

## Tuberculosis Trend in Orange County

In 2020, Orange County reported 142 cases of active tuberculosis (TB) disease, the lowest number of TB cases reported in 35 years. This reflects a 17.9% decrease in reported TB cases from 2019. It also represents a 32.1% decrease since 2011 when a 10-year high of 209 cases were reported and a 67.0% decrease from a historic high of 430 cases reported in 1993.

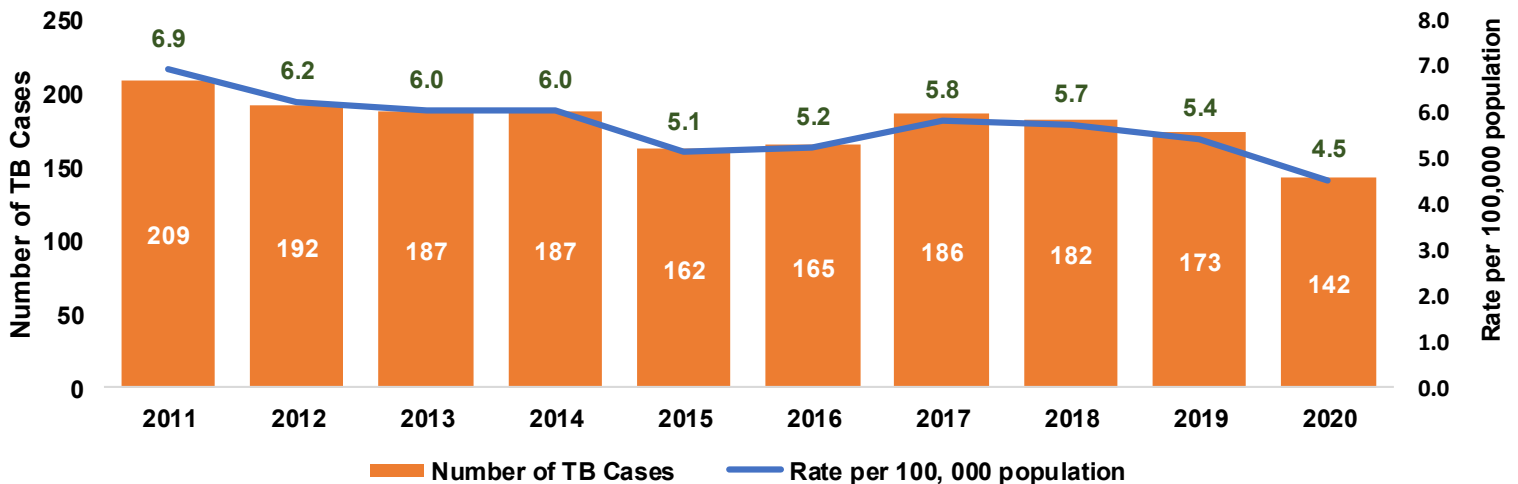
The TB case rate in Orange County is 4.5 per 100,000 population, which is double the case rate in the United States (2.2 cases per 100,000 population) and higher than the case rate in California of 4.3 per 100,000 population. Compared to 2019, the TB case rate in Orange County decreased 16.7% while the rates in California decreased by 18.9%.

Although Orange County has successfully reduced the number of TB cases each year since 2011, the pace of decline has slowed in recent years (2.1% average annual during 2016-2020 compared with 4.8% during 2011-2015). The COVID-19 pandemic likely contributed to the substantial decrease in TB cases in 2020 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, stay at home restrictions 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 2020, persons aged 65 years and older had a TB case rate of 10.0 per 100,000 population. In 2020, Orange County TB cases were more likely to be male, Asian, non-U.S. born and 65 years and older.

In 2020, Orange County ranked fourteenth in the State based on TB case rate. Orange County reported the fourth highest number of TB cases in California behind Los Angeles, San Diego and Santa Clara Counties. Orange County's 2020 TB case rate of 4.5 cases per 100,000 population remained higher than the national Healthy People 2020 objective of one TB case per 100,000 population.

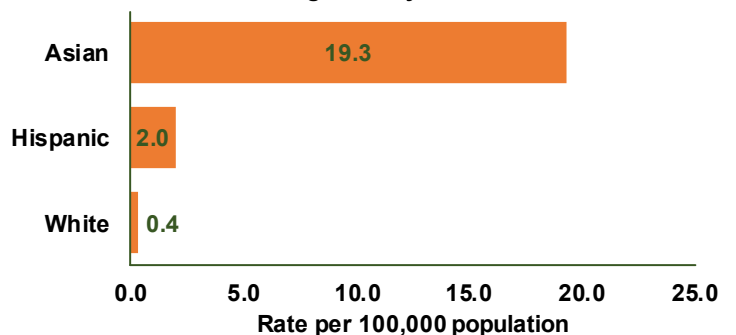
Reported Tuberculosis Cases and Rates,  
Orange County, 2011 - 2020



## Race and Ethnicity

In Orange County, TB continues to disproportionately affect minorities. In 2020, the TB case rate among Asians was more than nine times higher than the rate for Hispanics. The TB case rate among Asians was 19.3 cases per 100,000 population, which was a 2.0% decrease from 19.7 cases per 100,000 population in 2019. The TB case rate among Hispanics was 2.0 cases per 100,000 population, which was a decrease of 52.4% compared to 4.2 cases per 100,000 population in 2019. The TB case rate for Whites was 0.4 cases per 100,000 population. Case counts for other races were less than five. Case rates are not calculated for case counts less than five.

Tuberculosis Rates by Race/Ethnicity,  
Orange County, 2020



## Age

In 2020, Orange County TB cases were reported among persons ranging from 2 to 94 years of age with 36.6% of all TB cases occurring among individuals 65 years and older. The median age of TB cases was 57 years. There were three pediatric TB cases (under 15 years of age).

### Gender

In 2020, 57.7% of TB cases in Orange County were male. The TB case rate in Orange County, among males and females, was 5.1 and 3.7 cases 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 141 Orange County TB cases with a known birthplace, 127 (90.1%) were non-U.S. born. By comparison, 83.2% of California and 71.4% of U.S. 2020 cases with known birthplace were non-U.S. born. The top countries of birth of TB cases in Orange County were Vietnam (47.5%), Philippines (16.3%), U.S.A (9.9%), Mexico (7.8%), South Korea (4.3%), India (2.8%), China, Peru and Taiwan (1.4% each). Of the non-U.S. born persons with known U.S. arrival date, 121 (76.9%) were living in the U.S. for more than five years prior to TB diagnosis. This indicates reactivation of latent TB infection (LTBI) that was likely acquired before U.S. arrival rather than recent transmission. In 2020, the TB case rate for non-U.S. born persons living in Orange County was 12.7 cases per 100,000 population. This compares to a rate of 0.6 cases per 100,000 population among U.S. born-persons. The Orange County 2020 TB case rate for non-U.S. born persons is lower than the California rate of 13.2 and higher than the national TB Program objective for 2025 of 8.8 TB cases 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 2020 data shows that 93.5% of TB cases alive at TB diagnosis had a known HIV status. In Orange County, the epidemiology of TB/HIV co-infection reflects the population at high risk for TB: non-U.S. born persons from countries with high prevalence of TB. From 2011 to 2020, 31 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 2020, 26.6% of adult TB cases in Orange County had diabetes (down from 28.8% in 2019) and 35.3% (up from 31.2% in 2019) were current or past smokers.

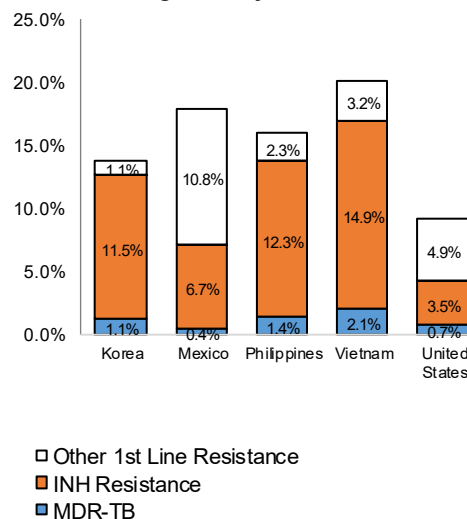
### Drug Susceptibility Testing

In 2020, drug susceptibility results for *Mycobacterium tuberculosis* isolates were available for all (100.0%) of the 120 Orange County culture positive TB cases.

### Drug Resistance

Of 120 culture positive cases, 27 (22.5%) 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 2020, there were two MDR-TB and no XDR-TB cases reported in Orange County. As compared to 2019, the incidence of MDR-TB in Orange County remained the same. Statewide in 2020, there were 11 MDR-TB cases and no XDR-TB case. In Orange County, drug resistance patterns vary by country of birth. From 2011 to 2020, the proportion of TB cases with INH drug resistance was highest in persons born in Vietnam (14.9%) and Philippines (12.3%). A higher proportion of MDR-TB cases with multidrug-resistance were born in Vietnam and Philippines (2.1% and 1.4%, respectively). In Orange County, 9.1% of U.S. born persons with TB had first-line drug resistance.

First-Line Drug Resistance by Country of Birth, Orange County, 2011 - 2020



### Treatment Initiation and Completion

In 2020, 87.3% of TB cases with positive acid-fast bacillus (AFB) sputum-smear results initiated treatment within seven days of specimen collection. By comparison, 86.2% of California and 85.3% of U.S. 2020 TB cases with positive sputum smear results initiated treatment within seven days of specimen collection. In 2018 (most recent year for which data is available), 80.8% 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%.

### LTBI

Based on the National Health and Nutrition Examination Survey (NHANES) data, CDC estimates that over 200,000 people in Orange County have LTBI. One in six non-U.S. born persons in Orange County have LTBI. Without treatment for LTBI, persons with LTBI are at risk for developing TB disease. Focusing efforts to screen for and treat LTBI is key to eliminating TB disease in Orange County.

### 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 activities for the patient. In 2020, there were 527 persons with suspected or confirmed TB disease assigned to Public Health nurse case managers, down from 837 in 2019.

### TB Prevention and Control During the COVID-19 Pandemic

In 2020, there was a 31% decline in encounters in the Orange County TB clinic compared to 2019. This was most likely due to patients observing the statewide stay at home restriction in place. Although several TB staff assisted in the COVID-19 response, there was no reduction in the provision of clinic services and TB prevention and control activities. Several steps were taken in order to keep patients safe during the pandemic. Patient appointments were spaced apart to avoid clinic congestion. The TB clinic waiting room was modified to observe physical distancing. Patient interviews that would have been done in-person were done over the phone. The use of video technology was promoted. There was a 10.9% increase from 2019 on video observed therapy enrollment. This involved patients being observed swallowing their medications remotely using live (synchronous) or recorded (asynchronous) videos.

## TB Cases by Zip Code of Residence, Orange County 2020

