

Annual Tuberculosis Surveillance Report, 2023

Virginia Department of Health
Division of Clinical Epidemiology
Tuberculosis Program

Acknowledgments

This report was prepared by:
Laura R. Young, MPH, CIC
Tuberculosis Epidemiologist & Surveillance Coordinator

The Division of Clinical Epidemiology TB Program acknowledges and appreciates the public health nurses, outreach workers, and other staff who provide direct services to patients and who provide the information and data summarized in this report. Without their dedication, Virginia could not move toward the goal of TB elimination.

For more information or for specific data requests, please contact the VDH TB Program:

Email: tuberculosis@vdh.virginia.gov

Call: 804-864-7906

Visit: vdh.virginia.gov/tuberculosis/

About This Report

This report provides TB surveillance data summaries for calendar year 2023, and for prior years for variables that are not yet complete for 2023. These data reflect the most complete information available as of October 1, 2024.

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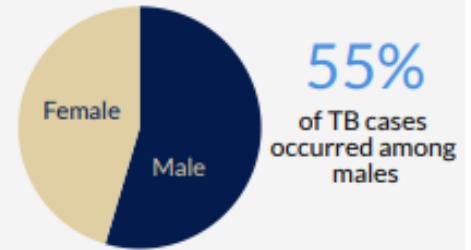
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Tuberculosis in Virginia, 2023

Overview

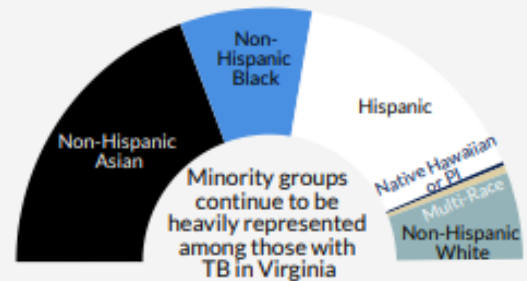
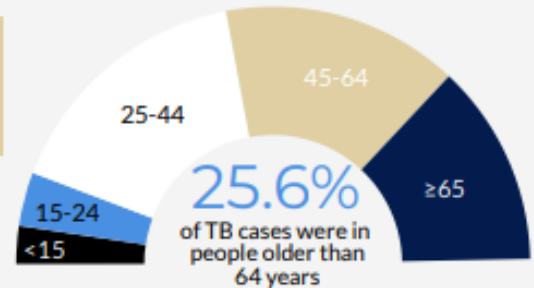


Demographics



Country of Birth

42 — Number of countries of birth represented among patients with TB disease



Most Common Countries of Birth Among Patients

United States: 31 Philippines: 18 India: 12 Vietnam: 12 Guatemala: 11



Clinical Characteristics

Proportion of TB cases with:

- 3.4%** | HIV
- 9.2%** | Resistance to any first line drug
- 21.3%** | Diabetes
- 36.2%** | A positive sputum smear
- 79.7%** | A pulmonary site of disease

Time in the U.S.

7.9 — Median number of years in the U.S. at time of diagnosis among non-U.S.-born patients

Profile of Tuberculosis Cases in Virginia

In 2023, Virginia reported 207 cases of tuberculosis (TB), a 6% increase from the 195 cases reported in 2022. This increase was expected as local and national TB numbers continued to increase after declines in reported cases during the peaks of the COVID-19 pandemic. Virginia's TB case rate increased from 2.3 cases per 100,000 persons in 2022 to 2.4 cases per 100,000 persons in 2023. Virginia's 2023 rate, as it has in the past, remained below the national rate of 2.9 cases per 100,000 persons.

Figure 1. Tuberculosis Cases, Virginia, 1942-2023

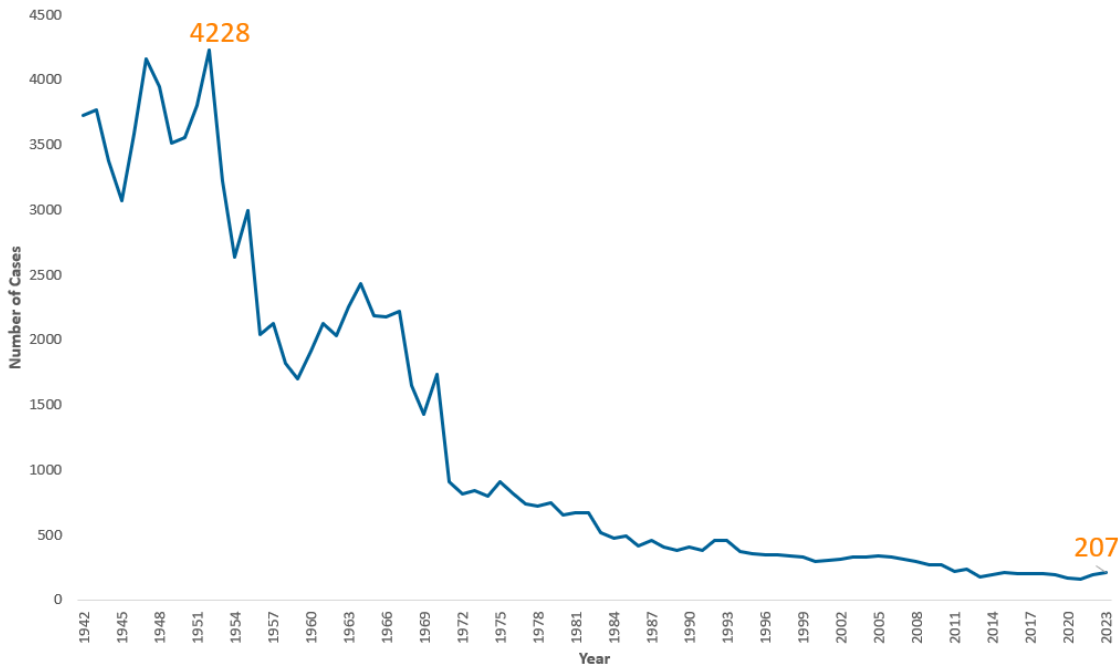
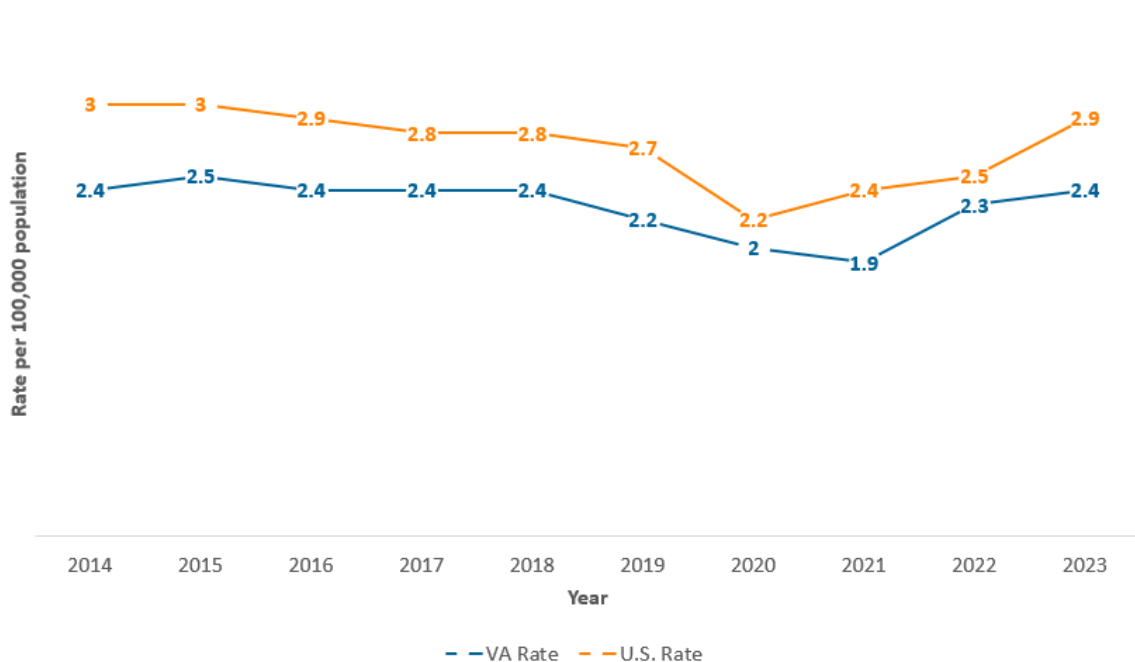
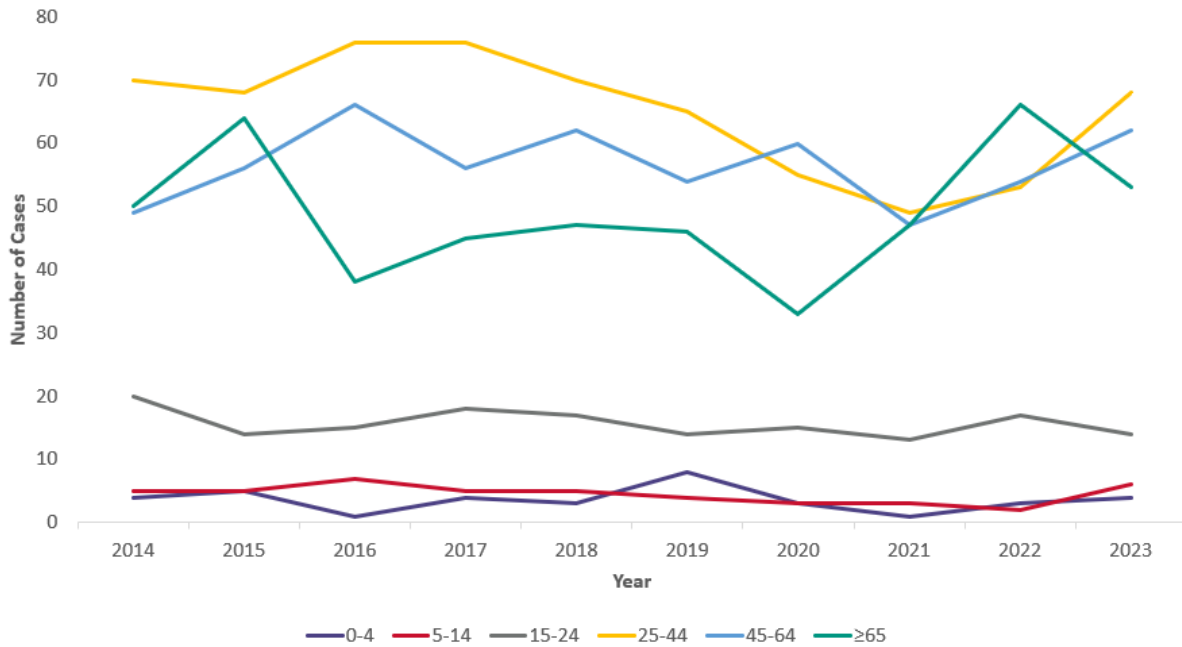


Figure 2. Tuberculosis Rates, Virginia and the United States, 2014-2023



Demographics

Figure 3. Tuberculosis Cases by Age Group in Years, Virginia, 2014-2023



In 2023, Virginia’s TB cases ranged in age from two to 89 years old. While in 2022 TB in older individuals increased with clients aged 65 and older accounting for 34% of cases, TB in this demographic decreased to 26% of cases in 2023. Adults aged 25-44 accounted for 33% of 2023 cases. Virginia provided case management for four clients under the age of five in 2023 and an additional six pediatric clients ranging in age from five to 14. The SHINE protocol, a shorter duration regimen for children with non-serious TB, was used for some of these clients. Fifty-four percent of Virginia’s 2023 TB cases were male and 46% were female.

Figure 4. Tuberculosis Cases by Sex, Virginia, 2014-2023

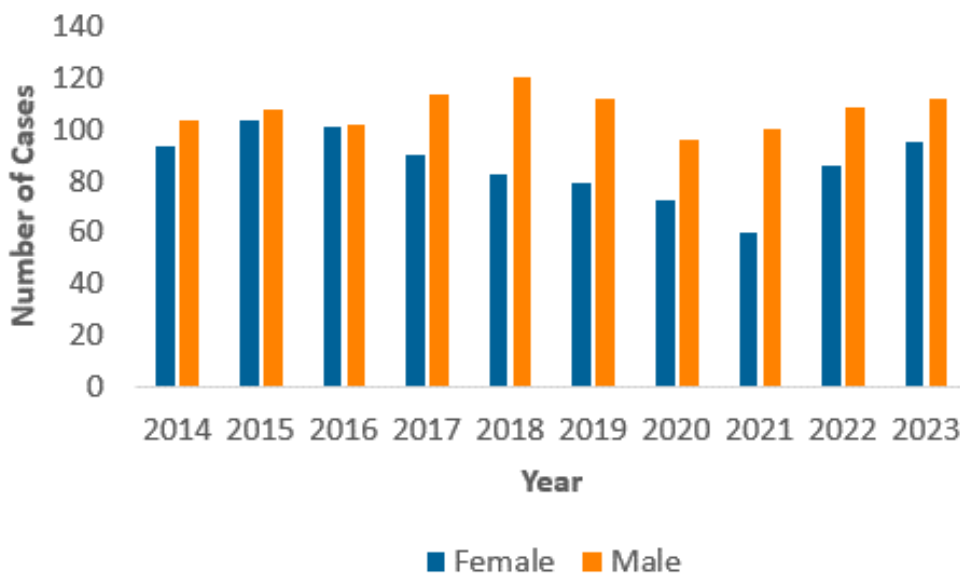


Figure 5. Race and Ethnicity of U.S.-Born Tuberculosis Cases, Virginia, 2014-2023

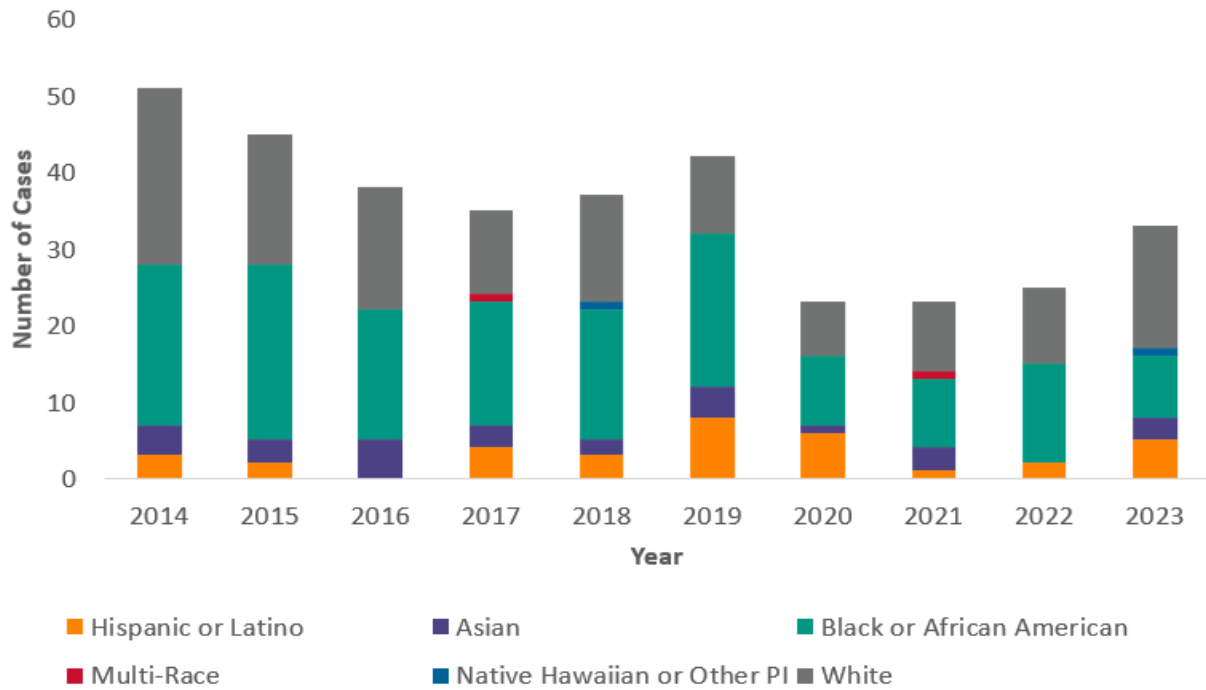
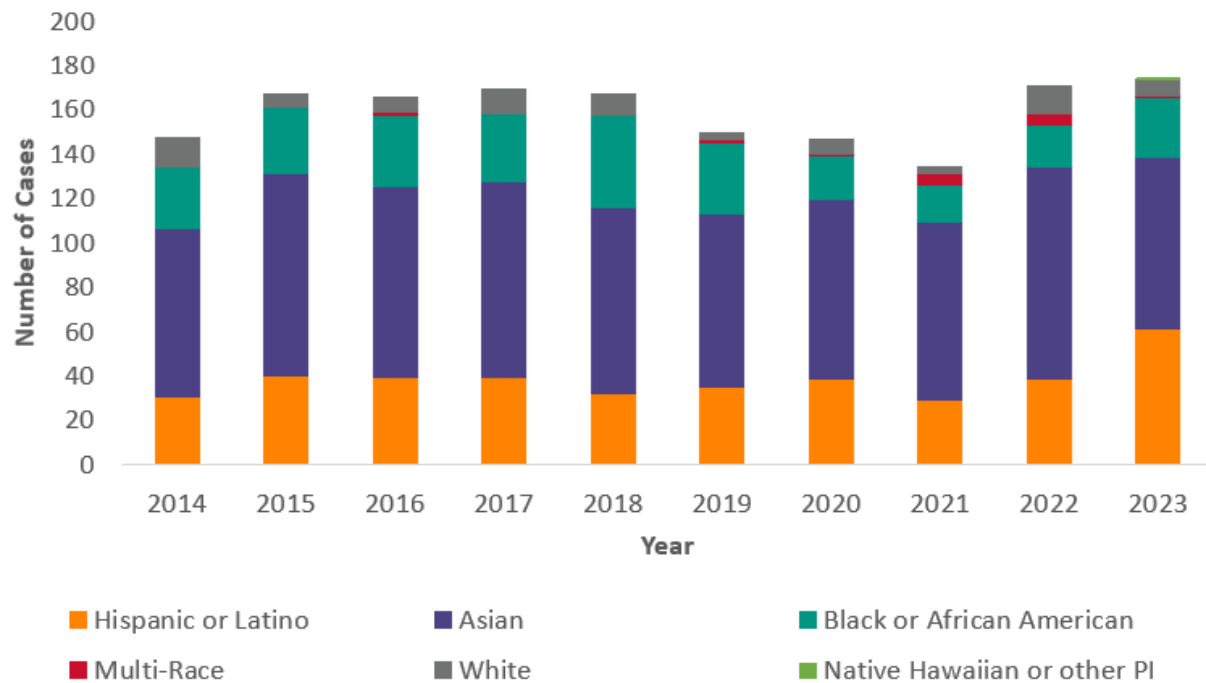


Figure 6. Race and Ethnicity of Non-U.S.-Born Tuberculosis Cases, Virginia, 2014-2023



Virginia typically sees TB in a high percentage of individuals who were born outside of the United States and sees higher numbers of individuals identifying as Asian or Hispanic/Latino in this group, compared to higher numbers of individuals identifying as Black or African American among U.S.-born people with TB. In 2023, 84% of Virginia’s TB clients were non-U.S. born. Humanitarian crises across the world and associated global movement continue to impact local, state, and national TB burden, and emphasize the need for a global TB elimination strategy. In 2023, Virginia provided care for TB clients born in 41 countries other than the United States. Rates of TB in the non-U.S.-born population are significantly higher than rates seen in the U.S.-born population in Virginia.

Figure 7. Percent of Total Tuberculosis Cases by Nativity, Virginia, 2014-2023

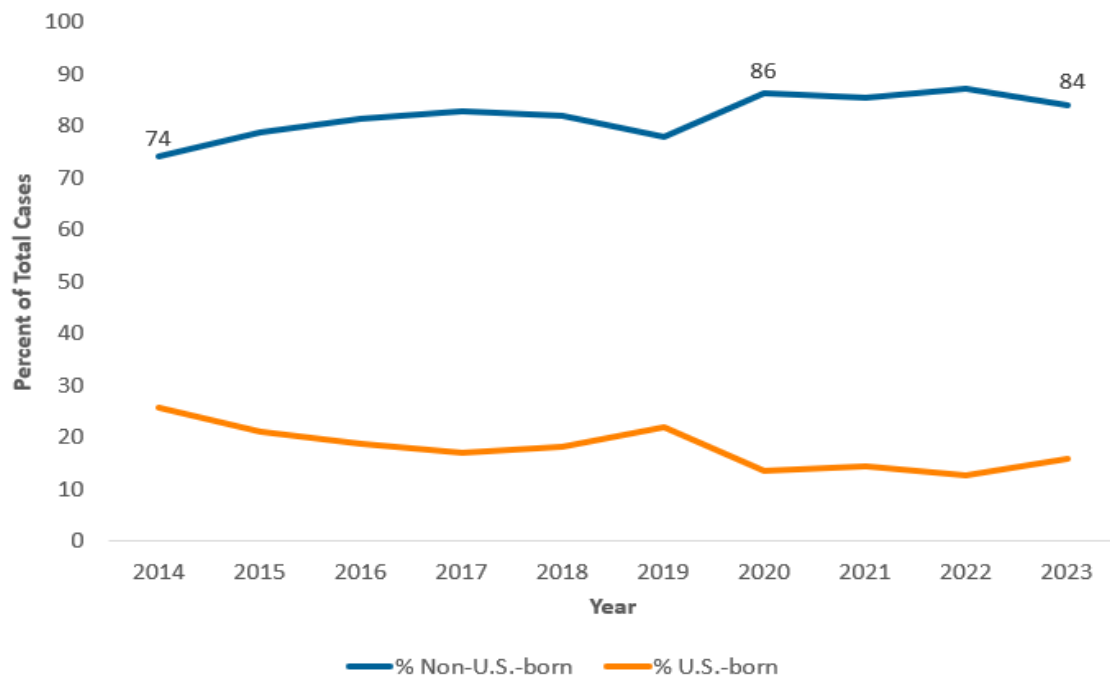


Figure 8. Tuberculosis Rate by Nativity and Overall State Rate, Virginia, 2014-2023

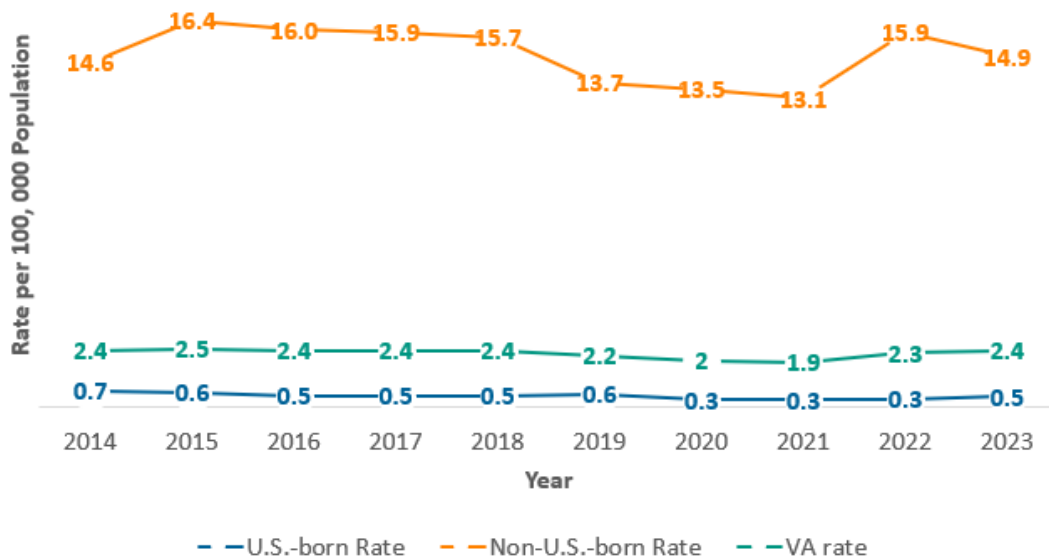
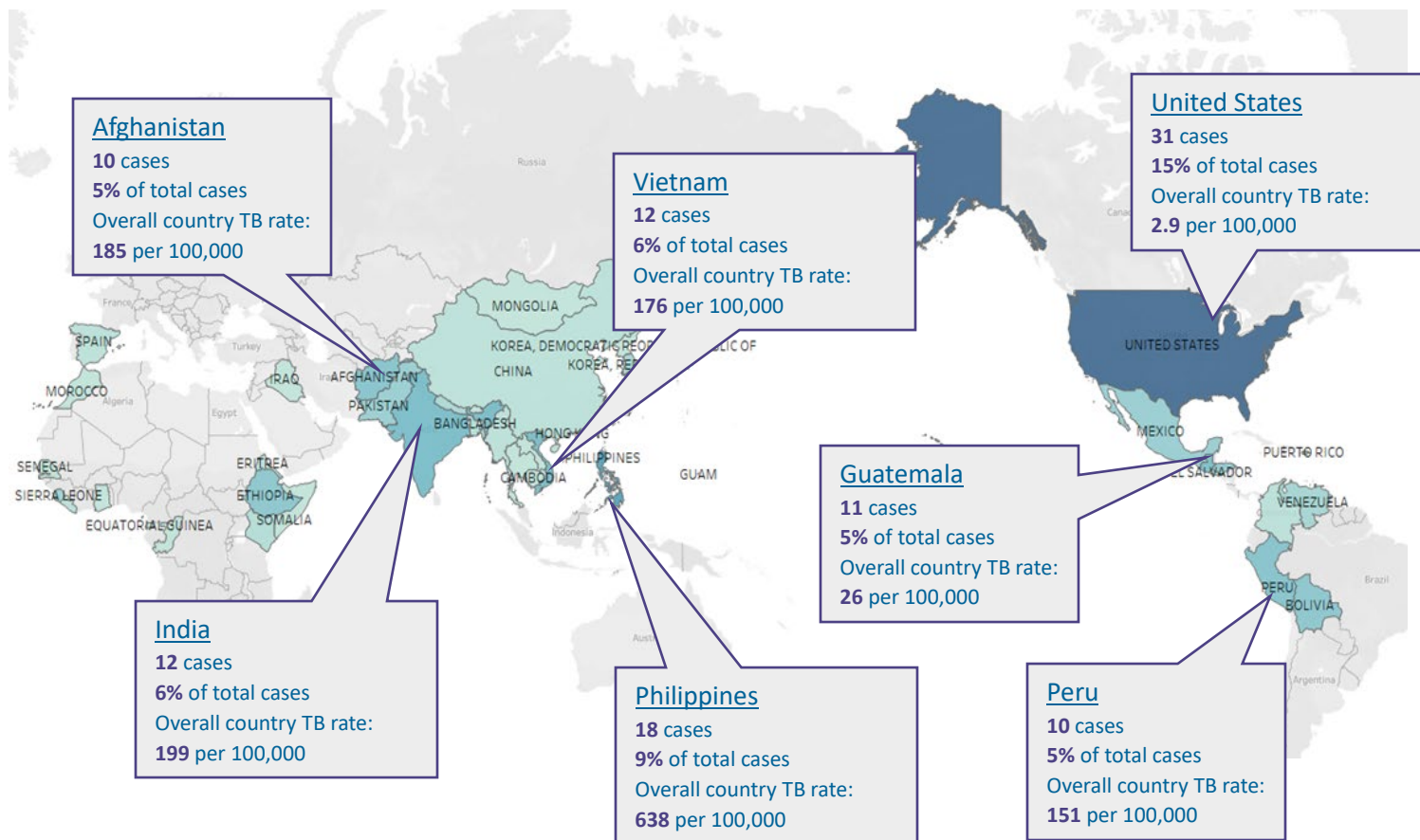
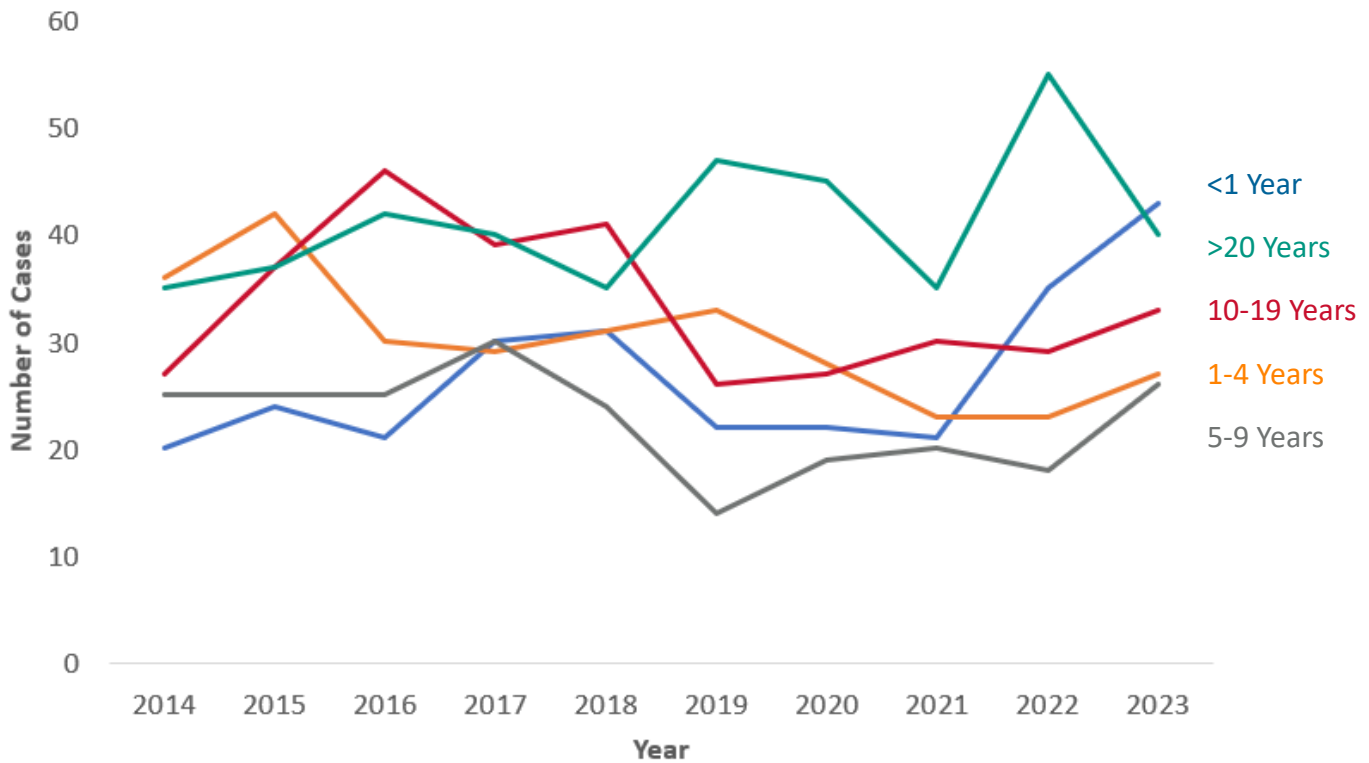


Figure 9. Top Countries of Birth, Tuberculosis Cases, Virginia, 2023*



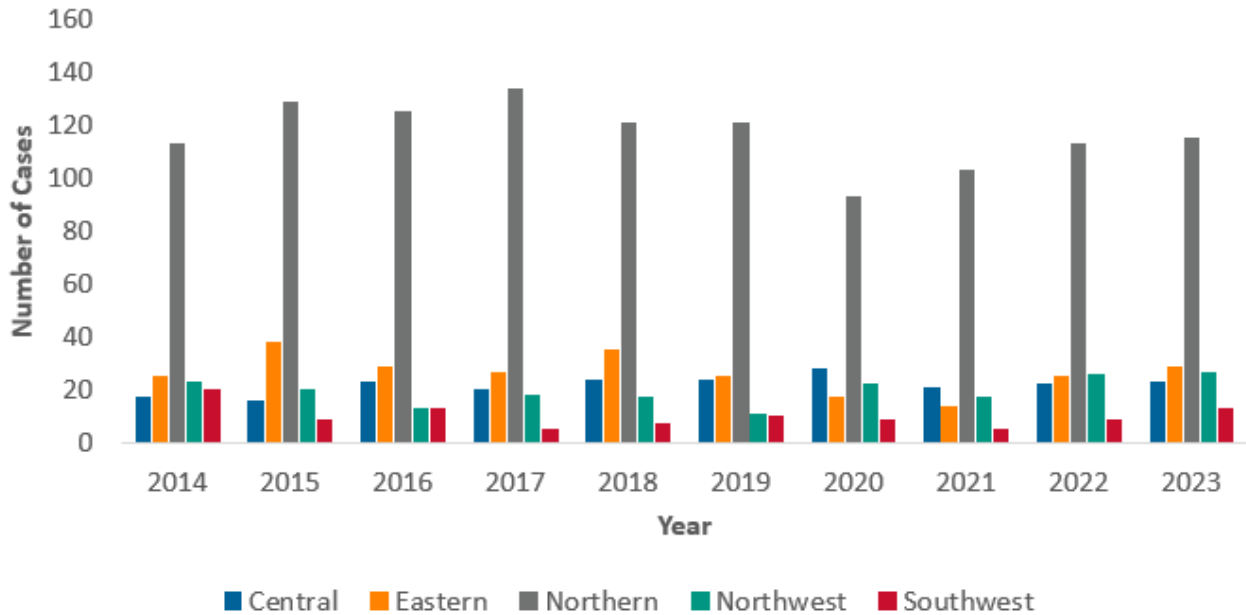
*Country-specific TB rates for countries other than the United States are based on 2022 data published as part of the [2023 WHO Global Tuberculosis Report](#).

Figure 10. Time in the United States at Tuberculosis Diagnosis, Virginia, 2014-2023



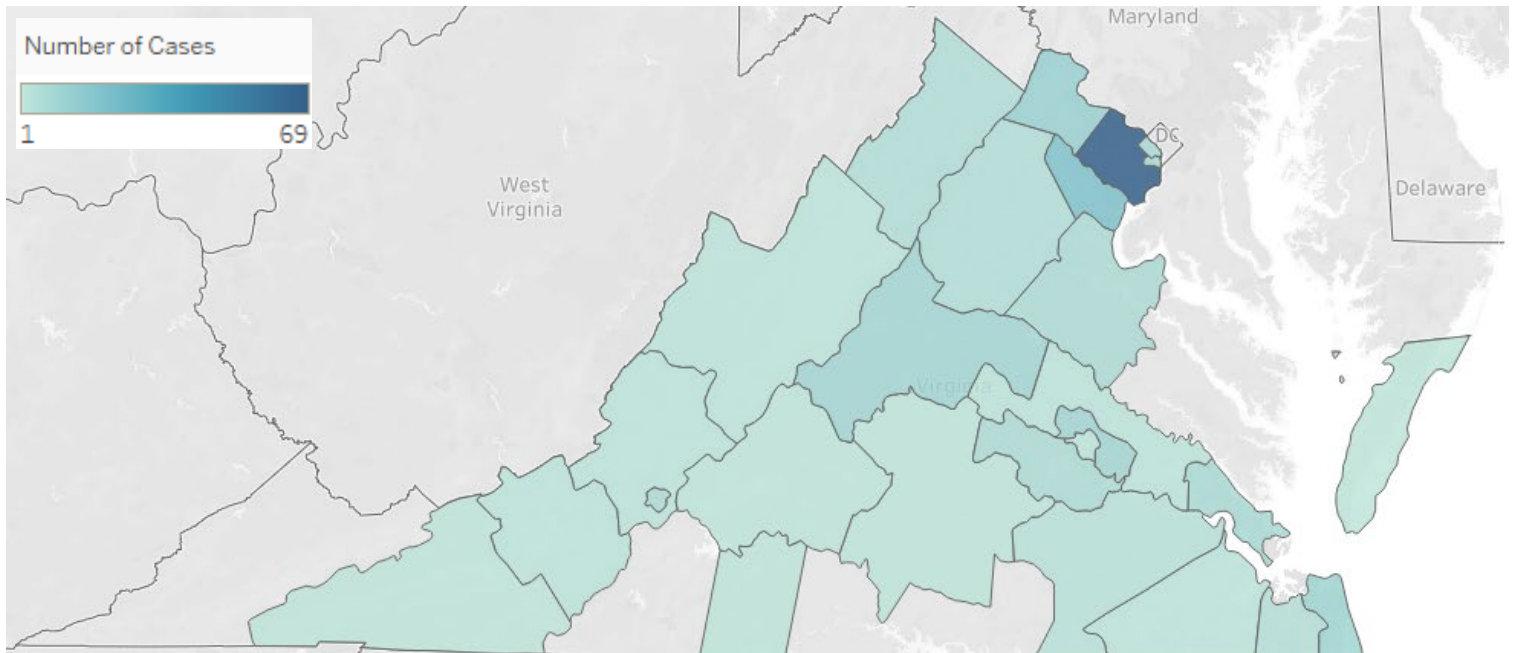
Among non-U.S.-born persons with TB in Virginia in 2023 for whom year of arrival data was available, there was an increase in diagnosis of TB in people who had recently arrived to the United States with 25% arriving less than a year from their diagnosis, compared to 21% in 2022. This aligns with return to post-pandemic to global movement, and movement due to international humanitarian crises. Virginia saw a decrease in the number of people diagnosed with TB who had lived in the United States for more than 20 years, but this group still accounted for 24% of people diagnosed with TB in Virginia who were born abroad.

Figure 11. Tuberculosis Case Distribution by Region, Virginia, 2014-2023



In 2023, 56% of persons with TB were living in the Northern Region of Virginia. However, every region in Virginia has provided care for a person with TB over the past decade. In 2023, 28 of Virginia’s 35 Health Districts provided care for active TB clients, ranging from one to 69 clients per Health District. TB rates across districts ranged in 2023 from 0 to 5.9 cases per 100,000 population.

Figure 12. Tuberculosis Case Distribution by District, Virginia, 2023



Clinical Characteristics

In 2023, 80% of Virginia’s TB cases had a pulmonary site of disease, with 42% of all TB cases having evidence of advanced pulmonary disease including positive sputum smears and/or cavitation on diagnostic chest imaging. These factors typically increase infectiousness of the patient and imply a significant burden of disease which may lead to delayed culture conversion. Over the past decade, at least 75% of Virginia’s TB cases have pulmonary involvement each year.

Figure 13. Site of Disease of Tuberculosis Cases, Virginia, 2014-2023

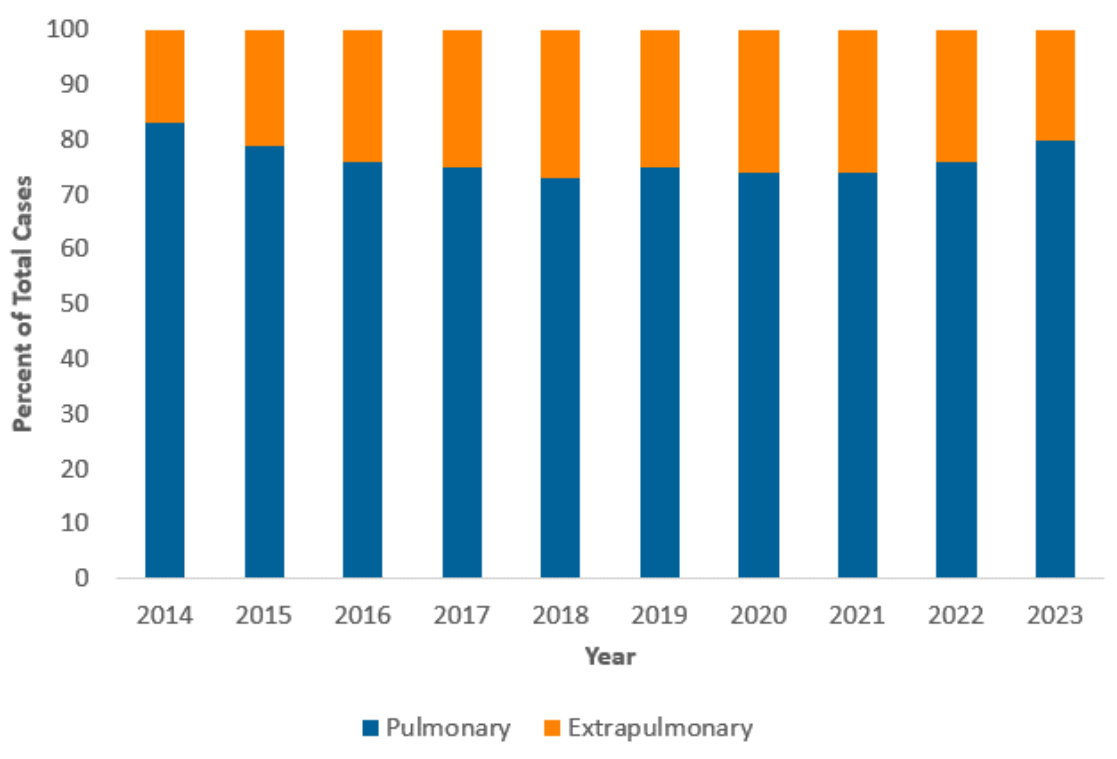


Table 1. Site of Disease of Extrapulmonary Tuberculosis Cases*, Virginia, 2023

Disease site	Number of Cases
Any extrapulmonary site	65
Pleural	15
Lymphatic Cervical	10
Other	7
Bone and/or joint	6
Lymphatic Intrathoracic	6
Eye and ear appendages	5
Lymphatic Axillary	4
Lymphatic Other	4
Meningeal	3
Peritoneal	3
Genitourinary	2
Pancreas	2
Pericardium	2
Lymphatic Unknown	1
Spleen	1

*Categories are not mutually exclusive. A client with multiple extrapulmonary sites of disease was counted for each site. These data also include individuals with an extrapulmonary site of disease who had pulmonary involvement.

Hemoglobin A1c testing and HIV testing are both standards of care for TB clients in Virginia. Diabetes is a leading comorbidity for TB clients in Virginia. In 2023, 21% of TB clients also had diabetes and this percentage has been at least 15% over the past decade. Virginia sees a relatively low percentage of HIV co-infection among TB clients. In 2023, 3% of TB cases were also living with HIV. This percentage has trended down over the past decade. Serum drug level testing is provided to monitor medication absorption for clients with diabetes, HIV, and in certain other circumstances.

Figure 14. Tuberculosis Cases with Diabetes, Virginia, 2014-2023

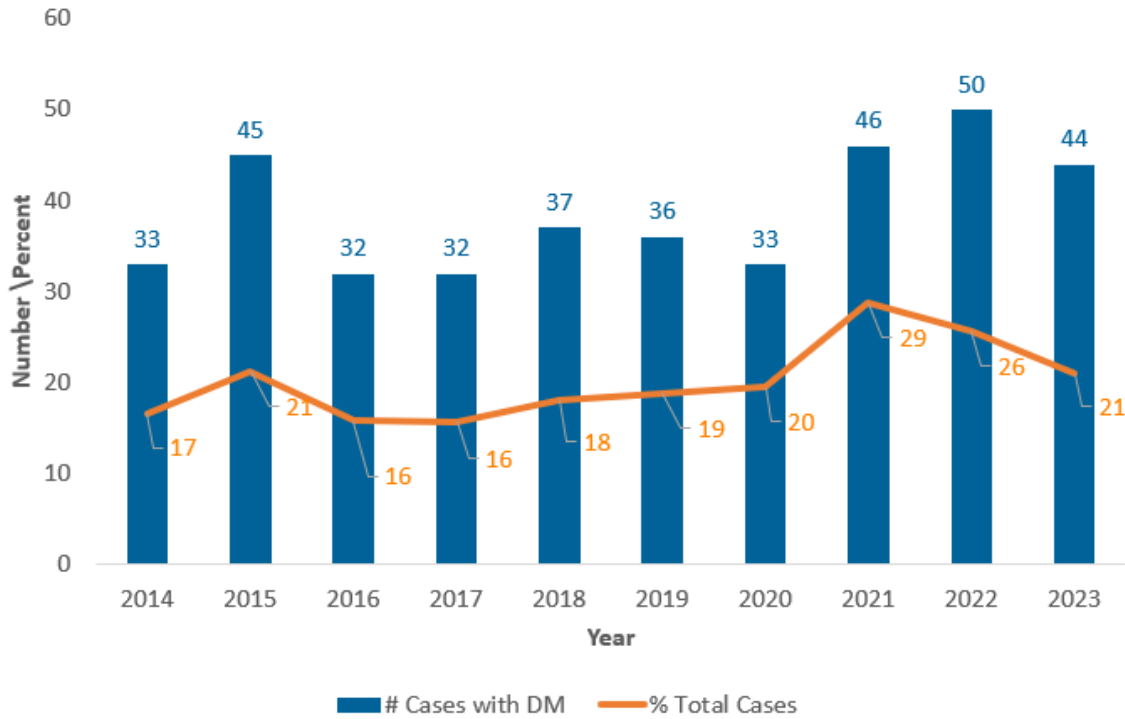
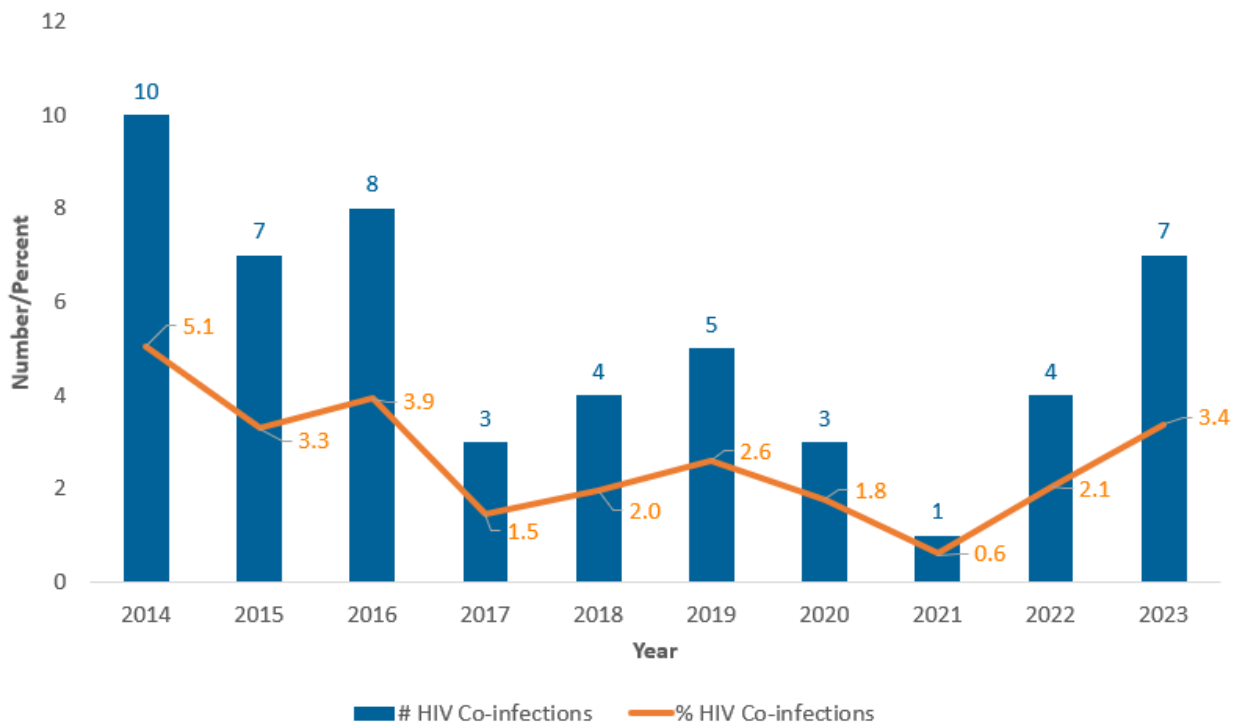


Figure 15. Tuberculosis Cases with HIV Co-infection, Virginia, 2014-2023



In 2022, the most recent year for which outcome data is complete, 82% of TB clients completed treatment, but 12% died either prior to diagnosis or after starting treatment. Although 2023 outcome data is not yet complete, fewer deaths prior to diagnosis of TB or during TB treatment have been reported (10).

Figure 16. Treatment Outcomes for Tuberculosis Cases Counted in 2022, Virginia

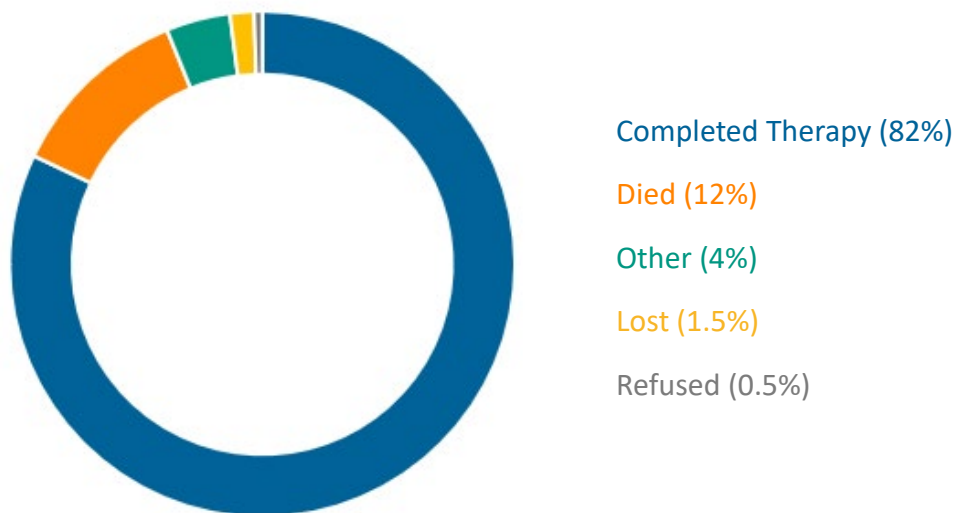
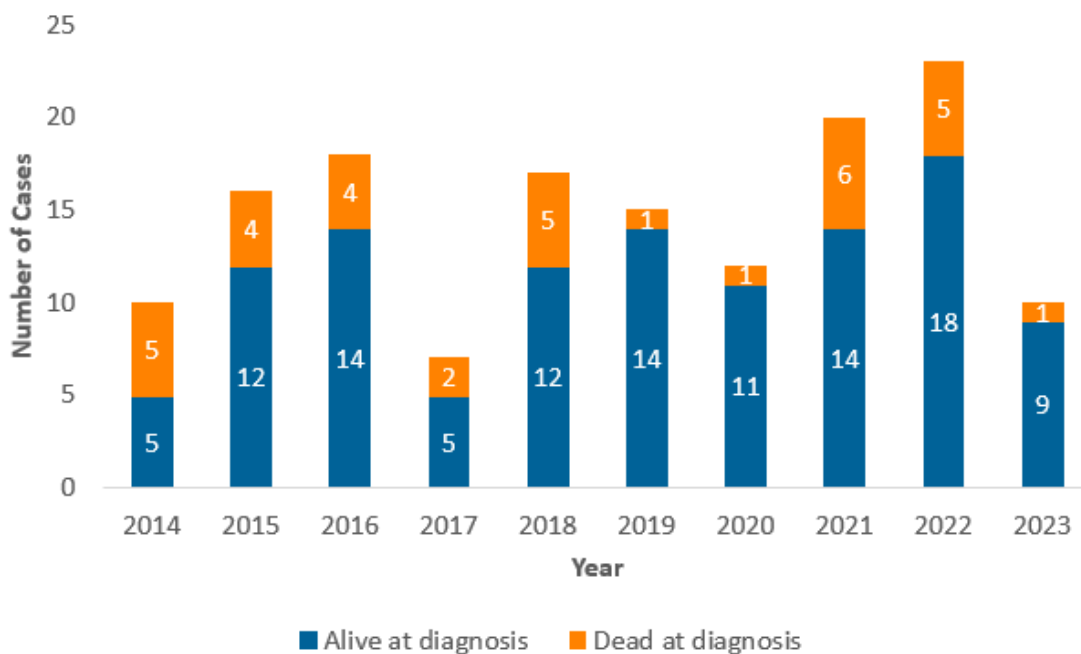


Figure 17. Number of Patients with Tuberculosis Who Died Before or During Treatment, Virginia, 2014-2023*

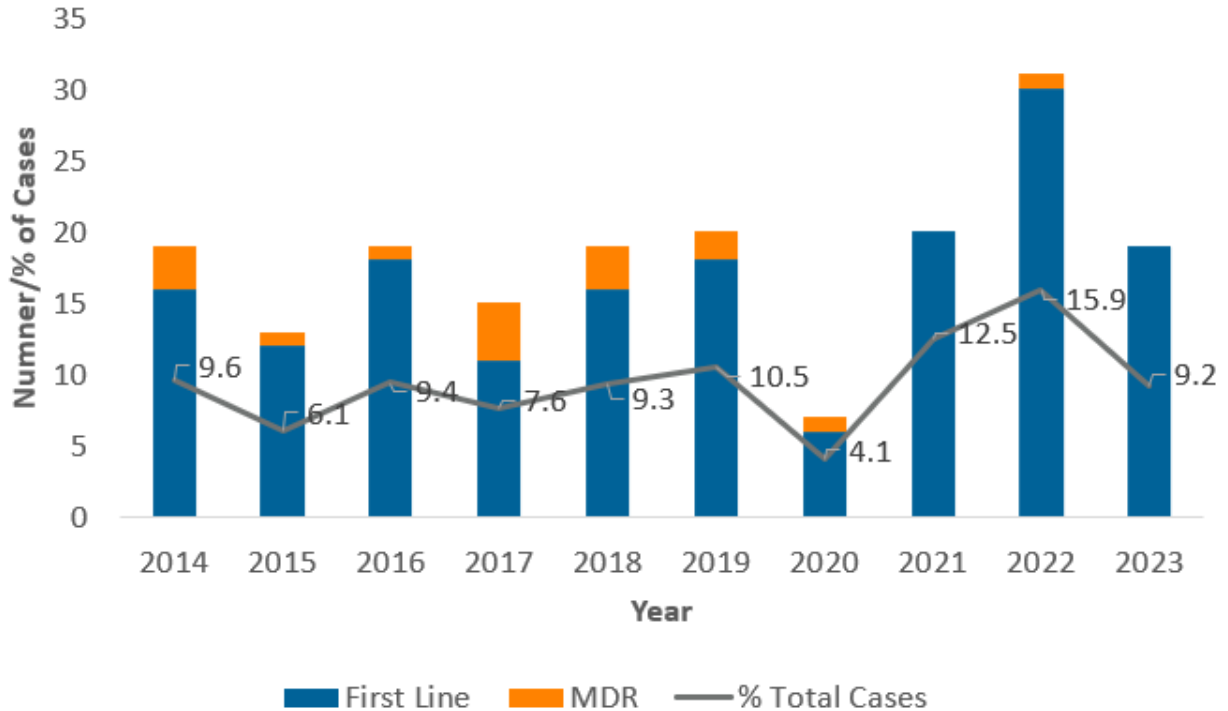


*2023 outcome data is not final

Drug Resistance

Virginia saw a decrease in identified resistance to at least one of the first line TB drugs (rifampin, isoniazid, pyrazinamide, and ethambutol) with resistance identified for 9% of TB patients compared to 16% in 2022. The majority of first line resistance identified is to isoniazid and pyrazinamide. In 2023, Virginia had no TB patients with multi-drug resistant TB, compared to one in 2022. Phenotypic drug susceptibility testing is performed for all culture positive TB cases. In late 2023, laboratories across the country experienced potential false resistant results for pyrazinamide due to an issue with the reagent used for the BD MGIT testing system, resulting in a Class 2 Device Recall in 2024. For this reason, phenotypic PZA testing was limited at the end of the year and into 2024, although molecular testing was utilized for some clients.

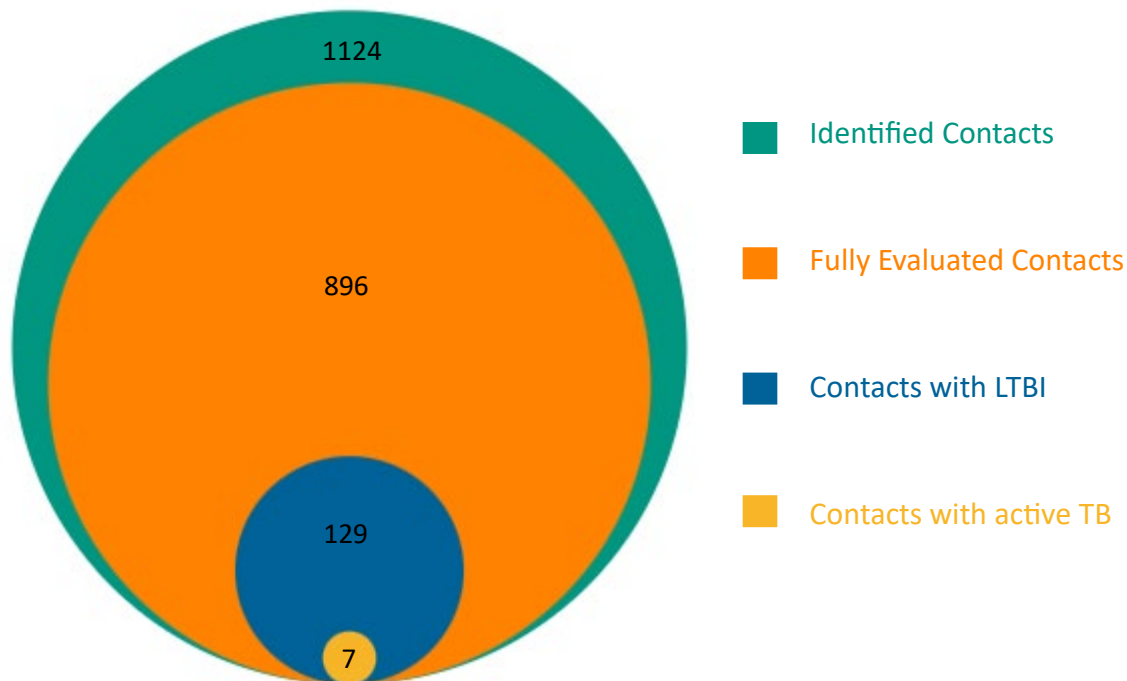
Figure 18. Drug Resistance Among Tuberculosis Cases, Virginia, 2014-2023



Contact Investigations

In 2022, the most recent year for which complete contact investigation data is available, 1124 contacts to TB cases were identified who warranted evaluation based on their exposure. Of these contacts, 896 (80%) were completely evaluated, meaning at least one test for TB infection eight to ten weeks after their last possible exposure, and a chest x-ray if indicated, was completed. These evaluations identified seven people with active TB disease and 129 people with new or previously undiagnosed LTBI. Of those identified with LTBI, 112 (87%) started treatment and 93 of those who started completed treatment (83%). Contact investigations were conducted in many different locations including household settings, businesses, places of worship, schools, and healthcare facilities.

Figure 19. Contact Investigation Outcomes, Virginia, 2022



Genotyping

Genotyping can assist with contact investigations, providing supporting evidence for hypothesized links between cases. Genotyping also provides additional information when laboratory contamination is suspected or when a person is experiencing a second episode of TB, which may be recurrence or a new infection. The Virginia Department of Health was able to submit isolates to CDC for all 160 patients with culture positive TB in 2023.