

## About us

The Santa Clara County Public Health Department Tuberculosis (TB) Prevention & Control Program investigates all reports of persons with confirmed or suspected TB disease in Santa Clara County. We provide individualized case management to each patient to help ensure treatment completion and to prevent TB from spreading further. We work with Civil Surgeons to identify and treat latent TB infection, and we provide consultation to medical providers and community organizations, thus creating partnerships for the prevention of tuberculosis.

## TB Summary

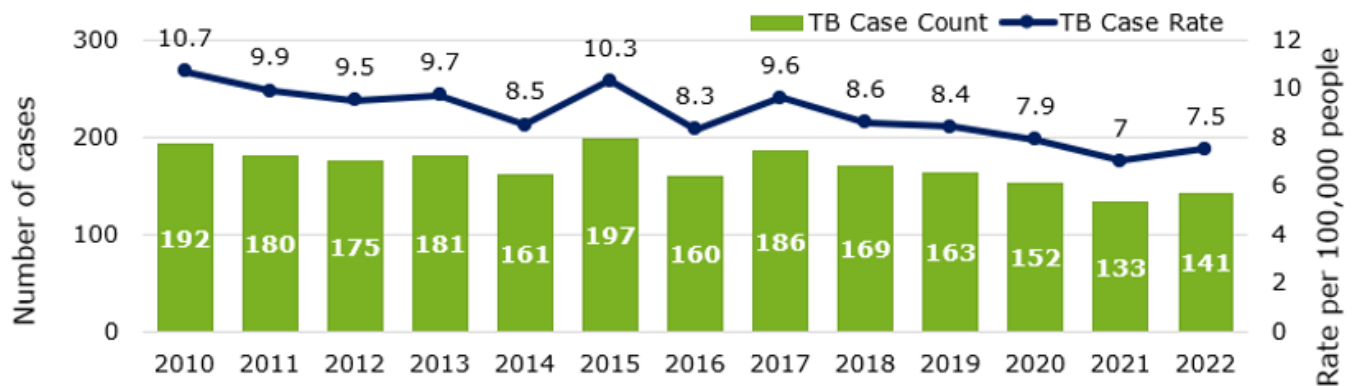
TB is a preventable and curable communicable disease. TB is caused by the bacteria *Mycobacterium tuberculosis*, which can spread from person to person through the air when an individual with infectious TB disease coughs, sneezes, or speaks. Transmission occurs when others breathe in the bacteria while in close and prolonged contact with a person with infectious TB disease. TB bacteria can infect anyone regardless of their age, race, sex, or socioeconomic status.

Latent TB infection (LTBI) occurs when individuals are infected with the bacteria that causes TB. In contrast with TB disease or “active TB” individuals with LTBI are not contagious. If, over the course of months to years, the body’s immune system can no longer control the latent infection, the bacteria multiply and cause TB disease. The risk of developing TB disease after infection is higher for folks with any condition that impairs the body’s ability to control the infection, such as being underweight, having HIV infection, taking immunosuppressing treatment, having diabetes, etc. [1]. Certain behaviors, such as alcohol use and smoking, also increase an individual’s risk for developing TB disease. If treatment is delayed, TB disease can cause serious illness and death. Fortunately, TB can be prevented, treated, and cured!

## TB Cases and Rates

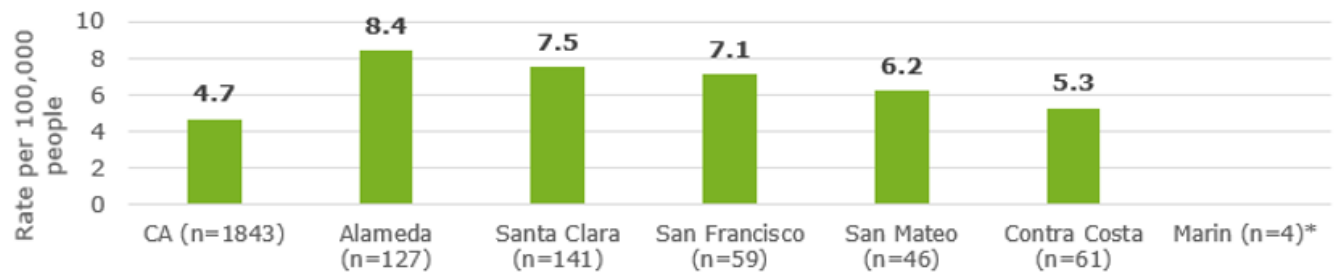
There were 141 cases of tuberculosis (TB) disease in Santa Clara County (SCC) in 2022 which is a 6% increase compared to 2021 (133 TB cases) (Figure 1). This represents a case rate of 7.5 per 100,000 people. This case rate is 1.6 times as high as the 2022 overall California rate (4.7) (Figure 2) and 3.0 times as high as the national rate (2.5) [2,3]. In 2022, SCC had the third highest case rate among all California jurisdictions, after Imperial and Alameda counties [2].

Figure 1: Trends in TB Case Counts and Rates in Santa Clara County, 2010-2022



Cases meet the laboratory (positive culture, nucleic acid amplification test, or demonstration of acid-fast bacilli or granulomas when a culture was not obtained or is falsely negative) or clinical case definition or are verified by provider diagnosis. Source: California Reportable Disease Information Exchange, 2010-2023. Data as of March 15, 2023, and are provisional; State of California, Department of Finance, Race/Ethnic Population with Age and Sex Detail, 2010-2060. Sacramento, California, July 2021; State of California, Department of Finance, E-2. California County Population Estimates and Components of Change by Year — July 1, 2010-2021. Sacramento, California, December 2021; State of California, Department of Finance, E-2. California County Population Estimates and Components of Change by Year — July 1, 2020-2022, January 2023.

Figure 2: TB Case Rates for California and San Francisco Bay Area Counties, 2022



Source: California Department of Public Health, TB Control Branch.  
 \*Rate is not calculated when the number of cases is less than 5

### Medical Comorbidities

In 2022, 36% of people with TB in SCC had one or more medical conditions associated with an increased risk of progression from latent tuberculosis infection to TB disease. The most common comorbidity in 2022 was diabetes mellitus (26%). Other risk factors included immunosuppression not related to HIV/AIDS (11%), end-stage renal disease (5%), alcohol use (1%), drug use (1%), and HIV infection (1%).

## TB Cases by Race/Ethnicity

TB cases in SCC during 2022 occurred predominantly among Asian (80%) and Hispanic (17%) populations, with a small percentage in African American/African Ancestry (1%), White (1%) and Native Hawaiian or other Pacific Islander (1%) populations (Figure 3).

In 2022, about 96% of TB cases occurred among persons born outside the U.S., primarily from the following countries: Vietnam (31%), the Philippines (18%), India (12%), China (9%), and Mexico (9%). Case rates by country of origin was highest among those born in Vietnam (44.5 per 100,000 people) and the Philippines (43.2), followed by India (13.6), China (9.6), and Mexico (9.4) which are much higher than the SCC overall case rate (7.4) (Figure 4).

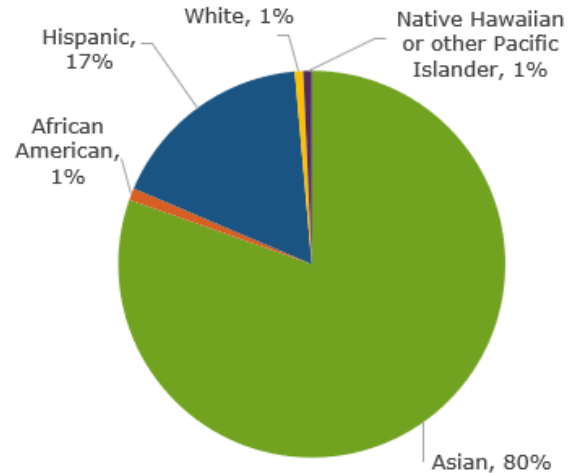
## Length of Time in US

In 2022, about 21% of persons with TB in SCC who were born outside the U.S. had lived in the U.S. for less than 5 years. Most persons with TB (65%) had lived in the U.S. for at least 10 years.

## Age Group

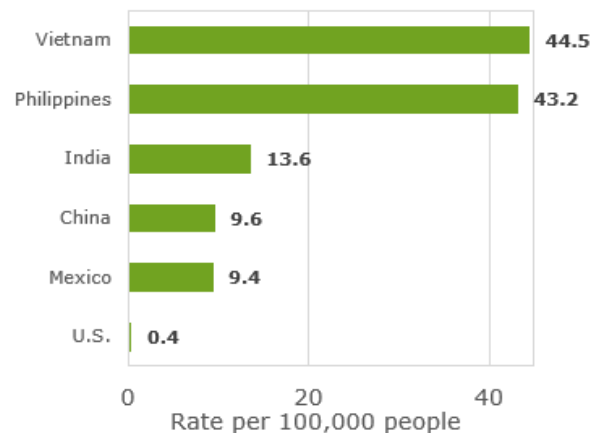
In 2022, people over 65 years old accounted for most TB cases (45%), followed by people 45-64 years old (32%), then 25-44 years old (15%). People less than 25 years old accounted for 8% of TB cases.

Figure 3: TB Cases by Race/Ethnicity in Santa Clara County, 2022



Source: Santa Clara County Public Health Department, California Reportable Disease Information Exchange, 2023; Data as of March 15, 2023 and are provisional.

Figure 4: TB Rates by Country of Birth in Santa Clara County, 2022



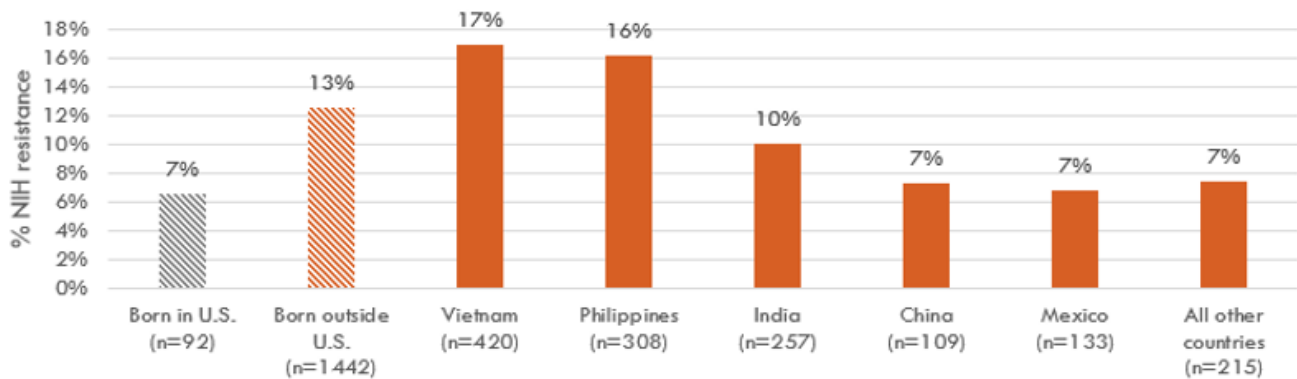
Source: Santa Clara County Public Health Department, California Reportable Disease Information Exchange, 2022. Data as of March 15, 2023, and are provisional; U.S. Census, American Community Survey 5-Year Estimate, 2015-2019; State of California, Department of Finance, E-2. California County Population Estimates and Components of Change by Year — July 1, 2020-2022. Sacramento, California, January 2023.

## TB Drug Resistance

### Isoniazid Resistance

Among people born outside the U.S. with culture-positive TB during 2010–2022, isoniazid (INH) resistance was present in 13% of those who had no prior history of TB and 18% of those with a prior history of TB. In 2021, in the US as a whole 9% of TB cases were resistant to INH. Among people with culture-positive TB and no prior history of TB, isoniazid resistance rates were highest among those born in Vietnam (17%), the Philippines (16%), and India (10%) (Figure 5).

Figure 5: Percentage of INH Resistance per Country of Birth — Santa Clara County, 2010–2022



Cases are culture-positive with initial drug susceptibility testing done and no prior history of TB. Excludes cases with susceptibility testing not done or unknown for isoniazid. Source: Santa Clara County Public Health Department, California Reportable Disease Information Exchange, 2010–2023; Data as of March 15, 2023 and are provisional.

### Multidrug-Resistant (MDR), pre-Extensively Drug-Resistant (pre-XDR), and XDR TB

Definitions for TB drug resistance were updated in 2022 [4]. MDR-TB cases are resistant to both isoniazid and rifampin; pre-XDR cases are additionally resistant to a fluoroquinolone or a second-line injectable. XDR cases are resistant to isoniazid, rifampin, and at least one fluoroquinolone, and either a second-line injectable OR bedaquiline OR linezolid. Using these new definitions, from 2010–2022 there have been 34 people diagnosed with MDR-TB in SCC: 41% were born in India, 29% were born in Vietnam, 9% were born in the Philippines, 6% were born in the U.S., and 3% were born in Mexico. There have been seven pre-XDR cases and no known XDR cases in SCC. there was one MDR-TB case and no pre-XDR or XDR cases in 2022.

### Rapid Molecular Testing to Detect Mycobacterium tuberculosis and Multi-drug Resistance

CDC recommends the use of a rapid molecular test on at least one specimen from each patient with signs and symptoms of pulmonary tuberculosis for whom a

diagnosis of tuberculosis is being considered but has not been established [5]. Use of molecular tests directly on clinical samples has been shown to shorten time to diagnosis, and some tests have the additional ability to provide information on drug susceptibility or provide an early indication of possible rifampin resistance (e.g. Xpert MTB/RIF) [5,6,7]. As most people with rifampin resistance have multi-drug resistance, this information can expedite initiation of an appropriate treatment regimen in consultation with the Public Health Department. The Xpert MTB/RIF assay is available through the Santa Clara County Public Health Laboratory and many regional labs. In 2022, NAATs were used for 90% of pulmonary TB cases in SCC.

## Global Perspective

The World Health Organization (WHO) estimates that about one out of four people in the world, or 2 billion people, are infected with *Mycobacterium tuberculosis* [1]. An estimated 10.6 million people developed TB disease and 1.6 million people died of TB disease in 2021. Most cases of TB disease occurred in South-East Asia (45%), Africa (23%), and the Western Pacific (18%). An estimated 6.7% of incident TB cases had HIV co-infection. Among incident TB cases, about 3.6% were estimated to have multidrug-resistant TB. TB treatment coverage was 61% in 2021, higher than 58% in 2020 but lower than 69% in 2019.

## Prevention

The California Department of Public Health estimates that in Santa Clara County, about 170,000 people have latent TB infection (LTBI) [8]. This represents a very large reservoir of individuals from which future cases of TB disease will develop. In order to significantly decrease the number of people with TB disease, more individuals with risk factors for TB need to be tested and treated for LTBI. This underscores the need for primary care providers to conduct targeted testing and treatment for LTBI as part of routine preventive care. Treatment for LTBI is very effective – it can decrease the risk of developing TB disease by over 90% when medications are taken as prescribed [6]. Short-course regimens (i.e. isoniazid-rifapentine, which is given weekly for 12 weeks, rifampin, which is given daily for 4 months, or isoniazid plus rifampin, which is given daily for 3 months) are preferred (except in persons for whom there is a contraindication, such as a drug interaction or contact to a person with drug-resistant TB) due to similar efficacy and higher treatment completion rates as compared with isoniazid given daily for 9 months [6,9,10,11,12].

## References

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6. Guidelines for the Treatment of Latent Tuberculosis Infection: *Recommendations from the National Tuberculosis Controllers Association and CDC, 2020*
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9. U.S. Preventive Services Task Force. *Screening for Latent Tuberculosis Infection in Adults: US Preventive Services Task Force Recommendation Statement*. JAMA. 2016; 316: 962-969.
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11. Menzies D, Adjobimey M, Ruslami R, et al. *Four Months of Rifampin or Nine Months of Isoniazid for Latent Tuberculosis in Adults*. N Engl J Med. 2018; 379: 440-453.
12. Centers for Disease Control and Prevention. *Update of Recommendations for Use of Once-Weekly Isoniazid-Rifapentine Regimen to Treat Latent Mycobacterium tuberculosis Infection*. MMWR. 2018; 67: 723-726.

## Additional Resources

- SCC Public Health Department - Residents: [www.sccphd.org/tbinfo](http://www.sccphd.org/tbinfo); Providers: [www.sccphd.org/tb](http://www.sccphd.org/tb)
- Centers for Disease Control and Prevention TB resources: <https://www.cdc.gov/tb/>
- California Department of Public Health Tuberculosis Control Branch: <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/TBCB.aspx>
- Curry International Tuberculosis Center: <http://www.currytbcenter.ucsf.edu>
- California Tuberculosis Controllers Association (CTCA): <http://www.ctca.org>

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