


GEORGIA TUBERCULOSIS SURVEILLANCE 2020 REPORT

GEORGIA DEPARTMENT OF PUBLIC HEALTH

Georgia Tuberculosis Surveillance Report | 2020

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Executive Summary

A total of 221 tuberculosis (TB) cases were reported in Georgia in 2020, representing a 25.8% decrease from 298 cases in 2019. The 2020 TB incidence (new case) rate of 2.1 cases per 100,000 persons represents a notable decrease from 2.8 cases per 100,000 persons in 2019 (Figure 1).

In 2020, TB incidence rates by health district ranged from 0.0 cases per 100,000 persons in District 5-1 (Dublin) to 5.1 cases per 100,000 persons in District 3-5 (DeKalb) (Table 2). Five health districts (Districts 3-2, 3-3, 3-4, 3-5, and 8-2) reported a TB incidence rate higher than the overall state incidence in 2020 (Figure 4). Three counties (Dekalb, Fulton, and Gwinnett) reported >25 TB cases each in 2020, accounting for 42.1% of reported cases statewide (Table 1).

Of the 221 TB cases reported in Georgia in 2020, 124 (56.1%) were non-U.S.-born (Figure 8). The top four countries of origin for non-U.S.-born persons reported with TB disease in Georgia were Mexico, India, Vietnam, and Ethiopia (Figure 9). TB cases among persons born in these four countries accounted for just over half (52.4%) of cases among non-U.S.-born persons in Georgia.

HIV status was reported for 96.3% of Georgia TB cases in 2020. Among the 213 patients with a known HIV status, 6.1% were HIV-positive. Persons living in congregate settings are at high risk for TB exposure. In 2020, 14 (6.3%) of Georgia's total TB cases experienced homelessness in the year before diagnosis and 7 (3.2%) were diagnosed while residing in a correctional facility (Figure 11). In 2020, there were two cases of multidrug-resistant TB (MDR-TB or TB resistant to at least isoniazid and rifampin) diagnosed in Georgia. One had a previous history of active TB disease, and the other was a missed contact to a previous MDR-TB case.

The latest year with completed TB contact investigation data was 2019. Among the 3,120 identified contacts of TB cases reported in 2019 in Georgia, 2,361 (75.7%) completed a medical evaluation for TB. Of the 464 contacts diagnosed with latent TB infection (LTBI), 334 (72.0%) started LTBI treatment and of those, 275 (82.3%) completed LTBI treatment.

TB incidence was noticeably lower in 2020 compared to 2019, both in Georgia and in the United States as a whole (Figure 2). The direct impact of COVID-19 on TB diagnosis is unknown, however it is possible that pandemic mitigation efforts, reduced travel, changes in immigration policies, or missed or delayed TB diagnoses contributed to this apparent decrease in TB incidence.

Although TB incidence is decreasing in Georgia, epidemiologic modeling by the U.S. Centers for Disease Control and Prevention (CDC) projects that the goal of TB elimination will not be attained in this century with the current rates of decline. Current program strategies such as early identification of TB cases, completion of TB treatment by directly observed therapy, and contact investigation should be maintained, but newer strategies such as targeted TB testing among high-risk individuals (e.g., persons born in countries with a high prevalence of TB and persons who live or work in high-risk congregate settings) and treating LTBI should be implemented to accelerate progress toward TB elimination.

Tuberculosis Surveillance in Georgia

TB is a reportable disease in Georgia. All Georgia physicians, laboratories, and other health care providers are required by law to immediately report clinical and laboratory-confirmed TB cases under their care to Georgia public health authorities. TB cases may be directly reported to a County Health Department, a District Health Office, or to the State TB Program. The TB Epidemiology Section of the Georgia Department of Public Health (GDPH) is responsible for the systematic collection of all reported TB cases in the state. Immediate reporting of TB cases enables public health staff to follow up with patients, administer directly observed therapy (DOT), monitor TB treatment until completion, evaluate and screen individuals exposed to a TB case, and control TB outbreaks.

TB cases in Georgia can be reported electronically through the State Electronic Notifiable Disease Surveillance System (SendSS), a secure web-based surveillance software developed by GDPH, or by calling, mailing, or faxing a report to public health authorities. Hospital infection control personnel, as well as public health nurses, outreach staff, epidemiologists, and communicable disease specialists involved in disease surveillance are encouraged to report TB through SendSS and can register to become a SendSS user by logging into the system's website (https://sendss.state.ga.us) and selecting TB from the list of reportable diseases.

Public health authorities collect demographic, clinical, and risk factor data about reported TB cases and their contacts. These data are analyzed to describe the distribution of the disease, trends in morbidity, mortality, drug resistance patterns, treatment outcomes, clusters of TB cases, and infection rates among high-risk groups and contacts to TB cases in Georgia. These data are used at the state and local level to guide policy and decision making, set priorities for program interventions, evaluate program performance for the prevention and control of TB in Georgia, and educate key stakeholders and the general public on TB. Georgia's TB surveillance data are transmitted electronically to the U.S. Centers for Disease Control and Prevention (CDC) and become part of the national TB surveillance database.

TB Case Definitions for Public Health Surveillance

GDPH utilizes the 2009 Council of State and Territorial Epidemiologists (CSTE) case definition for tuberculosis (Position Statement 09-ID-65) that can be accessed at: https://wwwn.cdc.gov/nndss/conditions/tuberculosis/case-definition/2009/.

Clinical case definition:

A case that meets all of the following criteria:

- A positive tuberculin skin test or positive interferon gamma release assay for *M. tuberculosis*
- Signs and symptoms compatible with TB (abnormal chest imaging study or clinical evidence of current disease)
- Treatment with two or more anti-TB medications

- A completed diagnostic evaluation

Laboratory criteria for diagnosis:

- Isolation of *M. tuberculosis* complex on a culture from a clinical specimen, or
- Demonstration of *M. tuberculosis* complex from a clinical specimen by nucleic acid amplification test

Confirmed case: A case that meets the clinical case definition or is laboratory confirmed.

Current Epidemiology of Tuberculosis in Georgia

Georgia reported 221 new tuberculosis (TB) cases in 2020. This represents a 25.8% decrease from the 298 TB cases reported in 2019 (Figure 1). The number of TB cases in Georgia has decreased by 68.2% since 2000 (Figure 1). The TB incidence rate in Georgia decreased from 2.8 cases per 100,000 persons in 2019 to 2.1 cases per 100,000 in 2020. This is slightly lower than the national case rate of 2.2 cases per 100,000 population in 2020 (Figure 2). According to the CDC, Georgia ranked 6th in the United States for the number of new TB cases and ranked 9th for the TB case rate (per 100,000 population) among the 50 reporting states in 2020.

Geographic Distribution

Among the 159 counties in Georgia, three counties in the metropolitan Atlanta area reported the highest number of TB cases in 2020: DeKalb (39 cases), Fulton (28 cases), and Gwinnett (26 cases) (Table 1). These three counties accounted for 42.1% of all TB cases reported in Georgia in 2020. Figure 3a shows the geographic distribution of TB cases by county in 2020.

Each of Georgia's 18 Health Districts has oversight responsibility for public health in the counties it serves. In 2020, District 3-5 (DeKalb) had the highest TB case rate with 5.1 cases per 100,000 population, followed by District 8-2 (Albany) with 4.7 cases per 100,000 population and District 3-3 (Clayton) with 4.4 cases per 100,000 population (Table 2).

Sex and Age Distribution

In 2020, TB cases in Georgia occurred predominantly among males (153 cases, 69.2%), compared to females (68 cases, 30.8%). When stratified by age, the highest proportion of TB cases occurred among persons between the ages of 25 and 44 (88 cases, 39.8%) (Figure 5). Among persons 25-44 years old, 59 cases (67.0%) were male, and 29 cases (33.0%) were female (Figure 5). The 25-44 age group had the highest TB case rate (3.0 per 100,000), while the lowest case rate was among children 5-14 years old (0.2 per 100,000) (Table 6). The TB case rate for children younger than 5 years of age, a group more likely to develop life-threatening forms of TB disease, decreased from 2.0 per 100,000 in 2019 to 1.1 per 100,000 in 2020. Young children are more likely than older children and adults to have TB spread through their bloodstream and cause complications and deadlier forms of TB disease, such as TB meningitis or disseminated TB.

Race/Ethnicity Distribution and TB Disparities

TB disproportionately affects racial/ethnic minorities in Georgia. In 2020, non-Hispanic Blacks, non-Hispanic Asians, and Hispanics accounted for 43.0%, 22.2%, and 21.3% of TB cases in Georgia (Figure 6), respectively, but only represented 31.8%, 4.4%, and 10.0% of Georgia's population, respectively. Non-Hispanic whites constituted 12.7% of TB cases in 2020. Non-Hispanic Native Hawaiian/Pacific Islanders had the highest TB case rate among race/ethnic groups (13.2 per 100,000), followed by non-Hispanic Asians (10.4 per 100,000), Hispanics (4.4 per 100,000), and non-Hispanic Blacks (2.8 per 100,000) (Table 7). The TB case rate among non-Hispanic Black persons represents an 90.8% decrease from the non-Hispanic Black TB case rate in 1993 (30.6 per 100,000). However, the TB case rate among non-Hispanic Blacks was still more than five times higher than the TB case rate among non-Hispanic whites (0.5 per 100,000) in Georgia in 2020 (Table 7).

High-Risk Populations

Non-U.S.-Born Persons

TB among persons born outside of the United States accounted for 56.6% of TB cases with a known country of origin in Georgia in 2020. More than half of non-U.S.-born cases reported in 2020 came from Mexico (19.4%), India (16.9%), Vietnam (8.9%), and Ethiopia (7.3%)—all countries where TB is an endemic disease (Figure 9). Among the 113 non-U.S.-born cases in 2020 with a known year of arrival, 34 (30.1%) were diagnosed in the first five years of their arrival in the United States. This is a notable decrease from the 70 (44.3%) non-U.S.-born cases diagnosed within the first five years of their arrival in 2019.

In 2020, three counties reported more than half (51.6%) of the total number of non-U.S.-born TB cases in Georgia: DeKalb County (29 cases), Gwinnett County (24 cases), and Fulton County (11 cases).

Persons with HIV Co-Infection

HIV testing should be performed for all TB patients, as TB treatment may change when antiretroviral therapy for HIV is given concurrently. Active TB often accelerates the natural progression of HIV infection. Of the 221 TB cases reported in 2020, 5.9% were HIV-positive, compared to 7.7% in 2019 (Figure 10). Among the 13 TB cases with HIV co-infection in 2020, 76.9% were non-Hispanic Blacks, 69.2% were male, and 76.9% were between 25 and 44 years old.

HIV status was reported for 96.3% of TB cases in 2020. In the high-risk age group of adults 25-44 years of age, HIV status was reported for 100.0% of patients in 2020, compared to 96.7% in 2019. Of the 8 TB cases whose HIV status was not reported, HIV testing was not offered to 3 cases (37.5%), all of which were children less than 5 years old. HIV test results were unknown for 5

(62.5%) of the 8 TB cases whose HIV status was not reported, including three patients who died prior to diagnosis with TB, one who refused testing, and one whose test result was unknown.

Persons in Congregate Settings and Persons with Substance Abuse

Persons residing in crowded congregate settings such as homeless shelters, prisons, and nursing homes are at risk for acquiring TB. In 2020, 14 (6.3%) TB cases in Georgia experienced homelessness in the year before TB diagnosis, 7 (3.2%) were residents of correctional facilities at the time of diagnosis, and none were residents of long-term care facilities (Table 3, Figure 11). Of the 7 TB cases incarcerated in correctional facilities, 3 (42.9%) were inmates of local jails and 4 (57.1%) were inmates of state prisons.

Substance abuse is the most reported behavioral risk factor among patients with TB in the United States. TB patients who abuse substances often experience treatment failure and remain infectious longer because treatment failure presumably extends periods of infectiousness. In Georgia, 48 (21.7%) TB cases in 2020 had reported abuse of either illicit drugs or alcohol (Table 3, Figure 11).

TB in Children

TB in children is considered a sentinel public health event as it often indicates recent transmission from an infectious adult case. Additionally, potentially lethal forms of TB disease, such as TB meningitis or disseminated TB, can develop in very young children. In 2020, children younger than 15 years old comprised 4.5% of TB cases in Georgia: 7 cases (1.1 per 100,000) were reported in children younger than 5 years old and 3 cases (0.2 per 100,000) were reported in children 5-14 years old (Table 6, Figure 5). There was one case of TB meningitis in a child younger than 5 years old in Georgia in 2020.

Persons with latent tuberculosis infection (LTBI) are infected with TB bacteria, but do not have clinical signs and symptoms of TB disease. In Georgia, LTBI in children younger than five years old is a reportable disease. When LTBI in a child less than five years of age is reported, the local health department will initiate a contact investigation to identify the source of the infection, recommend treatment, follow up with the child to ensure completion of treatment, and monitor for development of active TB disease. Early identification and treatment of TB infection in children can prevent progression to active disease and aid in identifying previously undiagnosed and untreated cases of active TB.

In 2020, 6 children younger than five years old were reported to have LTBI in Georgia; 2 (33.3%) were identified during immigration medical exams, 1 (16.7%) was reported by a hospital or private health provider and 3 (50.0%) were identified by contact investigations performed by county health department staff.

Diagnosis and Treatment Outcomes

Initial Diagnosis, Treatment, and Directly Observed Therapy

In Georgia, most TB cases are initially diagnosed in a hospital or clinic and are followed up by county health departments after discharge to continue their TB treatment. In 2020, 156 (70.6%) of the 221 TB cases in Georgia were diagnosed and initially reported by a hospital or clinic.

Of the 212 TB cases with available data on type of outpatient healthcare provider, 172 (81.1%) cases were managed and treated by county health departments, 28 (13.2%) were treated by both the health department and a private physician, 6 (2.8%) were inpatient only and 6 (2.8%) were cared for solely by a private physician.

Treatment outcomes were analyzed for eligible 2019 cases as treatment completion data for cases reported in 2020 are not yet available. Eligible cases included persons alive at diagnosis, with an initial drug regimen of one or more drugs prescribed, who did not die within one year of initiating treatment. Ineligible cases included persons with an initial rifampin-resistant isolate, patients with bone and joint disease, meningeal disease, or disease of the central nervous system, or pediatric patients (ages 0–14 years) with miliary disease or positive blood culture or a positive nucleic acid amplification test on a blood specimen, and those who moved out of the country within one year of initiating treatment. Persons reported by the Folkston ICE Processing Center are also excluded as treatment outcomes are unknown.

Among the 245 eligible TB cases counted in 2019, a total of 241 (98.4%) completed treatment and 226 (92.2%) completed treatment within 12 months (Table 5; Figure 13). County health department staff provide directly observed therapy (DOT) to TB patients, which entails watching a patient swallow every dose of their TB treatment medications for at least 6 months. Of the 210 cases with available data on treatment administration data in 2019, 165 (78.6%) received TB treatment entirely by DOT, 40 (19.0%) were treated by a combination of DOT and self-administered therapy, and 5 (2.4%) were totally self-administered (Figure 14).

TB Mortality

Twenty persons died of TB in Georgia in 2020, where the age-adjusted TB mortality rate was 0.2 per 100,000. From 2016 to 2020, a mean of 16.0 TB deaths occurred in Georgia per year, with the highest number of deaths from TB reported in 2020 (N=20).

TB and the COVID-19 Pandemic

TB incidence was noticeably lower in 2020 compared to 2019, both in Georgia and in the United States as a whole (Figure 2). At the national level, TB incidence decreased by nearly 20%, from 2.7 per 100,000 persons in 2019 to 2.2 per 100,000 persons in 2020. The direct impact of COVID-19 on TB diagnosis is unknown, however it is possible that pandemic mitigation efforts, reduced

travel, changes in immigration policies, or missed or delayed TB diagnoses contributed to this apparent decrease in TB. Additionally, TB and COVID-19 present with similar signs and symptoms, including coughing, fever, and difficulty breathing. TB disease should be considered in patients presenting with signs and symptoms consistent with TB (e.g., cough for 2 weeks or more, unintentional weight loss, and hemoptysis), especially in instances where COVID-19 diagnostic tests are negative.

Contact Investigations and Latent TB Infection

Pulmonary TB

Persons with pulmonary or laryngeal TB have a greater potential to infect others with TB, and infectiousness is higher if their sputum smears are positive for acid-fast bacilli (AFB), sputum cultures are positive for *Mycobacterium tuberculosis,* or cavitary lesions are present on chest radiography. In 2020, 170 (76.9%) of the 221 TB cases in Georgia had pulmonary TB. Of the 170 pulmonary TB cases, 125 (73.5%) had sputum cultures that were positive for *Mycobacterium tuberculosis*, 103 (60.6%) were sputum AFB smear-positive, and 44 (25.9%) showed cavitary lesions on chest radiography.

TB Contact Investigations and Latent TB Infection

Public health authorities routinely conduct contact investigations among persons exposed to a TB case to identify secondary TB cases and contacts with latent TB infection (LTBI). TB cases (cases with positive acid-fast bacillus (AFB) sputum-smear results or pulmonary cavities) have the highest priority for investigation. During a contact investigation, public health staff conduct in-person interviews to ask recent contacts whether they have TB-like symptoms, administer a TB skin test (TST) or interferon gamma release assay (IGRA), repeat the TST or IGRA 8-10 weeks after the last exposure to the index (first) TB case if the initial TST or IGRA is negative, and have a chest radiology exam performed if the TST or IGRA is positive. Persons with LTBI have a positive TST or IGRA but are asymptomatic and have a normal chest radiology exam. They are not contagious but have a 10% chance of developing TB disease if they do not receive treatment for LTBI.

A total of 3,120 contacts were identified from the contact investigations of TB cases reported in 2019 (the latest year with complete contact investigation data). Among these, 2,361 (75.7%) were completely evaluated for TB. Of the completely evaluated contacts, 464 (19.7%) had LTBI and 42 (1.8%) had TB disease. Among the 464 contacts with LTBI, 334 (72.0%) started LTBI treatment. Of the contacts who started LTBI treatment, 275 (82.3%) completed LTBI treatment, 18 (5.4%) chose to stop LTBI treatment, 36 (10.8%) were lost to follow-up, 1 (<1%) had adverse side effects, 1 (<1%) moved elsewhere, 3 (<1%) discontinued treatment due to provider decision, and none developed active TB disease.

Drug Resistance and Molecular Epidemiology

Drug Resistance

Among the 179 culture-positive TB cases in Georgia in 2020, 169 (94.4%) were tested for initial drug susceptibility to the three first-line anti-TB medications: isoniazid (INH), rifampin (RIF), and ethambutol (EMB). Of the 164 tested isolates from cases with no previous history of TB, 15 (9.1%) had primary resistance to INH (resistance to INH only) and none had primary resistance to RIF (resistance to RIF only). There were 2 reported cases of multidrug-resistant TB (MDR-TB, i.e. TB resistant to at least INH and RIF) in 2020, one of which had a history of previous TB disease and the other was a missed contact to a prior MDR-TB case. This is slightly higher compared to the 1 case of multidrug-resistant TB in 2019. From 2016-2020, the percentage of TB cases with primary INH resistance (INH-R) in Georgia ranged from 7.0% to 9.3%, with an average of 2.2 MDR-TB cases per year (Figure 12).

Molecular Epidemiology

TB genotyping is a laboratory method that determines the genetic relatedness of TB strains among different patients with culture-positive TB disease. Identical genotypes among persons with TB disease suggest recent person-to-person transmission. The state TB program routinely analyzes TB genotype clusters, which are comprised of two or more TB cases with identical genotypes, to identify recent TB transmission, describe risk factors for transmission, identify possible sources of transmission, and determine ways to stop transmission.

From 2018-2020, there were 31 two-case clusters, 12 three-case clusters, 3 four-case clusters, 5 five-case clusters, and 6 clusters with six or more cases in Georgia (Figure 15). Figure 16 displays the number of genotype cluster alerts by alert level. According to the CDC, alert level is determined by the log likelihood ratio statistic (LLR) for a given cluster, identifying higher than expected geospatial concentrations for a TB genotype cluster in a specific county, compared to the national distribution of that genotype. The Tuberculosis Genotyping Information Management System (TB GIMS) generates alert level notifications based on the LLR: "No alert" is indicated if the LLR is between 0≤5, "medium" is for clusters with LLRs between 5≤10, and "high" alert is for clusters with LLRs ≥10. LOTUS (Large Outbreak of Tuberculosis in the United States) alerts are generated when clusters of ≥10 genotype-matched cases within a 3-year period that related by recent transmission are identified. Between 2018-2020, Georgia received 27 medium alerts, 7 high alerts, and 3 LOTUS alerts (Figure 16).

Table 1. Tuberculosis Cases and Case Rates per 100,000 Population by County, Georgia, 2019-2020.				
County	2019		2020	
	Cases	Rate	Cases	Rate
Appling	0	0.0	0	0.0
Atkinson	0	0.0	0	0.0
Bacon	0	0.0	0	0.0
Baker	0	0.0	<5	--
Baldwin	<5	--	<5	--
Banks	0	0.0	0	0.0
Barrow	0	0.0	<5	--
Bartow	<5	--	<5	--
Ben Hill	<5	--	0	0.0
Berrien	0	0.0	<5	--
Bibb	5	3.3	0	0.0
Bleckley	0	0.0	0	0.0
Brantley	0	0.0	0	0.0
Brooks	0	0.0	0	0.0
Bryan	0	0.0	0	0.0
Bulloch	<5	--	<5	--
Burke	<5	--	0	0.0
Butts	0	0.0	0	0.0
Calhoun	0	0.0	0	0.0
Camden	0	0.0	0	0.0
Candler	0	0.0	0	0.0
Carroll	<5	--	<5	--
Catoosa	<5	--	<5	--
Charlton*	0	0.0	0	0.0
D. Ray James Correctional Facility/ Folkston ICE Processing Center‡	5	--	<5	--
Chatham	10	3.5	8	2.8
Chattahoochee	<5	--	0	0.0
Chattooga	<5	--	0	0.0
Cherokee	<5	--	<5	--
Clarke	<5	--	<5	--
Clay	0	0.0	0	0.0
Clayton	13	4.4	13	4.4
Clinch	<5	--	0	0.0
Cobb	14	1.8	13	1.7
Coffee	0	0.0	<5	--
Colquitt	<5	--	<5	--
Columbia*	0	0.0	<5	--
Augusta State Medical Prison‡	0	0.0	<5	--
Cook	0	0.0	0	0.0
Coweta	<5	--	<5	--
Crawford	0	0.0	0	0.0

County	2019		2020	
	Cases	Rate	Cases	Rate
Crisp	0	0.0	<5	--
Dade	0	0.0	0	0.0
Dawson	0	0.0	0	0.0
Decatur	<5	--	<5	--
DeKalb	56	7.4	39	5.1
Dodge	0	0.0	0	0.0
Dooly	0	0.0	0	0.0
Dougherty	0	0.0	6	6.9
Douglas	<5	--	0	0.0
Early	0	0.0	0	0.0
Echols	0	0.0	0	0.0
Effingham	0	0.0	0	0.0
Elbert	0	0.0	0	0.0
Emanuel	0	0.0	0	0.0
Evans	0	0.0	0	0.0
Fannin	0	0.0	0	0.0
Fayette	<5	--	<5	--
Floyd	<5	--	<5	--
Forsyth	<5	--	<5	--
Franklin	0	0.0	0	0.0
Fulton	43	4.0	28	2.6
Gilmer	0	0.0	0	0.0
Glascock	0	0.0	0	0.0
Glynn	<5	--	0	0.0
Gordon	0	0.0	<5	--
Grady	0	0.0	0	0.0
Greene	0	0.0	0	0.0
Gwinnett	41	4.4	26	2.8
Habersham	<5	--	<5	--
Hall	<5	--	5	2.4
Hancock	0	0.0	0	0.0
Haralson	0	0.0	0	0.0
Harris	0	0.0	<5	--
Hart	<5	--	0	0.0
Heard	0	0.0	0	0.0
Henry	<5	--	<5	--
Houston	6	3.8	<5	--
Irwin*	<5	--	0	0.0
Irwin County Detention Center	0	0.0	0	0.0
Jackson	0	0.0	0	0.0
Jasper	0	0.0	0	0.0
Jeff Davis	0	0.0	<5	--
Jefferson	0	0.0	0	0.0
Jenkins	0	0.0	0	0.0

County	2019		2020	
	Cases	Rate	Cases	Rate
Johnson	0	0.0	0	0.0
Jones	0	0.0	0	0.0
Lamar	0	0.0	<5	--
Lanier	0	0.0	0	0.0
Laurens	<5	--	0	0.0
Lee	0	0.0	0	0.0
Liberty	<5	--	0	0.0
Lincoln	0	0.0	0	0.0
Long	0	0.0	0	0.0
Lowndes	<5	--	<5	--
Lumpkin	0	0.0	0	0.0
Macon	<5	--	<5	--
Madison	<5	--	0	0.0
Marion	0	0.0	0	0.0
McDuffie	0	0.0	0	0.0
McIntosh	0	0.0	0	0.0
Meriwether	<5	--	0	0.0
Miller	0	0.0	0	0.0
Mitchell	<5	--	<5	--
Monroe	0	0.0	0	0.0
Montgomery	<5	--	0	0.0
Morgan	0	0.0	0	0.0
Murray	0	0.0	<5	--
Muscogee	9	4.6	<5	--
Newton	<5	--	<5	--
Oconee	<5	--	0	0.0
Oglethorpe	0	0.0	0	0.0
Paulding	<5	--	<5	--
Peach	<5	--	<5	--
Pickens	0	0.0	0	0.0
Pierce	<5	--	0	0.0
Pike	0	0.0	0	0.0
Polk	<5	--	0	0.0
Pulaski	0	0.0	0	0.0
Putnam	0	0.0	0	0.0
Quitman	0	0.0	0	0.0
Rabun	0	0.0	0	0.0
Randolph	0	0.0	0	0.0
Richmond	<5	--	<5	--
Rockdale	<5	--	<5	--
Schley	0	0.0	0	0.0
Screven	0	0.0	0	0.0
Seminole	0	0.0	0	0.0
Spalding	<5	--	0	0.0

County	2019		2020	
	Cases	Rate	Cases	Rate
Stephens	<5	--	0	0.0
Stewart*	0	0.0	0	0.0
Stewart Detention Center	<5	--	0	0.0
Sumter	<5	--	0	0.0
Talbot	0	0.0	0	0.0
Taliaferro	0	0.0	0	0.0
Tattnall	0	0.0	0	0.0
Taylor	0	0.0	0	0.0
Telfair	0	0.0	0	0.0
Terrell	<5	--	<5	--
Thomas	0	0.0	0	0.0
Tift	<5	--	0	0.0
Toombs	<5	--	<5	--
Towns	<5	--	0	0.0
Treutlen	0	0.0	0	0.0
Troup	8	11.4	0	0.0
Turner	0	0.0	0	0.0
Twiggs	0	0.0	0	0.0
Union	0	0.0	0	0.0
Upson	0	0.0	0	0.0
Walker	<5	--	<5	--
Walton	<5	--	0	0.0
Ware	0	0.0	<5	--
Warren	0	0.0	0	0.0
Washington	0	0.0	0	0.0
Wayne	<5	--	0	0.0
Webster	0	0.0	0	0.0
Wheeler	0	0.0	0	0.0
White	0	0.0	0	0.0
Whitfield	<5	--	<5	--
Wilcox	0	0.0	0	0.0
Wilkes	0	0.0	<5	--
Wilkinson	0	0.0	<5	--
Worth	0	0.0	0	0.0
Georgia	**298**	**2.8**	**221**	**2.1**

*Reported cases and calculated case rates in these counties exclude cases from corresponding prisons and detention centers.

‡Denominators for prisons and detention centers are unknown

Note: In counties where one to four cases were reported, "<5" is used to represent the number of reported cases, and the case rate is not calculated.

***Data Sources*:** 1) Case counts were obtained from State Electronic Notifiable Disease Surveillance System (SendSS) data as of September 30th, 2021; 2) Rates were calculated using population estimates obtained from the U.S. Census Bureau via https://oasis.state.ga.us/oasis/webquery/qryPopulation.aspx.

Table 2. Number of TB Cases and TB Case Rates per 100,000 population by Health District, Georgia, 2019-2020.

Health District	2019		2020	
	Cases	Rate	Cases	Rate
1.1 Rome	10	1.5	11	1.6
1.2 Dalton	5	1.0	<5	--
2.0 Gainesville	11	1.5	12	1.6
3.1 Cobb	16	1.8	13	1.4
3.2 Fulton	43	4.0	28	2.6
3.3 Clayton	13	4.4	13	4.4
3.4 Lawrenceville	45	4.0	29	2.5
3.5 DeKalb	56	7.4	39	5.1
4.0 LaGrange	17	1.9	12	1.4
5.1 Dublin	<5	--	0	0.0
5.2 Macon	13	2.4	7	1.3
6.0 Augusta	5	1.0	7	1.4
Augusta State Medical Prison‡	0	0.0	<5	--
7.0 Columbus*	16	4.3	5	1.4
Stewart Detention Center	<5	--	0	0.0
8.1 Valdosta	6	2.3	<5	--
Irwin County Detention Center	0	0	0	0
8.2 Albany	9	2.6	16	4.7
9.1 Coastal	14	2.2	8	1.3
9.2 Waycross*	5	1.3	5	1.3
D. Ray James Correctional Facility/ Folkston ICE Processing Center‡	5	--	<5	--
10.0 Athens	5	1.0	5	0.9
Total	**298**	**2.8**	**221**	**2.1**

*Reported cases and calculated case rates in these health districts exclude cases from corresponding prisons and detention centers.

‡Denominators for prisons and detention centers are unknown.

Note: In districts where one to four cases were reported, "<5" is used to represent the number of reported cases, and the case rate is not calculated.

Data Sources: 1) Case counts were obtained from State Electronic Notifiable Disease Surveillance System (SendSS) data as of September 30th, 2021; 2) Rates were calculated using population estimates obtained from the U.S. Census Bureau via https://oasis.state.ga.us/oasis/webquery/qryPopulation.aspx.

Table 3. Percentage of TB Cases with Known Risk Factors for TB by Health District, Georgia, 2020.

Health District	Non-U.S.-Born (%)	Homeless in Past Year (%)	Correctional Facility (%)	Long-Term Care Facility (%)	Substance Abuse (%)
1.1 Rome	63.6	0.0	9.1	0.0	9.1
1.2 Dalton	66.7	33.3	0.0	0.0	66.7
2.0 Gainesville	66.7	0.0	0.0	0.0	8.3
3.1 Cobb	69.2	15.4	0.0	0.0	7.7
3.2 Fulton	39.3	14.3	3.6	0.0	21.4
3.3 Clayton	61.5	15.4	0.0	0.0	38.5
3.4 Lawrenceville	86.2	0.0	0.0	0.0	6.9
3.5 DeKalb	74.4	7.7	3.4	0.0	28.2
4.0 LaGrange	50.0	0.0	0.0	0.0	8.3
5.1 Dublin	0.0	0.0	0.0	0.0	0.0
5.2 Macon	14.3	14.3	0.0	0.0	42.9
6.0 Augusta	10.0	0.0	30.0	0.0	20.0
7.0 Columbus	20.0	0.0	0.0	0.0	80.0
8.1 Valdosta	25.0	0.0	0.0	0.0	25.0
8.2 Albany	12.5	0.0	0.0	0.0	18.8
9.1 Coastal	37.5	0.0	0.0	0.0	25.0
9.2 Waycross	83.3	0.0	16.7	0.0	33.3
10.0 Athens	100.0	0.0	0.0	0.0	20.0
Total	**56.1**	**6.3**	**3.2**	**0.0**	**21.7**

***Data Source*:** Data were obtained from State Electronic Notifiable Disease Surveillance System (SendSS) as of September 30th, 2021.

Table 4. Primary Resistance to First-Line Anti-TB Medications, Georgia, 2020.

	Isoniazid		Rifampin		Ethambutol	
	Cases	Percent*	Cases	Percent*	Cases	Percent*
Georgia	16^	9.8	1^	0.6	0	0.0

*Percent of cases with completed drug susceptibility testing and no prior treatment with anti-TB medications (N=164)
^Includes 1 case with multi-drug resistance

***Data Source*:** Data were obtained from State Electronic Notifiable Disease Surveillance System (SendSS) as of September 30th, 2021.

Table 5. Completion of TB Treatment and Completion of TB Treatment within 12 Months by Health District, Georgia, 2019 (N=245).[*] [‡]		
Health District	Completion of TB Treatment (%)	Completion of TB Treatment within 12 months (%)
1.1 Rome	100.0	100.0
1.2 Dalton	100.0	100.0
2.0 Gainesville	100.0	90.0
3.1 Cobb	92.8	85.7
3.2 Fulton	97.4	81.6
3.3 Clayton	100.0	90.9
3.4 Lawrenceville	100.0	100.0
3.5 DeKalb	100.0	100.0
4.0 LaGrange	92.9	85.7
5.1 Dublin	100.0	100.0
5.2 Macon	100.0	87.5
6.0 Augusta	100.0	80.0
7.0 Columbus	92.3	92.3
8.1 Valdosta	100.0	100.0
8.2 Albany	100.0	85.7
9.1 Coastal	100.0	90.0
9.2 Waycross[‡]	100.0	100.0
10.0 Athens	100.0	75.0
Total	**98.4**	**92.2**

[*]Denominator includes persons alive at diagnosis, with initial drug regimen of one or more drugs prescribed, who did not die within one year of initiating treatment; denominator excludes persons with initial rifampin-resistant isolate, patients with bone and joint disease, meningeal disease, or disease of the central nervous system, or pediatric patients (ages 0–14 years) with miliary disease or positive blood culture or a positive nucleic acid amplification test on a blood specimen, and those who moved out of the country within one year of initiating treatment.
[‡] Denominator excludes persons reported by the Folkston ICE Processing Center as treatment outcomes are unknown

***Data Source*:** Data were obtained from State Electronic Notifiable Disease Surveillance System (SendSS) as of September 30th, 2021.

Table 6. TB Case Rates[*] by Age Group, Georgia, 2016-2020					
Age (years)	2016 (N=301)	2017 (N=293)	2018 (N=271)	2019 (N=298)	2020 (N=221)
<5	1.4	2.0	0.9	2.0	1.1
5-14	0.7	0.6	0.7	0.5	0.2
15-24	1.7	1.8	1.4	2.1	1.3
25-44	3.2	3.6	3.6	3.2	3.0
45-64	4.2	3.5	2.3	3.7	2.5
65+	4.1	3.6	4.9	3.8	2.2

[*]Cases per 100,000 population

***Data Source*:** Data were obtained from State Electronic Notifiable Disease Surveillance System (SendSS) as of September 30th, 2021.

Table 7. TB Case Rates* by Race/Ethnicity, Georgia, 2016-2020					
Race/Ethnicity	2016 (N=302)	2017 (N=293)	2018 (N=271)	2019 (N=298)	2020 (N=221)
Asian, non-Hispanic	16.8	16.5	15.8	16.1	10.4
All races, Hispanic	4.5	4.1	5.8	5.7	4.4
American Indian/Alaskan Native, non-Hispanic	0.0	0.0	0.0	4.1	0.0
Black, non-Hispanic	4.6	4.6	3.1	3.9	2.8
Multiracial, non-Hispanic	0.5	0.5	1.0	1.0	0.5
White, non-Hispanic	0.7	0.5	0.7	0.6	0.5
Native Hawaiian/Pacific Islander, non-Hispanic	0.0	0.0	0.0	0.0	13.2

*Cases per 100,000 population

***Data Source*:** Data were obtained from State Electronic Notifiable Disease Surveillance System (SendSS) as of September 30th, 2021.

Figure 1. TB Cases and Case Rates, Georgia, 2000-2020

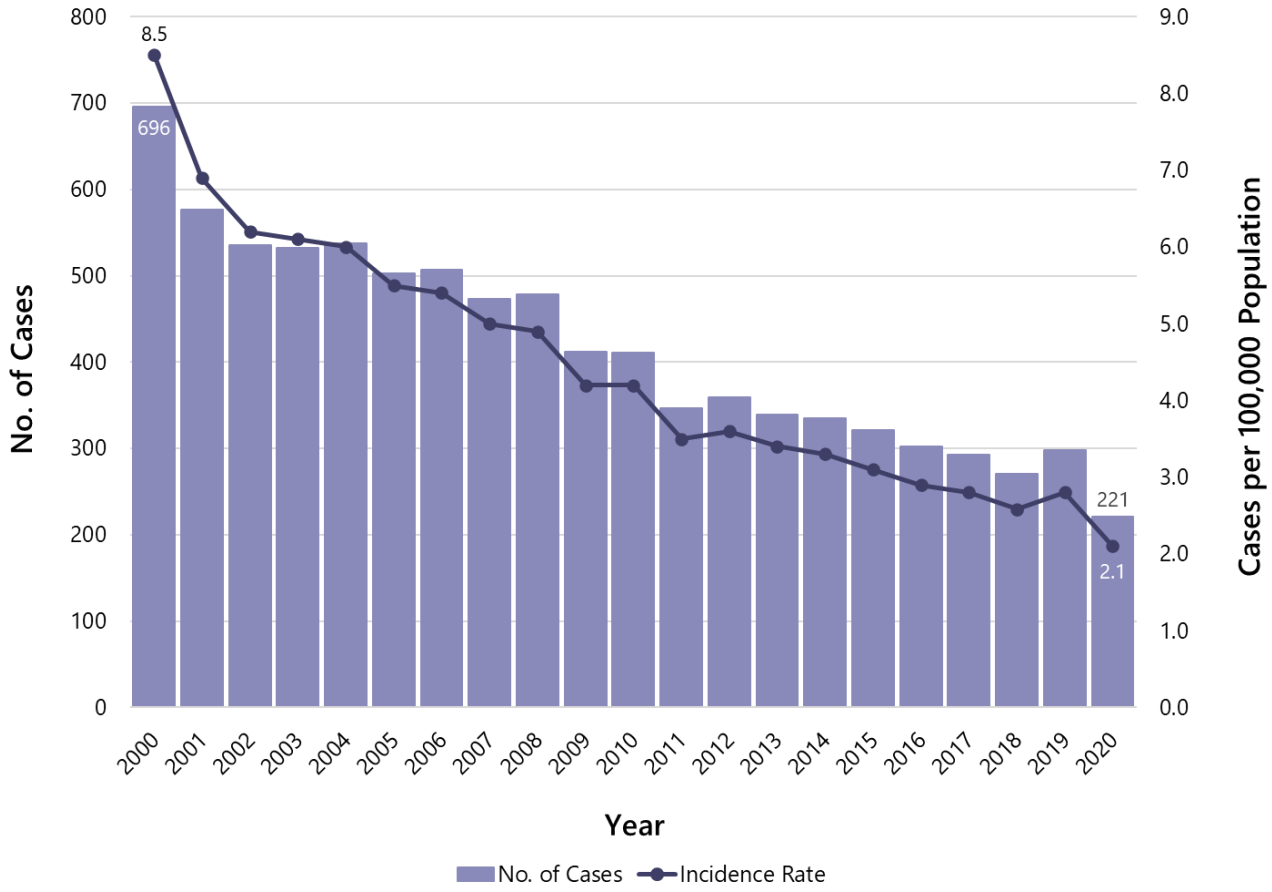


Figure 2. TB Case Rates, United States and Georgia, 2000-2020

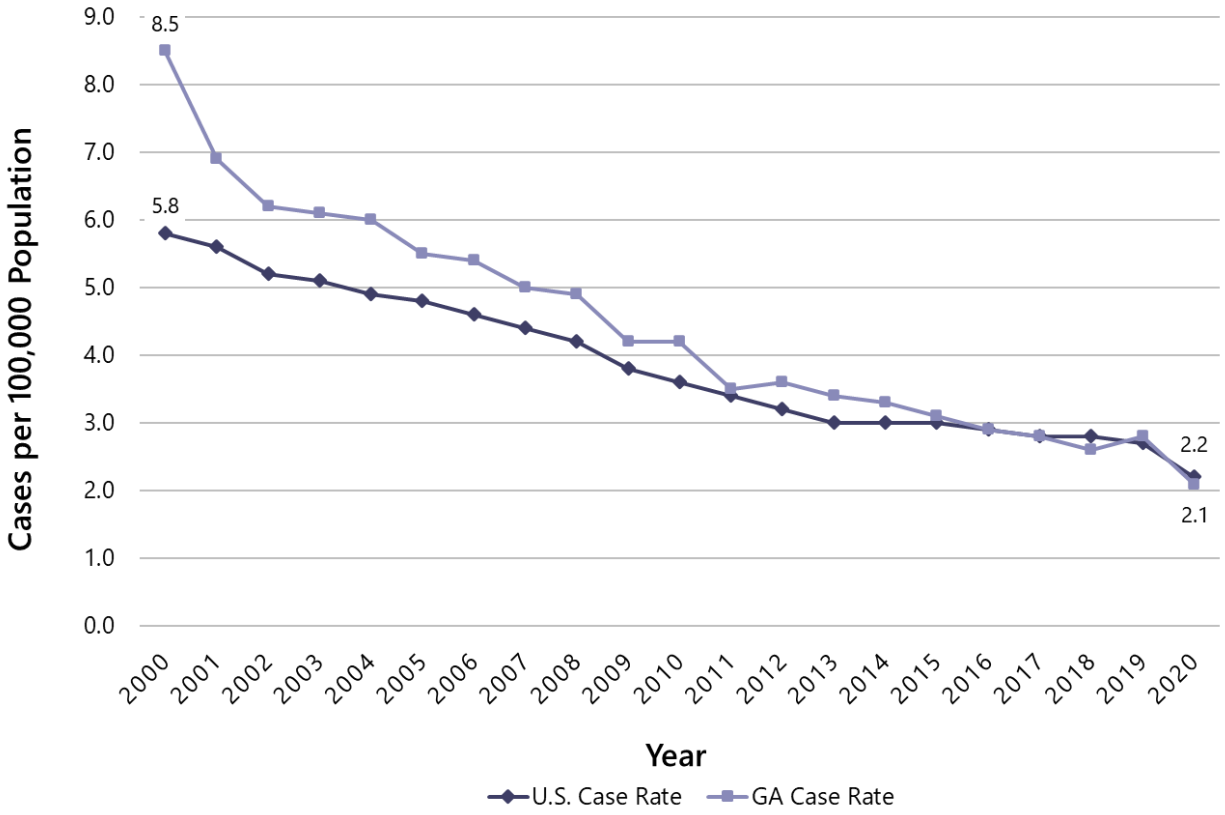


Figure 3a. Number of TB Cases by County, Georgia, 2020 (N=221)

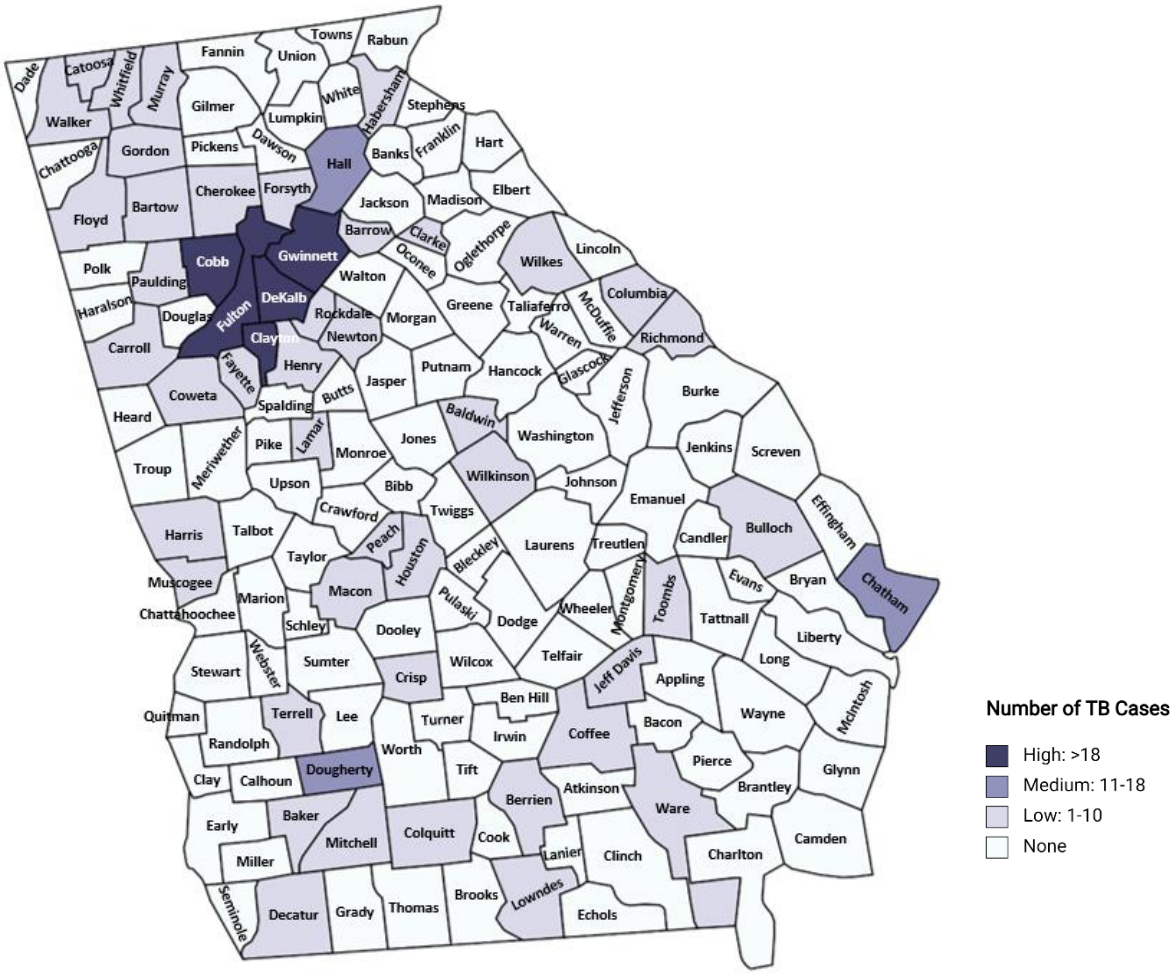


Figure 3b. Number of TB Cases by Health District, Georgia, 2020 (N=221)

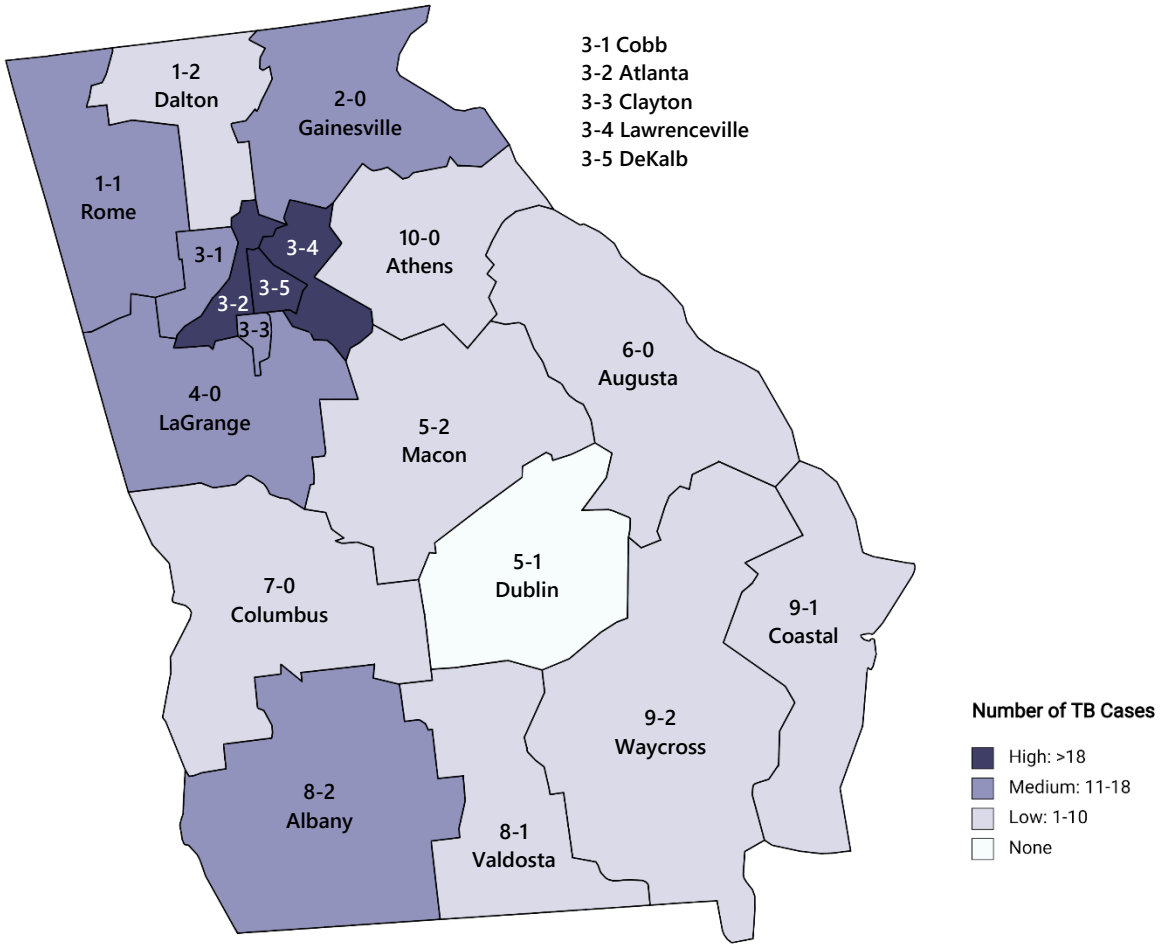


Figure 4. TB Case Rate by Health District, Georgia, 2020 (N=221)

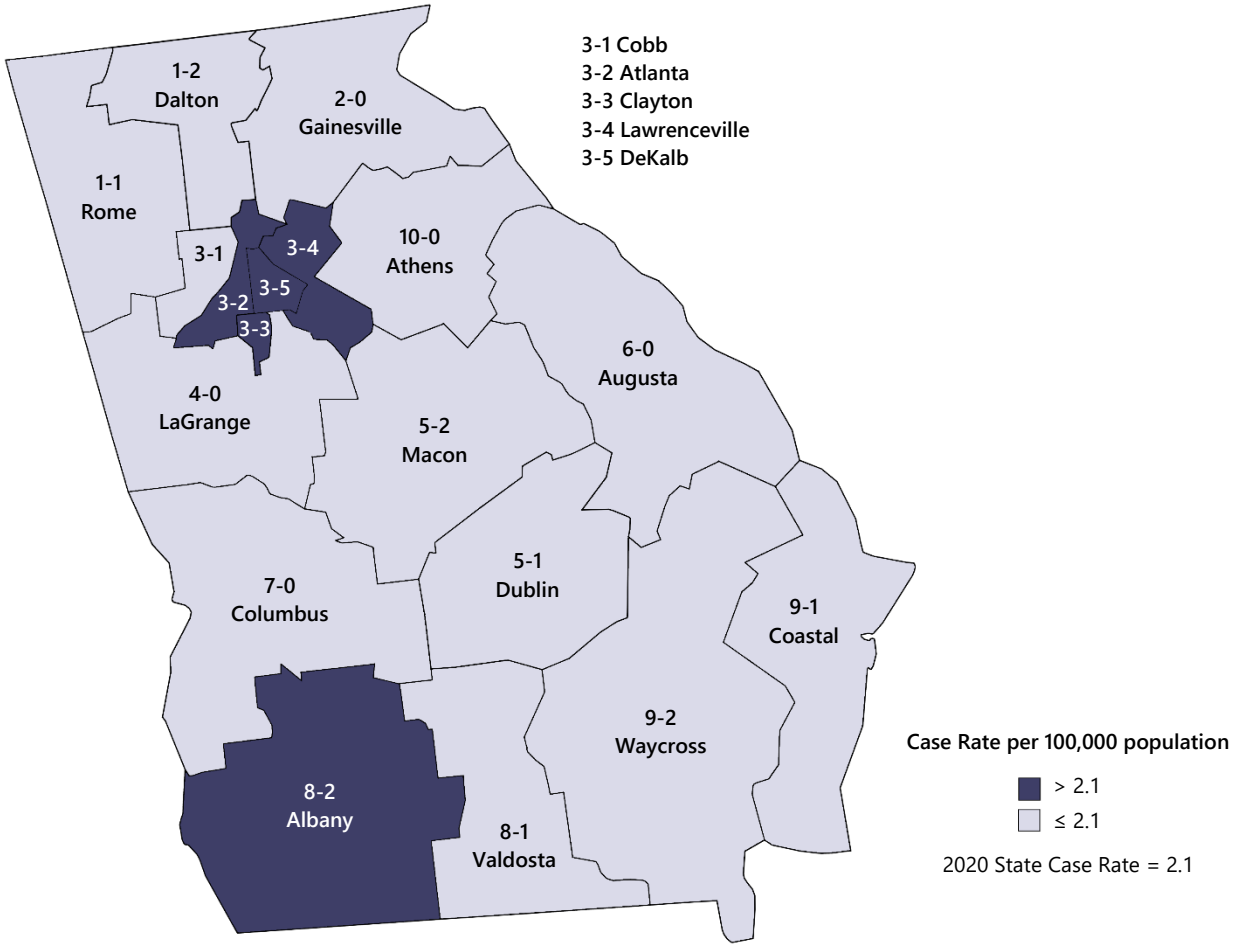


Figure 5. TB Cases by Age and Sex, Georgia, 2020 (N=221)

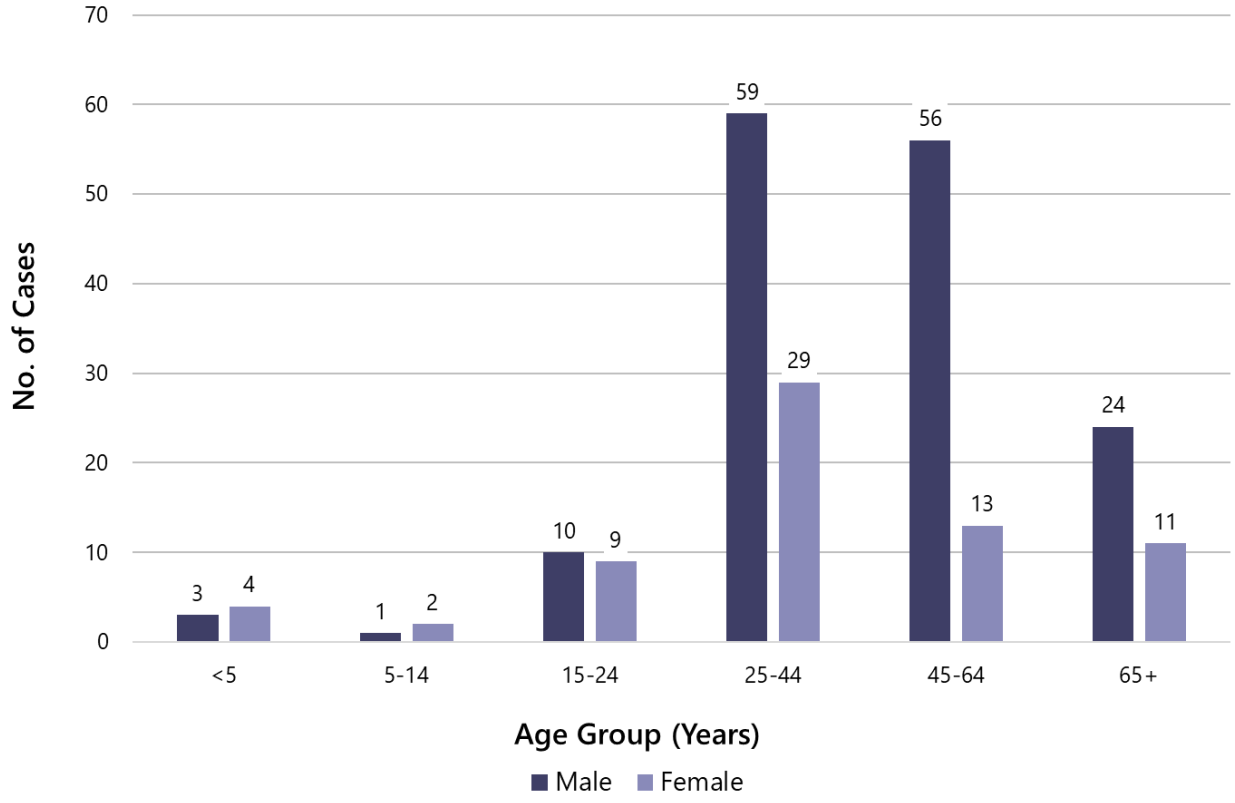


Figure 6. Number and Percentage of TB Cases by Race/Ethnicity, Georgia, 2020 (N=221)

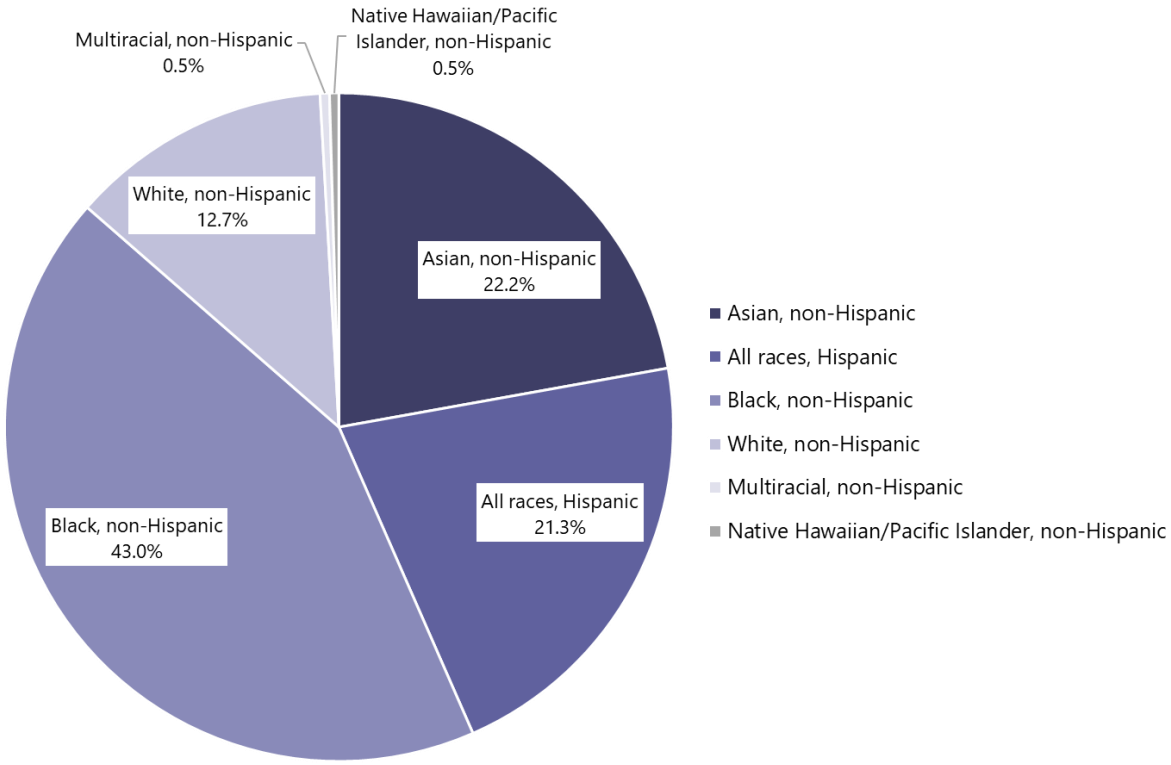


Figure 7. TB Case Rates Among Non-Hispanic Black and Non-Hispanic White Persons, Georgia, 2000-2020

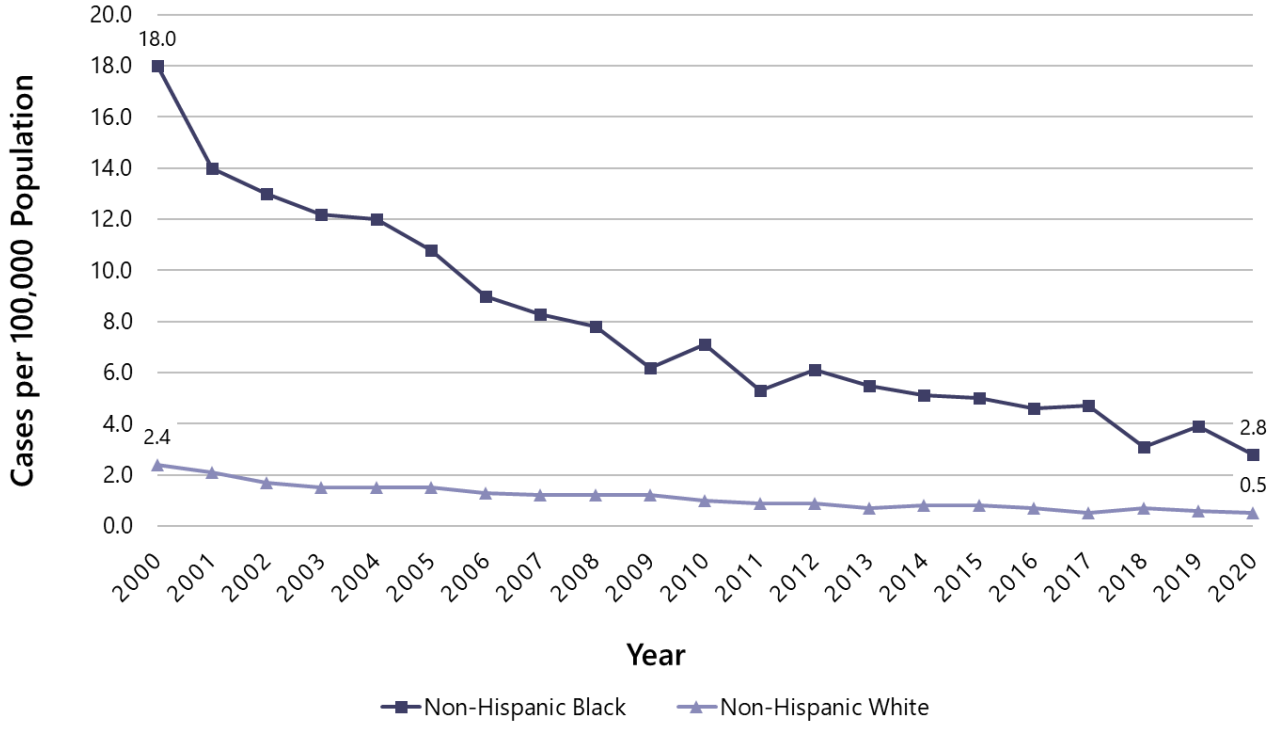


Figure 8. U.S.-Born and Non-U.S.-Born TB Cases, Georgia, 2000-2020

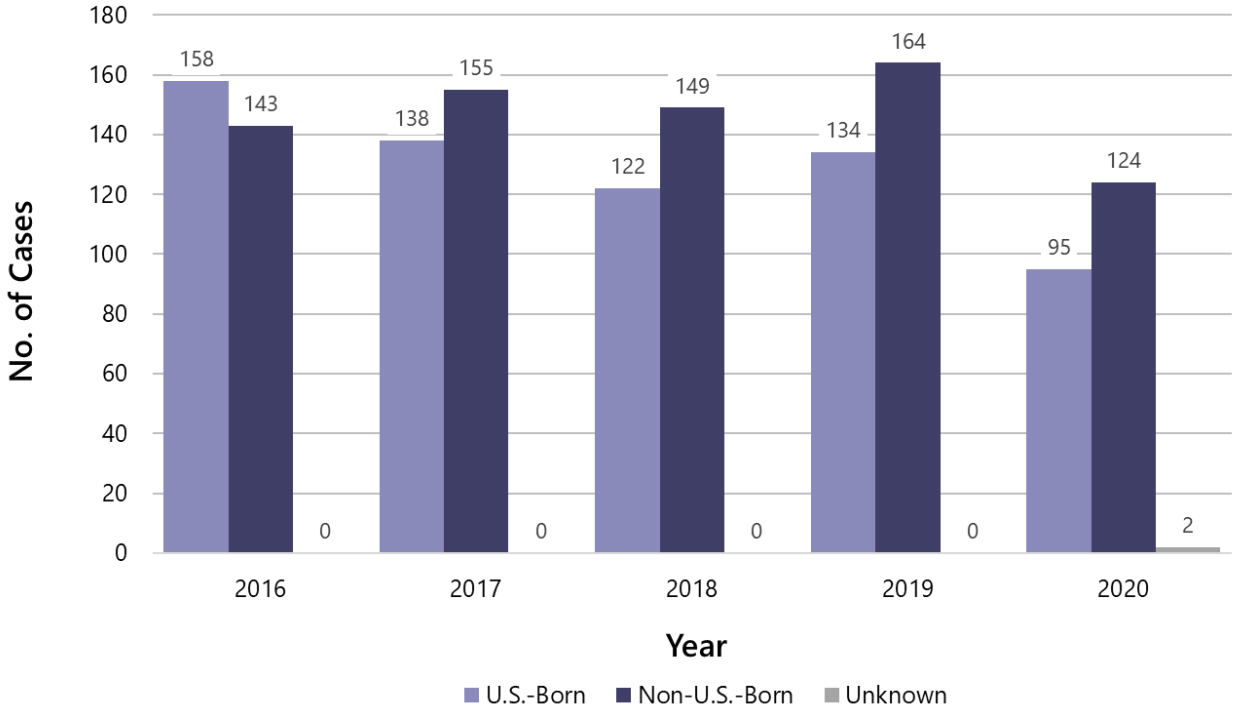
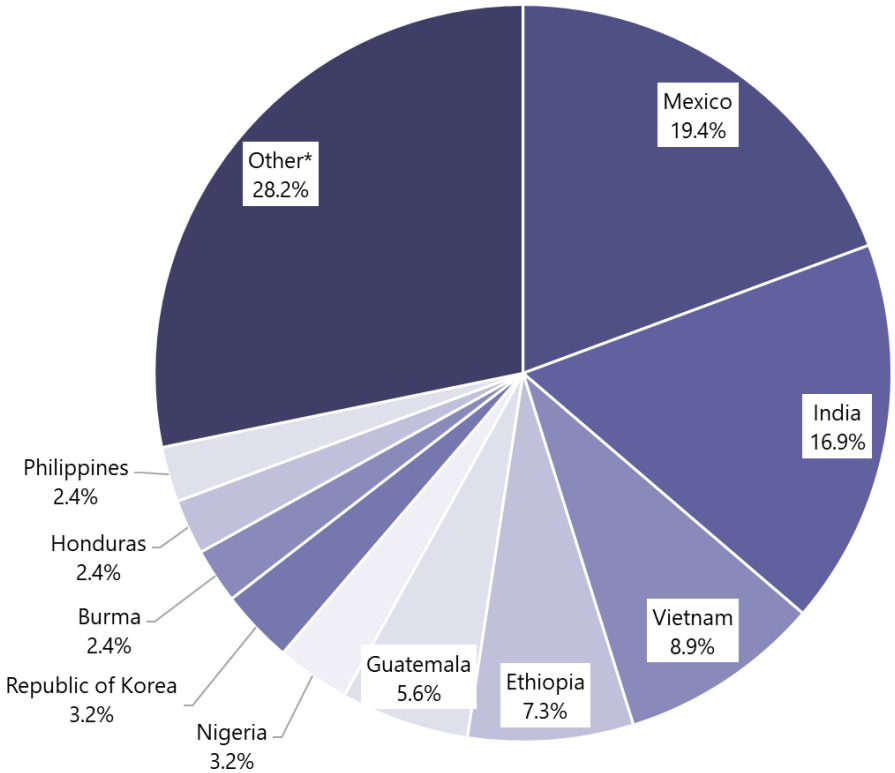


Figure 9. Country of Origin for Non-U.S.-Born TB Cases, Georgia, 2020 (N=124)



*Other countries of birth include: Afghanistan, Angola, Bangladesh, Bhutan, Bosnia and Herzegovina, Brazil, Columbia, Democratic Republic of Congo, El Salvador, The Gambia, Georgia, Ghana, Guyana, Haiti, Laos, Mali, Nepal, Palau, Peru, Sierra Leone, Somalia, South Africa, Sudan, Taiwan, Uganda, Venezuela, and Zimbabwe

Figure 10. HIV Status of TB Cases, Georgia, 2000-2020

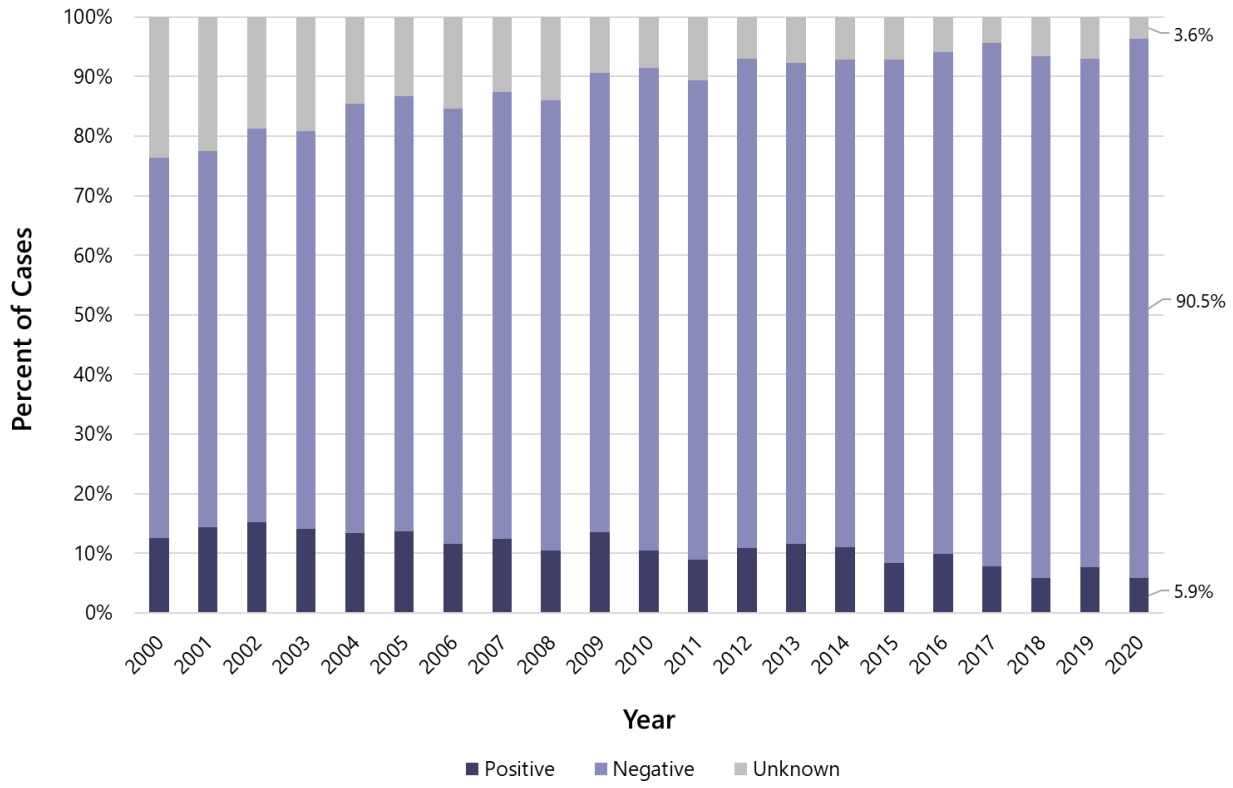


Figure 11. Risk Factors Among TB Patients, Georgia, 2016-2020

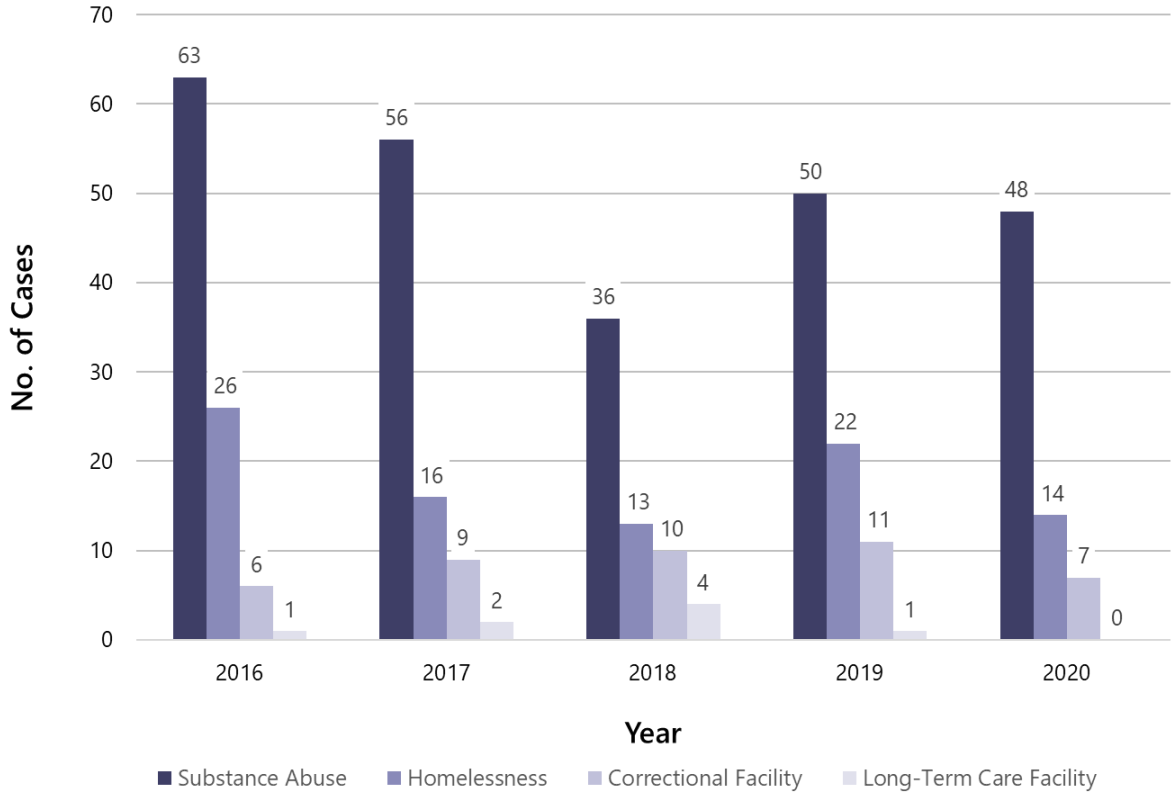
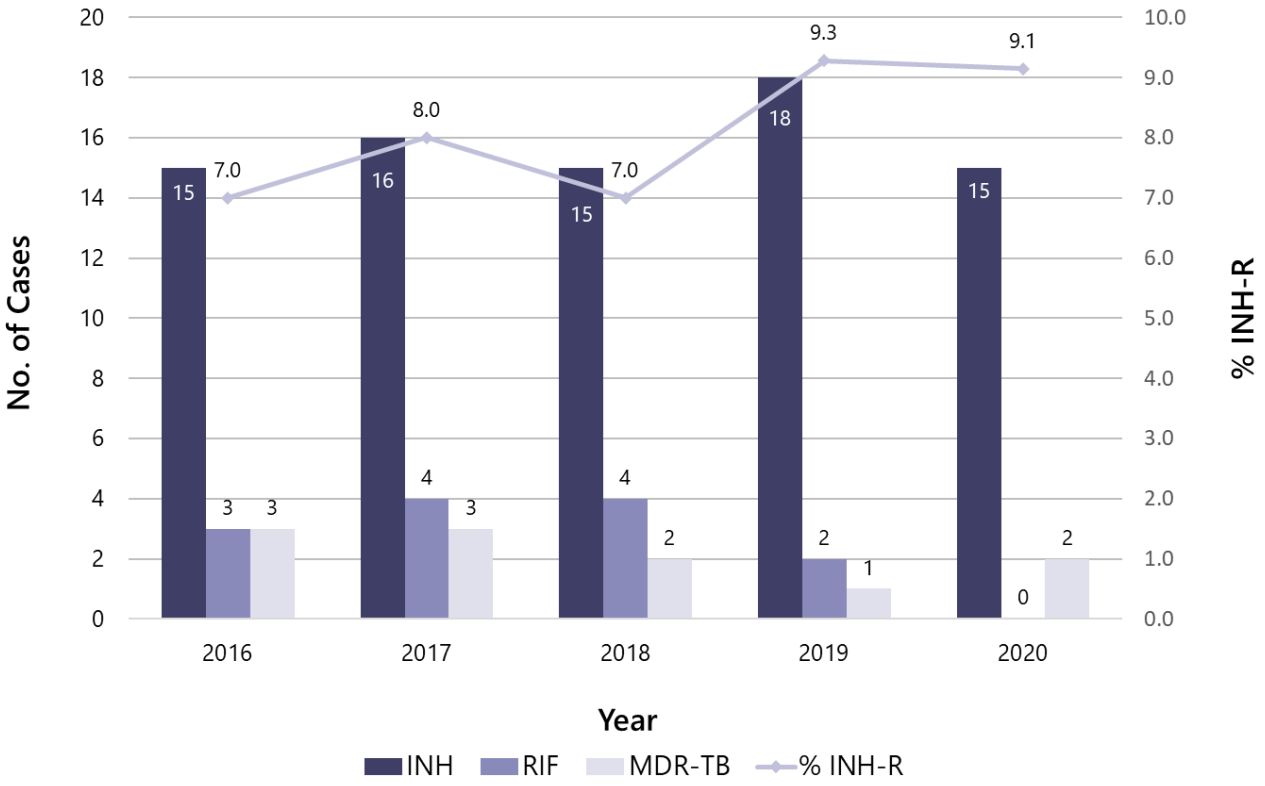


Figure 12. Primary Drug Resistance (INH-R)* and Multi-Drug Resistant TB (MDR-TB)**, Georgia, 2016-2020



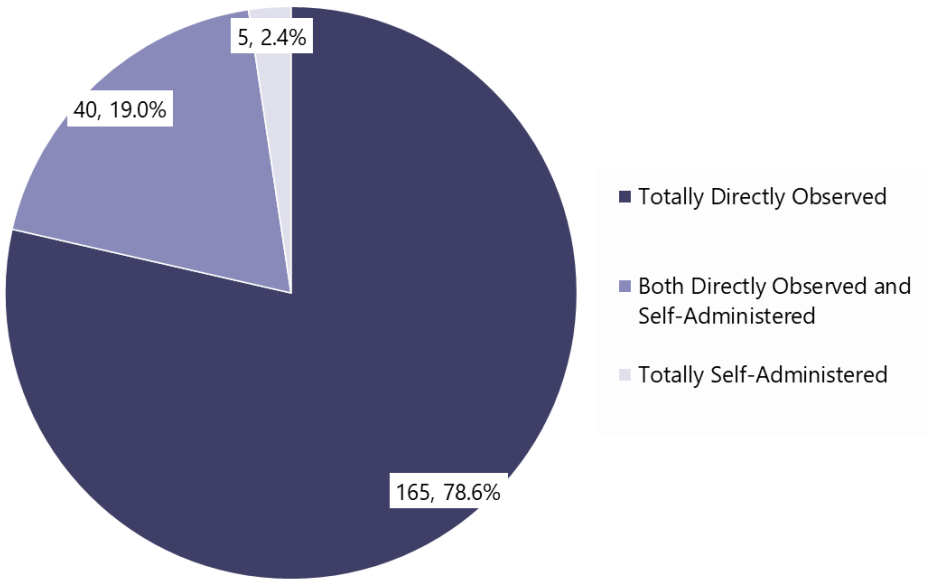
*Defined as having no previous diagnosis of TB and having resistance of INH at first occurrence of disease
**Defined as having resistance to at least INH and RIF

Figure 13. Completion of TB Therapy, Georgia, 2000-2019*

*Data available through 2019

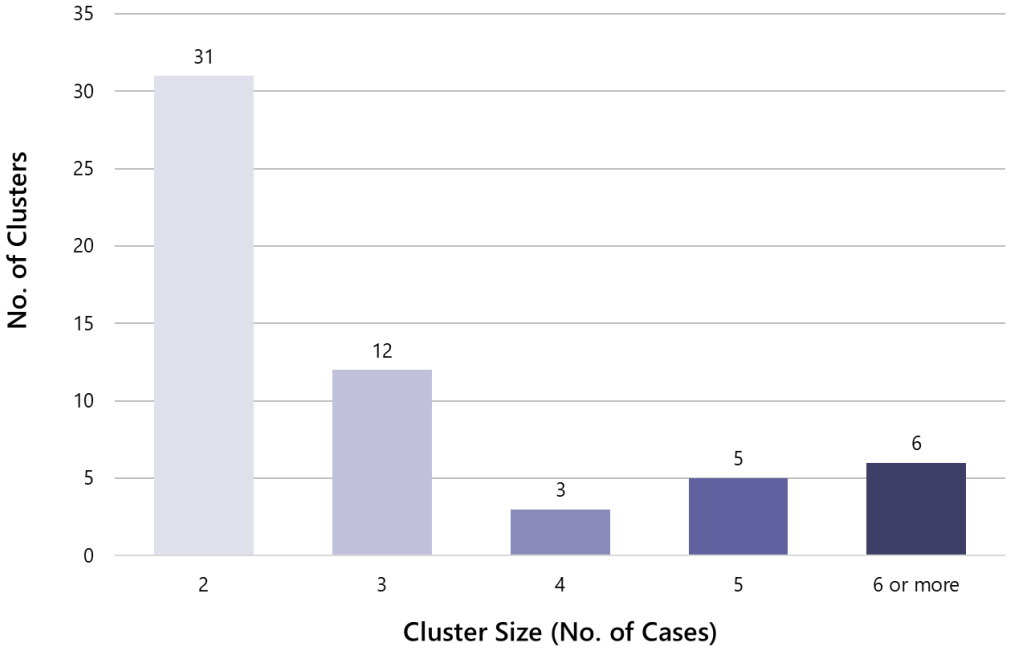
Note: Includes persons alive at diagnosis, with initial drug regimen of one or more drugs prescribed, who did not die within one year of initiating treatment; excludes persons with initial rifampin-resistant isolate, patients with bone and joint disease, meningeal disease, or disease of the central nervous system, or pediatric patients (ages 0–14 years) with miliary disease or positive blood culture or a positive nucleic acid amplification test on a blood specimen, and those who moved out of the country within one year of initiating treatment.

Figure 14. Mode of Treatment Administration Among Persons Reported with TB, Georgia, 2019* (N=210^)



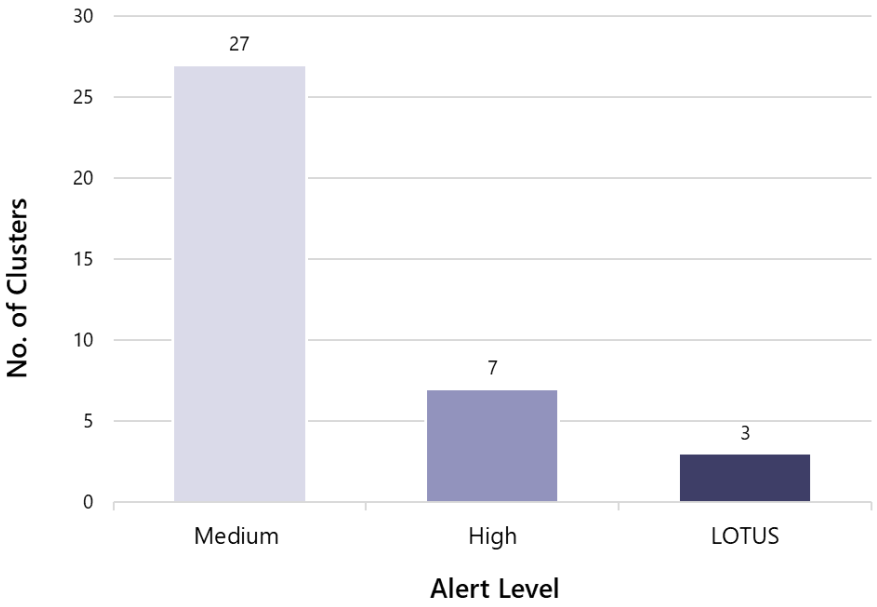
*Data available through 2019; ^Excludes 92 cases with unknown or missing treatment administration data.

Figure 15. Number of County-Based TB Genotype Clusters* by Cluster Size, Georgia, 2018-2020



*Genotype Clusters are defined as two or more cases with matching spoligotype and 24-locus MIRU-VNTR (GENType) within a county during the specified 3-year time-period.

Figure 16. Tuberculosis Genotype Clusters by TB GIMS* Alert Level^, Georgia, 2018-2020



*Tuberculosis Genotyping Information Management System; ^According to the CDC, alert level is determined by the log likelihood ratio statistic (LLR) for a given cluster, identifying higher than expected geospatial concentrations for a TB genotype cluster in a specific county, compared to the national distribution of that genotype. The Tuberculosis Genotyping Information Management System (TB GIMS) generates alert level notifications based on the LLR: "No alert" is indicated if the LLR is between 0≤5, "medium" is for clusters with LLRs between 5≤10, and "high" alert is for clusters with LLRs ≥10. LOTUS (Large Outbreak of Tuberculosis in the United States) alerts are generated when clusters of ≥10 genotype-matched cases within a 3-year period that related by recent transmission are identified.

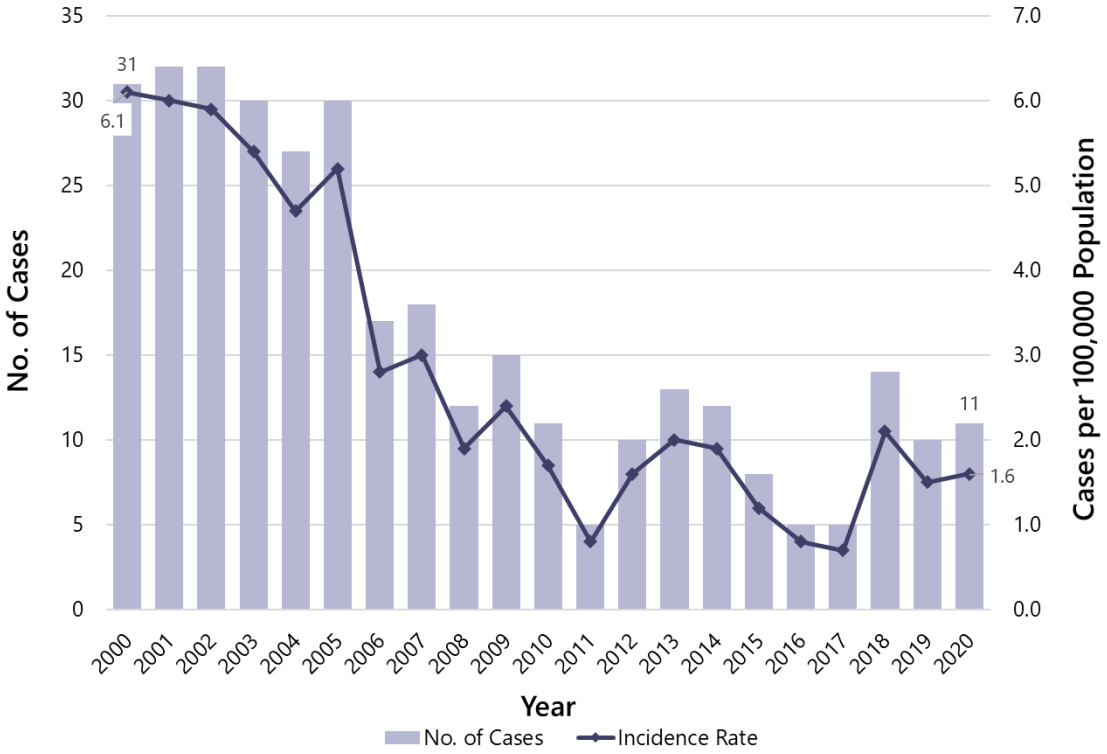
2000-2020

TUBERCULOSIS

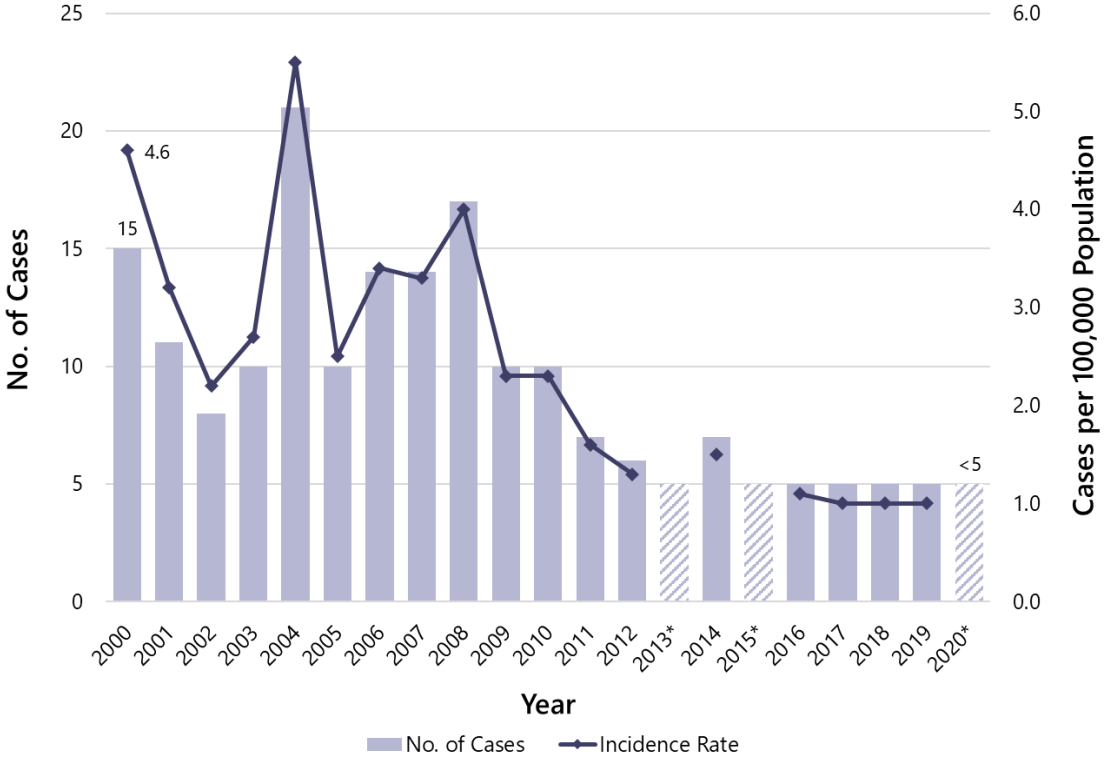
Morbidity Trends

by Health District

TB Cases and Rates, District 1-1 (Rome), 2000-2020

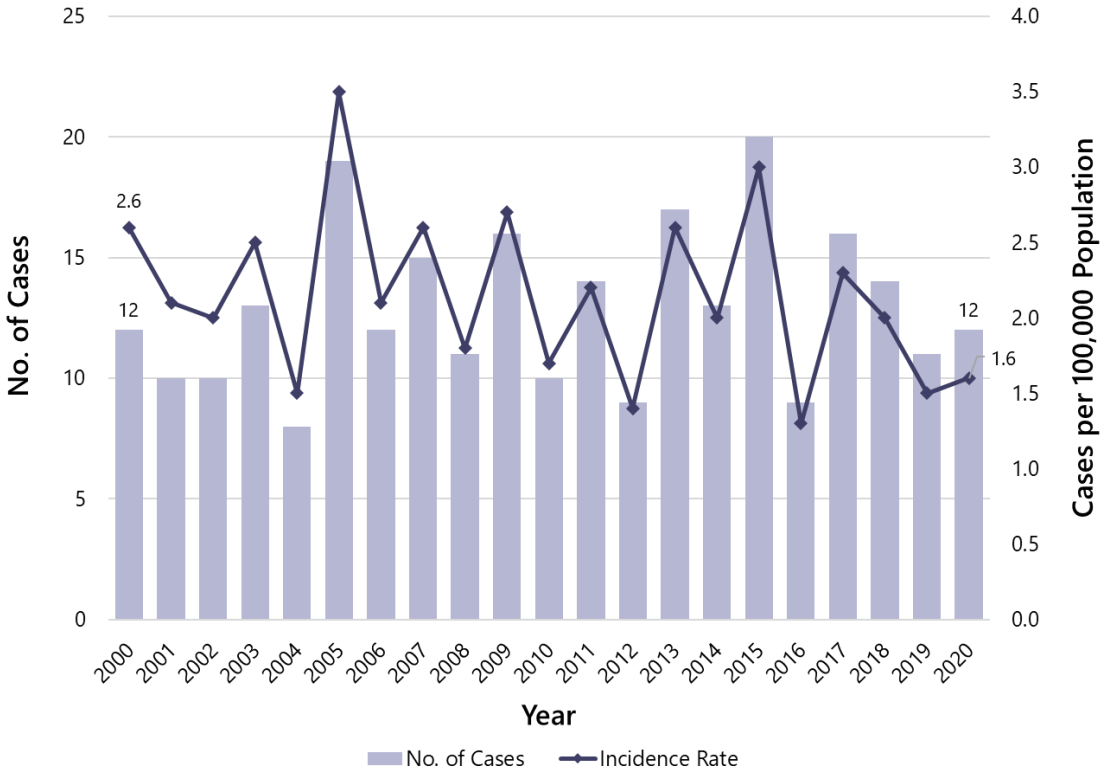


TB Cases and Rates, District 1-2 (Dalton), 2000-2020

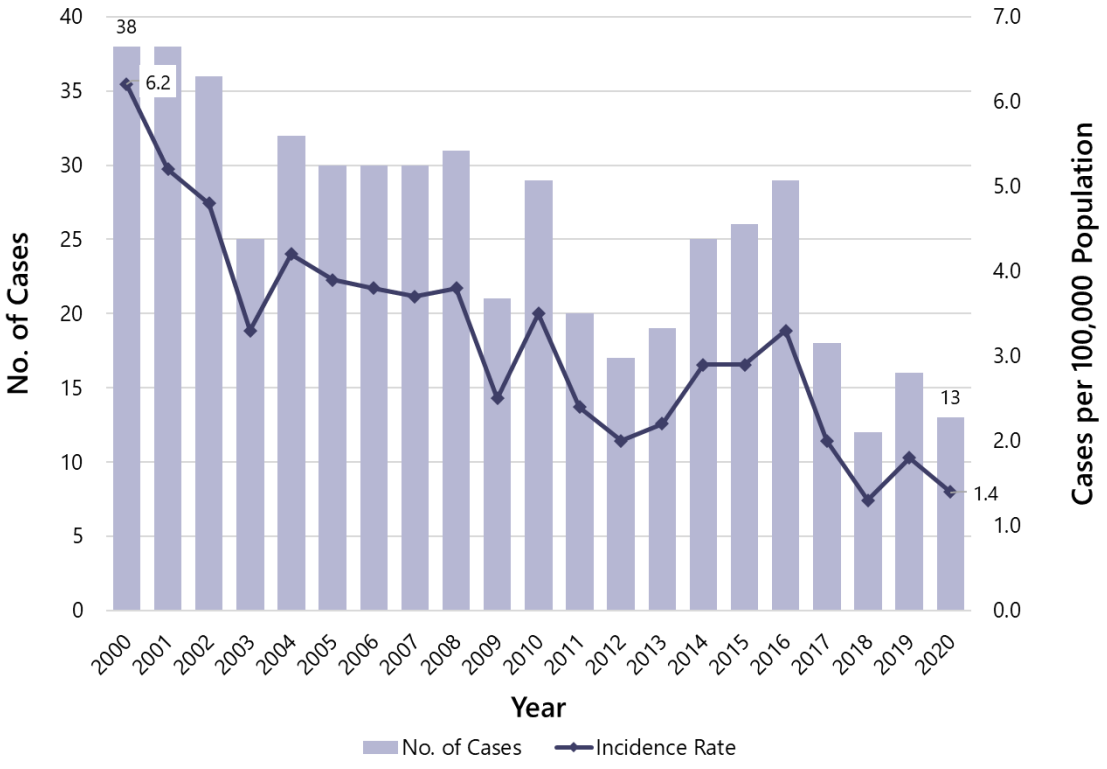


*Case counts between one and four are suppressed and the case rate is not calculated.

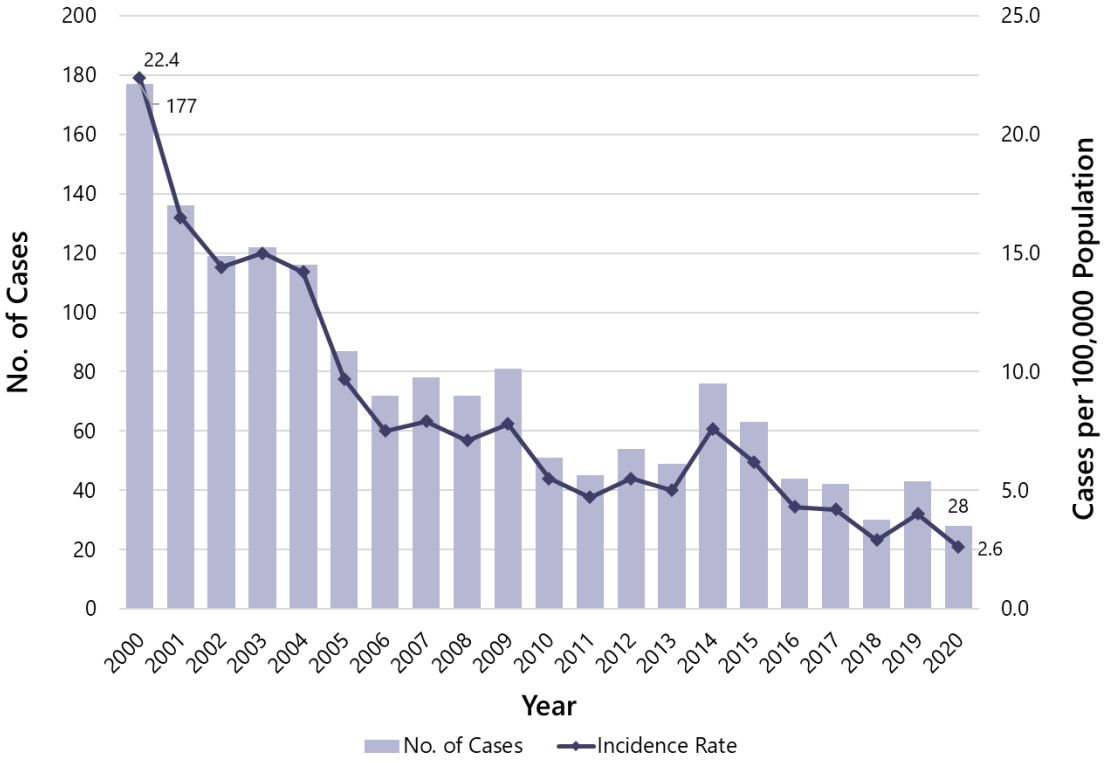
TB Cases and Rates, District 2-0 (Gainesville), 2000-2020



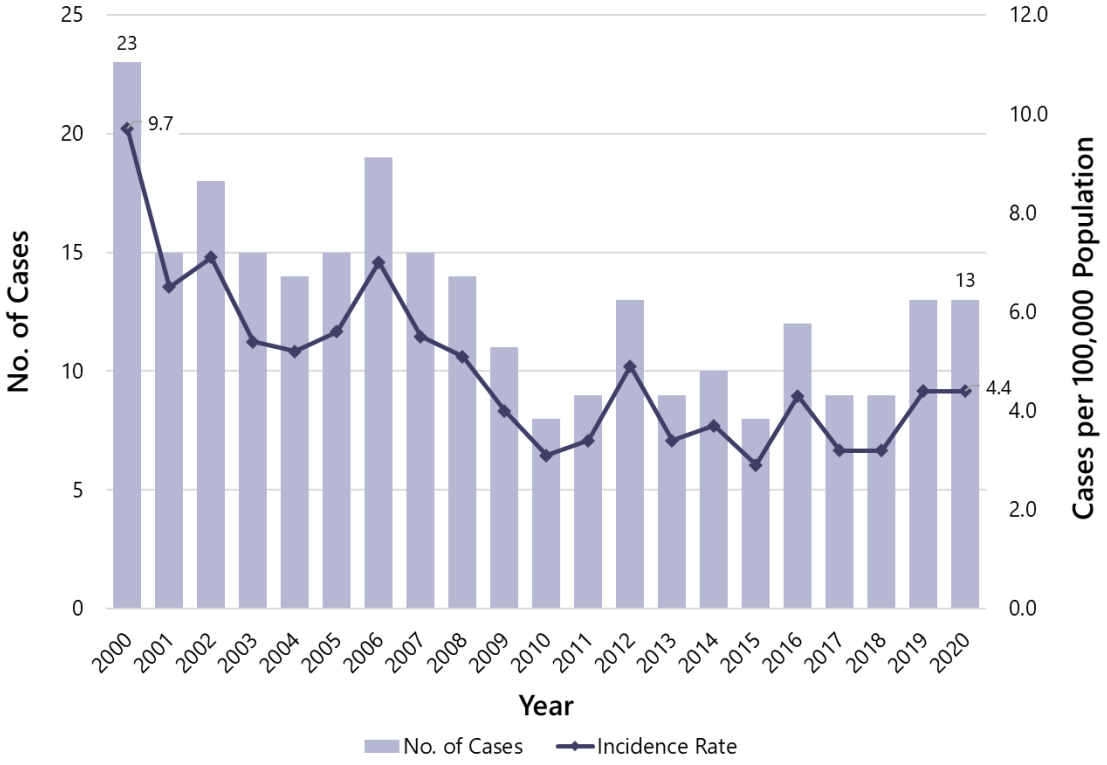
TB Cases and Rates, District 3-1 (Cobb), 2000-2020



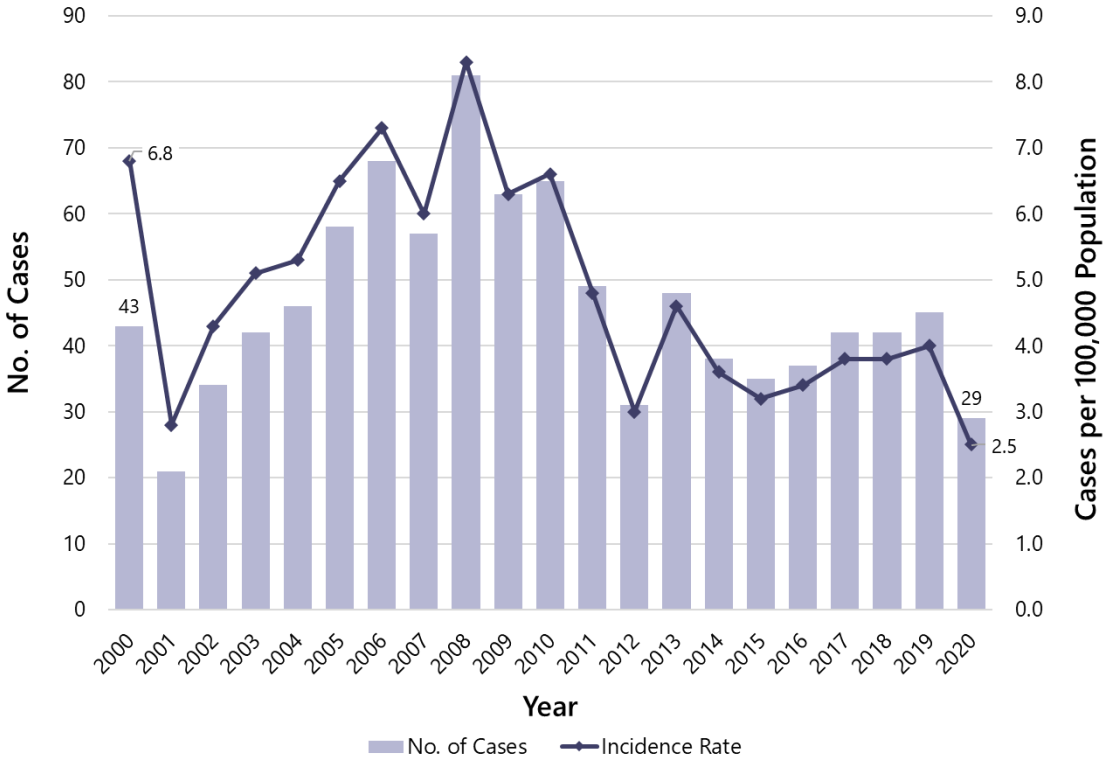
TB Cases and Rates, District 3-2 (Fulton), 2000-2020



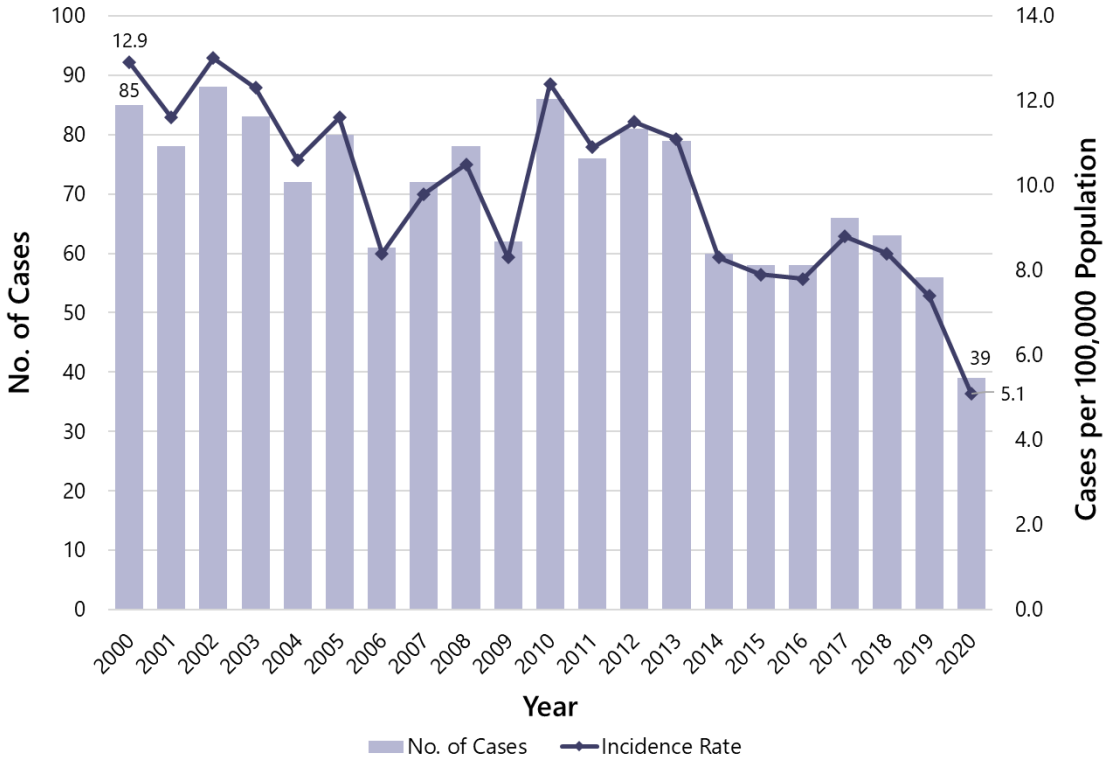
TB Cases and Rates, District 3-3 (Clayton), 2000-2020



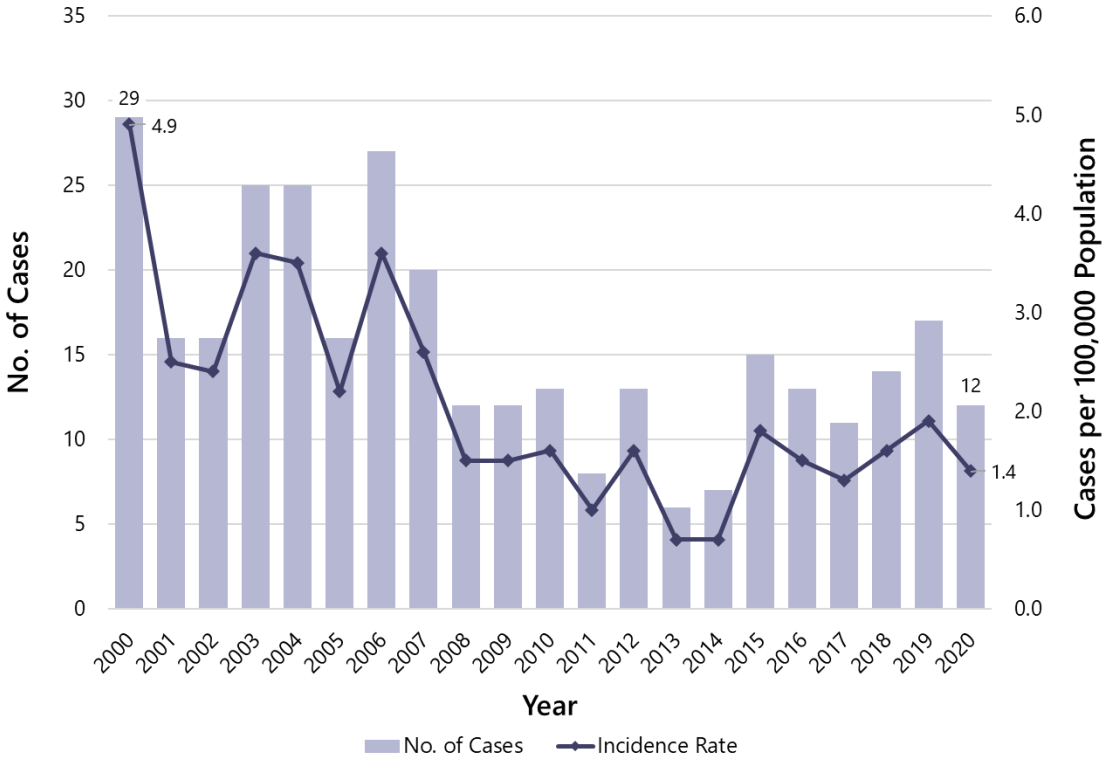
TB Cases and Rates, District 3-4 (Lawrenceville), 2000-2020



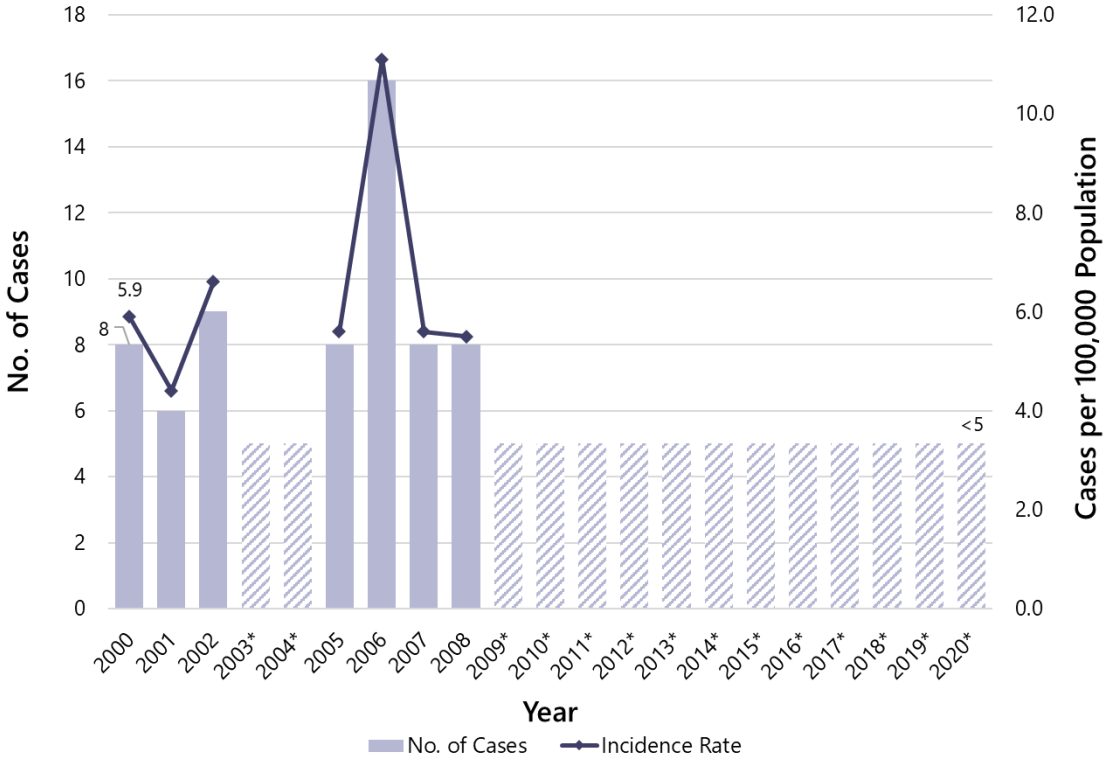
TB Cases and Rates, District 3-5 (DeKalb), 2000-2020



TB Cases and Rates, District 4-0 (LaGrange), 2000-2020

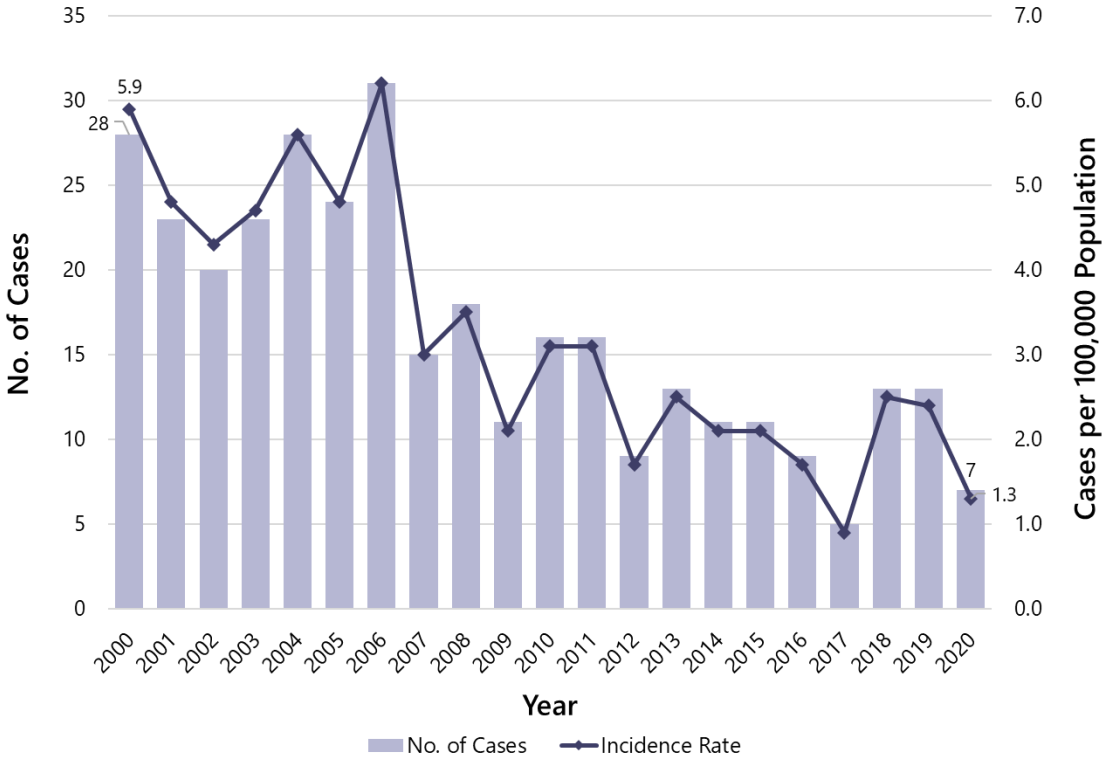


TB Cases and Rates, District 5-1 (Dublin), 2000-2020

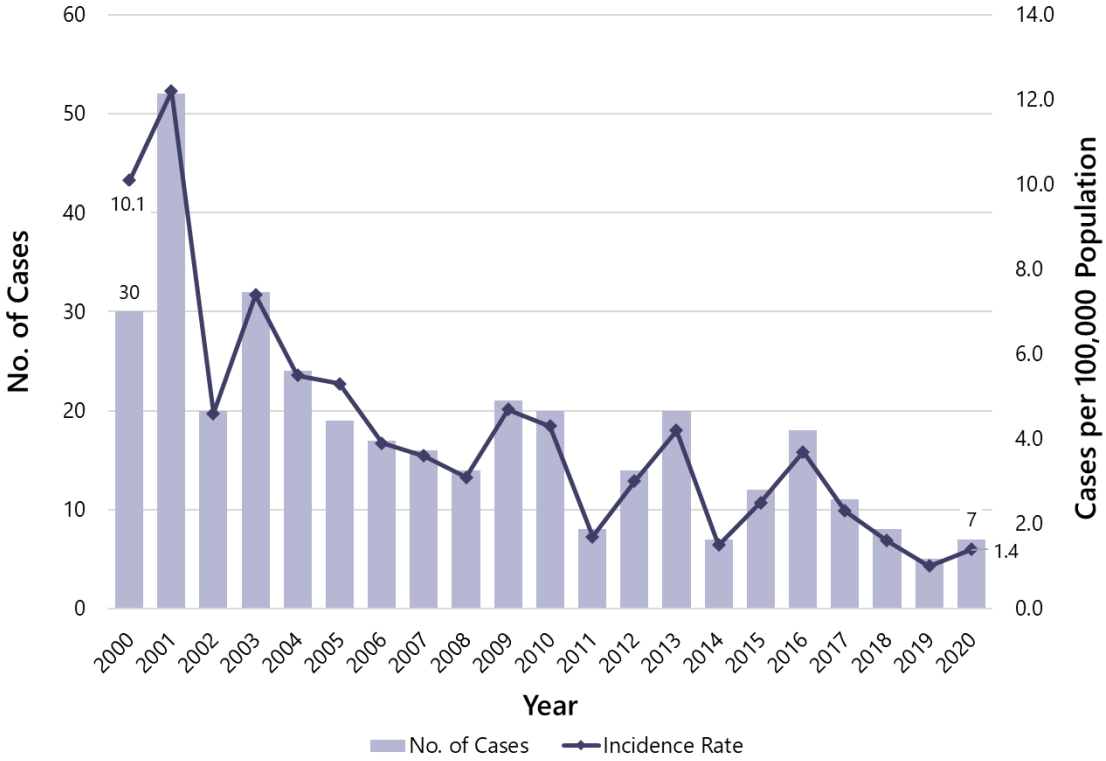


*Case counts between one and four are suppressed and the case rate is not calculated.

TB Cases and Rates, District 5-2 (Macon), 2000-2020

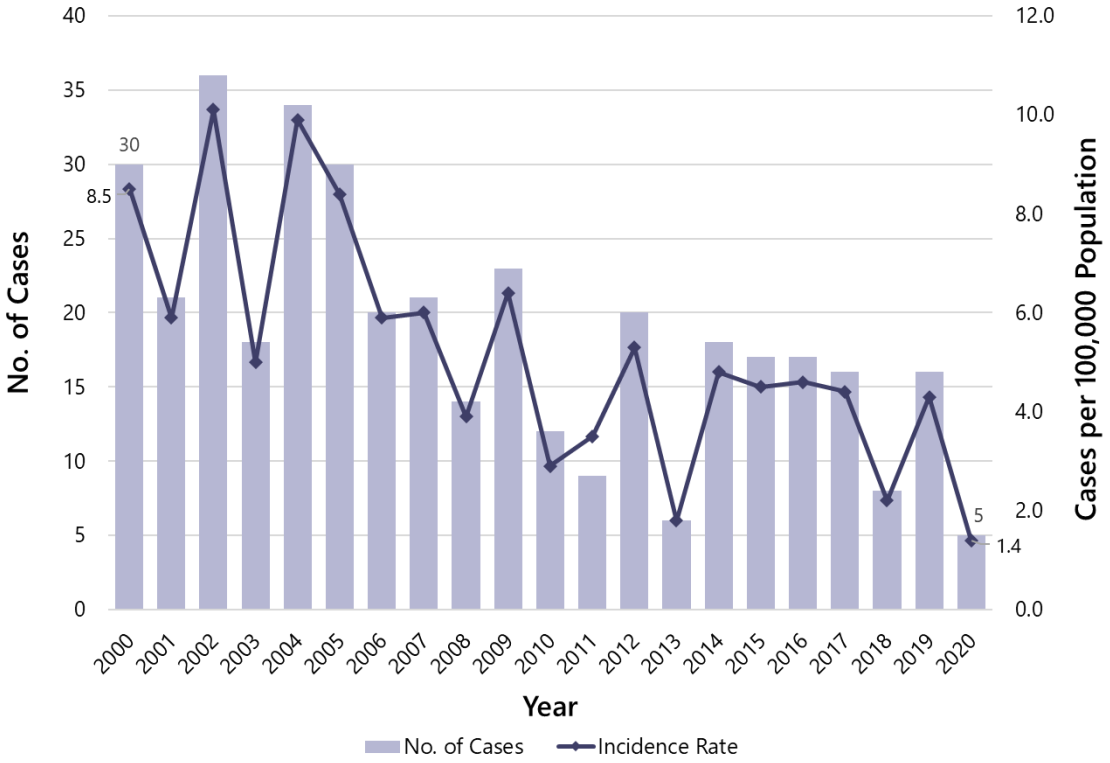


TB Cases and Rates, District 6-0 (Augusta)*, 2000-2020



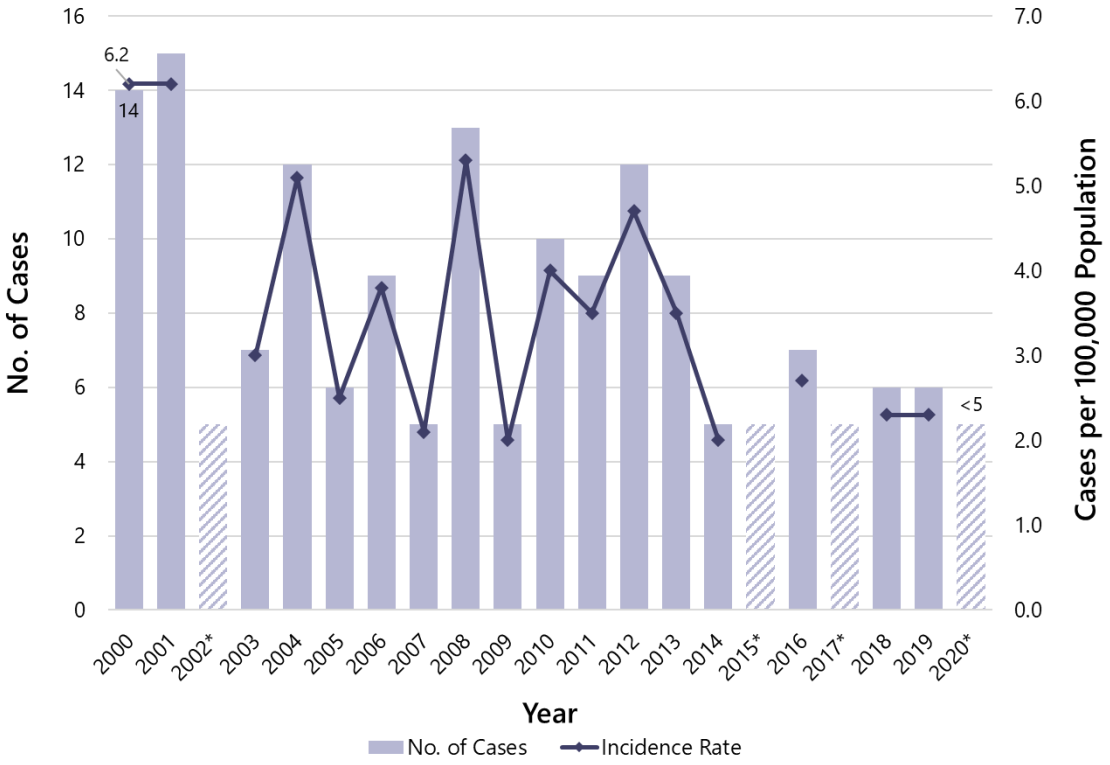
*Augusta State Medical Prison cases not included

TB Cases and Rates, District 7-0 (Columbus)*, 2000-2020



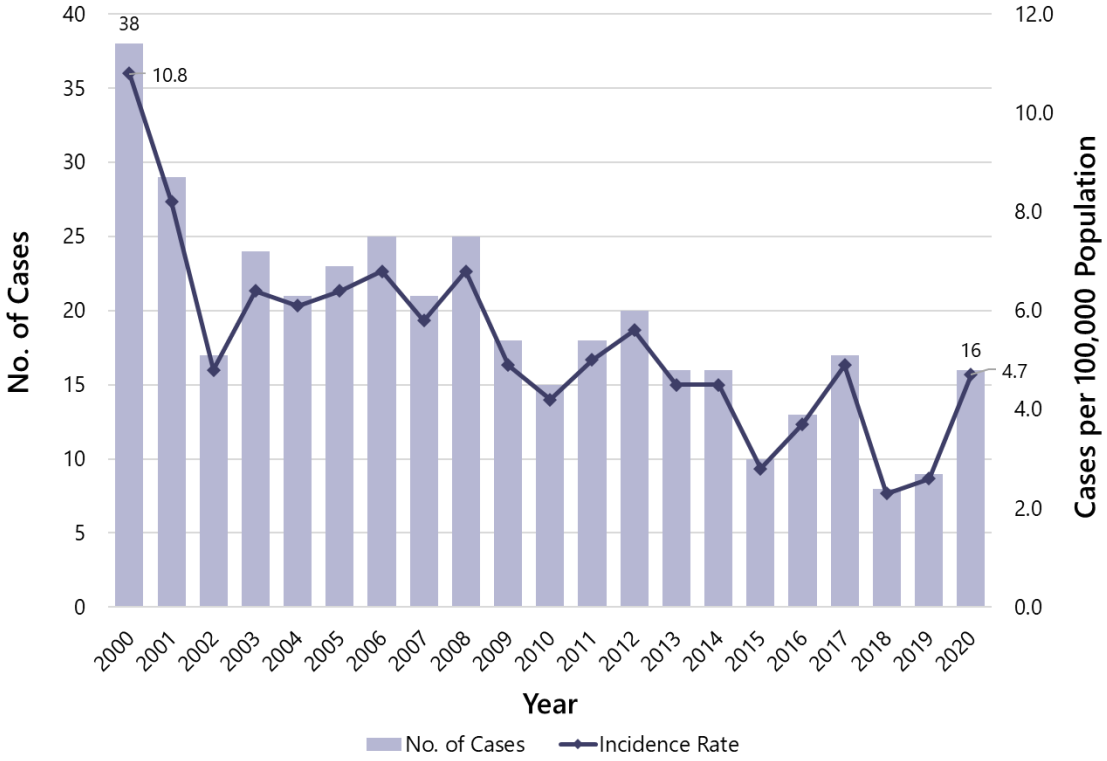
*Stewart Detention Center cases not included

TB Cases and Rates, District 8-1 (Valdosta), 2000-2020

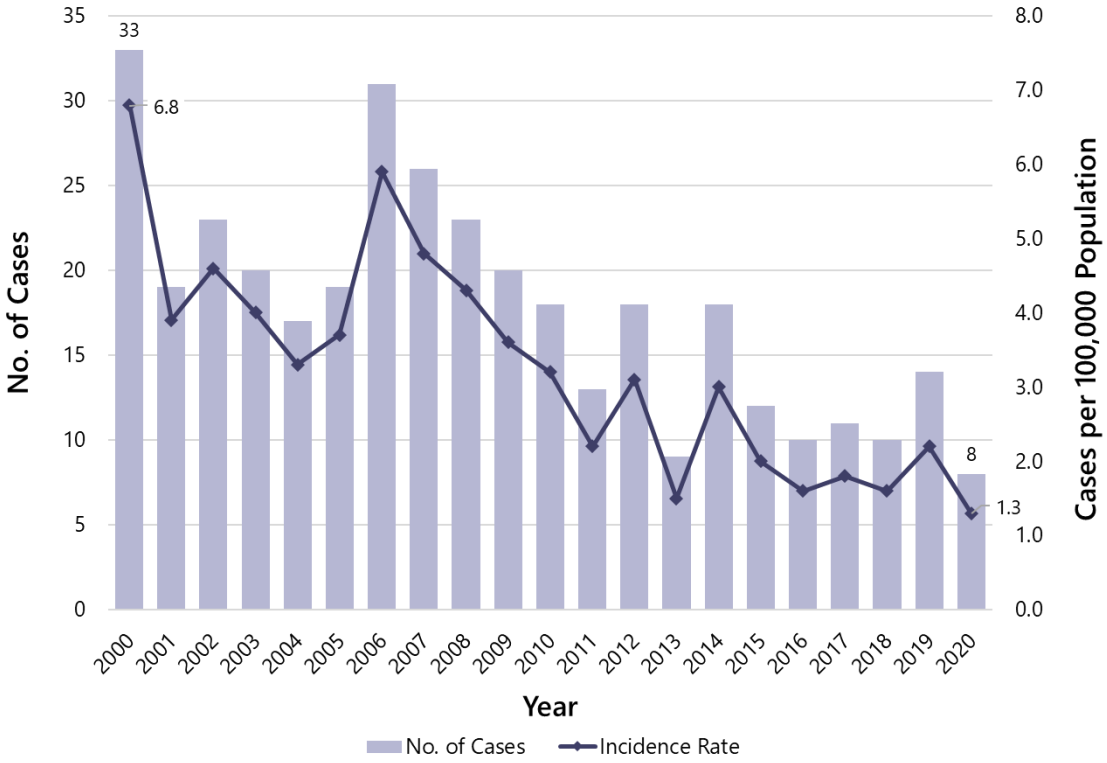


*Case counts between one and four are suppressed and the case rate is not calculated.

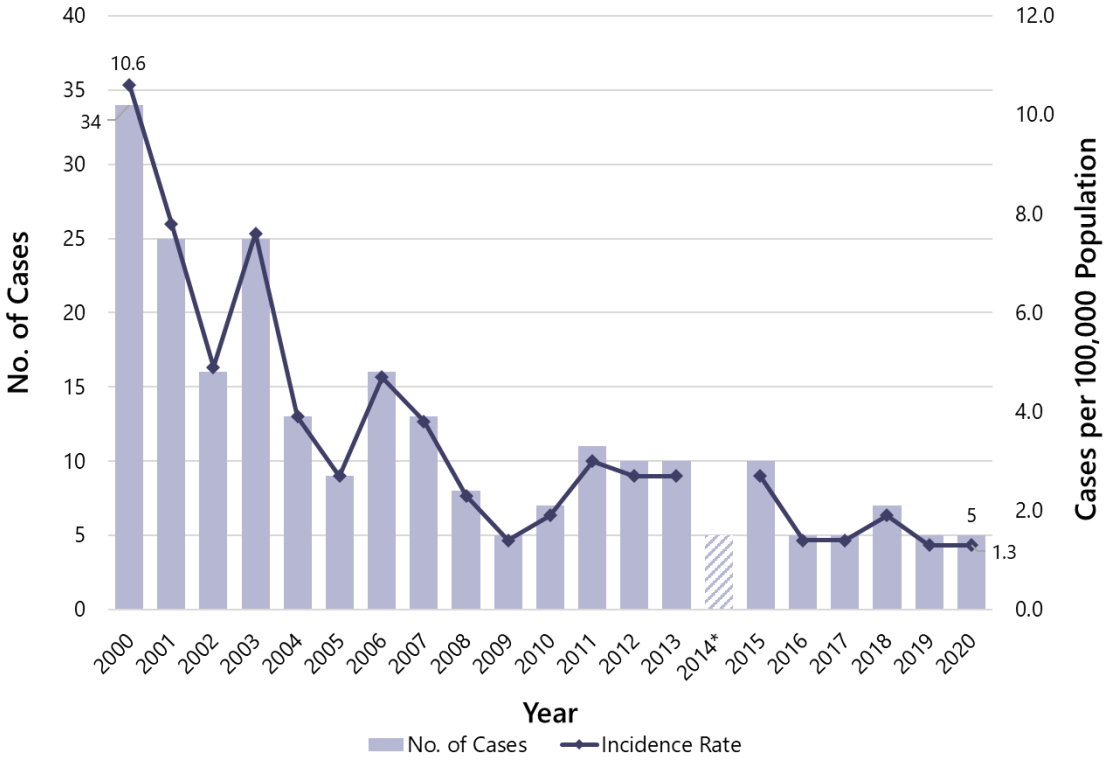
TB Cases and Rates, District 8-2 (Albany), 2000-2020



TB Cases and Rates, District 9-1 (Coastal), 2000-2020

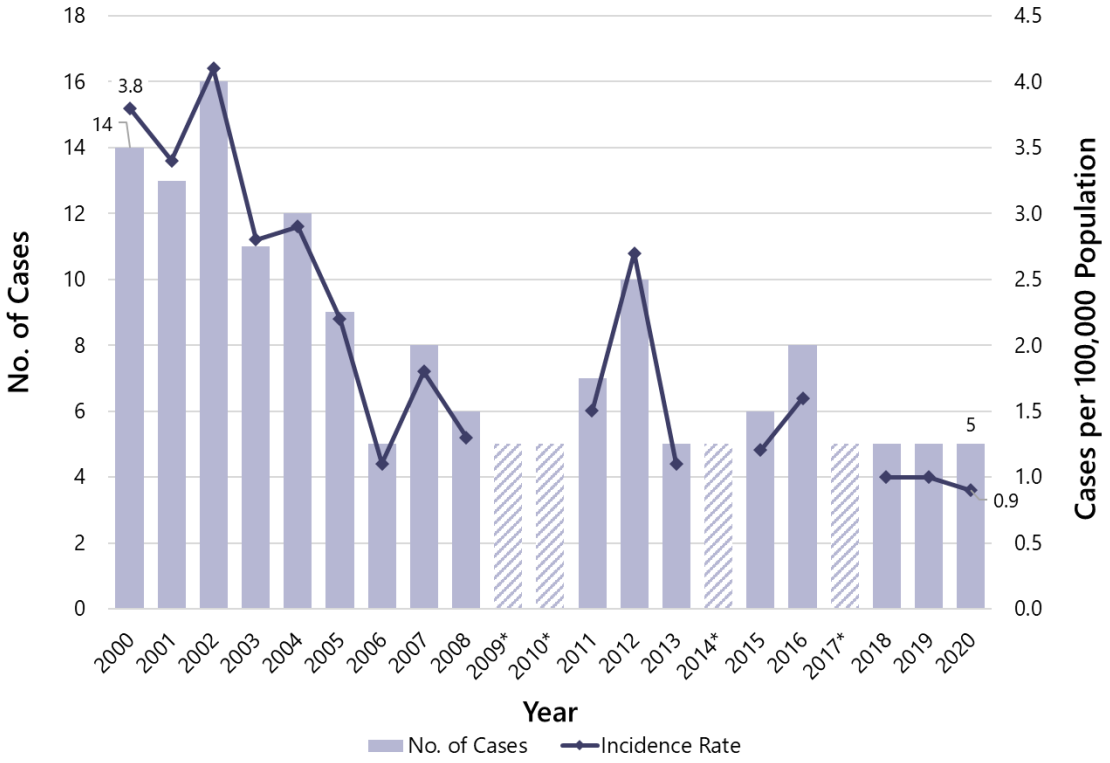


TB Cases and Rates, District 9-2 (Waycross), 2000-2020



*Case counts between one and four are suppressed and the case rate is not calculated.

TB Cases and Rates, District 10-0 (Athens), 2000-2020



*Case counts between one and four are suppressed and the case rate is not calculated.