

Tuberculosis in New York State

2021

Annual Statistical Report
Bureau of Tuberculosis Control



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EXECUTIVE SUMMARY

MORBIDITY

- From 2020 to 2021, tuberculosis (TB) morbidity increased in New York State. In 2021, 684 TB cases were reported, which represents a 12.9 percent increase in the number of cases from 2020. TB morbidity also increased nationally by 9.9 percent. However, compared to the last peak of tuberculosis in 1992, TB cases were down statewide by 85 percent, while the decrease nationally was 70.5 percent.
- The number of TB cases in New York City increased by 19.1 percent from 2020 (N=445) to 2021 (N=530). However, in the remainder of the state, the number of TB cases declined 4.3 percent from 2020 (N=161) to 2021 (N=154).
- New York State ranked fifth nationwide for TB morbidity with an incidence rate of 3.4 per 100,000 population, but New York City as a distinct reporting area ranked third nationally in TB morbidity. The state incidence rate was elevated by a higher rate of TB in New York City (6.0 per 100,000 population). In contrast, New York State (exclusive of New York City) reported an incidence rate of 1.4 per 100,000 population.

GEOGRAPHIC DISTRIBUTION

- Three counties – Nassau, Suffolk, and Westchester – reported 56.5 percent of the TB cases in New York State (exclusive of New York City). In New York City, the borough of Queens had the highest rate of TB with a rate of 9.5 per 100,000 population.

RACE/ETHNICITY

- In 2021, Asians continued to have the highest incidence rate of TB statewide (16 per 100,000 population). White, non-Hispanics had the lowest incidence rate of 0.4 per 100,000 population.

NON-U.S.-BORN

- Statewide, the proportion of non-U.S.-born TB cases increased from 85.1 percent (N=516) in 2020 to 86 percent (N=588) in 2021. In New York City, people born in China represented the greatest number of non-U.S.-born TB cases (N=97). In the remainder of the state, those born in India comprised the greatest number of non-U.S.-born TB cases (N=17).

DRUG SUSCEPTIBILITY

- Among individuals with drug susceptibilities reported in 2021, 7 cases from New York City had multidrug-resistant tuberculosis (MDR TB), which is one more than reported in 2020. In New York State (exclusive of New York City) there were 2 MDR TB cases reported, which is double the number reported in 2020.

TB IN THE PRISONS

- Since 1991, the incidence of TB among the New York State Department of Corrections and Community Supervision (DOCCS) inmate population has been continually declining. There were no cases reported among the inmate population in 2021.

TUBERCULOSIS CASES AND RATES

Table 1. Tuberculosis Cases and Rates, * New York State, 1960-2021

Year	New York State (Exclusive of New York City)		New York City		New York State (Total)	
	No.	Rate	No.	Rate	No.	Rate
1960	2,376	26.4	4,699	60.4	7,075	42.2
1961	2,052	22.3	4,360	56.3	6,412	37.8
1962	2,005	21.4	4,437	56.7	6,442	37.5
1963	1,865	19.6	4,891	61.7	6,756	38.7
1964	1,715	17.8	4,207	52.7	5,922	33.6
1965	1,627	16.6	4,242	53.0	5,869	33.0
1966	1,633	16.5	3,663	45.7	5,296	29.5
1967	1,527	15.2	3,542	44.4	5,069	28.1
1968	1,475	14.5	3,224	40.5	4,699	25.9
1969	1,384	13.5	2,951	37.4	4,335	23.9
1970	1,275	12.3	2,590	32.8	3,865	21.2
1971	1,180	11.3	2,572	32.5	3,752	20.4
1972	1,176	11.2	2,275	29.0	3,451	18.8
1973	1,009	9.6	2,101	27.4	3,110	17.1
1974**	844	8.1	2,022	26.6	2,866	15.9
1975	1,041	9.9	2,893	38.6	3,934	21.8
1976	916	8.7	2,156	29.0	3,072	17.1
1977	829	7.9	1,605	22.0	2,434	13.6
1978	753	7.1	1,307	18.2	2,060	11.6
1979	699	6.6	1,530	21.5	2,229	12.6
1980	780	7.4	1,514	21.4	2,294	13.1
1981	641	6.1	1,582	22.4	2,223	12.7
1982	674	6.4	1,594	22.5	2,268	12.9
1983	658	6.2	1,651	23.1	2,309	13.1
1984	616	5.8	1,630	22.6	2,246	12.7
1985	638	6.0	1,843	25.5	2,481	13.9
1986	615	5.8	2,223	30.6	2,838	15.9
1987	615	5.8	2,197	30.1	2,812	15.7
1988	688	6.5	2,317	31.8	3,005	16.8
1989	657	6.2	2,545	34.8	3,202	17.8
1990	656	6.1	3,520	48.1	4,176	23.2
1991	748	7.0	3,673	50.2	4,421	24.6
1992	763	7.2	3,811	52.0	4,574	25.4
1993	717	6.7	3,235	44.2	3,952	22.0
1994	641	6.0	2,995	40.9	3,636	20.2
1995	621	5.8	2,445	33.4	3,066	17.0
1996	535	5.0	2,053	28.0	2,588	14.4
1997	535	5.0	1,730	23.6	2,265	12.6
1998	442	4.1	1,558	21.3	2,000	11.1
1999	377	3.5	1,460	19.9	1,837	10.2
2000	412	3.8	1,332	16.6	1,744	9.2
2001	415	3.8	1,261	15.7	1,676	8.8
2002	350	3.2	1,084	13.5	1,434	7.6
2003	340	3.1	1,140	14.2	1,480	7.8
2004	324	3.0	1,039	13.0	1,363	7.2
2005	305	2.8	984	12.3	1,289	6.8
2006	317	2.9	954	11.9	1,271	6.7
2007	261	2.4	914	11.4	1,175	6.2
2008	305	2.8	895	11.2	1,200	6.3
2009	246	2.2	760	9.5	1,006	5.3
2010	243	2.2	711	8.7	954	4.9
2011	221	2.0	689	8.4	910	4.7
2012	215	1.9	651	8.0	866	4.5
2013	217	1.9	656	8.0	873	4.5
2014	202	1.8	585	7.2	787	4.1
2015	188	1.7	577	7.1	765	3.9
2016	203	1.8	565	6.9	768	4.0
2017	193	1.7	613	7.5	806	4.2
2018	191	1.7	559	6.8	750	3.9
2019	188	1.7	566	6.9	754	3.9
2020	161	1.4	445	5.1	606	3.0
2021	154	1.4	530	6.0	684	3.4

*Rate calculations are based on 2020 United States decennial Census data; per 100,000 population
 **Figures after 1974 reflect a nationally revised case definition that includes reactivated cases
 Source: New York State Department of Health Bureau of Tuberculosis Control

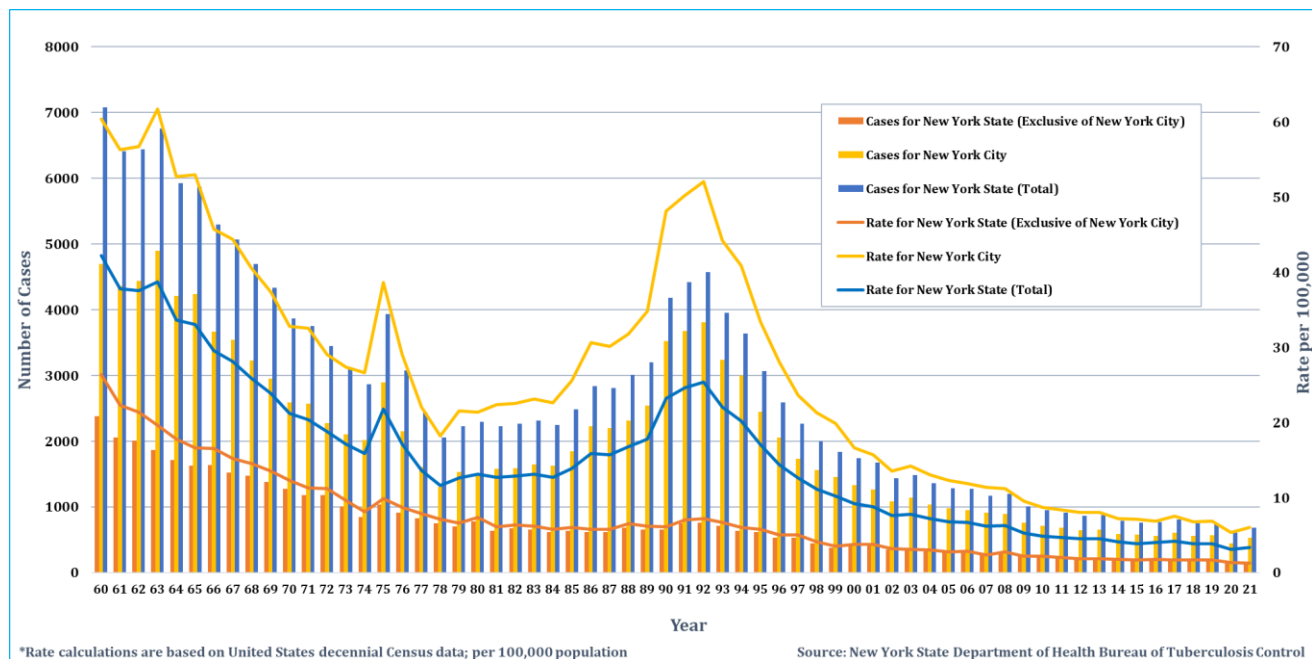
TUBERCULOSIS CASES AND RATES

From 2020-2021, TB cases and rates increased in New York State, largely because of an increase in cases in New York City. In 2021, a total of 684 cases were reported in New York State, which represents a 12.9 percent increase from 2020.

The largest number of TB cases in New York State were reported by New York City. Although New York City has only 43.6 percent of the state’s population, it represented 77.5 percent of the total TB cases in New York State. From 2020-2021, the number of TB cases in New York City increased by 19.1 percent, while the rest of the state experienced a 4.3 percent decline in TB cases.

The rate of TB in New York State in 2021 was greatly influenced by the high TB morbidity in New York City. Outside of New York City, the rate of TB in 2021 was 1.4 per 100,000 population, but New York City had a rate of 6.0 per 100,000 population which results in an overall rate of 3.4 per 100,000 population for New York State.

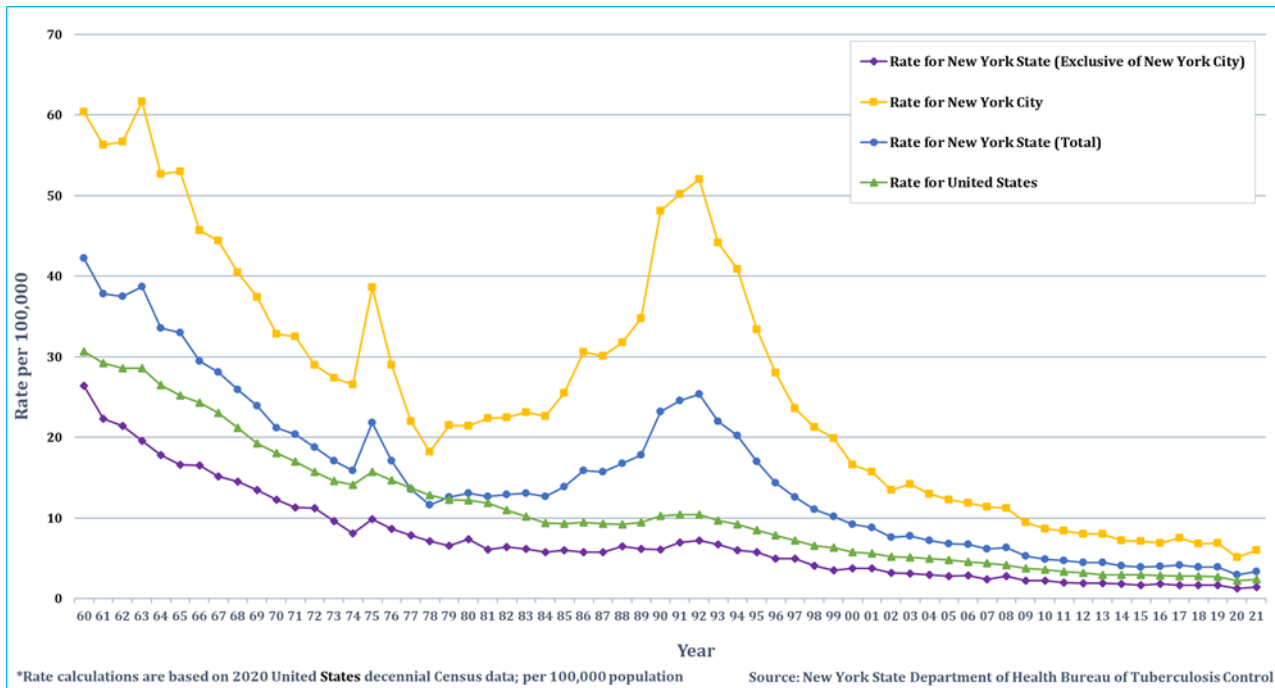
Figure 1. Tuberculosis Cases and Rates, * New York State, 1960-2021



Over the last 50 years, there have been two peaks in TB morbidity where the number and rate of TB substantially increased. The first peak in 1975 can be explained by a change in the case definition to include reactivated TB cases. The second increase, that began in the mid-1980s and extended through the early 1990s, was mainly driven by the resurgence of TB cases in New York City. This rise was primarily due to two factors: (1) the HIV/AIDS epidemic that started in the early 1980s, and (2) the reduction of TB control resources when there was a rise in high-risk populations, such as the non-U.S.-born and unhoused individuals.

TUBERCULOSIS CASES AND RATES

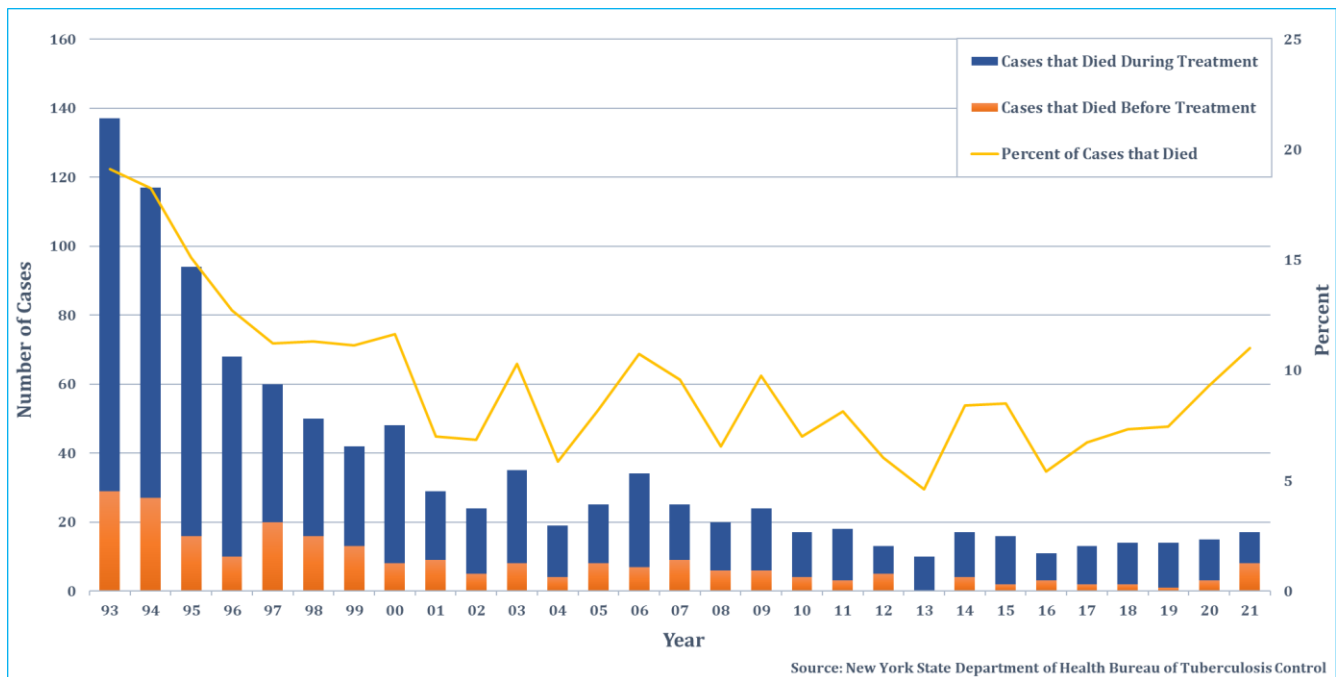
Figure 2. Tuberculosis Case Rates*, New York State and the United States, 1960-2021



Historically, TB case rates in New York State (exclusive of New York City) have been lower than the national average, while case rates in New York City have exceeded national rates. In 2021, the national case rate was 2.4 per 100,000 population and ranged from 0.3 to 7.9 per 100,000 population across the states. New York State ranked third in the nation based on the number of cases (N=684) and fifth based on incidence rate (3.4 per 100,000 population), but these rankings were largely influenced by New York City which, by itself, would have ranked third nationally based on number of cases (N=530) and third based on incidence rate (6.0 per 100,000 population).

TUBERCULOSIS CASES AND RATES

Figure 3. Number and Percent of Deaths Among Tuberculosis Cases, New York State (Exclusive of New York City), 1993-2021



The number and percent of deaths among TB cases in New York State (exclusive of New York City) decreased considerably following the last epidemic that peaked in the early 1990s. This decline in mortality slowed by 1997 and has varied each year since 2000. The deaths portrayed in Figure 3 are not all TB-related.

Among the reported TB cases in New York State (exclusive of New York City), there were 17 deaths in 2021 before or during treatment. The cause of death was known to be TB-related for three (17.6%) of these cases. Of these three, two were over 65 years of age.

GEOGRAPHIC DISTRIBUTION

Table 2. Tuberculosis Cases and Rates* by County, New York State, 2017-2021

County	2017		2018		2019		2020		2021	
	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate**
Albany	8	2.6	4	1.3	5	1.6	5	1.6	2	0.6
Allegany	0	---	0	---	2	4.1	0	---	0	---
Broome	2	1.0	4	2.0	1	0.5	2	1.0	2	1.0
Cattaraugus	1	1.2	0	---	0	---	0	---	0	---
Cayuga	1	1.2	2	2.5	0	---	0	---	0	---
Chautauqua	1	0.7	0	---	0	---	0	---	0	---
Chemung	0	---	1	1.1	0	---	0	---	1	1.2
Chenango	0	---	0	---	0	---	0	---	0	---
Clinton	0	---	1	1.2	1	1.2	0	---	0	---
Columbia	3	4.8	0	---	2	3.2	0	---	0	---
Cortland	0	---	0	---	0	---	0	---	0	---
Delaware	0	---	0	---	0	---	0	---	0	---
Dutchess	4	1.3	3	1.0	3	1.0	2	0.7	4	1.4
Erie	5	0.5	13	1.4	3	0.3	15	1.6	14	1.5
Essex	0	---	0	---	1	2.5	0	---	0	---
Franklin	0	---	0	---	0	---	0	---	0	---
Fulton	1	1.8	0	---	2	3.6	0	---	0	---
Genesee	1	1.7	2	3.3	3	5.0	0	---	1	1.7
Greene	0	---	0	---	0	---	1	2.1	2	4.2
Hamilton	0	---	0	---	0	---	0	---	0	---
Herkimer	0	---	0	---	1	1.5	0	---	0	---
Jefferson	1	0.9	0	---	0	---	1	0.9	0	---
Lewis	0	---	0	---	0	---	0	---	0	---
Livingston	0	---	1	1.5	1	1.5	0	---	0	---
Madison	0	---	0	---	0	---	0	---	0	---
Monroe	14	1.9	16	2.1	15	2.0	8	1.1	14	1.8
Montgomery	0	---	0	---	0	---	0	---	0	---
Nassau	40	3.0	43	3.2	51	3.8	40	2.9	32	2.3
Niagara	1	0.5	1	0.5	1	0.5	0	---	2	0.9
Oneida	9	3.8	4	1.7	4	1.7	4	1.7	1	0.4
Onondaga	6	1.3	6	1.3	8	1.7	9	1.9	6	1.3
Ontario	0	---	1	0.9	0	---	1	0.9	0	---
Orange	9	2.4	7	1.9	7	1.9	5	1.2	9	2.2
Orleans	0	---	2	4.7	1	2.3	0	---	0	---
Oswego	0	---	0	---	1	0.8	0	---	0	---
Otsego	0	---	1	1.6	0	---	0	---	0	---
Putnam	1	1.0	1	1.0	1	1.0	1	1.0	0	---
Rensselaer	1	0.6	1	0.6	2	1.3	2	1.2	0	---
Rockland	14	4.5	11	3.5	10	3.2	6	1.8	5	1.5
Saratoga	0	---	0	---	0	---	0	---	0	---
Schenectady	0	---	0	---	1	0.6	1	0.6	1	0.6
Schoharie	0	---	0	---	0	---	0	---	0	---
Schuyler	0	---	0	---	0	---	1	5.6	0	---
Seneca	0	---	0	---	0	---	0	---	0	---
St. Lawrence	1	0.9	0	---	1	0.9	0	---	0	---
Steuben	0	---	0	---	2	2.0	0	---	0	---
Suffolk	34	2.3	24	1.6	31	2.1	30	2.0	32	2.1
Sullivan	2	2.6	2	2.6	0	---	0	---	0	---
Tioga	0	---	1	2.0	0	---	0	---	0	---
Tompkins	2	2.0	3	3.0	2	2.0	2	1.9	0	---
Ulster	0	---	1	0.5	1	0.5	0	---	3	1.6
Warren	0	---	0	---	0	---	0	---	0	---
Washington	0	---	0	---	0	---	0	---	0	---
Wayne	0	---	0	---	0	---	1	1.1	0	---
Westchester	31	3.3	35	3.7	24	2.5	23	2.3	23	2.3
Wyoming	0	---	0	---	0	---	0	---	0	---
Yates	0	---	0	---	0	---	1	4.0	0	---
New York State Total (Exclusive of New York City)	193	1.7	191	1.7	188	1.7	161	1.4	154	1.4
Bronx	106	7.7	81	5.8	90	6.5	81	5.5	65	4.4
Kings	184	7.3	173	6.9	153	6.1	116	4.2	142	5.1
New York	64	4.0	82	5.2	74	4.7	56	3.3	75	4.4
Queens	247	11.1	204	9.1	227	10.2	176	7.3	229	9.5
Richmond	12	2.6	19	4.1	22	4.7	16	3.2	19	3.8
New York City Total	613	7.5	559	6.8	566	6.9	445	5.1	530	6.0
STATE TOTAL	806	4.2	750	3.9	754	3.9	606	3.0	684	3.4

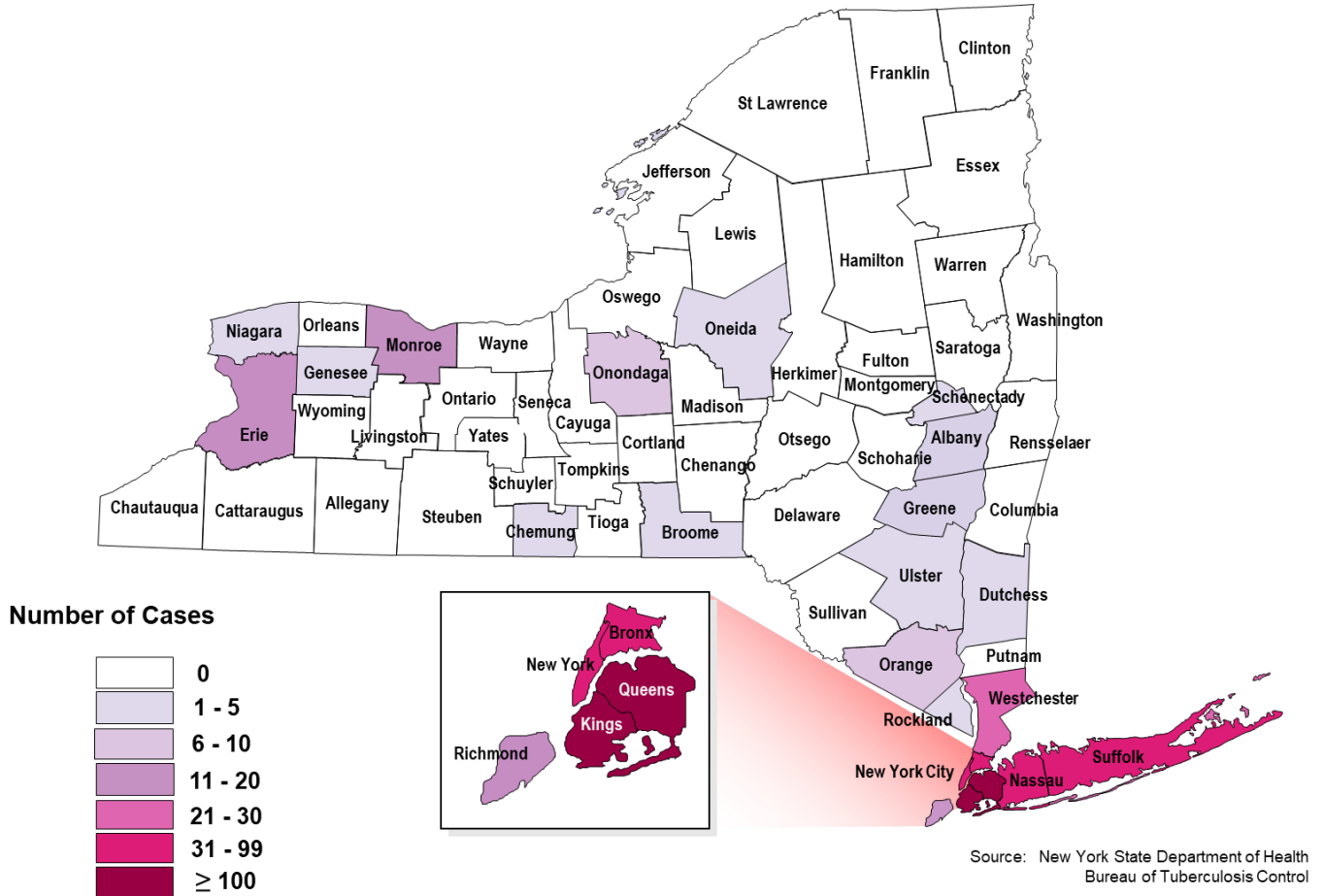
*Rate calculations are based on 2020 United States Census data; per 100,000 population

Source: New York State Department of Health Bureau of Tuberculosis Control

GEOGRAPHIC DISTRIBUTION

TB morbidity is unevenly distributed across New York State and varies greatly between counties. In 2021, all five boroughs of New York City and eighteen (31.6%) of the 57 upstate counties reported at least one TB case. Higher numbers of cases were seen in the metropolitan areas. More than half of all TB morbidity reported for New York State (exclusive of New York City) was concentrated in Nassau, Suffolk, and Westchester counties (56.5%, N=87/154).

Figure 4. Distribution of Tuberculosis Cases, New York State, 2021



DEMOGRAPHIC CHARACTERISTICS

Table 3. Tuberculosis Cases and Rates* by Gender, Age and Race/Ethnicity‡, New York State, 2021**

Demographic Characteristics		New York State (Exclusive of New York City)		New York City		New York State (Total)	
		No.	Rate	No.	Rate	No.	Rate
Gender	Male	88	1.6	325	8.4	413	4.4
	Female	66	1.2	205	4.8	271	2.7
Age Group	Under 5 years	6	0.9	0	0.0	6	0.5
	5-9	2	0.3	0	0.0	2	0.2
	10-14	3	0.4	2	0.4	5	0.4
	15-19	7	0.8	16	3.0	23	1.7
	20-24	13	1.7	28	4.4	41	2.9
	25-34	24	1.9	73	5.2	97	3.6
	35-44	11	0.8	91	7.9	102	3.9
	45-54	14	0.8	75	6.8	89	3.1
	55-64	25	1.8	87	9.8	112	4.9
65+	49	3.0	158	15.9	207	7.9	
Race/Ethnicity‡	White, non-Hispanic	18	0.2	28	1.0	45	0.4
	Black, non-Hispanic	29	3.0	83	4.7	112	4.1
	Hispanic	49	3.4	123	4.9	172	4.4
	Asian	54	9.9	253	18.4	306	16.0
	American Indian	0	---	0	---	0	---
	Pacific Islander	0	---	0	---	0	---
	Multiple Races	1	0.2	20	6.7	21	2.9
	Other/Unknown	3	6.6	23	19.0	28	14.2
TOTAL CASES		154	1.4	530	6.0	684	3.4

*Rate for age groups and gender are based on 2010 United States Census data; per 100,000 population.

**Age calculations are based on date of birth and report date.

‡ Rate calculations are based on 2020 United States Census data; per 100,000 population.

Source: New York State Department of Health
Bureau of Tuberculosis Control

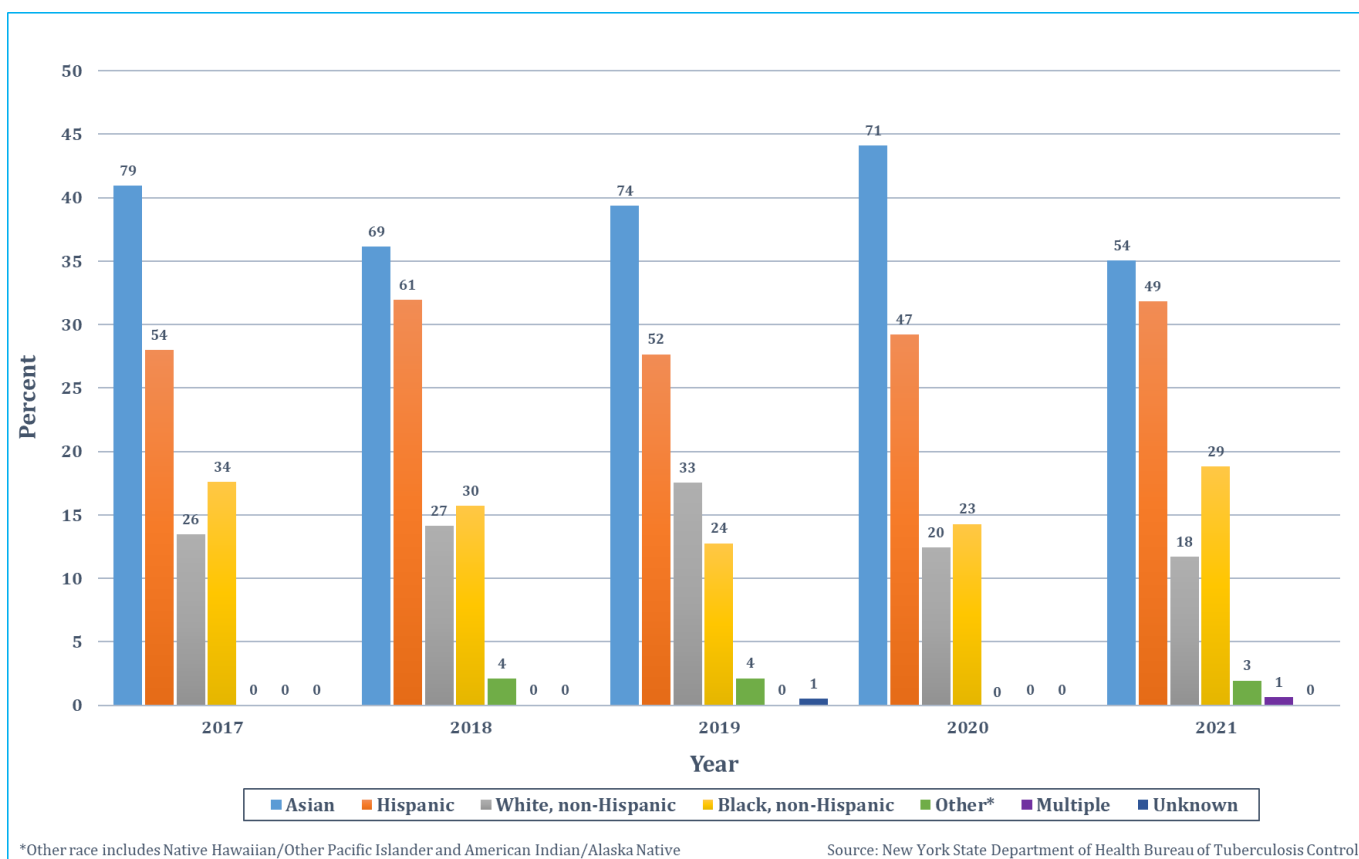
Statewide, in 2021, the lowest rates of TB were seen among the high-risk pediatric population (<15 years old). The highest rate was seen in those 65 years and older with a rate of 7.9 per 100,000 population, which is an increase from the previous year's rate of 6.8 per 100,000 population in this age group.

White, non-Hispanics continued to have the lowest incidence rate in New York State (0.4 per 100,000 population), while Asians continued to have the highest rate (15.9 per 100,000 population). The rate of TB in white, non-Hispanics in New York City was five times greater than the rate for white, non-Hispanics in the rest of the state (1.0 per 100,000 population versus 0.2 per 100,000 population).

Females continued to have a lower incidence of TB than males (2.7 versus 4.4 per 100,000 population).

DEMOGRAPHIC CHARACTERISTICS

Figure 5. Number and Percent of Tuberculosis Cases by Race/Ethnicity, New York State (Exclusive of New York City), 2017-2021

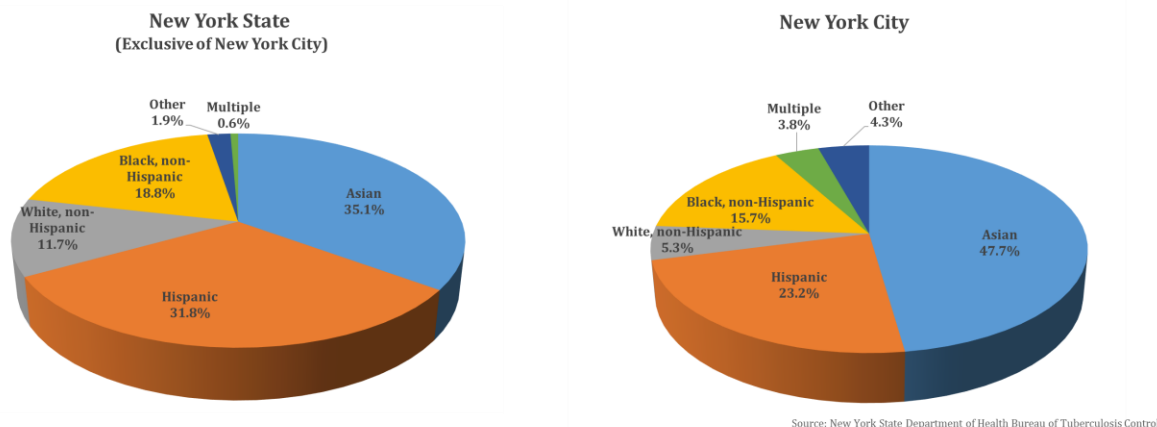


Over the last five years most TB cases reported in New York State (exclusive of New York City) have been of Asian and Hispanic descent. Since 2015, Asians have continued to represent a larger percentage of reported cases than any other racial/ethnic group.

In 2021, most of the TB cases in New York State (exclusive of New York City) continued to be Asian or Hispanic (N=54 and N=49, respectively). Although there has been variability over the last five years, the proportion of Asian cases was 20.4 percent lower in 2021 than in 2020 (35.1% and 44.1%, respectively), while the proportion of Hispanic cases in 2021 rose by 8.9 percent (31.8% and 29.2%, respectively).

DEMOGRAPHIC CHARACTERISTICS

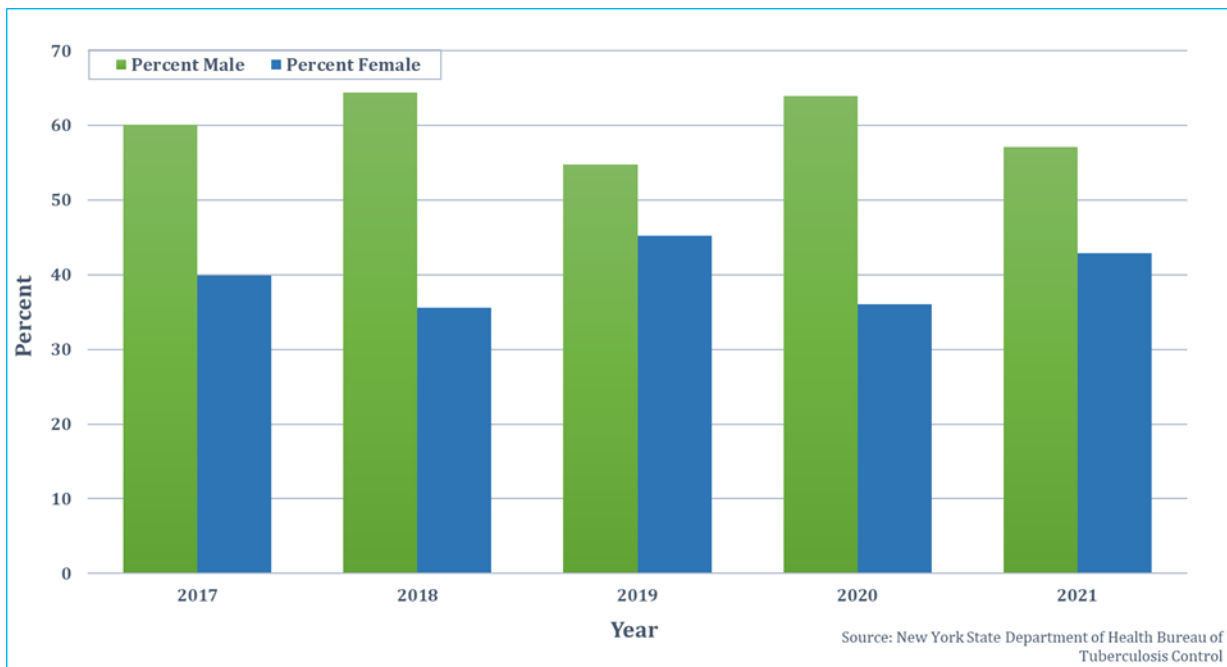
Figure 6. Race/Ethnicity of Tuberculosis Cases, New York State, 2021



In 2021, the proportion of Hispanic cases in New York State (exclusive of New York City) was greater than in New York City (31.8% and 23.2%, respectively), whereas the proportion of Asian cases in New York City was greater than the rest of the state (47.7% and 35.1%, respectively).

DEMOGRAPHIC CHARACTERISTICS

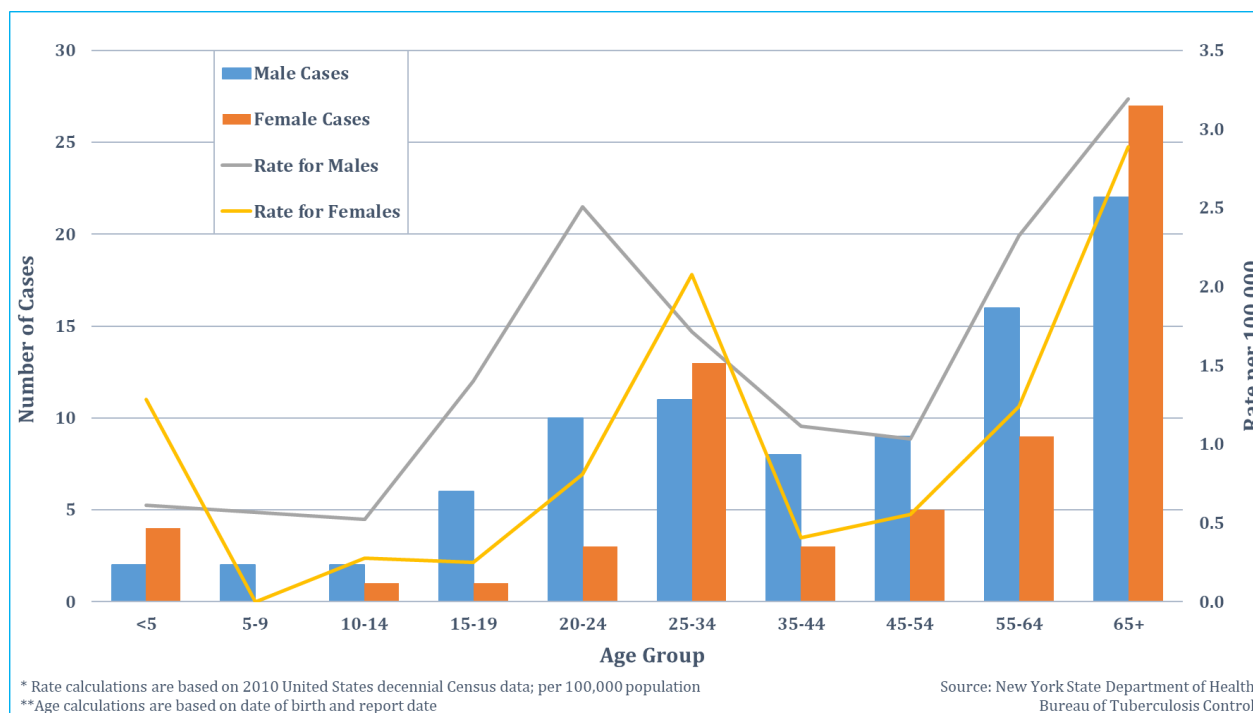
Figure 7. Percent of Tuberculosis Cases by Gender, New York State (Exclusive of New York City), 2017-2021



Over the last five years, males have consistently comprised a higher proportion of TB cases compared to females in New York State (exclusive of New York City). In 2021, 57.1 percent (N=88/154) of reported cases were male, and 42.9 percent (N=66/154) were female.

DEMOGRAPHIC CHARACTERISTICS

Figure 8. Tuberculosis Cases and Rates* by Age and Gender, New York State (Exclusive of New York City), 2021**

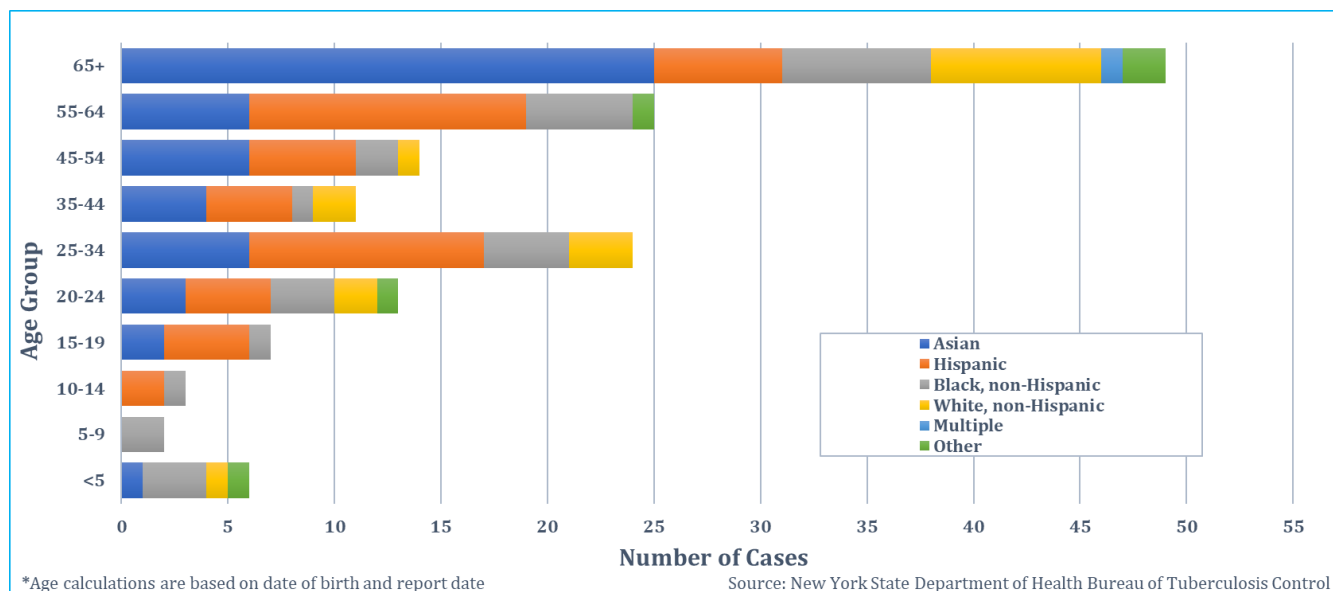


In 2021, the difference in TB morbidity between males and females in New York State (exclusive of New York City) varied according to age. The number of cases and rate per 100,000 population were higher for males than females in several age groups, except for the <5, 25-34, and 65+ age groups.

The largest gender gap was seen in the 20–24-year age group where the case rate for males was about three times greater than that of females (2.5 per 100,000 for males; 0.8 per 100,000 for females).

DEMOGRAPHIC CHARACTERISTICS

Figure 9. Tuberculosis Cases by Age* and Race/Ethnicity, New York State (Exclusive of New York City), 2021



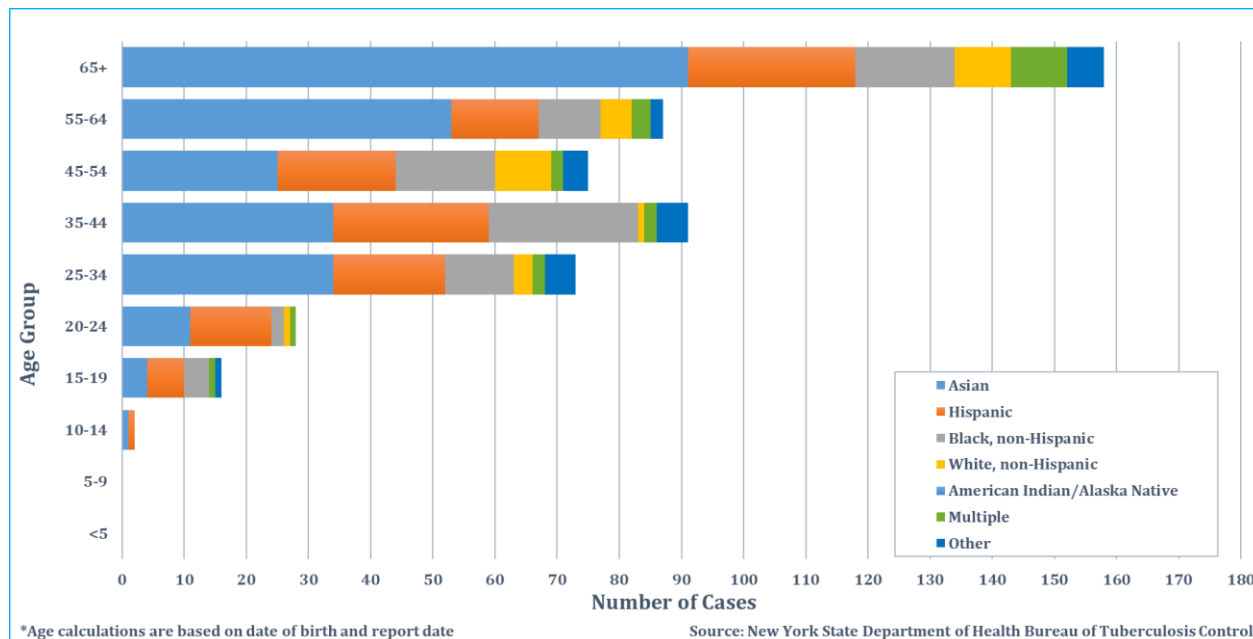
In 2021, the largest number of TB cases (N=49) in New York State (exclusive of New York City) was in the oldest age group, 65 years of age and older. Twenty-five cases (51.2%) in this age group were Asian, while eight cases (16.3%) were white, non-Hispanic.

The second largest number of TB cases in 2021 for New York State (exclusive of New York City) was reported in the 55-64 age group (N=25), followed closely behind by the 25-34 age group (N=24). Fifty-two percent of cases in the 55-64-year age group and 46 percent in the 25-34-year age group were Hispanic.

The youngest two age groups (<10 years old) represented only 5.2% of the total TB cases (N=8). The majority of TB cases in these age groups were Black, non-Hispanic (N=5).

DEMOGRAPHIC CHARACTERISTICS

Figure 10. Tuberculosis Cases by Age* and Race/Ethnicity, New York City, 2021



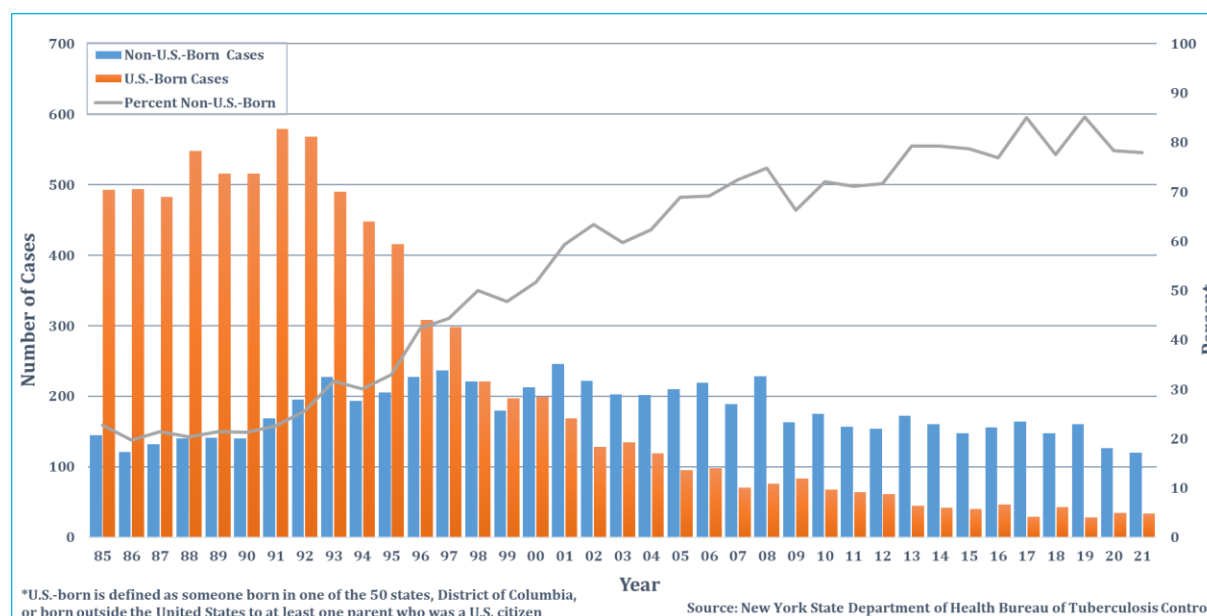
In New York City, the largest number of TB cases reported in 2021 was seen in the 65 years and older age group (N=158). Among these 158 cases, 91 cases (57.6%) were Asian, and 27 cases (17.1%) were Hispanic.

In 2021, the second largest number of TB cases in New York City was identified in the 35-44 age group (N=91). Thirty-four cases (37.4%) in this age group were Asian, twenty-five cases (27.5%) were Hispanic, and twenty-four cases (26.4%) were Black, non-Hispanic.

In New York City, there were no TB patients that were less than ten years old.

TUBERCULOSIS IN THE NON-U.S.-BORN

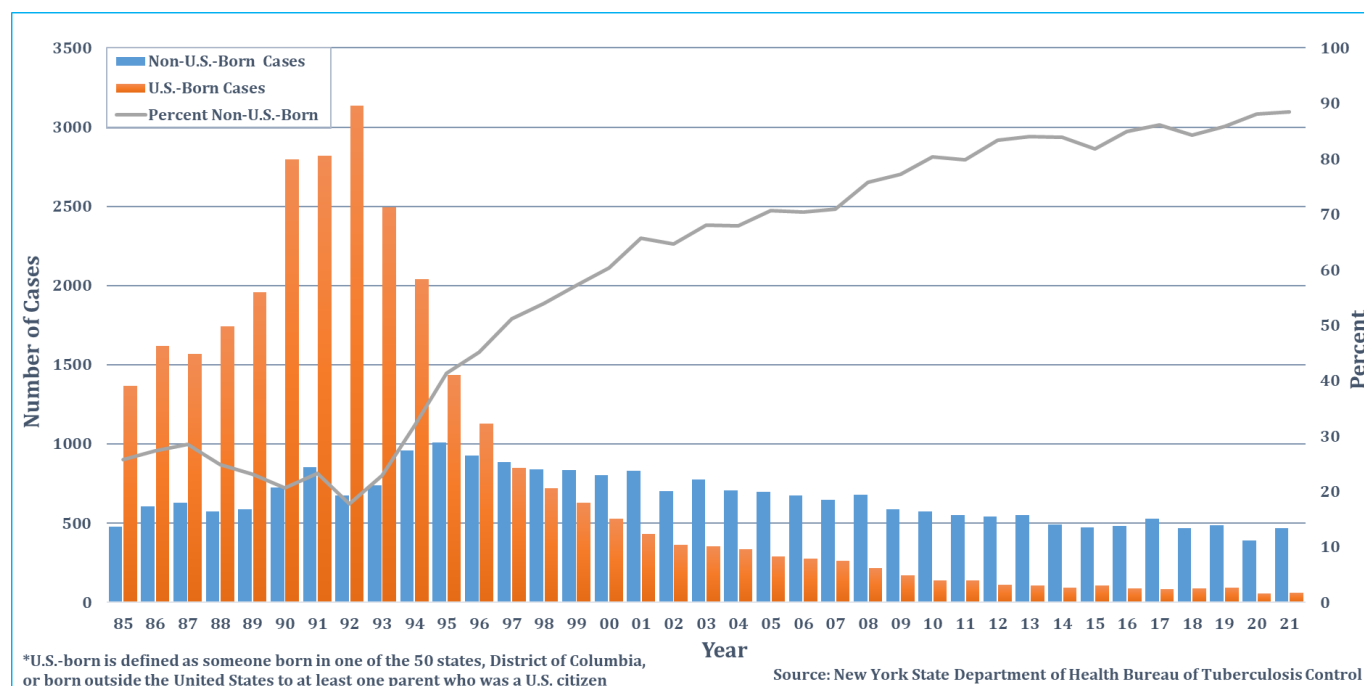
Figure 11. Number and Percent of Tuberculosis Cases by U.S.-Born* and Non-U.S.-Born Status, New York State (Exclusive of New York City), 1985-2021



In 2021, there were 120 TB cases among the non-U.S.-born in New York State (exclusive of New York City), which is a 4.8 percent decrease from the 126 cases reported in 2020. The percentage of non-U.S.-born cases decreased from 78.3 percent in 2020 to 77.9 percent in 2021.

TUBERCULOSIS IN THE NON-U.S.-BORN

Figure 12. Number and Percent of Tuberculosis Cases by U.S.-Born* and Non-U.S.-Born Status, New York City, 1985-2021



In New York City, the number of non-U.S.-born TB cases increased from 390 in 2020 to 469 in 2021. The proportion of cases that were non-U.S. born also increased from 87.6 percent in 2020 to 88.5 percent in 2021.

TUBERCULOSIS IN THE NON-U.S.-BORN

Table 4. Tuberculosis Cases by Country of Origin*, New York State, 2021

Country	New York State (Exclusive of New York City)	New York City	New York State (Total)
China	6	97	103
United States	34	55	89
India	17	32	49
Ecuador	7	41	48
Bangladesh	3	36	39
Philippines	5	33	38
Mexico	6	25	31
Haiti	8	19	27
Dominican Republic	6	18	24
Guyana	3	18	21
Korea, South	3	16	19
Pakistan	6	12	18
Nepal	1	13	14
Guatemala	5	9	14
Honduras	4	7	11
Peru	8	2	10
Vietnam	5	4	9
Burma	3	4	7
Hong Kong	0	7	7
Malaysia	0	5	5
Nigeria	0	5	5
Senegal	0	5	5
Other Countries	24	67	91
Unknown	0	0	0
TOTAL CASES	154	530	684

*Only countries representing ≥ 5 TB cases are named.

**Puerto Rico and other U.S. Territories are considered separately for the purpose of this table.

Source: New York State Department of Health
Bureau of Tuberculosis Control

In 2021, the TB patients in New York State came from 69 different countries (not including the United States). Twenty-one of these countries were represented by at least five patients. The most common country of origin for non-U.S.-born TB cases in New York State (exclusive of New York City) was India (N=17), while the most common country in New York City was China (N=97).

The top four geographical regions of birth of the non-U.S.-born in New York State (exclusive of New York City) were: Central/South America (30.0%); Indo/Pakistan (26.7%); Caribbean (12.5%); Southeast Asia (11.7%).

TUBERCULOSIS IN THE NON-U.S.-BORN

Table 5. Number and Percent of Tuberculosis Cases by U.S.-Born* and Non-U.S.-Born Status, New York State (Exclusive of New York City), 2021

County	Total Number	U.S.-Born Number	Non-U.S.-Born Number	Non-U.S.-Born Percent
Albany	2	1	1	50.0
Allegany	0	0	0	0.0
Broome	2	0	2	100.0
Cattaraugus	0	0	0	0.0
Cayuga	0	0	0	0.0
Chautauqua	0	0	0	0.0
Chemung	1	0	1	100.0
Chenango	0	0	0	0.0
Clinton	0	0	0	0.0
Columbia	0	0	0	0.0
Cortland	0	0	0	0.0
Delaware	0	0	0	0.0
Dutchess	4	3	1	25.0
Erie	14	3	11	78.6
Essex	0	0	0	0.0
Franklin	0	0	0	0.0
Fulton	0	0	0	0.0
Genesee	1	1	0	0.0
Greene	2	1	1	50.0
Hamilton	0	0	0	0.0
Herkimer	0	0	0	0.0
Jefferson	0	0	0	0.0
Lewis	0	0	0	0.0
Livingston	0	0	0	0.0
Madison	0	0	0	0.0
Monroe	14	3	11	78.6
Montgomery	0	0	0	0.0
Nassau	32	6	26	81.3
Niagara	2	1	1	50.0
Oneida	1	1	0	0.0
Onondaga	6	2	4	66.7
Ontario	0	0	0	0.0
Orange	9	2	7	77.8
Orleans	0	0	0	0.0
Oswego	0	0	0	0.0
Otsego	0	0	0	0.0
Putnam	0	0	0	0.0
Rensselaer	0	0	0	0.0
Rockland	5	0	5	100.0
St. Lawrence	0	0	0	0.0
Saratoga	0	0	0	0.0
Schenectady	1	0	1	100.0
Schoharie	0	0	0	0.0
Schuyler	0	0	0	0.0
Seneca	0	0	0	0.0
Steuben	0	0	0	0.0
Suffolk	32	4	28	87.5
Sullivan	0	0	0	0.0
Tioga	0	0	0	0.0
Tompkins	0	0	0	0.0
Ulster	3	2	1	33.3
Warren	0	0	0	0.0
Washington	0	0	0	0.0
Wayne	0	0	0	0.0
Westchester	23	4	19	82.6
Wyoming	0	0	0	0.0
Yates	0	0	0	0.0
TOTAL CASES	154	34	120	77.9

*U.S.-born is defined as someone born in one of the 50 states, District of Columbia, or born outside the United States to at least one parent who was a U.S. citizen.
Source: New York State Department of Health Bureau of Tuberculosis Control

In 2021, there were 120 non-U.S.-born TB cases reported in New York State (exclusive of New York City). Over half (60.8%, N=73/120) of these cases were identified in Nassau, Suffolk, and Westchester alone. In the following four counties, all TB cases (100%) were non-U.S.-born: Broome, Chemung, Rockland, and Schenectady counties.

TUBERCULOSIS IN THE NON-U.S.-BORN

Table 6. Length of Time Non-U.S.-Born Tuberculosis Cases were in the United States Prior to Diagnosis, New York State (Exclusive of New York City), 2021

Length of Time in the U.S. (Years)	No.	%
<1	6	5.0
1-5	33	27.5
6-10	18	15.0
11-15	6	5.0
16-20	12	10.0
21-30	13	10.8
31-40	12	10.0
41-50	8	6.7
51-60	6	5.0
61+	1	0.8
Unknown	5	4.2

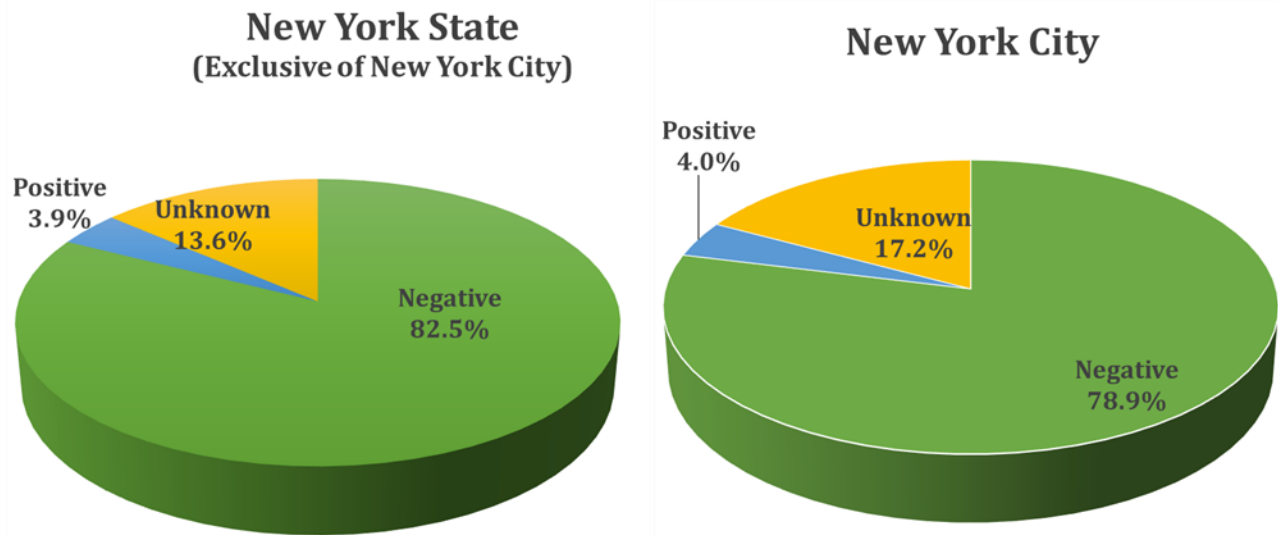
Source: New York State Department of Health
Bureau of Tuberculosis Control

In 2021, 32.5 percent (N=39/120) of non-U.S.-born TB cases in New York State (exclusive of New York City) were diagnosed within five years of entering the U.S. Six (15.3%) of these 39 cases entered the U.S. within one year prior to diagnosis.

HIV CO-INFECTION

Knowledge of HIV status is essential for the proper management of patients with TB. HIV infection impairs the immune system leaving individuals at greater risk of becoming infected with TB and developing active disease.

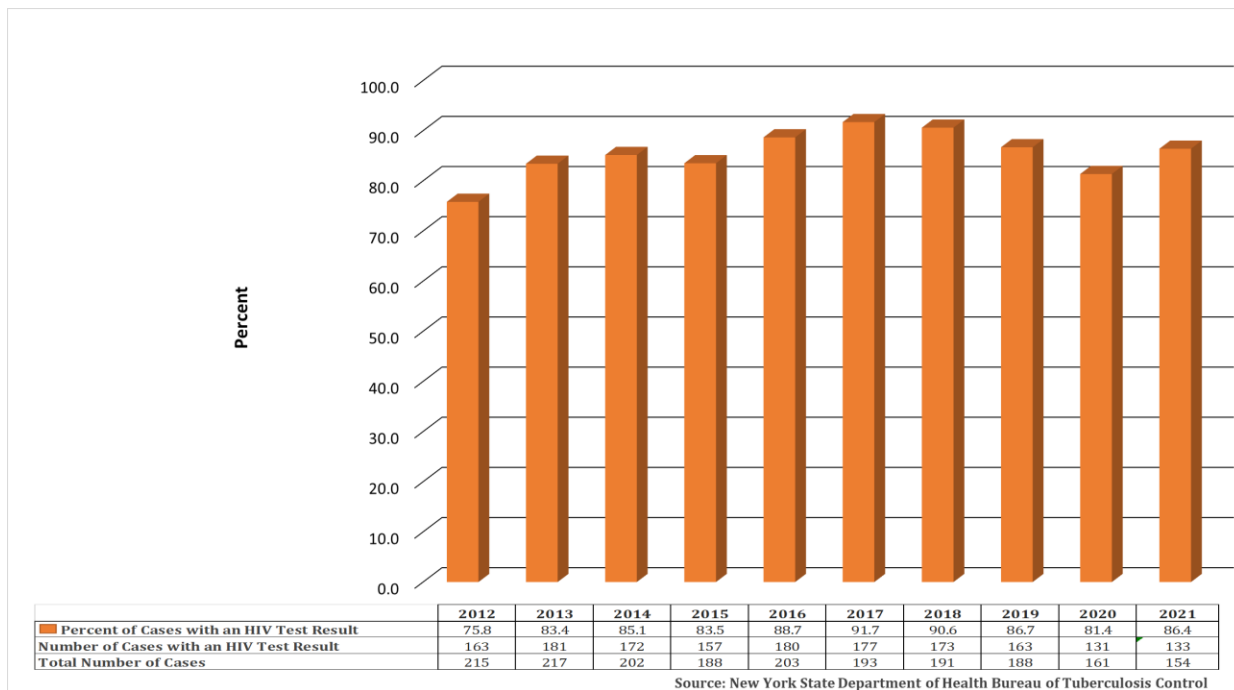
Figure 13. HIV Status for Tuberculosis Cases, New York State, 2021



In 2021, 86.4 percent (N=133/154) of TB cases in New York State (exclusive of New York City) and 82.9 percent (N=439/530) of cases in New York City had a known HIV status. The proportion of cases with HIV/TB co-infection in New York State (exclusive of New York City) was 3.9 percent, similar to the 4.0 percent in New York City. Individuals that were missing HIV testing information and those who were not offered or had refused testing were considered to have an unknown status.

HIV CO-INFECTION

Figure 14. Number and Percent of Tuberculosis Cases Who Have Been Tested for HIV, New York State (Exclusive of New York City), 2012-2021



In New York State (exclusive of New York City), the proportion of TB cases with a known HIV status has generally increased over the last decade. However, for two years (2019-2020) there was a decline in known HIV status. In 2021, known HIV status began to increase again, as 86.4 percent (N=133/154) of TB cases had a documented HIV result.

TB cases in the 5-9 years old age group had the lowest proportion of known HIV results (0%), while those in the 25-34-year and 35-44-year age groups had the highest proportion of known HIV results (95.8% and 100%, respectively).

HIV CO-INFECTION

Table 7a. HIV Status for Tuberculosis Cases, New York State (Exclusive of New York City), 2017-2021

HIV Test Result	2017		2018		2019		2020		2021	
	No.	%	No.	%	No.	%	No.	%	No.	%
Negative	171	88.6	164	85.9	157	83.5	124	77.0	127	82.5
Positive	6	3.1	9	4.7	6	3.2	7	4.4	6	3.9
Refused	9	4.7	11	5.8	12	6.4	15	9.3	11	7.1
Not Offered	6	3.1	5	2.6	9	4.8	11	6.8	9	5.8
Missing/Unknown	1	0.5	2	1.0	4	2.1	4	2.5	1	0.6
TOTAL CASES	193		191		188		161		154	

Source: New York State Department of Health
Bureau of Tuberculosis Control

In 2021, 13.6 percent (N=21/154) of TB cases in New York State (excluding New York City) had an unknown HIV status (refused, not offered or missing/unknown). Among these 21 cases, 52.4 percent (N=11) refused testing, and seven (63.6%) were over 55 years old.

Table 7b. HIV Status for Tuberculosis Cases by Gender, New York State (Exclusive of New York City), 2021

HIV Test Result	Male		Female		Total	
	No.	%	No.	%	No.	%
Negative	73	83.0	54	81.8	127	82.5
Positive	4	4.5	2	3.0	6	3.9
Refused	6	6.8	5	7.6	11	7.1
Not Offered	5	5.7	4	6.1	9	5.8
Missing/Unknown	0	0.0	1	1.5	1	0.6
TOTAL CASES	88		66		154	

Source: New York State Department of Health
Bureau of Tuberculosis Control

In New York State (exclusive of New York City), the proportion of TB cases with a known HIV status was similar among males and females in 2021 (87.5% and 84.8%, respectively). Of the six cases with known HIV/TB co-infection, 66.7 percent (N=4/6) were male.

RISK FACTORS

In addition to the commonly collected risk factors such as HIV status, drug/alcohol usage, occupation and country of birth, there are several other medical and exposure risk factors that are associated with TB. Medical risk factors are conditions that weaken an individual's immune defenses against TB and may complicate the management of the disease. Exposure risk factors are those that place an individual at increased risk of TB transmission.

Table 8a. Additional Risk Factors* Among Tuberculosis Cases, New York State (Exclusive of New York City), 2017-2021

Additional Risk Factors		2017		2018		2019		2020		2021	
		No.	%	No.	%	No.	%	No.	%	No.	%
Medical Risk	Diabetes Mellitus	33	17.1	38	19.9	30	16.0	26	16.1	33	21.4
	Immunosuppression (not HIV/AIDS)	9	4.7	13	6.8	15	8.0	20	12.4	13	8.4
	Incomplete LTBI Therapy	5	2.6	3	1.6	5	2.7	3	1.9	2	1.3
	End-Stage Renal Disease	5	2.6	0	0.0	5	2.7	1	0.6	1	0.6
	Post-Organ Transplantation	1	0.5	2	1.0	1	0.5	0	0.0	1	0.6
	TNF-α Antagonist Therapy	2	1.0	3	1.6	2	1.1	3	1.9	0	0.0
Exposure Risk**	Contact of Infectious TB Patient	8	4.1	9	4.7	12	6.4	13	8.1	15	9.7
	Contact of MDR-TB Patient	0	0.0	0	0.0	0	0.0	1	0.6	0	0.0
	Missed Contact	1	0.5	1	0.5	0	0.0	0	0.0	1	0.6
Other Risk	Other Factors	25	13.0	20	10.5	25	13.3	29	18.0	58	37.7
None	No Additional Factors	117	60.6	107	56.0	107	56.9	77	47.8	88	57.1
TOTAL CASES		193		191		188		161		154	

*Categories are not mutually exclusive

**Within the last 2 years

LTBI = Latent Tuberculosis Infection

Source: New York State Department of Health
Bureau of Tuberculosis Control

In 2021, 42.9 percent (N=66) of TB cases reported having a medical or exposure risk factor. Among these cases, diabetes was the most reported risk factor; 21.4 percent (N=33/154) of cases in New York State (exclusive of New York City) had diabetes in 2021. The most reported exposure risk (9.7%) was contact with an infectious TB patient (N=15/154). Among the 58 cases for which another risk factor is specified, the most common risk factor was co-infection with Covid 19 (38/58 or 66%).

Table 8b. Additional Risk Factors* Among Tuberculosis Cases by Gender, New York State (Exclusive of New York City), 2021

Additional Risk Factors		Male		Female		Total	
		No.	%	No.	%	No.	%
Medical Risk	Diabetes Mellitus	20	22.7	13	19.7	33	21.4
	Immunosuppression (not HIV/AIDS)	4	4.5	9	13.6	13	8.4
	Incomplete LTBI Therapy	1	1.1	1	1.5	2	1.3
	End-Stage Renal Disease	1	1.1	0	0.0	1	0.6
	Post-Organ Transplantation	1	1.1	0	0.0	1	0.6
	TNF-α Antagonist Therapy	0	0.0	0	0.0	0	0.0
Exposure Risk**	Contact of Infectious TB Patient	9	10.2	6	9.1	15	9.7
	Contact of MDR-TB Patient	0	0.0	0	0.0	0	0.0
	Missed Contact	1	1.1	0	0.0	1	0.6
Other Risk	Other Factors	28	31.8	30	45.5	58	37.7
None	No Additional Factors	52	59.1	36	54.5	88	57.1
TOTAL CASES		88		66		154	

*Categories are not mutually exclusive

**Within the last 2 years

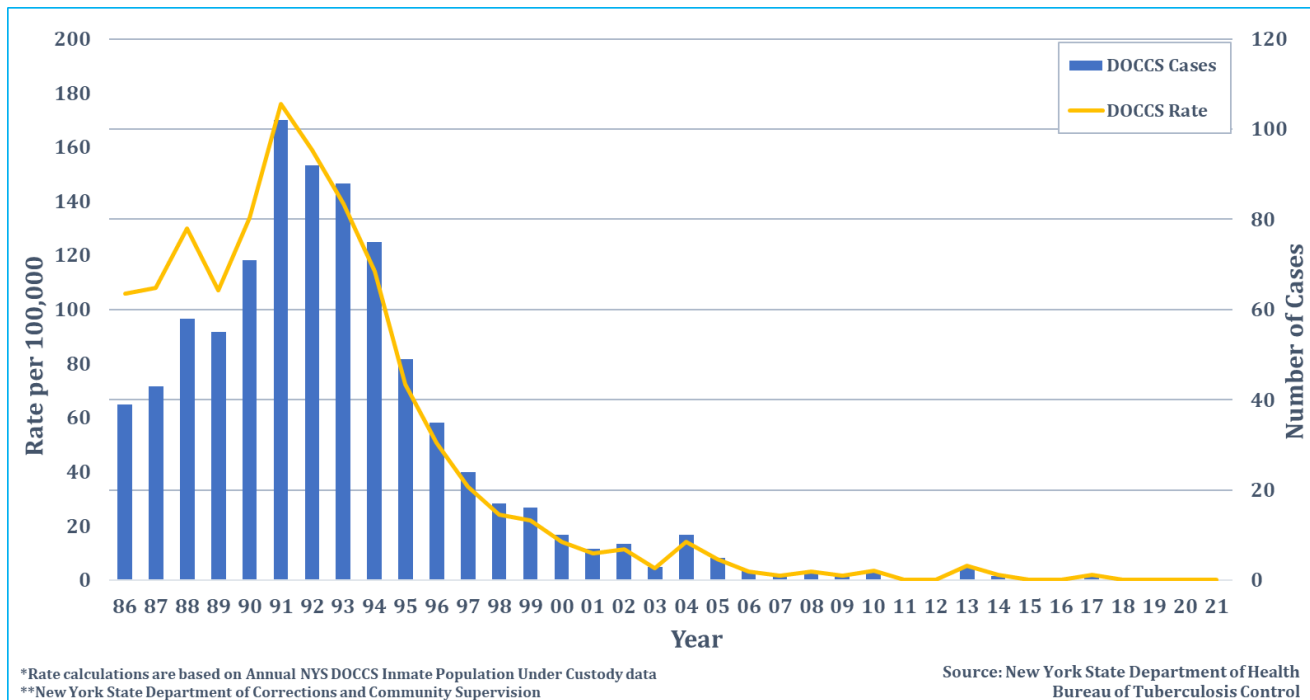
LTBI = Latent Tuberculosis Infection

Source: New York State Department of Health
Bureau of Tuberculosis Control

In 2021, 45.5% (N=30) of female TB cases in New York State (exclusive of New York City) had at least one additional risk factor compared to 40.9% (N=36) of male cases. The males had a higher proportion with diabetes than the females (22.7% vs 19.7%, respectively).

RISK FACTORS

Figure 15. Tuberculosis Cases and Rates* Among DOCCS Inmates, New York State (Exclusive of New York City), 1986-2021**



During the late 1980s and early 1990s, a substantial proportion of TB cases reported by New York State (exclusive of New York City) were in the New York State Department of Corrections and Community Supervision (DOCCS) inmate population. Since the high point of 102 cases in 1991, there has been a notable decline in TB cases in the DOCCS inmate population. In 2021, no new TB cases were reported among the DOCCS inmate population.

RISK FACTORS

There is an increased risk of TB transmission for residents and staff of congregate settings (e.g., correctional facilities and long-term care facilities) due to the close proximity and prolonged contact with others. Residents of congregate settings may also have significant co-morbidities that amplify this risk even further.

Table 9. High-Risk Congregate Setting at the Time of Diagnosis for Tuberculosis Cases, New York State (Exclusive of New York City), 2017-2021

Congregate Setting at Time of TB Diagnosis		2017		2018		2019		2020		2021	
		No.	%	No.	%	No.	%	No.	%	No.	%
Correctional Facility	Juvenile Facility	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Local Jail	0	0.0	1	0.5	1	0.5	0	0.0	0	0.0
	State Prison	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0
	Federal Prison	0	0.0	0	0.0	2	1.1	0	0.0	0	0.0
	Other Facility	0	0.0	0	0.0	1	0.5	0	0.0	0	0.0
Long-Term Care Facility	Alcohol/Drug Treatment	0	0.0	0	0.0	0	0.0	0	0.0	1	0.6
	Hospital-Based	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Mental Health Residence	0	0.0	0	0.0	1	0.5	0	0.0	0	0.0
	Nursing Home	3	1.6	2	1.0	3	1.6	1	0.6	0	0.0
	Residential	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Other Long-Term Care	1	0.5	0	0.0	0	0.0	0	0.0	1	0.6
Unknown	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
TOTAL CASES		193		191		188		161		154	

Source: New York State Department of Health
Bureau of Tuberculosis Control

The number and percentage of cases diagnosed while residing in a congregate setting varied over the last five years in New York State (exclusive of New York City); it was highest in 2019 (4.3%, N=8/188) and lowest in 2020 (0.6%, N=1/161). Of the two cases found in congregate settings in 2021 (1.3%), one case was diagnosed in an alcohol/drug treatment center and the other was diagnosed in an other long-term care facility.

Table 10. Tuberculosis Cases Among the Unhoused Within the Past Year, New York State (Exclusive of New York City), 2017-2021

The unhoused population is at increased risk of acquiring or transmitting TB to others as being unhoused is often accompanied by other risk factors associated with TB, such as substance abuse, HIV infection, and inadequate medical care. A person is considered to be unhoused if they do not have a fixed, regular nighttime residence. These individuals may live on the streets, alternate between many temporary residences, or reside in privately or publicly supervised shelters.

Year	Unhoused Cases	
	No.	%
2017	7	3.6
2018	5	2.6
2019	5	2.7
2020	1	0.6
2021	2	1.3

From 2017 to 2021, a total of 20 TB cases in New York State (exclusive of New York City) were unhoused within the 12 months prior to diagnosis. In 2021, 1.3 percent (N=2/154) of TB cases were unhoused.

Source: New York State Department of Health

RISK FACTORS

Substance abuse weakens the immune system which can leave people more infectious or at greater risk of becoming infected and developing active TB. The drugs used to treat TB can be toxic to the liver. Substance abuse, such as excess alcohol use, can increase the damaging effects of treatment.

Table 11. Substance Abuse* Among Tuberculosis Cases Within the Past Year, New York State (Exclusive of New York City), 2017-2021

Substance Abuse	2017		2018		2019		2020		2021	
	No.	%	No.	%	No.	%	No.	%	No.	%
Injection Drug Use	2	1.0	1	0.5	0	0.0	0	0.0	1	0.6
Non-Injection Drug Use	6	3.1	10	5.2	3	1.6	4	2.5	4	2.6
Excess Alcohol Use	17	8.8	19	9.9	6	3.2	7	4.3	9	5.8
TOTAL CASES	193		191		188		161		154	

*Categories are not mutually exclusive

Source: New York State Department of Health
Bureau of Tuberculosis Control

In New York State (exclusive of New York City), excess alcohol use has been the most commonly reported form of substance abuse among TB cases over the last five years. There were nine cases (5.8%) in 2021 who reported alcohol abuse, representing a 28.6 percent increase in reported excess alcohol use since 2020. Two out of the nine cases (22.2%) who reported excess alcohol use also reported non-injection drug use.

DRUG RESISTANCE

The first-line drugs used for treating TB disease are isoniazid (INH), rifampin (RIF), pyrazinamide (PZA), and ethambutol (EMB), but there are other second-line drugs that are also used when necessary. Most TB strains are susceptible to all first-line drugs, but resistance to one or more can occur and complicate the management of the disease. Multidrug-resistant tuberculosis (MDR TB) is caused by a TB strain that is resistant to at least INH and RIF. Extensively drug resistant tuberculosis (XDR TB) is MDR TB with additional resistance to second-line drugs, such as any fluoroquinolone (levofloxacin, moxifloxacin, and ofloxacin) and at least one of the injectable drugs (amikacin, kanamycin, and capreomycin). Drug susceptibility testing (DST) is performed, whenever possible, to identify any drug resistance.

Table 12. Phenotypic Drug Susceptibility Results for Culture-Confirmed Tuberculosis Cases, New York State (Exclusive of New York City), 2017-2021

First-Line Drug Susceptibility Results		2017		2018		2019		2020		2021	
		No.	%	No.	%	No.	%	No.	%	No.	%
Positive Culture		142	---	151	---	150	---	138	---	128	---
Susceptibility Test Reported		138	97.2	130	86.1	81	54.0	81	58.7	81	63.3
Susceptibility Test Results	Susceptible to all first-line drugs	120	87.0	104	80.0	64	79.0	60	74.1	62	76.5
	INH and RIF resistant (MDR TB)	2	1.4	2	1.5	1	1.2	1	1.2	2	2.5
	INH resistant, RIF susceptible	7	5.1	13	10.0	15	18.5	12	14.8	10	12.3
	RIF resistant, INH susceptible	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Resistance other than INH and RIF	9	6.5	11	8.5	1	1.2	11	13.6	13	16.0

*U.S.-born is defined as someone born in one of the 50 states, District of Columbia, or born outside the United States to at least one parent who was a U.S. citizen
INH = Isoniazid; RIF = Rifampin; MDR TB = Multidrug-resistant TB

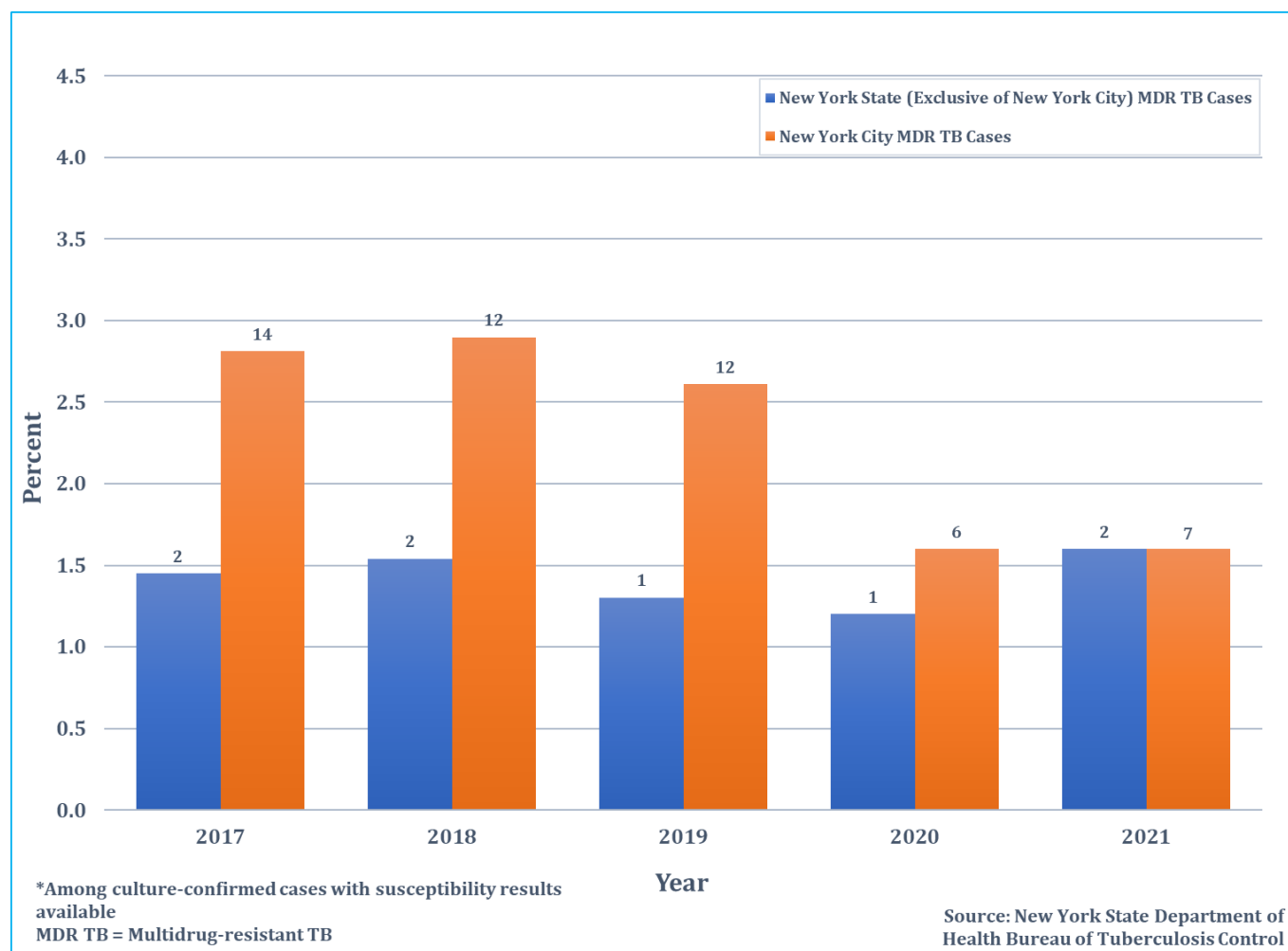
Source: New York State Department of Health Bureau of Tuberculosis Control

Over the past five years, there have been 709 culture-confirmed TB cases in New York State (exclusive of New York City). Phenotypic DST results have been reported for 72 percent (N=511/709) of these cases. Most of these cases (80.2%, N=410) have been susceptible to all first-line TB drugs when testing for drug resistance using phenotypic DST.

Since March 2016, in addition to phenotypic DST, the Department's Wadsworth Center for Laboratories and Research has been performing Whole Genome Sequencing (WGS) on the first isolate for each TB case. Toward the end of 2018, Wadsworth Laboratories changed their protocol to focus primarily on WGS and to perform phenotypic DST only when genetic mutations suggestive of resistance were identified. As a result of this change, only 63.2 percent (N=81/128) of cases with a positive culture in 2021 had phenotypic DST results. Of the remaining 47 culture-confirmed cases (36.7%) without phenotypic DST results, 46 had molecular DST results that indicated susceptibility to all first-line drugs.

DRUG RESISTANCE

Figure 16. Number and Percent of Multidrug-Resistant Tuberculosis Cases*, New York State, 2017-2021



Over the last five years, there were over six times as many MDR TB cases in New York City as in the remainder of the state (N=51 and N=8, respectively). In the last two years, the number of cases in New York City with MDR TB were halved, compared to the previous years. During the same period, the number of MDR TB cases in the rest of the state fluctuated between one to two cases. In 2021, two MDR TB cases (1.6% of culture-confirmed cases with susceptibility results available) were reported for New York State (exclusive of New York City), whereas in New York City there were seven MDR TB cases (1.6% of culture-confirmed cases with susceptibility results available) reported.

GENOTYPING

Table 13. Tuberculosis Genotyping Summary for Tuberculosis Cases, New York State (Exclusive of New York City), 2017-2021

Genotyping		2017		2018		2019		2020		2021	
		No.	%	No.	%	No.	%	No.	%	No.	%
Initial Positive Cultures		146	---	157	---	150	---	138	---	134	---
False Positives	Total False Positives	4	---	4	---	1	---	1	---	6	---
	Control strain	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Contamination	0	0.0	1	0.0	0	0.0	1	0.0	2	1.5
	M. bovis BCG	3	2.1	3	2.1	1	2.1	1	0.7	4	3.0
	Total True Positives	142	---	153	---	149	---	136	---	128	---
True Positives	Isolates Available	141	---	151	---	149	---	136	---	127	---
	Complete Genotype*	136	96.5	151	100.0	147	98.7	115	84.5	124	97.6
	Partial Genotype	138	97.9	151	100.0	147	98.7	130	97.0	124	97.6
	No Result	3	2.1	2	2.1	2	1.3	6	4.5	4	3.1

*Complete genotype means having both a spoligotype and MIRU result

Source: New York State Department of Health
Bureau of Tuberculosis Control

New York State requires that all initial positive cultures be submitted for genotyping. Beginning in 2004, real time spoligotyping and subsequent restriction fragment length polymorphism (RFLP) testing were performed at the Department's Wadsworth Center for Laboratories and Research, but RFLP was discontinued in 2009. In addition, the CDC-sponsored National Tuberculosis Genotyping Program has performed mycobacterial interspersed repetitive unit (MIRU) and spoligotyping, both of which are needed for a genotype to be considered complete.

In 2021, 99.2 percent (N=127/128) of positive cultures in New York State (exclusive of New York City) were available for genotyping. Of these isolates, 97.6 percent (N=124) had a complete genotype (spoligotype and MIRU result).

SITE OF DISEASE

The primary site of disease for most TB cases is pulmonary, but extrapulmonary involvement also occurs. TB is spread from person to person through airborne transmission, so cases with pulmonary involvement have the greatest potential to infect others.

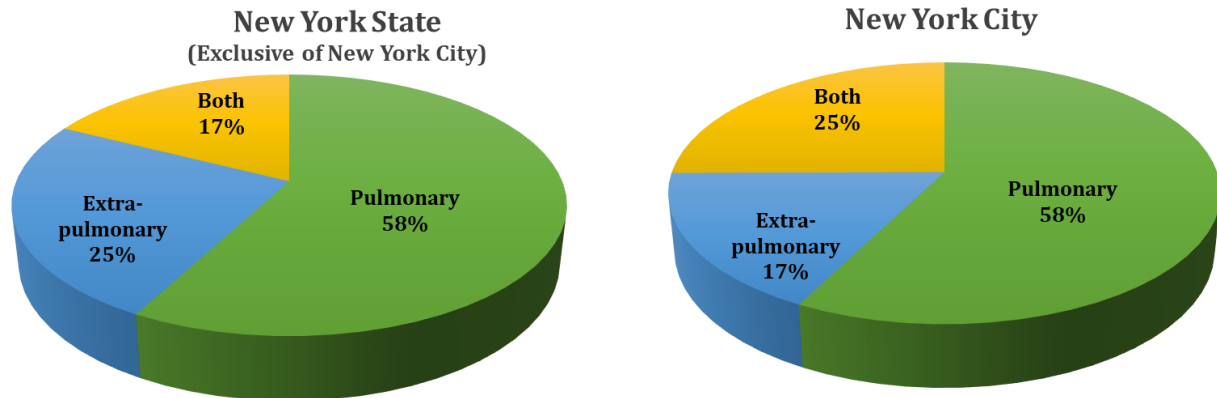
Table 14. Primary Site of Disease for Tuberculosis Cases, New York State (Exclusive of New York City), 2017-2021

Primary Site of Disease	2017		2018		2019		2020		2021	
	No.	%	No.	%	No.	%	No.	%	No.	%
Pulmonary	122	63.2	119	62.3	115	61.2	95	59.0	89	57.8
Extrapulmonary	48	24.9	49	25.7	49	26.1	36	22.4	38	24.7
Both	23	11.9	23	12.0	24	12.8	30	18.6	27	17.5
TOTAL CASES	193		191		188		161		154	

Source: New York State Department of Health Bureau of Tuberculosis Control

In the last five years, the proportion of TB cases with pulmonary disease ranged from 74.0 to 77.6 percent in New York State (exclusive of New York City). The highest proportion of cases with pulmonary TB was observed in 2020 (77.6%) and the lowest was seen in 2019 (73.9%).

Figure 17. Primary Site of Disease for Tuberculosis Cases, New York State, 2021



Source: New York State Department of Health Bureau of Tuberculosis Control

Eighty-three percent (N=438/530) of TB cases in New York City had pulmonary disease compared to seventy-five percent (N=116/154) of cases in the rest of the state.

SITE OF DISEASE

Table 15. Extra-Pulmonary Sites of Disease* for Tuberculosis Cases, New York State, 2021

Extra-Pulmonary Site of Disease	New York State (Exclusive Of New York City)	New York City	New York State (Total)
Lymphatic	20	90	110
Pleural	18	63	81
Bone/Joint	9	36	45
Genitourinary	4	14	18
Peritoneal	4	16	20
Meningeal	5	7	12
Laryngeal	0	1	1
Other	12	50	62

*Categories are not mutually exclusive

Source: New York State Department of Health Bureau of Tuberculosis Control

There were 290 cases in New York State with at least one extra-pulmonary site of disease in 2021. Two-hundred twenty-five cases in New York City had disease in one or more extra-pulmonary sites, while sixty-five cases in New York State (exclusive of New York City) had an extra-pulmonary site of TB disease.

Among these cases, the most common sites of disease were lymphatic (N=110), pleural (N=81) and bone/joint (N=45).

COMPLETION OF THERAPY

Table 16. Treatment Status for Tuberculosis Cases*, New York State (Exclusive of New York City), 2016-2020

Treatment Status	2016		2017		2018		2019		2020	
	No.	%	No.	%	No.	%	No.	%	No.	%
Open	0	0.0	0	0.0	1	0.5	4	2.2	0	0.0
Complete	185	93.0	176	92.1	165	87.3	154	83.2	143	90.5
Died	8	4.0	11	5.8	12	0.0	18	9.7	12	7.6
Uncooperative/Refused	1	0.5	1	0.5	1	0.5	3	1.6	0	0.0
Lost	1	0.5	0	0.0	2	1.1	1	0.5	0	0.0
Adverse Treatment Event	0	0.0	0	0.0	1	0.5	0	0.0	0	0.0
Other	4	2.0	3	1.6	7	3.7	5	2.7	3	1.9
TOTAL CASES	199		191		189		185		158	

*Excludes patients found not to have TB, those who were reported at death and those who never started treatment

Source: New York State Department of Health
Bureau of Tuberculosis Control

In New York State (exclusive of New York City), the average treatment completion rate for TB cases who were alive at diagnosis and started treatment between 2016 and 2020 (the most recent year for which completion information is available) was 89 percent (N=823/922). For the 158 TB cases in New York State (exclusive of New York City) who were alive at diagnosis and who started treatment in 2020, 90.5 percent (N= 143/158) completed treatment.

Table 17. Treatment Status for Tuberculosis Cases* by MDR TB Status Reported, New York State (Exclusive of New York City), 2020

Treatment Status	Non-MDR TB		MDR TB		Total	
	No.	%	No.	%	No.	%
Open	0	0.0	0	0.0	0	0.0
Complete	142	90.4	1	100.0	143	90.5
Died	12	7.6	0	0.0	12	7.6
Uncooperative/Refused	0	0.0	0	0.0	0	0.0
Lost	0	0.0	0	0.0	0	0.0
Adverse Treatment Event	0	0.0	0	0.0	0	0.0
Other	3	1.9	0	0.0	3	1.9
TOTAL CASES	157		1		158	

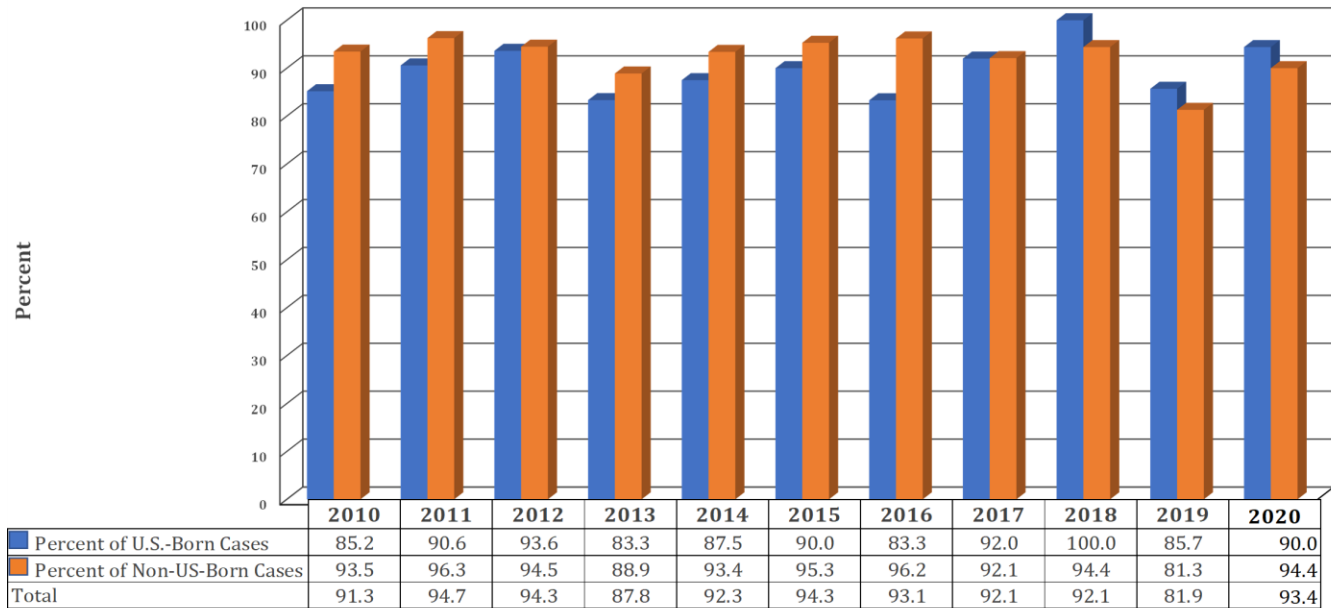
*Excludes patients found not to have TB, those who were reported at death and those who never started treatment
MDR TB = Multidrug-resistant TB

Source: New York State Department of Health
Bureau of Tuberculosis Control

The single MDR TB case completed TB treatment which is a 100% completion rate. The non-MDR TB cases had a 90.4% completion rate.

COMPLETION OF THERAPY

Figure 18. Percent of Tuberculosis Cases Who Completed Treatment Within 12 Months*, by U.S.-Born and Non-U.S.-Born Status, New York State (Exclusive of New York City), 2010-2020**



*Among those eligible to complete within 12 months
 **U.S.-born is defined as someone born in one of the 50 states, District of Columbia, or born outside the United States to at least one parent who was a U.S. citizen.

Source: New York State Department of Health
 Bureau of Tuberculosis Control

For 2020 (the most recent year for which complete information is available), 93.4 percent (N=128/137) of patients in New York State (exclusive of New York City) who were eligible to complete treatment within 12 months finished treatment.

In 2020, U.S.-born patients had a 90.0 percent treatment completion rate within 12 months while non-U.S.-born had a 94.4 percent completion rate within 12 months which is an increase from the prior year when rates in the U.S. born vs. the non-U.S. -born were 85.7 percent and 81.3 percent, respectively.

^Patients with rifampin resistance, those with meningeal TB, and children under 15 who have disseminated TB (miliary TB or evidence of miliary TB on chest radiograph, or a positive blood culture) are ineligible to complete within 12 months so they are excluded. Those who were never started on treatment, were dead at diagnosis, or who died while on treatment are also excluded. Effective January 2009, the CDC revised the definition of who is eligible to complete treatment to exclude patients who moved out of the country while on treatment.

CONTACTS TO INFECTIOUS TUBERCULOSIS CASES

People who come into close contact with an infectious TB case for a prolonged period are at high risk of becoming infected. Since TB is spread person to person by breathing in airborne particles from another infected individual, pulmonary TB cases who are exhibiting symptoms such as coughing are most likely to transmit TB to others.

For newly diagnosed cases, investigations are conducted to identify close contacts who may have been infected. Once contacts are identified, they are notified of their exposure and efforts are made to get each contact evaluated. Upon evaluation, if a contact has a positive tuberculin skin test (TST) or a positive Interferon-Gamma Release Assay (IGRA), further evaluation is done to determine if the infection is active TB disease or latent TB infection (LTBI). Treatment options for the condition are then discussed. Individuals who have been recently infected have a greater risk of their infection developing into active TB disease, so it is important for LTBI patients to complete treatment.

Table 18. Number and Percent of Infectious Tuberculosis Cases with Contacts Identified, New York State (Exclusive of New York City), 2010-2020

Year	Total Infectious Cases	Infectious Cases with Contacts Identified	
		No.	%
2010	73	72	98.6
2011	80	78	97.5
2012	75	75	100.0
2013	63	62	98.4
2014	72	72	100.0
2015	72	72	100.0
2016	50	49	98.0
2017	54	53	98.1
2018	69	67	97.1
2019	61	59	96.7
2020	52	49	94.2

Source: New York State Department of Health Bureau of Tuberculosis Control

In 2020 (the most recent year for which complete information is available), 94.2 percent (N=49/52) of infectious TB cases in New York State (exclusive of New York City) had contacts identified, a slight decline of 2.5 percent from the previous year. However, this is above the national average of 92.8 percent in 2020.

Table 19. Number and Percent of Contacts to Infectious Tuberculosis Cases Evaluated for Latent Tuberculosis Infection, New York State (Exclusive of New York City), 2010-2020

Year	Total Contacts Identified	Contacts Evaluated	
		No.	%
2010	2,253	2,027	89.9
2011	3,662	3,049	83.3
2012	1,851	1,587	85.7
2013	1,462	1,215	83.1
2014	1,843	1,571	85.2
2015	1,922	1,431	74.5
2016	933	725	77.7
2017	1,714	1,417	82.7
2018	1,509	1,359	90.1
2019	1,344	784	58.3
2020	563	424	75.3

Source: New York State Department of Health Bureau of Tuberculosis Control

Over 75.3 percent (N=424/563) of contacts to infectious cases in New York State (exclusive of New York City) were evaluated for LTBI in 2020 (the most recent year for which complete information is available). This was a 29.2 percent increase from the previous year (75.3% and 58.3%, respectively), but is slightly below the national average of 78.2%.

CONTACTS TO INFECTIOUS TUBERCULOSIS CASES

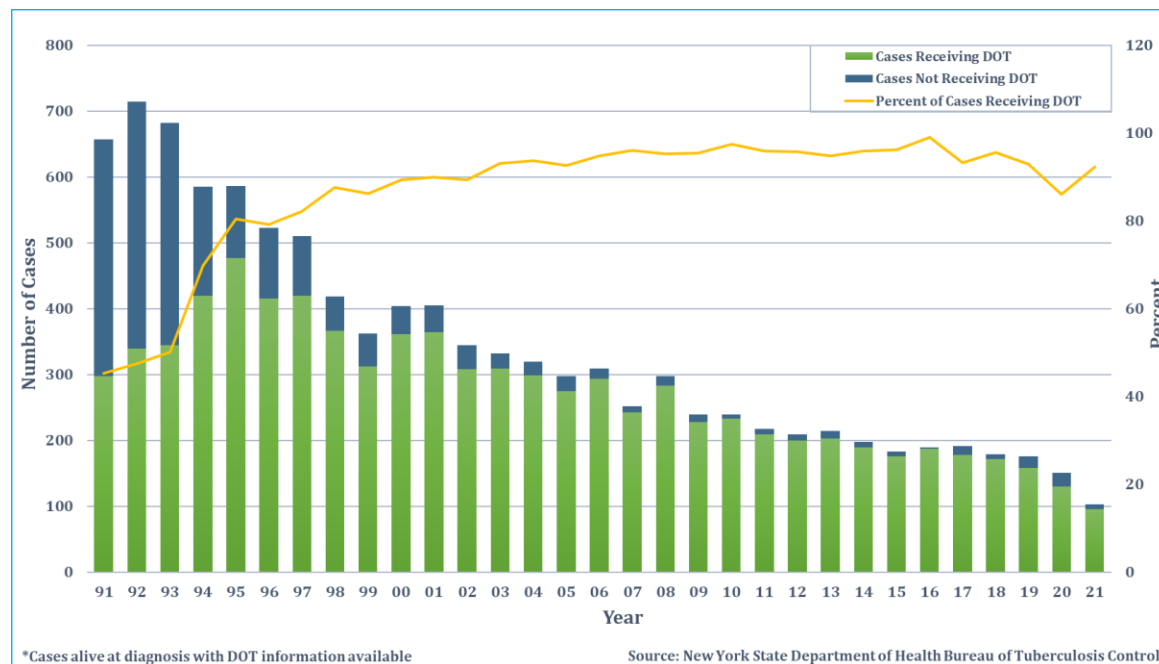
Figure 19. Number and Percent of Contacts to Infectious Tuberculosis Cases Placed on Treatment for Latent Tuberculosis Infection and Completed*, New York State (Exclusive of New York City), 2010-2020



Among the contacts to infectious cases in New York State (exclusive of New York City) who were evaluated in 2020 (the most recent year for which complete information is available), 16.3 percent (N=69/424) were diagnosed with LTBI. Seventy-seven percent (N=53/69) of these contacts were started on a treatment regimen and 75.5 percent (N=40/53) of those who started treatment completed the prescribed regimen. The proportion of contacts with LTBI who started treatment (76.8 percent) was below the statewide target of 92% but much closer to the national average of 77.8 percent. The proportion of contacts with LTBI that completed treatment (75.5 percent) also fell short of the statewide target of 93% but closer to the national average of 79 percent.

DIRECTLY OBSERVED THERAPY

Figure 20. Number and Percent of Tuberculosis Cases* Receiving Any Directly Observed Therapy, New York State (Exclusive of New York City), 1991-2021



In New York State (exclusive of New York City) the proportion of cases receiving directly observed therapy (DOT) has been increasing since the early 1990s when it was first actively promoted by the New York State Department of Health, local health units, and others. In 1991, 45.2 percent (N=297/657) of TB cases on treatment received at least part of their therapy as DOT. By 2003, the proportion of cases receiving a portion of their treatment as DOT more than doubled. By 2016, it reached its highest level at 98.9 percent (N=187/189). In 2021, this percentage increased to 92.2 percent (N=95/103) from 86.1 percent (N=130/151) in 2020.

CONTACT INFORMATION

New York State Department of Health Bureau of Tuberculosis Control

New York State Department of Health
Bureau of Tuberculosis Control
Empire State Plaza
Corning Tower, Room 565
Albany, NY 12237

Tel (518) 474-7000

Main Fax (518) 473-6164

Confidential Fax (518) 408-1941

Email tbcontrol@health.ny.gov

For more information:

www.health.ny.gov/diseases/communicable/tuberculosis

New York City Department of Health and Mental Hygiene Bureau of Tuberculosis Control

New York City Department of Health & Mental Hygiene
Bureau of Tuberculosis Control
42-09 28th Street, CN 72B
Long Island City, NY 11101

Tel (844) 713-0559 (TB Hotline)

Fax (844) 713-0557/0558

For more information:

www.nyc.gov/site/doh/health/health-topics/tuberculosis.page