

Tuberculosis Trend in Orange County

In 2021, Orange County reported 138 cases of active tuberculosis (TB) disease, which reflects a 2.8% decrease in reported TB cases from 2020. This also reflects a 28.1% decrease since 2012 when a 10-year high of 192 cases were reported and a 67.9% decrease from a historic high of 430 cases reported in 1993.

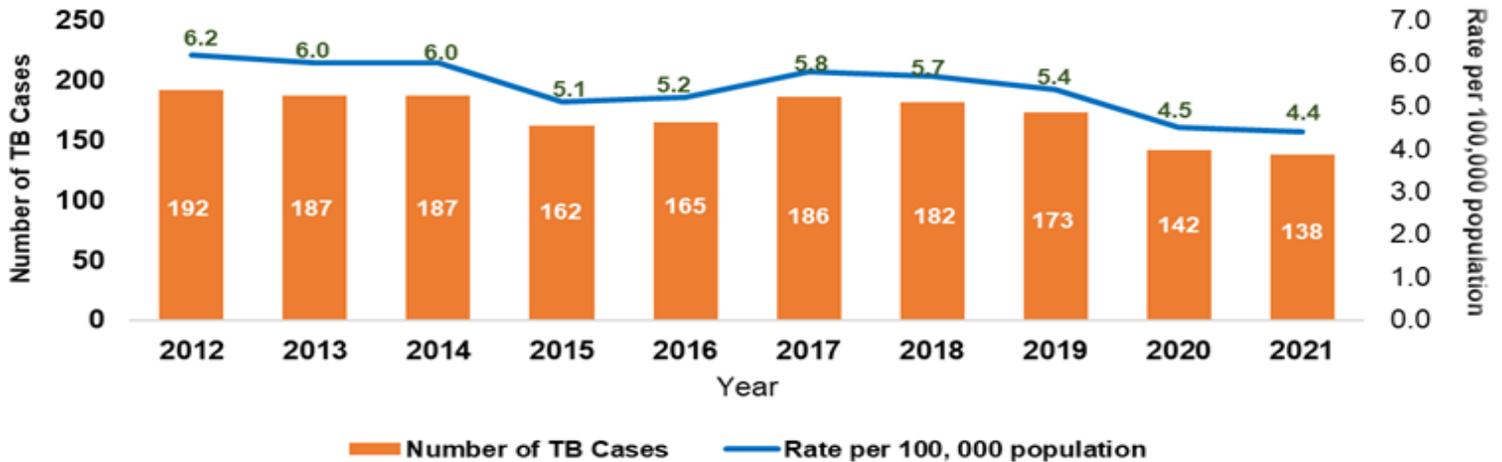
The TB case rate in Orange County is the same as the California case rate at 4.4 per 100,000 population. This is nearly double the case rate in the United States at 2.4 cases per 100,000 population. Compared to 2020, the TB case rate in Orange County decreased 2.2% while the rate in California increased by 2.3%.

Although Orange County has successfully reduced the number of TB cases each year since 2012, the pace of decline has slowed in recent years (3.0% average annual during 2017-2021 compared with 4.5% during 2012-2016). The ongoing COVID-19 pandemic may have contributed to the decrease in TB cases in 2021 due to a combination of factors, which include decrease in detection (fewer patients seeking care or fewer TB patients being diagnosed due to stay at home restrictions); decrease in TB transmission due to physical distancing and use of face masks; and decrease in immigration (due to travel restrictions or economic hardship).

The highest burden of disease continues to be among the elderly population. In 2021, persons aged 65 years and older had a TB case rate of 9.0 per 100,000 population. In 2021, Orange County TB cases were more likely to be male, Asian, non-U.S. born and 65 years and older.

In 2021, Orange County ranked fourteenth in the State based on TB case rate. Orange County reported the third highest number of TB cases in California behind Los Angeles and San Diego Counties. Orange County's 2021 TB case rate of 4.4 per 100,000 population remained higher than the national Healthy People 2020 objective of one TB case per 100,000 population.

Reported Tuberculosis Cases and Rates, Orange County, 2012 - 2021



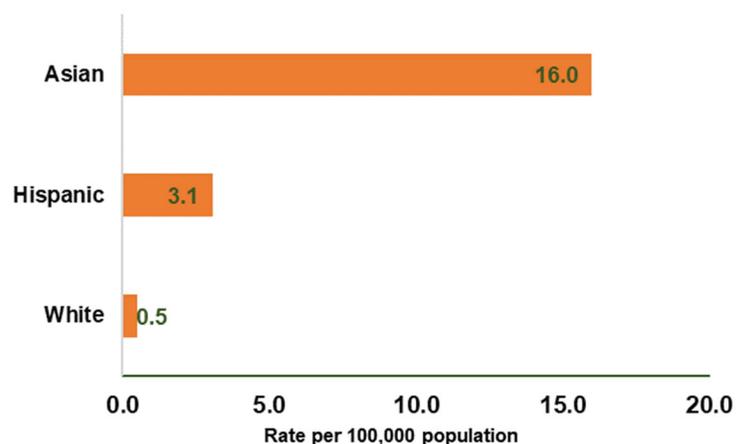
Race and Ethnicity

In Orange County, TB continues to disproportionately affect minorities. In 2021, the TB case rate among Asians was five times higher than the rate for Hispanics. The TB case rate among Asians was 16.0 per 100,000 population, which was a 17.1% decrease from 19.3 per 100,000 population in 2020. The TB case rate among Hispanics was 3.1 per 100,000 population, which was an increase of 55.0% compared to 2.0 per 100,000 population in 2020. The TB case rate among Whites was 0.5 per 100,000 population. Case counts for other races were less than five. Case rates are not calculated for case counts less than five.

Age

In 2021, Orange County TB cases were reported among persons ranging from 13 to 92 years of age with 34.5% of all TB cases occurring among individuals 65 years and older. The median age of TB cases was 59 years. There was one pediatric TB case (under 15 years of age).

Tuberculosis Rates by Race/Ethnicity, Orange County, 2021



Gender

In 2021, 70.3% of TB cases in Orange County were male. The TB case rate in Orange County, among males and females, was 6.1 and 2.5 per 100,000 population, respectively.

Country of Birth

Non-U.S. born persons continue to be disproportionately affected by TB. These persons predominately originate from countries with a high prevalence of TB. Of the 138 Orange County TB cases, 120 (87.0%) were non-U.S. born. By comparison, 84.0% of California and 71.0% of U.S. 2021 cases with known birthplace were non-U.S. born. The top five countries of birth of Orange County TB cases were Vietnam (44.9%), Mexico (15.2%), U.S.A. (13.0%), South Korea (7.2%), and the Philippines (6.5%). Of the non-U.S. born persons with known U.S. arrival date, 102 (90.3%) were living in the U.S. for more than five years prior to TB diagnosis. This indicates reactivation of LTBI that was likely acquired before U.S. arrival rather than recent transmission. In 2021, the TB case rate for non-U.S. born persons living in Orange County was 12.6 per 100,000 population. This compares to a rate of 0.8 per 100,000 population among U.S. born-persons. The Orange County 2021 TB case rate for non-U.S. born persons is lower than the California rate of 13.5 and higher than the national TB Program objective for 2025 of 8.8 per 100,000 non-U.S. born population.

TB and HIV co-infection

HIV is the strongest risk factor for the progression of LTBI to active disease. Provisional 2021 data shows that 130 (97.7%) of TB cases alive at TB diagnosis had a known HIV status. Of these 130 TB cases, five (3.8%) were reported with TB/HIV co-infection. From 2012 to 2021, 35 cases were reported with TB/HIV co-infection.

TB and Other Risk Factors

Diabetes and cigarette smoking increase the risk of progression from LTBI to active TB disease. In 2021, 34.3% of adult TB cases in Orange County had diabetes (up from 26.6% in 2020) and 31.4% (down from 35.3% in 2020) were current or past smokers.

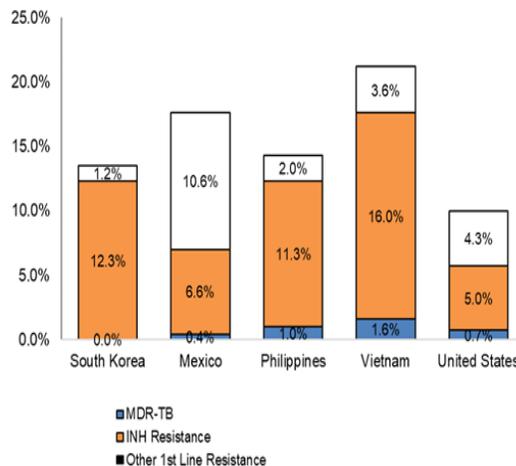
Drug Susceptibility Testing

In 2021, drug susceptibility results for Mycobacterium tuberculosis isolates were available for 122 (97.6%) of the 125 Orange County culture positive TB cases.

Drug Resistance

Of the 122 culture positive TB cases with known susceptibility, 28 (23.0%) were resistant to one or more of the first-line drugs used to treat TB - isoniazid (INH), rifampin (RIF), ethambutol (EMB) and pyrazinamide (PZA). Multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB) cases greatly complicate TB control. MDR-TB is TB that is resistant to at least INH and RIF, while XDR-TB is MDR-TB plus resistance to any fluoroquinolone (e.g. ciprofloxacin, levofloxacin, moxifloxacin or ofloxacin) and resistance to at least one second-line injectable drug (e.g., amikacin, capreomycin, or kanamycin). In 2021, there were no MDR-TB or XDR-TB cases reported in Orange County. Statewide in 2021, there were 11 MDR-TB cases and no XDR-TB case. In Orange County, drug resistance patterns vary by country of birth. From 2012 to 2021, the proportion of TB cases with INH drug resistance was highest in persons born in Vietnam (16.0%) and South Korea (12.3%). A higher proportion of MDR-TB cases with multidrug-resistance were born in Vietnam and Philippines (1.6% and 1.0%, respectively). In Orange County, 10.0% of U.S. born persons with TB had first-line drug resistance.

First-Line Drug Resistance by Country of Birth
Orange County, 2012 - 2021



TB Elimination

According to the Centers for Disease Control and Prevention (CDC), TB elimination is defined as one case of active TB per one million population. Despite Orange County reporting the lowest number of TB cases reported since 1993, a majority of TB cases occur due to reactivation of LTBI. Treating LTBI will prevent TB cases in Orange County. Estimates by the California Department of Public Health indicate that over 200,000 Orange County residents have LTBI. This represents a very large reservoir of individuals from which future cases of TB disease will develop. Diagnosing and treating LTBI is as an important strategy to accelerate the decline in TB cases in Orange County and achieve TB elimination.

Treatment Initiation and Completion

In 2021, 82.6% of TB cases with positive acid-fast bacillus (AFB) sputum smear results initiated treatment within seven days of specimen collection. By comparison, 84.2% of California and 84.8% of U.S. 2021 TB cases with positive sputum smear results initiated treatment within seven days of specimen collection. In 2019 (most recent year for which data is available), 78.3% of TB cases, for whom 12 months or less of treatment is indicated, completed their prescribed treatment within 12 months of diagnosis. This is lower than the national 2025 TB Program objective of 95.0%.

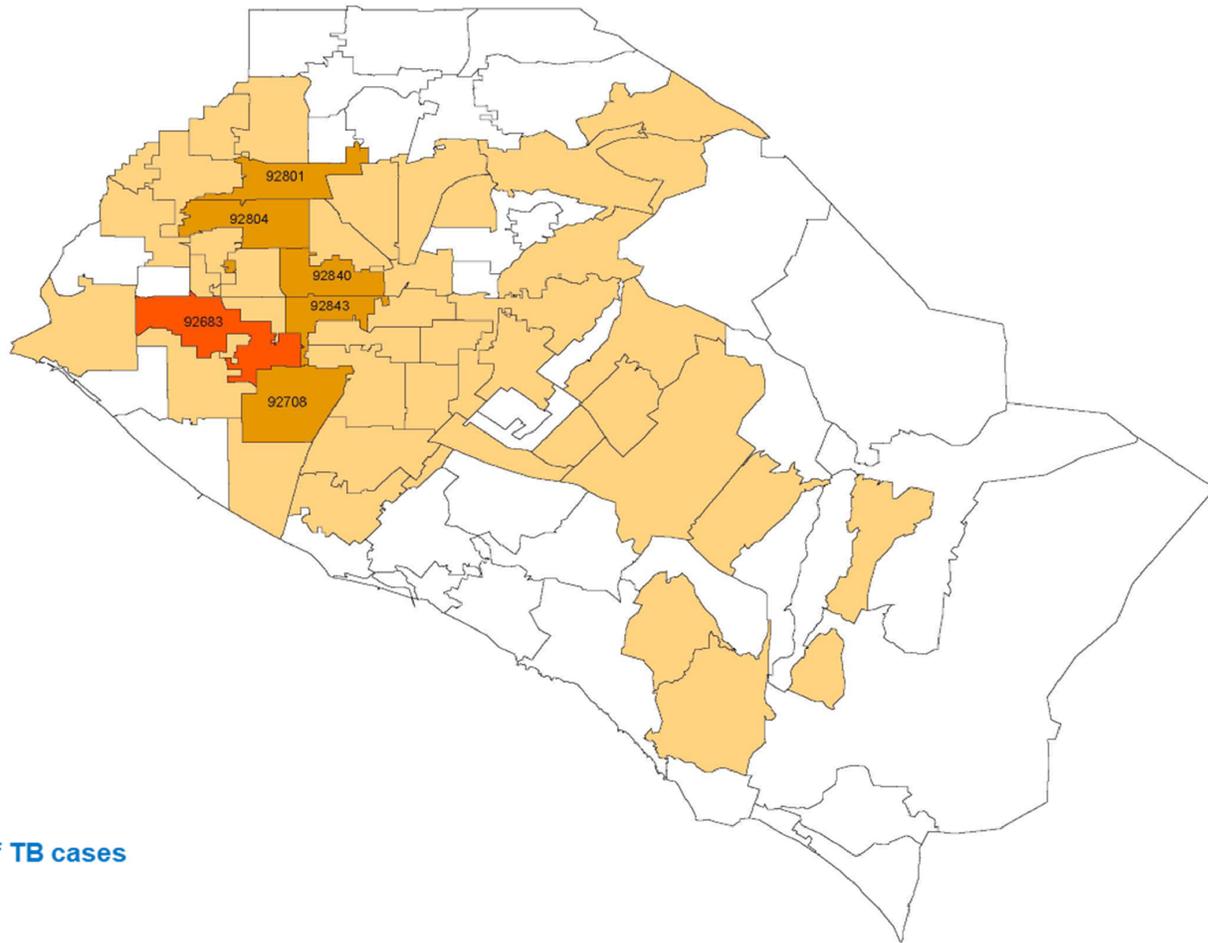
TB Reporting

In Orange County, all suspected or confirmed TB cases are assigned to a Public Health nurse case manager who provides individualized case management services for the patient. In 2021, there were 498 persons with suspected or confirmed TB disease assigned to Public Health nurse case managers, down from 527 in 2020.

TB Contact Investigation

Contact investigations are a key TB control strategy used to identify, find, and evaluate contacts to persons with infectious TB and provide appropriate treatment for LTBI or TB disease, if needed. Effective contact investigations interrupt the spread of TB in communities and help prevent transmission of TB. In Orange County, there are five high priority contacts identified for each person with infectious TB on the average, of which 21% have LTBI and less than one percent have TB disease. The four key areas of contact investigations are contact identification, contact evaluation, contact treatment initiation and contact treatment completion. In 2020 (most recent data), Orange County performed as follows in these four keys areas: 95.3% for contact identification, 84.1% for contact evaluation, 80.0% for contact treatment initiation and 81.3% for contact treatment completion. This is lower than the national 2025 TB Program objective.

TB Cases by Zip Code of Residence, Orange County, 2021



Number of TB cases

