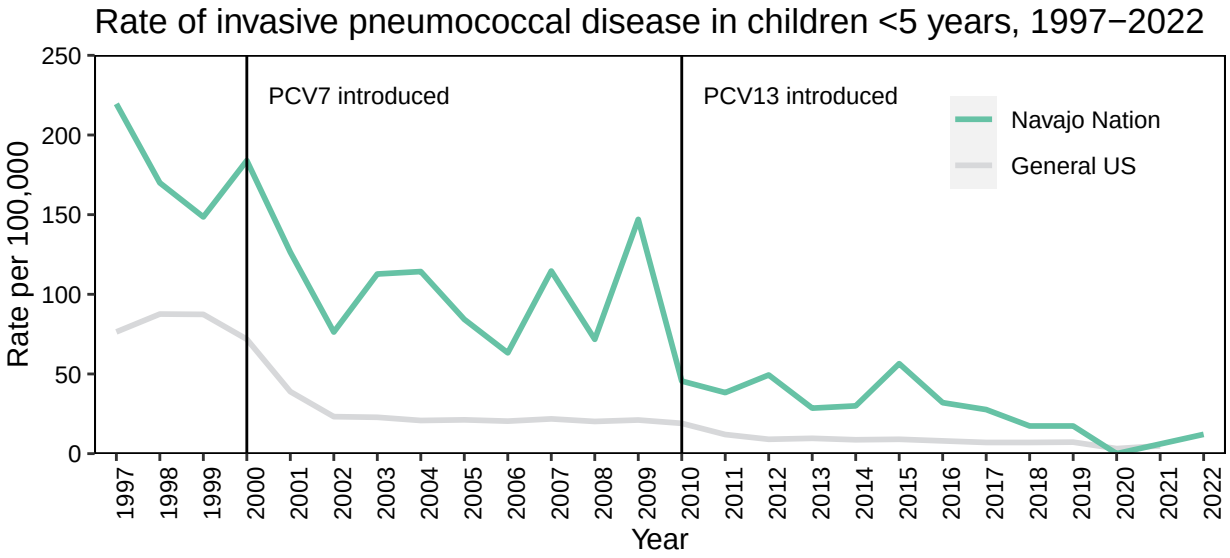
NNHRRB #: NNR-19.343 & NNR-16.238

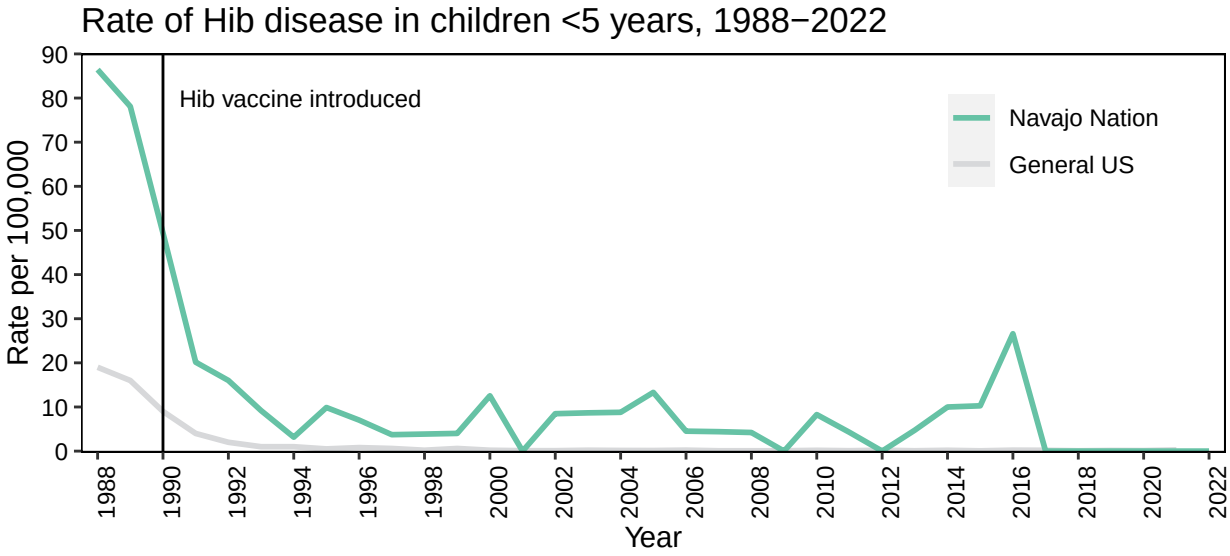
The 'Active Bacterial Surveillance' project, or 'ABS' was initiated over two decades ago in response to the disproportionately high burden of invasive bacterial disease (e.g., meningitis, pneumonia, sepsis) experienced by Indigenous communities. The Johns Hopkins Center for Indigenous Health works in collaboration with the Navajo Epidemiology Center and with facilities serving the Navajo Nation to conduct active, laboratory-based surveillance for invasive bacterial disease caused by *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Neisseria meningitidis*, *Staphylococcus aureus*, and group A *Streptococcus* occurring in Indigenous people living in and near the Navajo Nation.

ABS has been reviewed and approved by the Navajo Nation Human Research Review Board (NNR-19.343 & NNR-16.238). This surveillance system helps us to monitor invasive bacterial infections over time, informs advocacy for vaccine recommendations that are most beneficial to Indigenous communities, and serves as a platform to evaluate the impact of interventions, like vaccines.

Getting vaccinated is an effective and easy way to protect yourself and your loved ones against these diseases.Since there are many different types of *S. pneumoniae* and *H. influenzae* that cause disease, vaccines have been developed to protect against the types that have historically been the most common or caused the most severe cases. The number in the name of the pneumococcal vaccine indicates how many types of *S. pneumoniae* it protects against. So, PCV7 protects against 7 different types of *S. pneumoniae* while PCV13 protects against 13 types. There is also a *H. influenzae* type b, or Hib, vaccine that has been in use for a several decades. Pneumococcal and Hib vaccines are part of the routine immunization schedule for children and are recommended for elders as well as adults with certain underlying medical conditions.

Pneumococcal and Hib vaccines have both been successful at decreasing the burden of invasive disease in Navajo Nation and across the US. When we talk about disease burden, we like to look at rates which show us how common the disease is within a specific group or population. Using rates instead of case counts allows us to make comparisons of how common the disease is even if the size of the populations we're looking at is very different. The graphs below show the decrease in disease rates after pneumococcal and Hib vaccines were added into the routine childhood immunization schedule. Data on rates for the general U.S. population was taken from the Centers for Disease Control and Prevention's Active Bacterial Core surveillance reports and was only available through 2021. As you can see, the vaccines were effective at reducing the disparities in disease burden between Navajo Nation and the general U.S. population, however, there are still other types of *S. pneumoniae* and *H. influenzae* that continue to cause disease in the community.

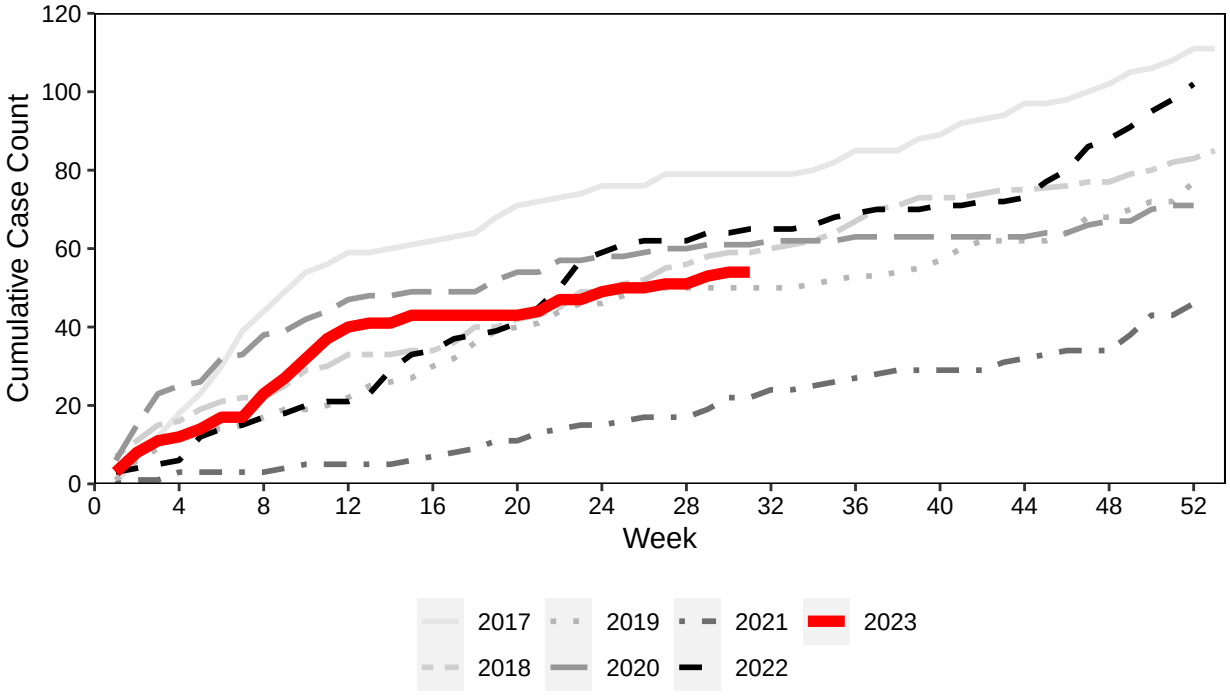




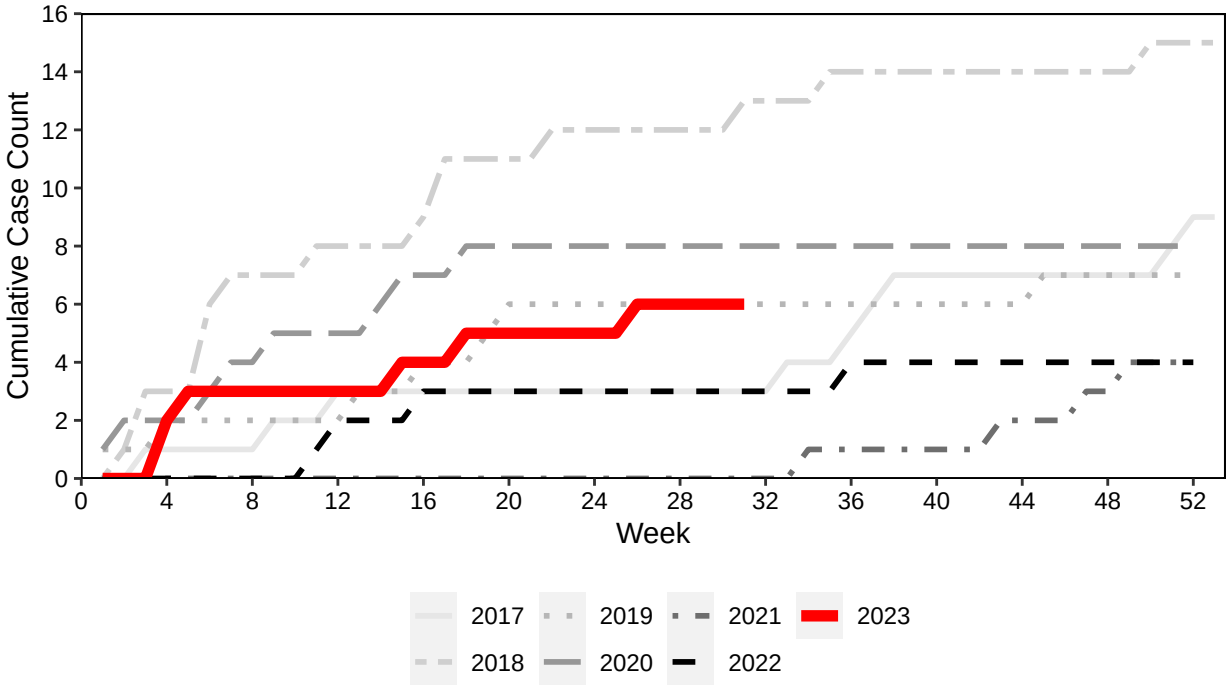
Despite the substantial positive impact that vaccines have had in reducing disease, disparties still persist and unfortunately these invasive bacterial infections continue to occur. It is important to continue monitoring them and seeking ways to further reduce the burden of disease.

Below are graphs showing the cumulative incidence of invasive pneumococcal disease, invasive *H. influenzae* disease, invasive *S. aureus* disease, and invasive group A *Streptococcus* disease occurring among Indigenous people living in or near the Navajo Nation. Incidence is the number of new cases that have occurred and cumulative means that you are keeping a running tally of those cases.When viewing the cumulative incidence graphs, each line represents a different year and the height of the line shows how many cases have occurred through that week of the year. So if you're looking at week 4 on the 2022 line, it's showing the total number of cases that were detected during the first 4 weeks of 2022. Please note that surveillance for group A *Streptococcus* was added to ABS in 2023, so unfortunately, no historical data is available for that pathogen. Additionally, data from the current year is subject to change as cases are continually added and reviewed throughout the year.

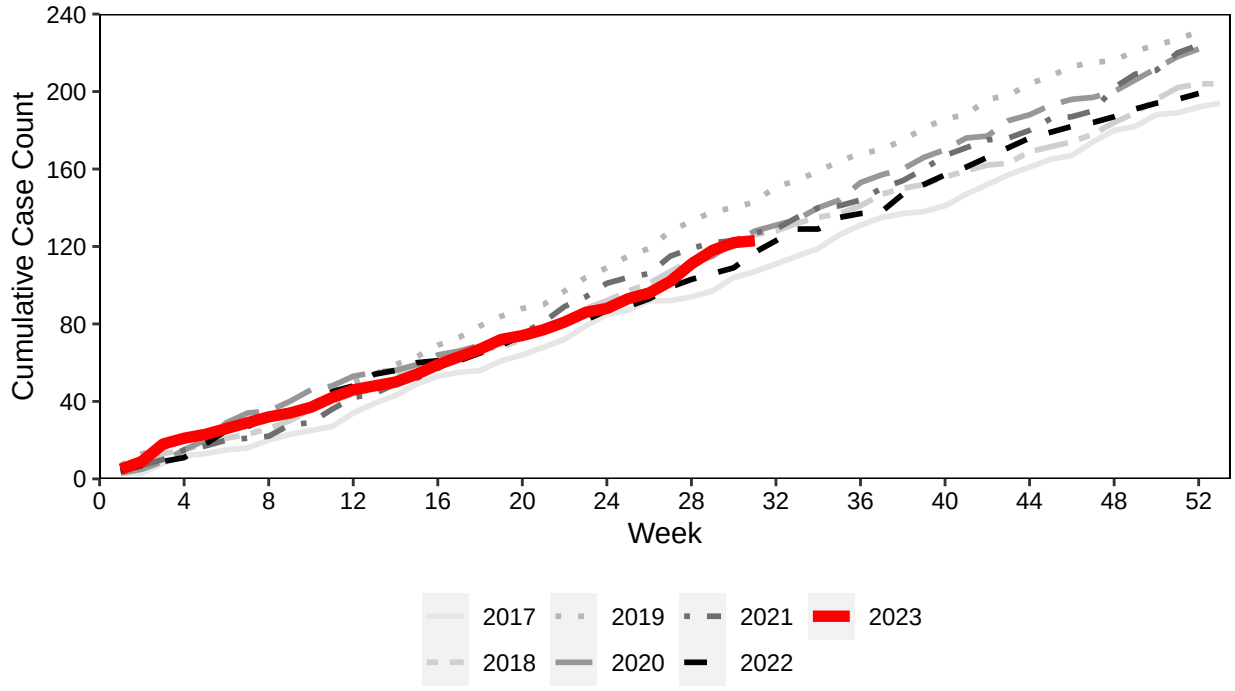
Cumulative incidence of invasive pneumococcal disease, 2017 − 2023



Cumulative incidence of invasive *H. influenzae*, 2017 − 2023



Cumulative incidence of invasive *S. aureus*, 2017 − 2023



Cumulative incidence of invasive group A *Streptococcus*, 2023