

**Massachusetts Department of Public Health  
Bureau of Infectious Disease and Laboratory Sciences  
Division of Global Populations and Infectious Disease Prevention - Summary Tuberculosis Statistics for the Year 2015  
Reported as of March 15, 2016**

**Tuberculosis - Massachusetts**

In 2015, 192 cases (incidence rate 2.8 per 100,000 residents)<sup>†</sup> of active tuberculosis (TB) were reported to, and verified by, the Massachusetts Department of Public Health. The Massachusetts case rate is similar to the United States (U.S.) case rate as a whole (3.0 per 100,000 residents)<sup>†</sup>. The 2015 Massachusetts case count was slightly decreased from the number of cases observed in 2014. Challenges include high rates of drug resistance, delays in diagnosis, and complex medical and social needs of persons diagnosed with TB.

**Race/Ethnicity**

Racial/ethnic minorities are disproportionately affected by TB; 88% of active TB disease in 2015 was diagnosed in members of minority groups. The TB case rate in 2015 was 23.2 per 100,000 among Asian non-Hispanic residents, 10.6 among black non-Hispanic residents, and 5.7 among Hispanic residents; compared with 0.46 among white non-Hispanic residents. Compared with white residents, the relative risk of being diagnosed with TB in 2015 was approximately 50.8 times higher among Asian (95% CI 32.2-80.1), 23.2 times higher among black (95% CI 14.2-38.1), and 12.6 times higher among Hispanic residents (95% CI 7.5-21.1).

**Higher Risk Groups**

**Non-U.S. Born** (persons born outside the United States and territories): Among 192 cases of TB in 2015, 167 (87%) were reported in non-U.S. born persons. Seventy-six (40%) cases were from six countries: 17 (9%) born in Vietnam, 16 (8%) born in China, 14 (7%) from India, 13 (7%) among persons born in Haiti, and eight (4%) each among persons born in Dominican Republic and Cambodia. The remaining 91 cases (47%) occurred in persons born in 38 additional countries.

**Children <15 Years of Age:** In 2015, seven cases of TB were diagnosed in children under 15 years of age (4% of cases, incidence rate <1 per 100,000 children <15 years old). Two of the seven children (29%) were born in the U.S.

**Incarcerated in Prison/Jail:** In 2015, one case of TB (<1%) was diagnosed in persons in correctional facilities.

**Homeless:** Of the 192 cases of TB reported in 2015, seven (4%) were in persons reported to have been homeless. Five (71%) were U.S. born individuals, representing 25% of the TB cases among U.S. born persons.

**HIV Co-infected (preliminary):** Twelve persons (6%) diagnosed with TB in 2015 were known to be co-infected with human immunodeficiency virus (HIV).

**Drug Resistance**

In 2015, 141 (73%) of the 192 TB cases were bacteriologically confirmed by positive culture for *Mycobacterium tuberculosis* and tested for drug sensitivity.

Resistance to one or more anti-TB drugs was detected in 30 (21%) of the 141 cultures. Resistance to isoniazid (INH), either alone or in combination with other agents, was seen in 16% of 141 cases. The frequency of multi-drug resistant TB (MDR-TB, defined as resistance to INH and Rifampin) in Massachusetts, seven cases (5%), was significantly higher than the national burden of 1% of all TB bacteriologically confirmed TB cases in 2014 (RR=4.2, p=0.002).<sup>†</sup>

There were no cases of XDR-TB (extremely drug resistant, defined as MDR-TB with additional resistance to any fluoroquinolone and at least one injectable second-line drug [amikacin, kanamycin or capreomycin]). With MDR-TB increasing worldwide, the continued presence of MDR-TB in Massachusetts remains a priority of TB program activities.

<b>Characteristics of TB Cases 2015 (N=192)</b>	
<b>Demographics</b>	<b># (%)</b>
<b>Sex</b>	
Male	100 (52%)
Female	92 (48%)
<b>Race Ethnicity</b>	
White, non-Hispanic	24 (13%)
Black, non-Hispanic	46 (24%)
Hispanic	36 (19%)
Asian	82 (43%)
Other, non-Hispanic	4 (2%)
<b>Origin of Birth</b>	
U.S. born	25 (13%)
Non-U.S. born	167 (87%)
<b>Age (years)</b>	
<5	2 (1%)
5-14	5 (3%)
15-19	5 (3%)
20-24	9 (5%)
25-44	61 (32%)
45-64	59 (31%)
65+	51 (27%)
<b>Clinical Presentation</b>	
<b>Primary Site of Disease</b>	
Pulmonary	114 (59%)
Extra-pulmonary	48 (25%)
Both	30 (16%)
<b>Chest Radiography</b>	
Cavitary disease only	28 (15%)
Miliary disease only	2 (1%)
Cavitary and miliary	1 (<1%)
Non-cavitary disease only	126 (66%)
Normal findings	33 (17%)
Not reported	2 (1%)
<b>Higher Risk Groups<sup>+</sup></b>	
Non-U.S. born	167 (87%)
Children <15 years of age	7 (4%)
Incarcerated in prison/jail	1 (<1%)
Homeless	7 (4%)
Substance use*	12 (6%)
HIV co-infection	12 (6%)
<b>Drug Resistance (N=141)</b>	
Resistance to at least 1 drug	30 (21%)
Resistance to at least INH	22 (16%)
Resistance to at least INH and RIF (MDR-TB)	7 (5%)
+ Not mutually exclusive groups * Alcohol abuse, injecting and/or non-injecting drug use	

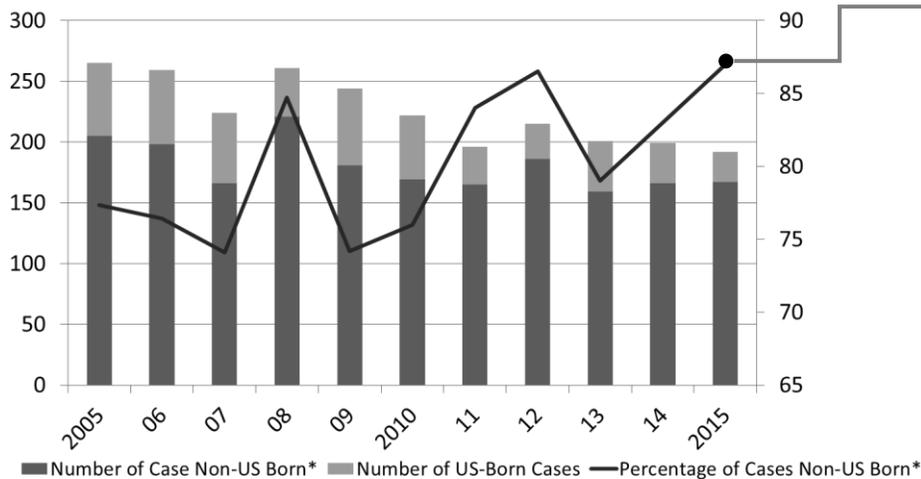
Note: All incidence rates are per 100,000 population and were calculated using 2010 U.S. Census unless otherwise noted.

For additional information, please visit our web page: <http://www.mass.gov/dph/cdc/tb>

<sup>†</sup>Incidence rate calculated using the U.S Census Bureau's July 1 midyear population estimates:

<http://www.census.gov/popest/data/national/totals/2015/index.html>

### Number of Persons with TB by Place of Birth and Year in Massachusetts, 2005-2015 \*



\*Non-US Birth defined as outside the United States and its territories

### Countries of Origin among Non-US Born\* TB Cases Massachusetts, 2015 (N=167)

Country	Number of TB Cases	Percent of Cases
Vietnam	17	10%
China	16	10%
India	14	8%
Haiti	13	8%
Cambodia	8	5%
Dominican Republic	8	5%
Nepal	7	4%
Philippines	7	4%
Brazil	5	3%
Ecuador	5	3%
<b>34 Other Countries<sup>†</sup></b>	<b>67</b>	<b>40%</b>

\*Birth outside the United States and its territories

### TB Drug Resistance, Massachusetts, 2015

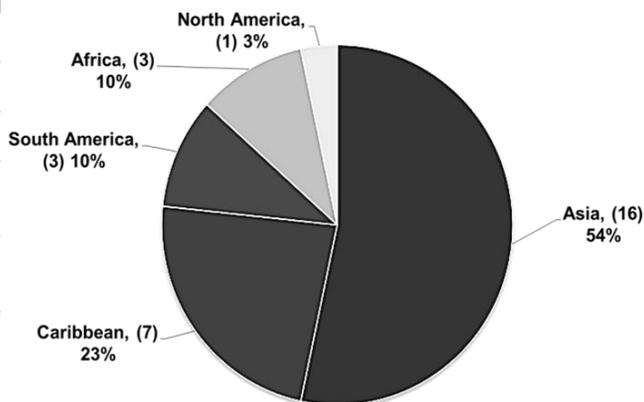
#### Total Cases

<b>Bacteriologically** confirmed cases*</b>	141 (73% of 192)
Drug susceptibility tests performed	141 (100%)
Resistance to any anti-TB drug	30 (21%)
Resistant to isoniazid (alone or in combination with other)	22 (16%)
Resistant to at least isoniazid and rifampin (MDR-TB)	7 (5%)
Resistant to at least isoniazid and rifampin, plus any fluoroquinolone and at least one of the three injectable second-line drugs (XDR-TB)	None

\*Bacteriologically substantiated TB case rate of 2.2 per 100,000 population

\*\*TB cases with either a positive sputum culture or a positive culture of tissue/other body fluids

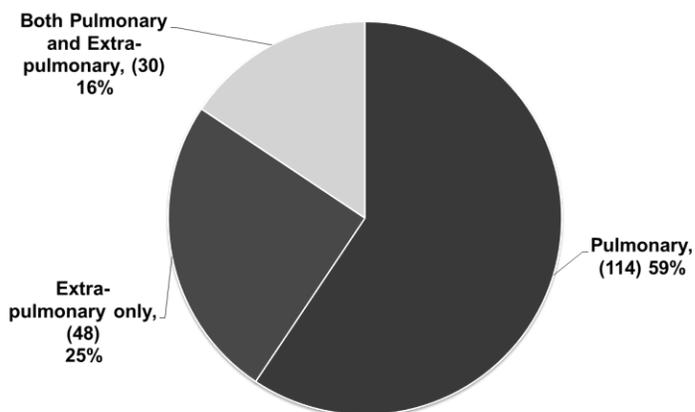
### Drug Resistant TB Cases by Place of Birth\* Massachusetts, 2015 (N=30)



\*Regions defined using UN classifications

<http://esa.un.org/wpp/Excel-Data/country-classification.pdf>

### TB Cases by Site of Disease, Massachusetts 2015 (N=192)



### Sites of Extra-Pulmonary Disease Only Massachusetts, 2015 (n=48)

Extra-Pulmonary Site of Disease	# TB Cases	Percentage of Total Extra-Pulmonary Cases
Lymphatic- Cervical	9	19%
Pleural	7	15%
Ocular	7	15%
Lymphatic- Other	6	13%
Other	19	40%