



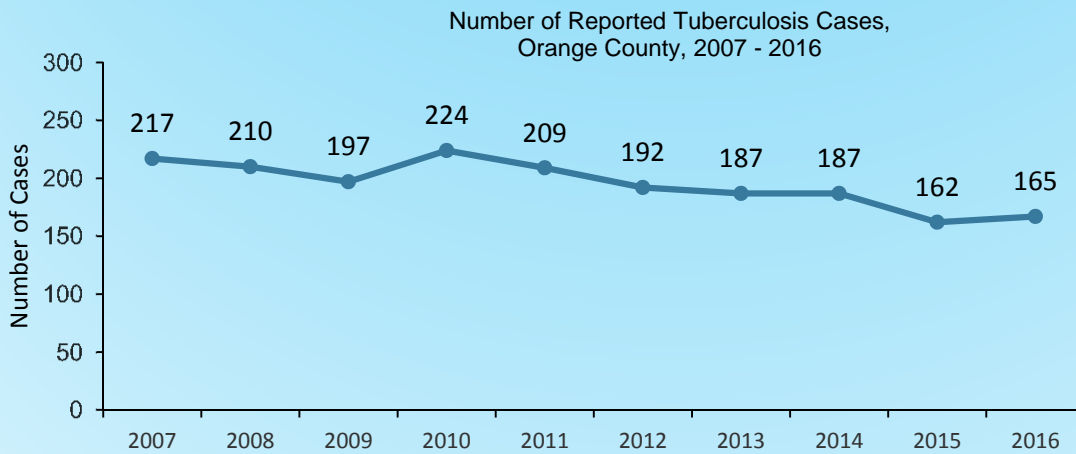
Pulmonary Disease Services Tuberculosis Fact Sheet, 2016

Tuberculosis Trend in Orange County

In 2016, Orange County reported 165 cases of tuberculosis (TB). This represents a 26.3% decrease since 2010 when a 10-year high of 224 cases were reported and a 68.5% decrease from a historic high of 523 cases reported in 1981. The TB case rate for 2016 was 5.2 cases for every 100,000 Orange County residents. This compares to a rate of 5.3 and 2.9 cases per 100,000 population for California and the United States, respectively. TB rates in California and the United States decreased 3.6% and 3.3% respectively, as compared to 2015 while the TB rate in Orange County increased 1.96% from 2015.

The highest burden of disease continues to be among older adults. In 2016, adults aged 65 years and older had a TB case rate of 12.0 cases per 100,000 population, while children aged 19 years and younger had the lowest rate at 0.8 case per 100,000 population. In 2016, Orange County TB cases were more likely to be male, Asian, foreign-born and 65 years and older.

In 2016, Orange County ranked fourteenth in the State based on TB case rate and had the third highest number of TB cases in California behind Los Angeles and San Diego Counties. Orange County's 2016 rate of 5.2 cases per 100,000 remained higher than the national Healthy People 2020 objective of one (1) TB case per 100,000.

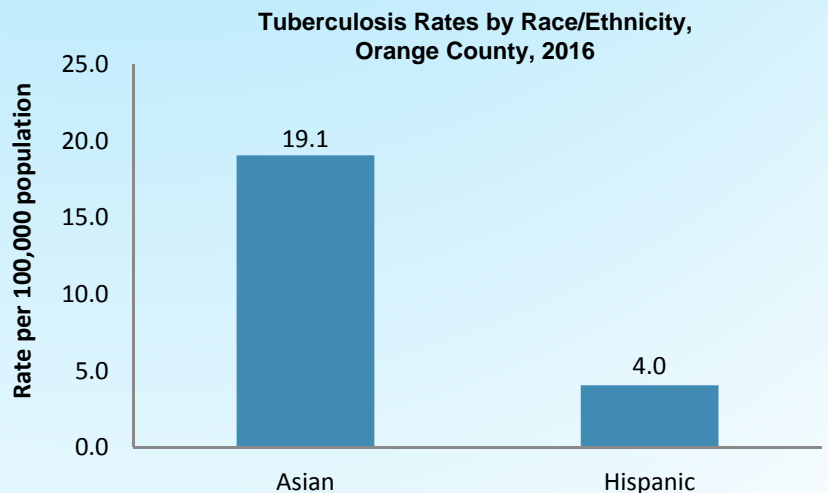


Year	Rate*
2007	7.3
2008	7.0
2009	6.6
2010	7.4
2011	6.9
2012	6.2
2013	6.0
2014	6.0
2015	5.1
2016	5.2

* Rate per 100,000 population

Race and Ethnicity

In Orange County, TB continues to disproportionately affect minorities. In 2016, the TB case rate among Asians was approximately five times higher than the TB case rate among Hispanics. The Asian TB case rate was 19.1 cases per 100,000 population; a 4.5% decrease from 20.0 cases per 100,000 in 2015. The Hispanic TB case rate was 4.0 cases per 100,000 population; an increase of 25.0% compared to 3.2 cases per 100,000 in 2015. Case counts for other races were less than five; case rates are not calculated for case counts less than five.





Pulmonary Disease Services Tuberculosis Fact Sheet, 2016

Age

In 2016, Orange County TB cases were reported among persons ranging from 2 to 99 years of age with 89.1% of all TB cases occurring among individuals 25 years and older. Of the three pediatric cases, two were younger than five years of age. TB in children under five years of age indicates ongoing or recent transmission. Children under five years are also susceptible to rapid progression from TB infection to TB disease. Screening high priority contacts to infectious TB cases and use of directly observed therapy for TB medications increase the success rate of finding and treating adult TB cases, thereby, decreasing TB exposure and infection of children under five years of age.

Gender

In 2016, 56.97% (94 of 165) of persons with TB in Orange County were male; this compares to 62.0% male California TB cases. In 2016, the TB case rate in Orange County was 6.0 and 4.4 cases per 100,000 population among males and females, respectively. In California, the 2016 TB case rate for males and females was 6.6 and 4.0 cases per 100,000 population, respectively. During the 2007-2016 time period, males accounted for an average of 59.1% of the Orange County TB cases per year (range: 52%-66%), while females accounted for an average of 40.8% (range: 34%-48%).

Foreign-born Cases

Foreign-born persons continue to be disproportionately affected by TB; these persons predominately originate from countries with a high prevalence of tuberculosis. Of the 165 Orange County TB cases reported in 2016, 151 (91.5%) were among persons born outside the United States. The top five countries of origin of foreign-born persons with TB were Vietnam (45.7%), Mexico (17.9%), Philippines (13.9%), India and Guatemala (4.0% each). By comparison, 80.8% of California and 68.2% of U.S. 2016 cases with known birthplace were foreign-born. Of the 145 foreign-born persons with known U.S. arrival date, 121 (83.4%) were living in the United States for more than 5 years prior to TB diagnosis. This indicates reactivation of latent TB infection that was likely acquired before U.S. arrival rather than recent transmission. In 2016, the TB rate for foreign-born persons living in Orange County was 15.6 cases per 100,000. This compares to a rate of 0.6 cases per 100,000 population among U.S. born-persons. The Orange County 2016 TB rate for foreign-born persons is the same as the California rate of 15.6 and higher than the national Healthy People 2020 objective of 14.0 TB cases per 100,000 foreign-born population.

TB and HIV co-infection

HIV is the strongest risk factor for the progression of TB infection to active disease. In Orange County, the epidemiology of TB/HIV co-infection reflects the population at high risk for TB: foreign-born persons from countries with high prevalence of TB. From 2007 to 2016, 34 cases were reported with TB/HIV co-infection in Orange County. Approximately 88.2% of these TB cases were foreign-born, and 60.0% of these foreign-born TB/HIV co-infected cases were Hispanic.

Drug Resistant TB

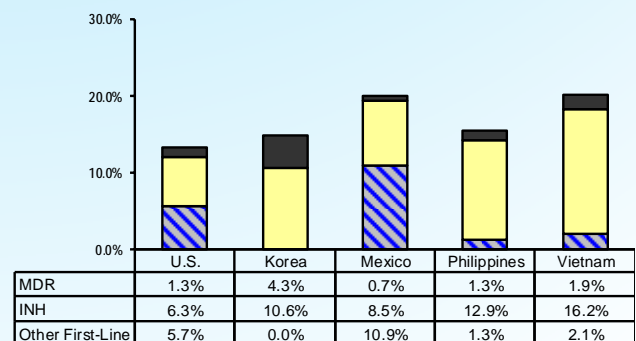
In 2016, drug susceptibility results for *Mycobacterium tuberculosis* isolates were available for 148 (98.7%) of the 150 Orange County culture positive TB cases. Of these 148 cases, 29 (19.6%) were resistant to one or more of the first-line drugs used to treat TB (isoniazid (INH), rifampin (RIF), ethambutol (EMB) and pyrazinamide (PZA)).

Multi-drug-resistant (MDR) and extensively drug-resistant (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).

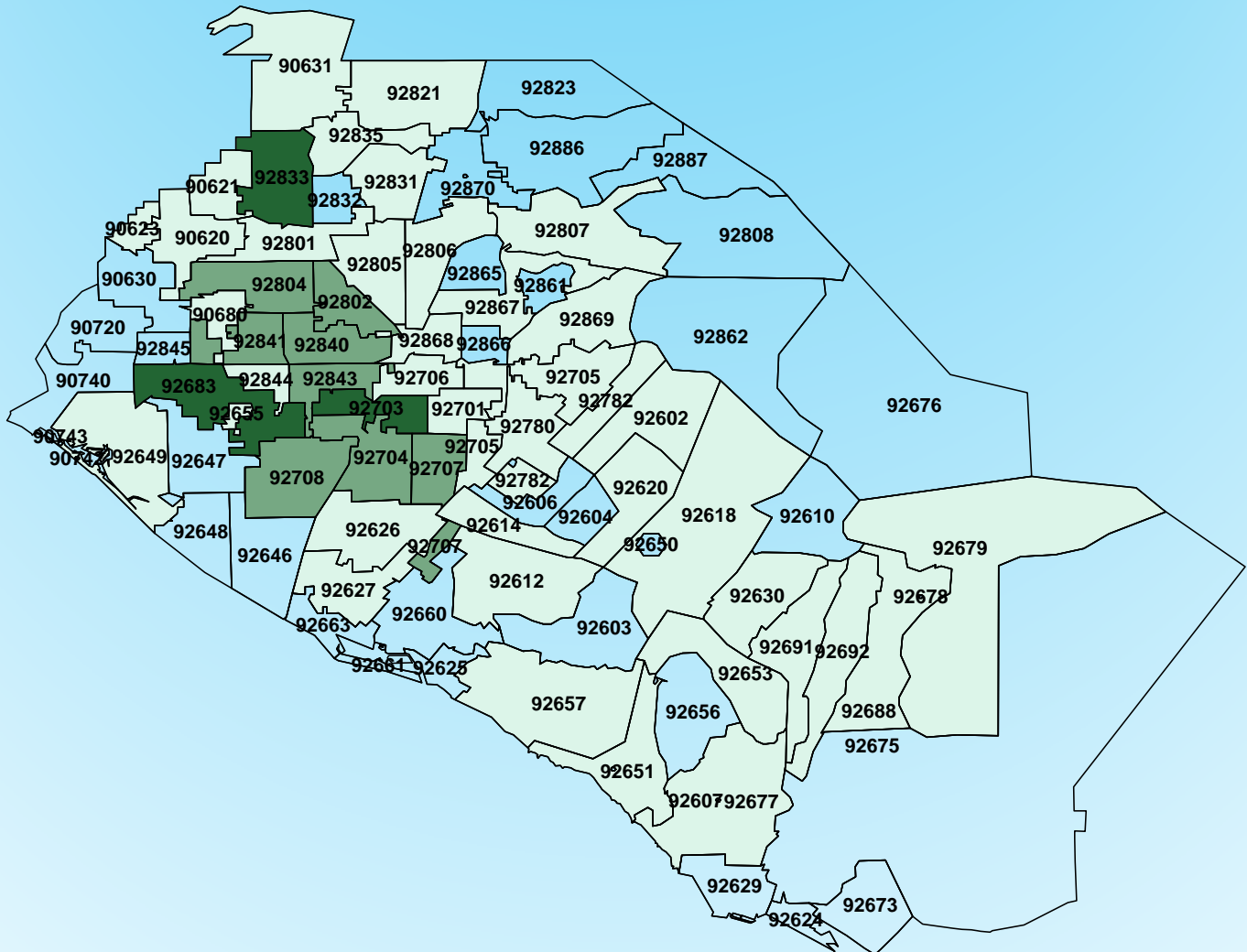
In 2016, one MDR-TB and no XDR-TB cases were reported in Orange County. As compared to 2015, the incidence of MDR-TB in Orange County decreased from two to one case. In comparison, in 2016, there were 28 MDR-TB cases and no XDR-TB cases in California.

In Orange County, drug resistance patterns vary by country of birth. During the 10-year time period 2007-2016, the proportion of TB cases with INH drug resistance was highest in persons born in Vietnam (16.2%) and the Philippines (12.9%). However, a higher proportion of Korean-born cases were multidrug-resistant (4.3%). In Orange County, first-line drug resistance among U.S. born persons with TB was 13.3% (1.3% MDR-TB, 6.3% INH resistant-not MDR-TB, and 5.7% other first-line drug resistance).

**First-Line Drug Resistance by Country of Birth
Orange County, 2007 - 2016**



TB Cases by Zipcode of Residence, Orange County 2016



Number of TB Cases Reported 2016

