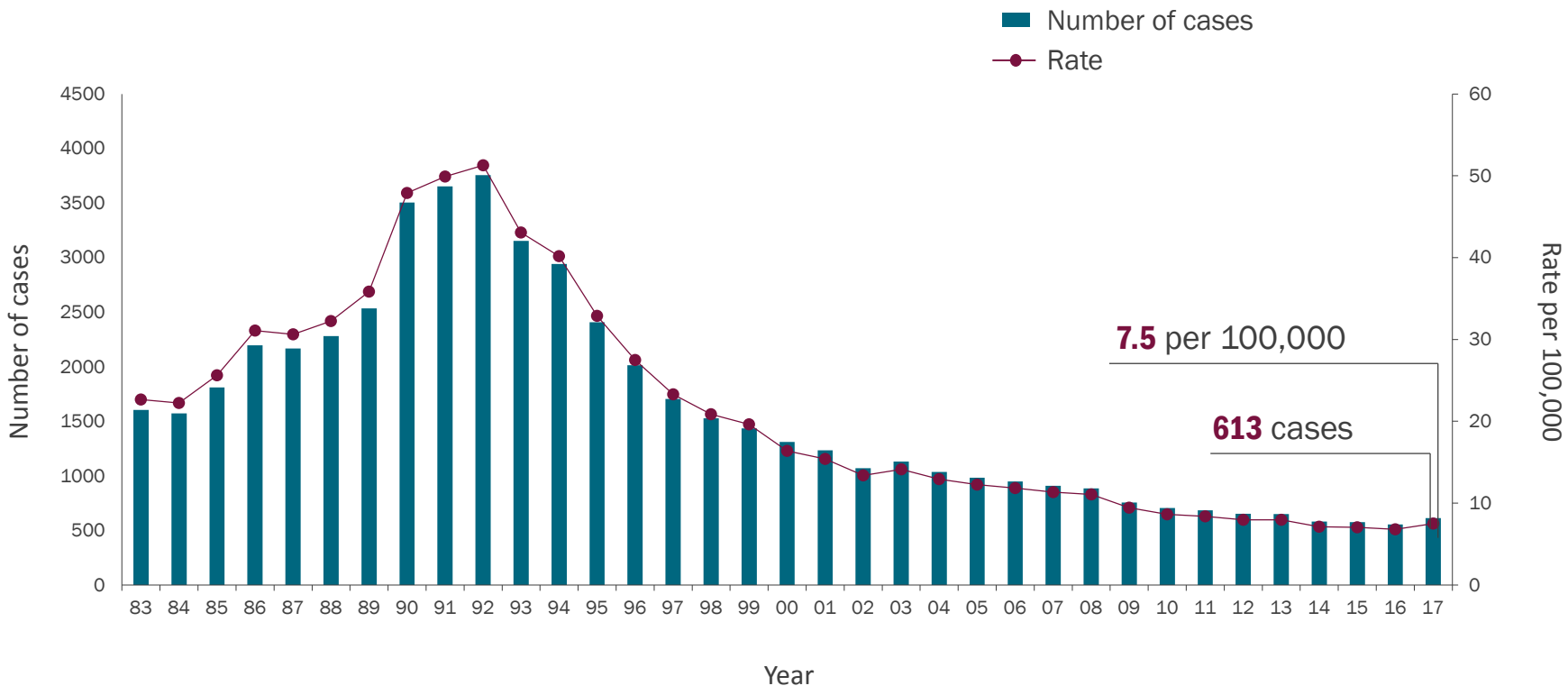
TUBERCULOSIS
IN NEW YORK CITY, 2017

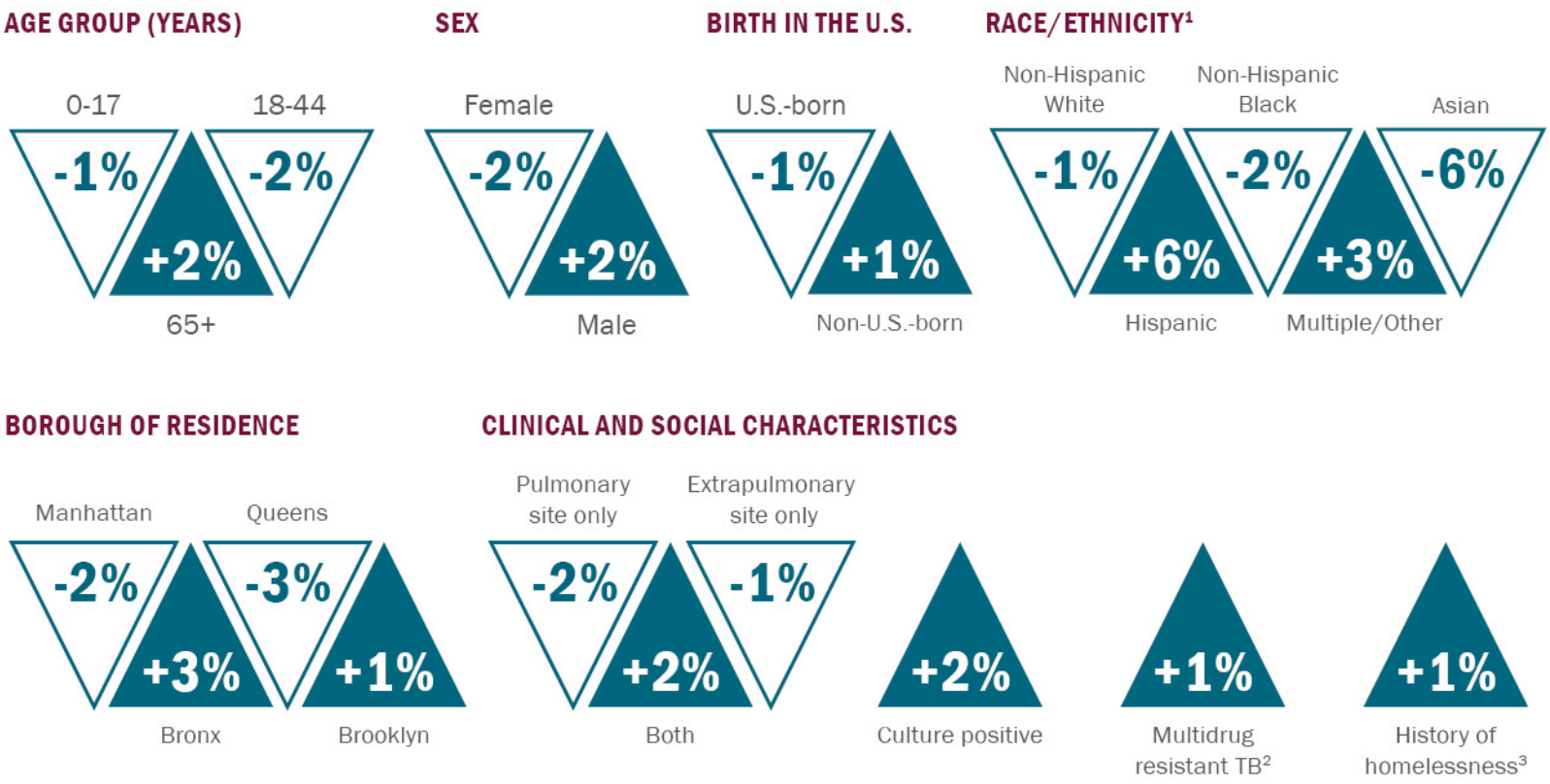
New York City Bureau of Tuberculosis Control

TUBERCULOSIS CASES AND RATES,[1] NEW YORK CITY, 1983-2017



1. Rates are based on decennial Census data

PERCENT CHANGE IN PROPORTION FOR SELECT CHARACTERISTICS AMONG TUBERCULOSIS CASES, 2016 TO 2017



NO CHANGE among patients 45-64 years of age, patients living in Staten Island at time of TB diagnosis or patients with HIV infection. Change in clustering proportion could not be assessed due to a change in genotyping and clustering methods.

1. Race/ethnicity is among patients born in the U.S. 2. MDR TB is defined as resistance to at least isoniazid and rifampin.
3. In the 12 months before TB diagnosis.

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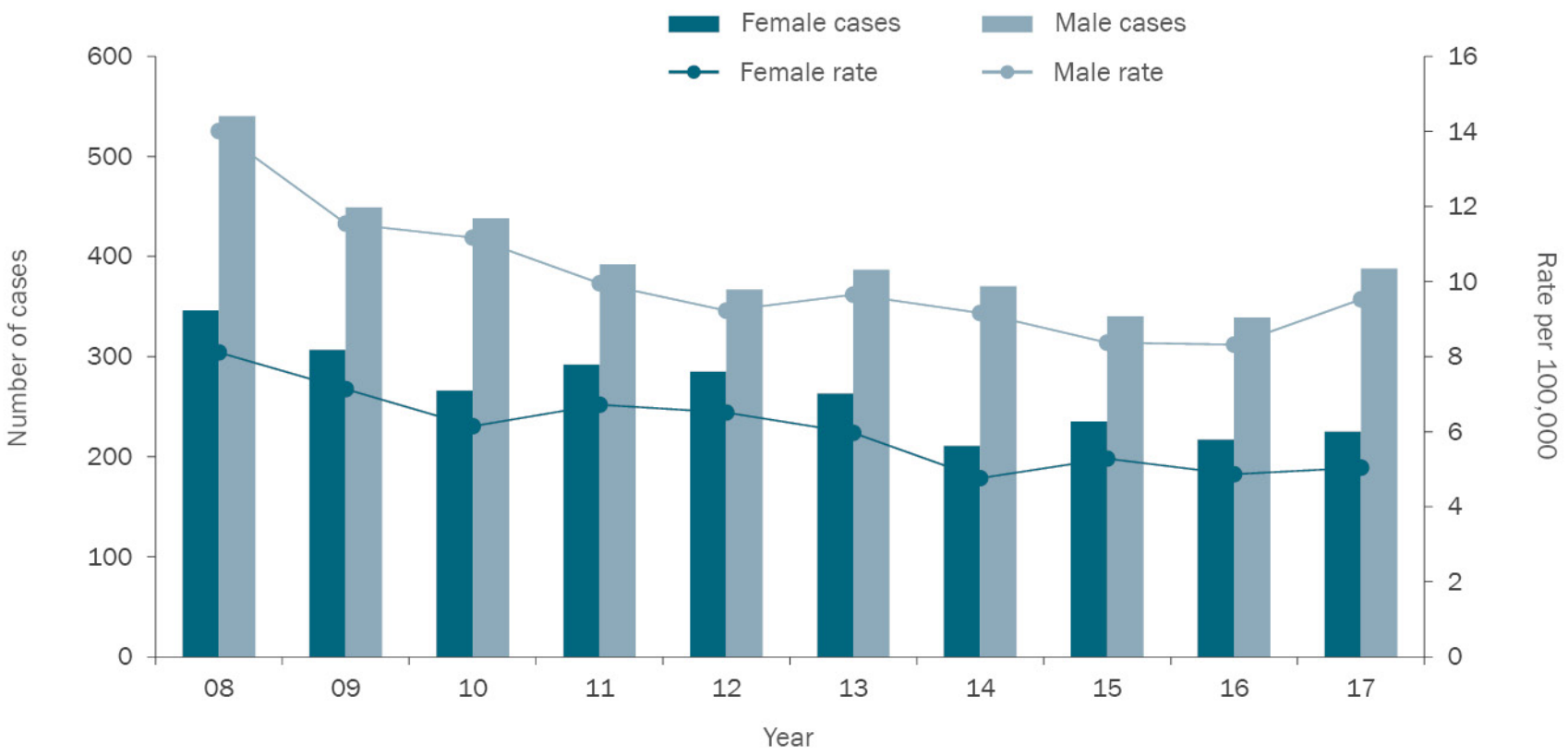
TUBERCULOSIS CASES AND RATES[1] BY SEX, NEW YORK CITY, 2008-2017



1. Rates are based on New York City Health Department population estimates, modified from U.S. Census Bureau interpolated intercensal population estimates, 2000-2016. Updated September 2017.

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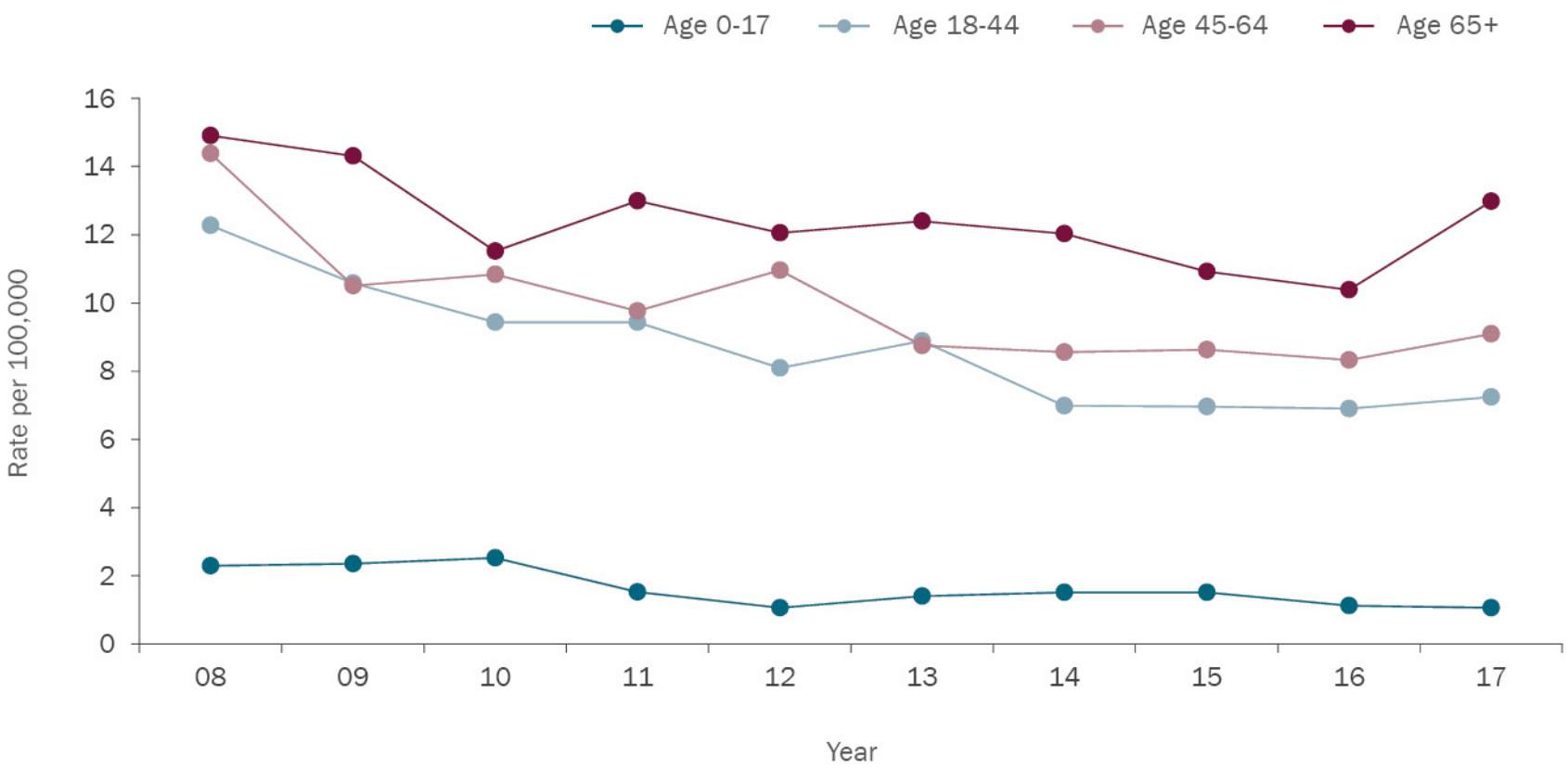
TUBERCULOSIS RATES[1] BY AGE GROUP IN YEARS, NEW YORK CITY, 2008-2017



1. Rates are based on New York City Health Department population estimates, modified from U.S. Census Bureau interpolated intercensal population estimates, 2000-2016. Updated September 2017.

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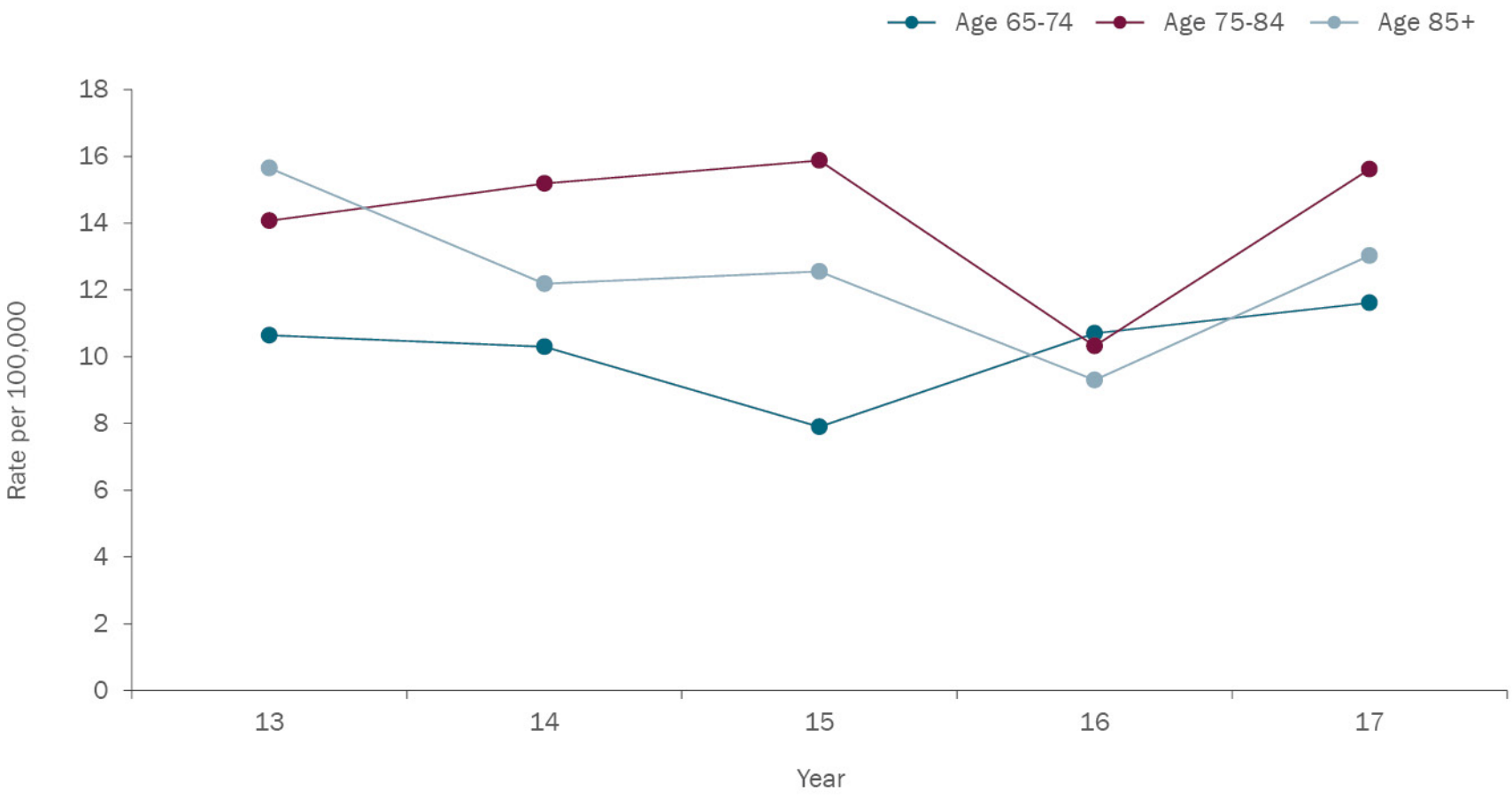
TUBERCULOSIS RATES[1] AMONG ADULTS OLDER THAN 65 BY AGE GROUP IN YEARS, NEW YORK CITY, 2013-2017



1. Rates are based on New York City Health Department population estimates, modified from U.S. Census Bureau interpolated intercensal population estimates, 2000-2016. Updated September 2017.

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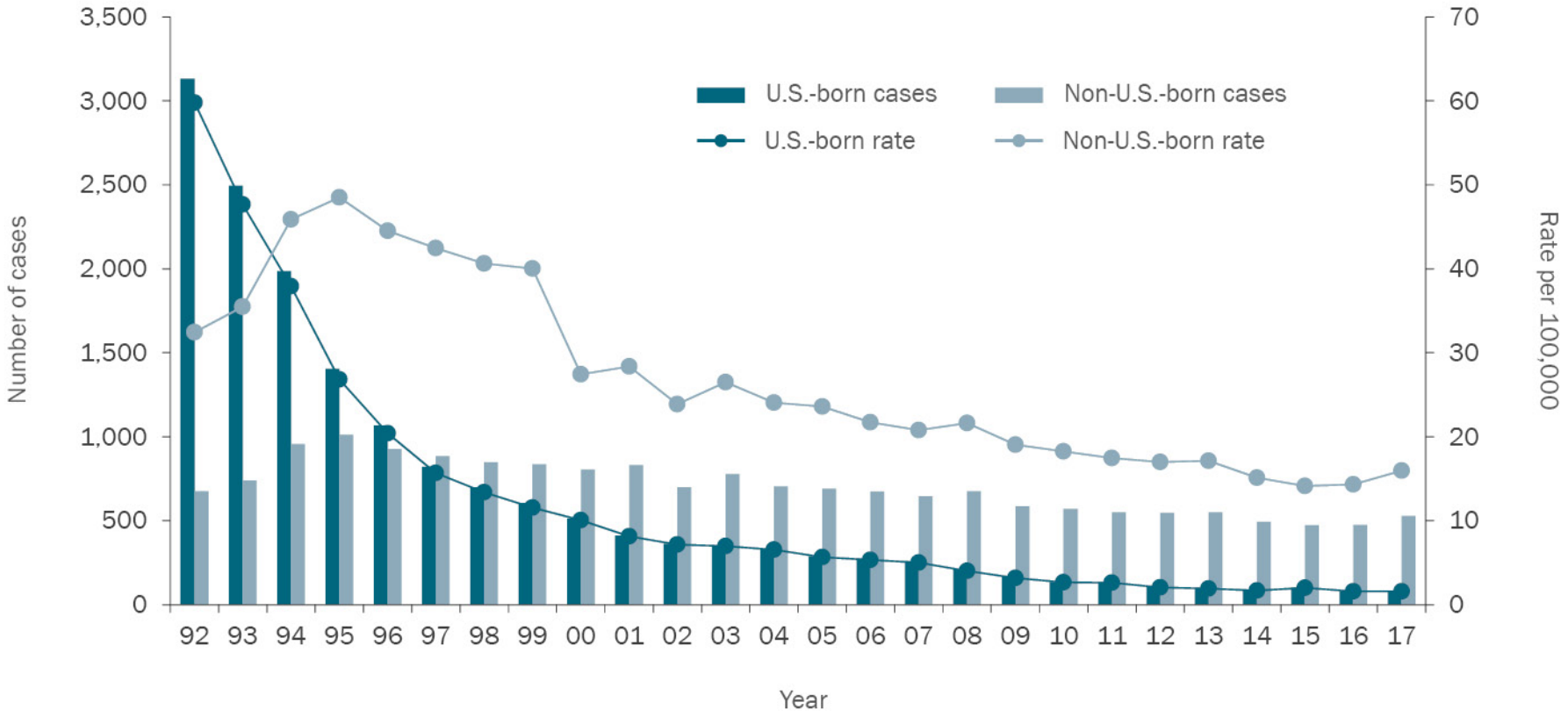
TUBERCULOSIS CASES AND RATES[1] BY BIRTH IN THE UNITED STATES (U.S.),[2] NEW YORK CITY, 1992-2017



1. Rates prior to 2000 are based on 1990 U.S. Census data. Rates for 2000-2005 are based on 2000 U.S. Census data. Rates after 2005 are based on one-year American Community Survey data for the given year or the most recent available data. 2. U.S.-born includes individuals born in the U.S. and U.S. territories. 3. Excludes cases with unknown country of birth.

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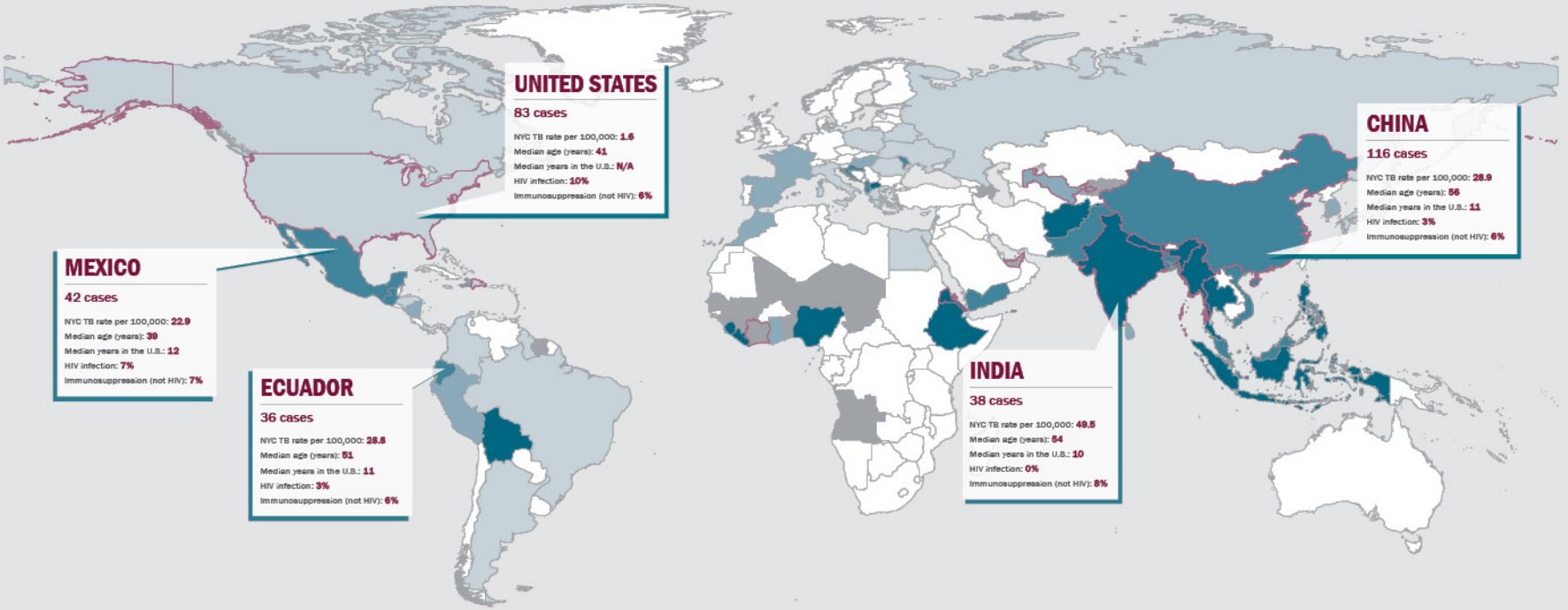
TUBERCULOSIS CASES, RATES[1] AND SELECT CHARACTERISTICS BY PATIENT COUNTRY OF BIRTH, NEW YORK CITY, 2017



15.9 TB rate per 100,000 among people born in a country other than the U.S.

1.6 TB rate per 100,000 among people born in the U.S.

75 Number of countries of birth represented among patients with TB disease in 2017

New York City TB rate (per 100,000)

- 40.1 to 360.0
- 20.1 to 40.0
- 10.1 to 20.0
- 0.5 to 10.0
- Rate not available
- No NYC TB cases
- Birth country of at least one NYC patient with MDR TB[7]

1. Rates are based on 2016 American Community Survey one-year sample data. 2. Two cases in 2017 were among patients with unknown country of birth. 3. There were 16 countries for which rate could not be calculated due to insufficient population data 4. China includes individuals born in mainland China, Hong Kong, Taiwan and Macau. 5. U.S.-born includes individuals born in the U.S. and U.S. territories. 6. Immunosuppression due to having a medical condition, not including HIV/AIDS, or use of immunosuppressive therapy 7. MDR TB is defined as resistance to at least isoniazid and rifampin.

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TOP TEN COUNTRIES OF BIRTH BY TUBERCULOSIS BURDEN AND INCIDENCE IN NEW YORK CITY,[1,2,3] 2017

COUNTRY OF BIRTH	# OF NYC TB CASES
China[4]	116
United States[5]	83
Mexico	42
India	38
Ecuador	36
Dominican Republic	31
Bangladesh	27
Philippines	25
Haiti	19
Nigeria	15

COUNTRY OF BIRTH	NYC TB RATE (PER 100,000)[1]
Eritrea	360
Sierra Leone	225
Bolivia	130
Burma	118
Indonesia	112
Ethiopia	93
Nepal	86
Liberia	78
Afghanistan	66
Nigeria	57

1. Rates are based on 2016 American Community Survey one-year sample data. 2. Two cases in 2017 were among patients with unknown country of birth. 3. There were 16 countries for which rate could not be calculated due to insufficient population data. 4. China includes individuals born in mainland China, Hong Kong, Taiwan and Macau. 5. U.S.-born includes individuals born in the U.S. and U.S. territories.

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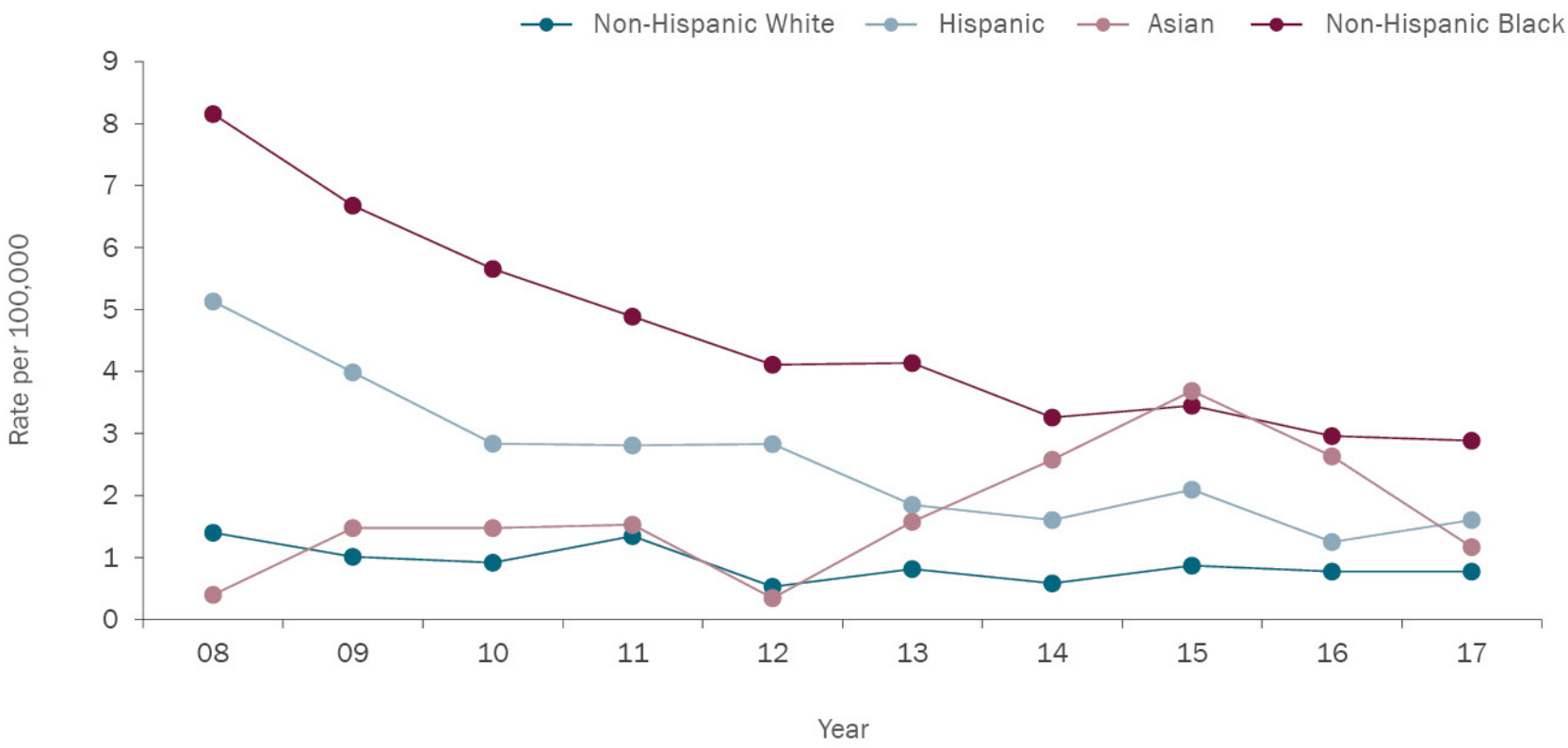
TUBERCULOSIS RATES[1] AMONG PEOPLE BORN IN THE UNITED STATES (U.S.)[2] BY RACE/ETHNICITY, NEW YORK CITY, 2008-2017



1. Rates are based on one-year American Community Survey Public Use Microdata Sample data for the given year or the most recent available data. 2. Data shown does not include patients with multiple, other, or unknown race/ethnicity. 3. U.S.-born includes individuals born in the U.S. and U.S. territories. 4. Excludes cases with unknown country of birth.

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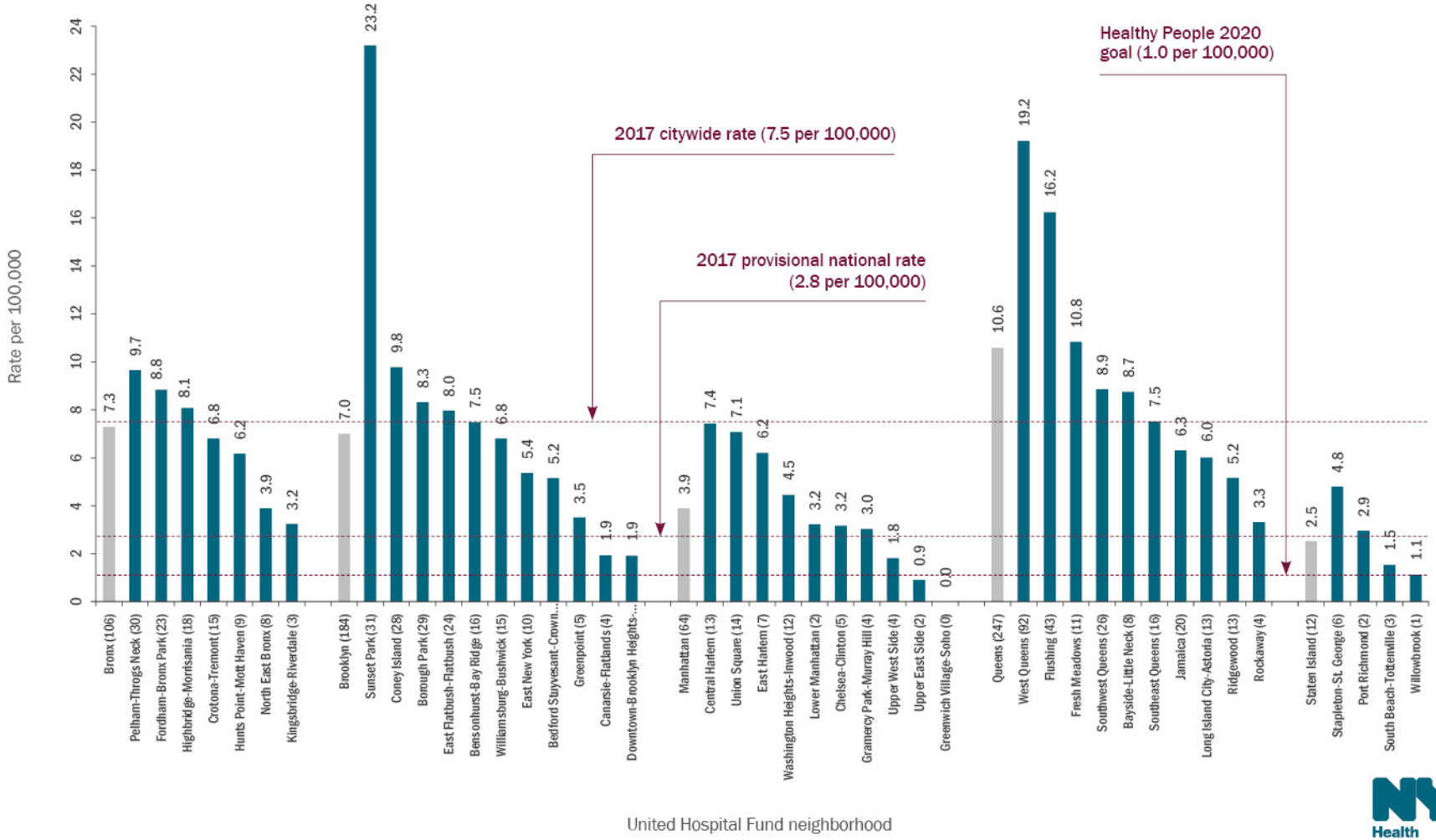
TUBERCULOSIS RATES[1] BY NEW YORK CITY NEIGHBORHOOD, NEW YORK CITY, 2017

1. Parentheses indicate the number of TB cases residing in each neighborhood at time of TB diagnosis. 2. Rates are based on New York City Health Department population estimates, modified from U.S. Census Bureau interpolated intercensal population estimates, 2000-2016. Updated September 2017.



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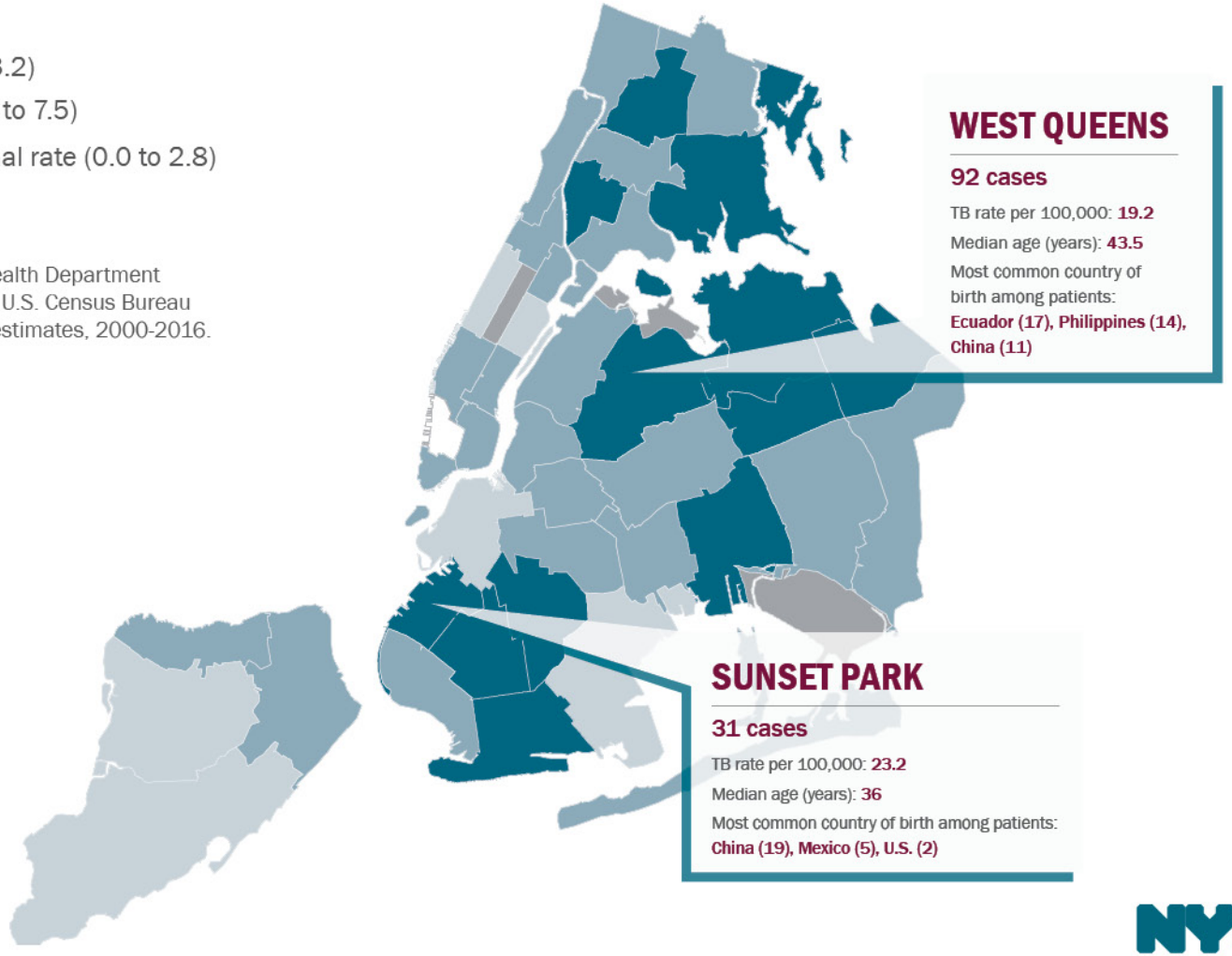
TUBERCULOSIS RATES[1] BY NEW YORK CITY NEIGHBORHOOD, NEW YORK CITY, 2017

Rate per 100,000

- Above citywide rate (7.6 to 23.2)
- At or below citywide rate (2.9 to 7.5)
- At or below provisional national rate (0.0 to 2.8)
- No NYC TB cases

1. Rates are based on New York City Health Department population estimates, modified from U.S. Census Bureau interpolated intercensal population estimates, 2000-2016. Updated September 2017.



WEST QUEENS

92 cases

TB rate per 100,000: **19.2**

Median age (years): **43.5**

Most common country of birth among patients: **Ecuador (17), Philippines (14), China (11)**

SUNSET PARK

31 cases

TB rate per 100,000: **23.2**

Median age (years): **36**

Most common country of birth among patients: **China (19), Mexico (5), U.S. (2)**

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TUBERCULOSIS CASES BY DISEASE SITE, NEW YORK CITY, 2017 (N=613)

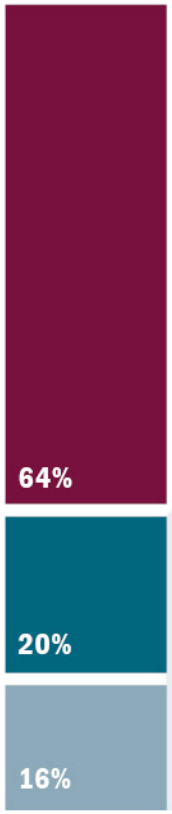

TABLE : Disease site among tuberculosis cases with extrapulmonary disease,[1] New York City, 2017 (n=224)

Disease site	Number of cases	Percent
Any extrapulmonary site	224	
Lymphatic	88	39
Pleural	58	26
Bone/Joint	25	11
Meningeal	15	7
Genitourinary	11	5
Peritoneal	17	8
Laryngeal	2	1
Other	45	20

1. Categories are not mutually exclusive.

Pulmonary disease only Extrapulmonary disease only Both pulmonary and extrapulmonary disease sites

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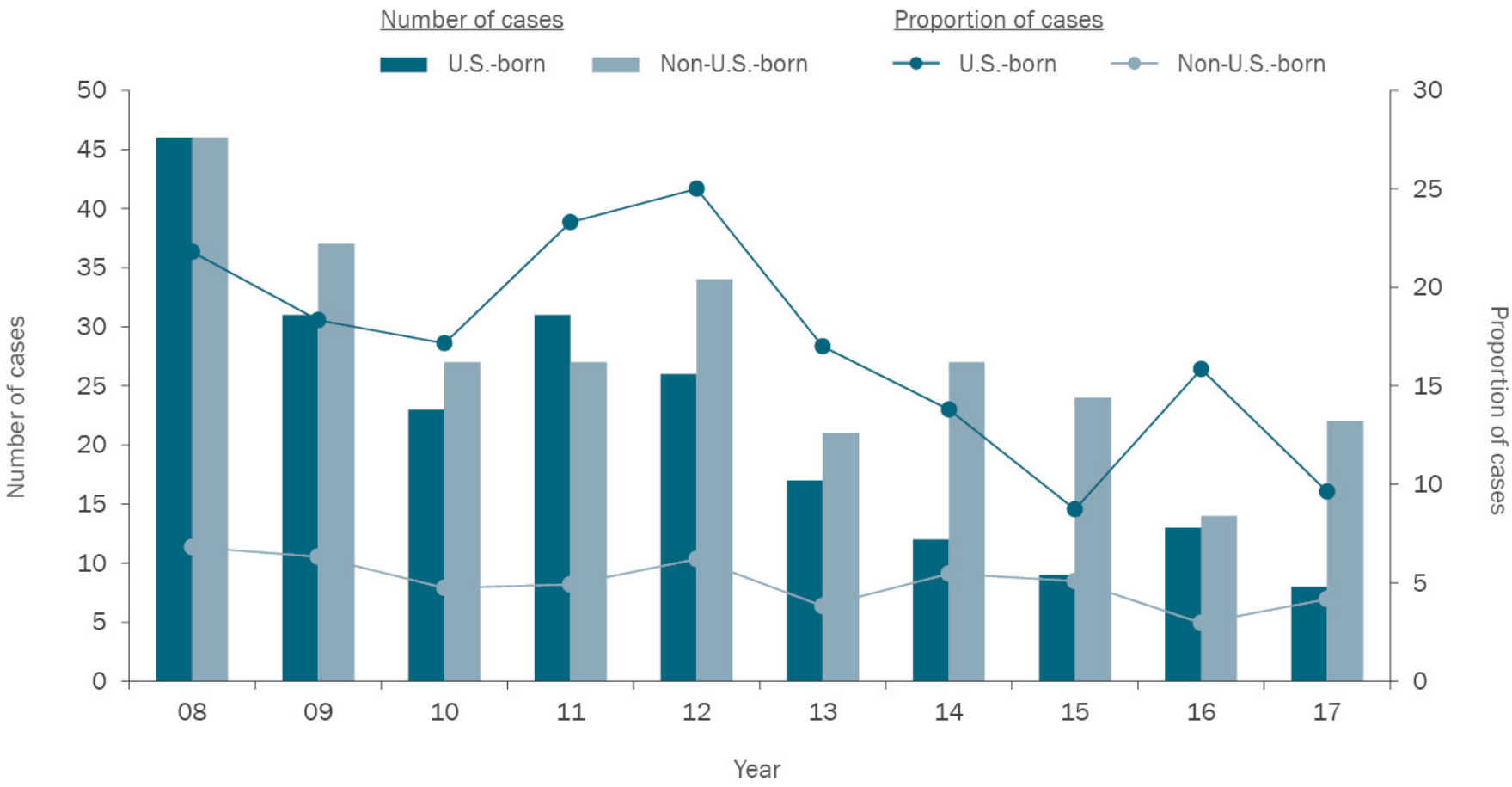
HIV INFECTION AMONG TUBERCULOSIS CASES BY BIRTH IN THE UNITED STATES (U.S.), NEW YORK CITY, 2008-2017



1. Excludes cases with unknown country of birth. 2. U.S.-born includes individuals born in the U.S. and U.S. territories. 3. 110 patients in 2017 had an unknown HIV status.

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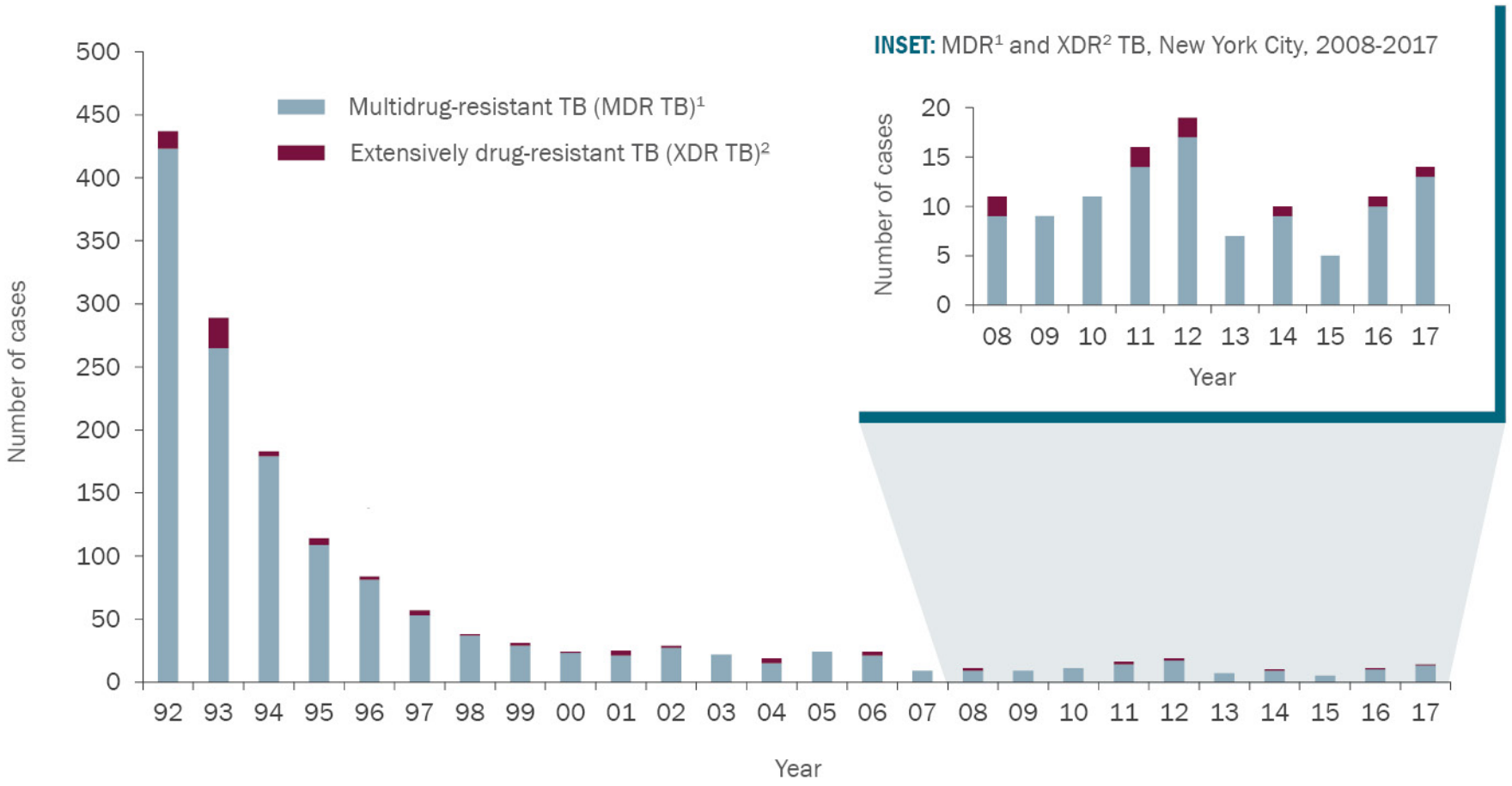
MULTIDRUG RESISTANCE[1] AMONG TUBERCULOSIS CASES, NEW YORK CITY, 1992-2017



1. MDR TB is defined as resistance to at least isoniazid and rifampin. 2. XDR TB is defined as resistance to at least isoniazid and rifampin plus a fluoroquinolone and a second-line injectable anti-TB medication.

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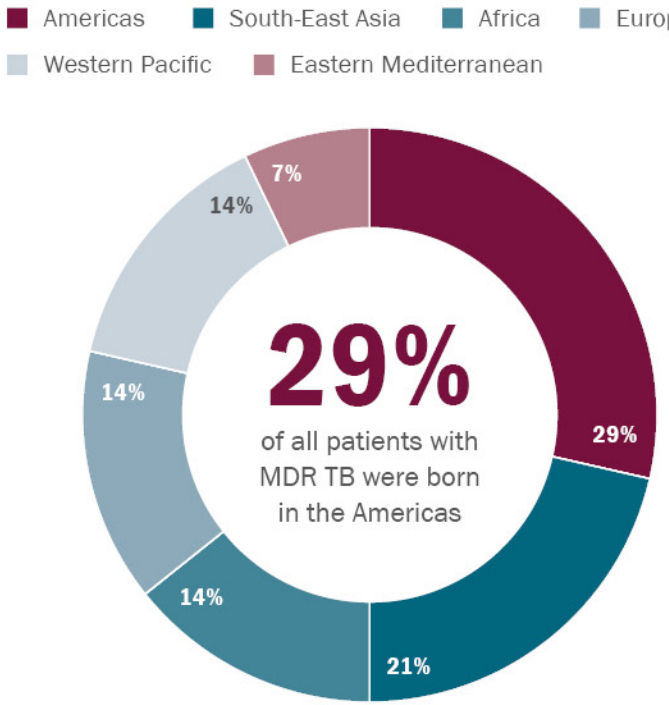
SELECT CHARACTERISTICS AMONG PATIENTS DIAGNOSED WITH MULTIDRUG-RESISTANT[1] TUBERCULOSIS, NEW YORK CITY, 2017 (N=14)

Characteristics	
Median age (range)	41 (19-80)
Number born outside of the United States (U.S.) (%)	12 (86%)
Years in the U.S. among non-U.S.-born patients (%)	
< 5 years	5 (42%)
5-10 years	4 (33%)
> 10 years	3 (25%)
Pulmonary site of disease (%)	12 (86%)
Median number of drugs to which there was known resistance among MDR TB cases[2] (range)	7 (3-12)
Median number of contacts identified around patients with MDR TB (range)	3 (0-155)

1. MDR TB is defined as resistance to at least isoniazid and rifampin.
2. Resistance to any fluoroquinolone was counted once

FIGURE: Region of birth[1] among patients diagnosed with multidrug-resistant tuberculosis, New York City, 2017 (n=14)



1. Based on World Health Organization regional defintions

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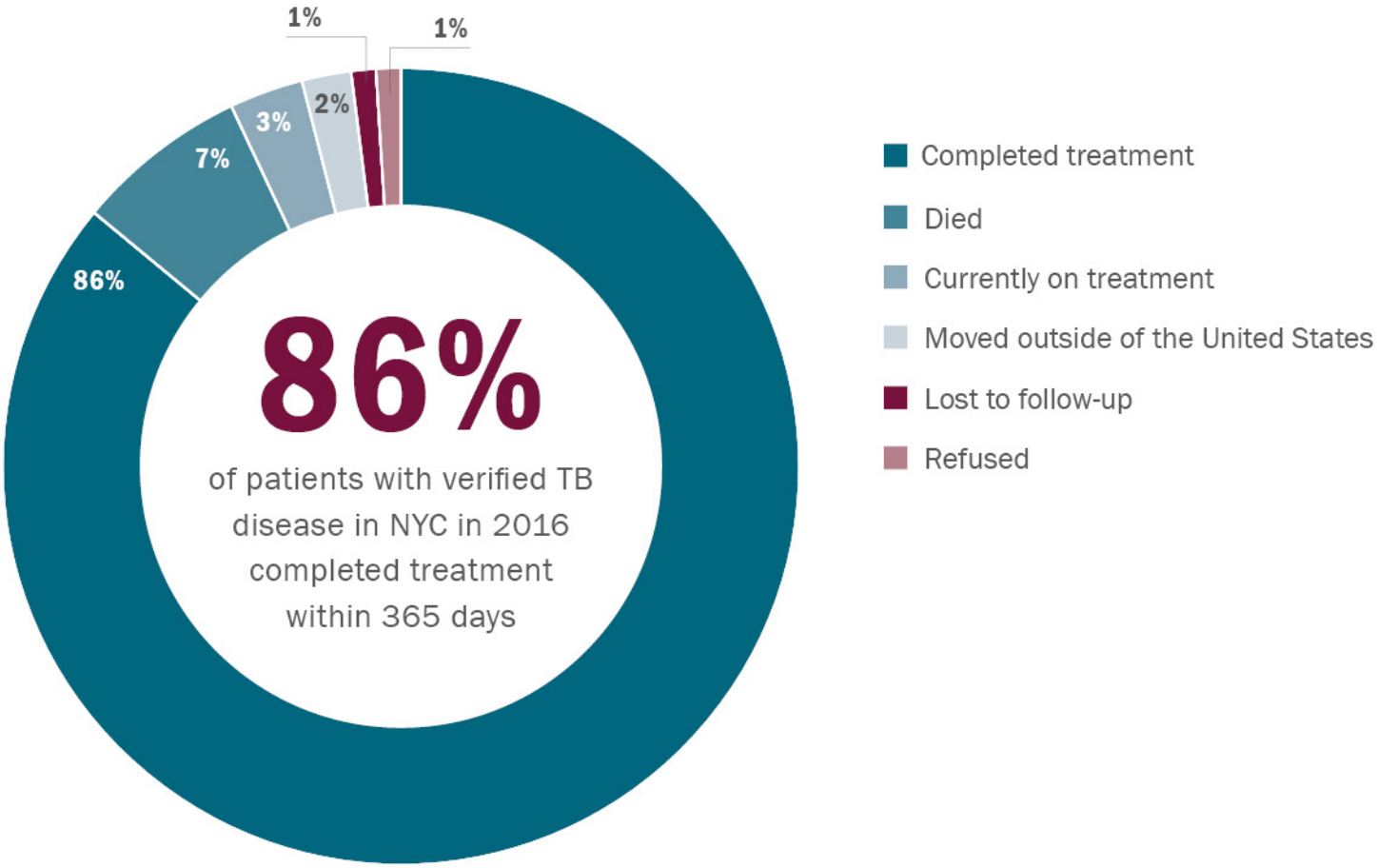
TREATMENT OUTCOMES FOR TUBERCULOSIS CASES COUNTED IN 2016[1] WHO WERE ELIGIBLE TO COMPLETE TREATMENT WITHIN 365 DAYS, NEW YORK CITY (N=556)



1. Treatment outcomes are not reported for the current year to allow sufficient time for follow-up.

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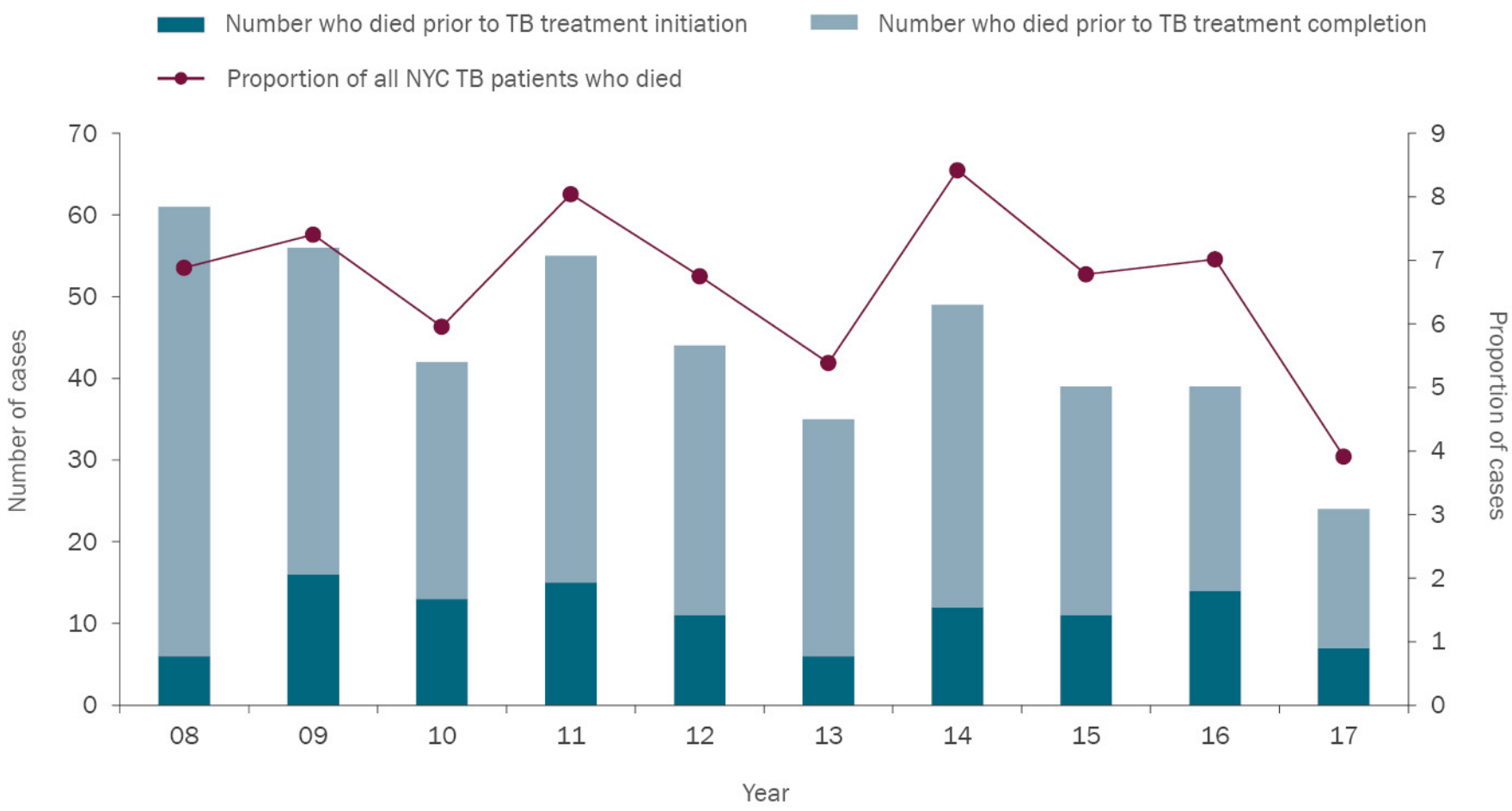
NUMBER AND PROPORTION OF PATIENTS WITH TUBERCULOSIS WHO DIED BEFORE OR DURING TREATMENT, NEW YORK CITY, 2008-2017



1. A death is defined as any patient who died prior to or during TB treatment, regardless of the cause of death. This excludes any patient who died after the completion of TB treatment.

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CONTACT INVESTIGATIONS IN NON-HOUSEHOLD SETTINGS[1] BY SITE TYPE, NEW YORK CITY, 2017 (N=69)

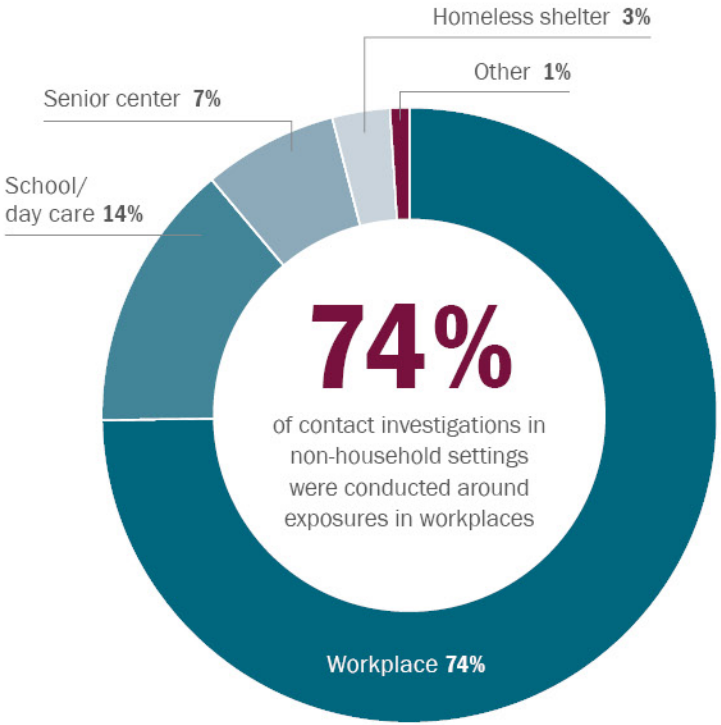

TABLE: Contact investigation outcomes in non-household settings[1] by number of exposed contacts, New York City, 2017 (n=69)

	≥ 15 exposed contacts	< 15 exposed contacts	Total
	n (%)	n (%)	n (%)
Number of sites	28	41	69
Likely transmission[2]	8 (31%)	7 (19%)	15 (24%)
Transmisison could not be assessed	2 (7%)	5 (12%)	7 (10%)
Total number of contacts	849	249	1,098
Median contacts per site (range)	25 (15-89)	6 (1-14)	10 (1-89)
Contacts eligible for testing[3]	810 (95%)	233 (94%)	1,043 (95%)
Contacts tested	709 (88%)	207 (89%)	916 (88%)
Contacts with a positive TB test result	75 (11%)	28 (14%)	103 (11%)

1. Excludes health care-associated investigations (n=153)
2. Proportion calculated among investigations where transmission could be assessed
3. Contacts eligible for testing are defined as contacts without a known history of TB disease or documented positive test for TB infection who were alive subsequent to the diagnosis of the infectious TB case to whom they were exposed

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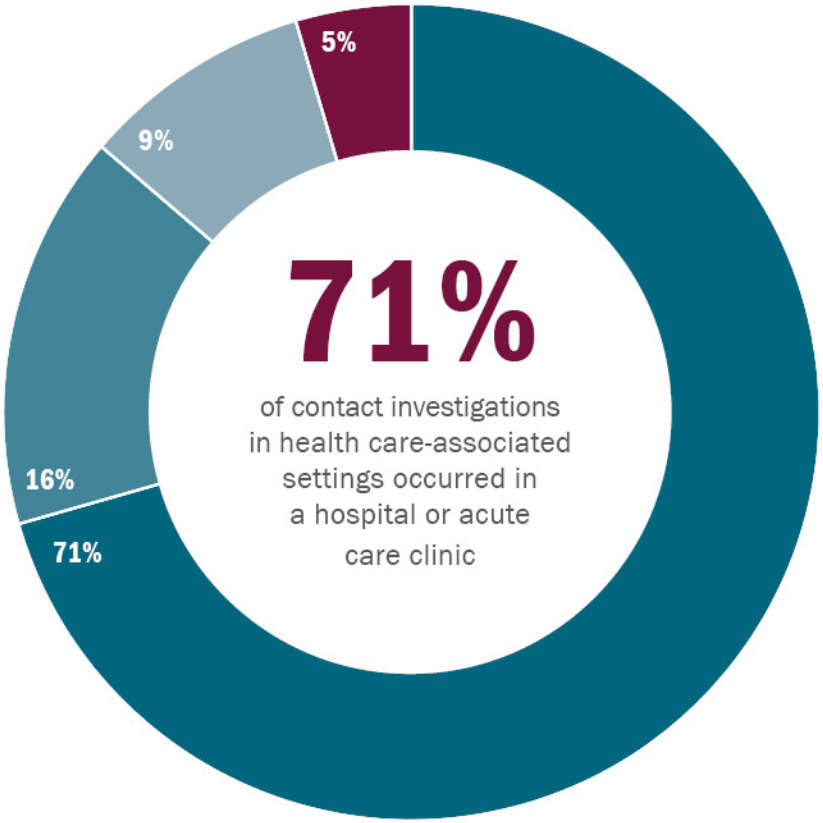
CONTACT INVESTIGATIONS IN HEALTHCARE-ASSOCIATED SETTINGS BY SITE TYPE, NEW YORK CITY, 2017 (N=153)



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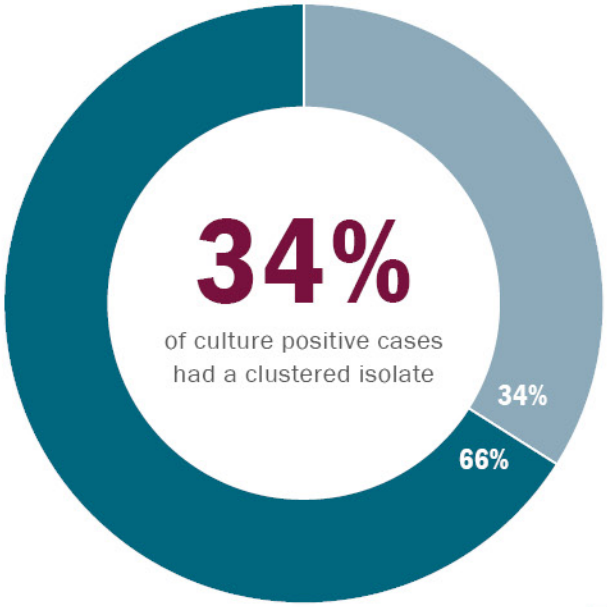
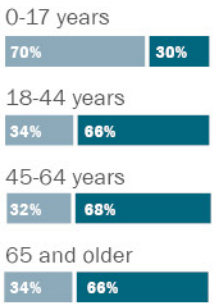
PROPORTION CLUSTERED[1] AMONG TUBERCULOSIS CASES WITH A COMPLETE GENOTYPE[2] BY SELECT PATIENT CHARACTERISTICS, NEW YORK CITY, 2017 (N=440)

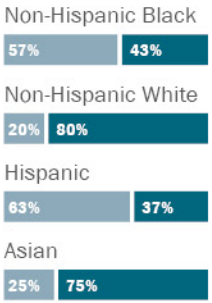


AGE GROUP:

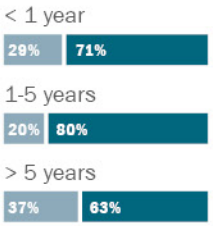


BIRTH IN THE UNITED STATES (U.S.):[3]

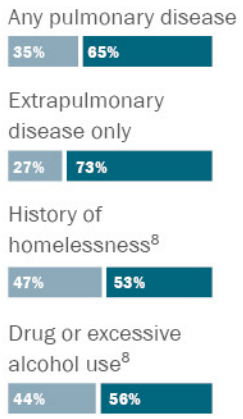
RACE/ETHNICITY:[4,5]



TIME IN THE U.S.:[6,7]



OTHER:



47% Proportion of cases among patients younger than 18 with no obtainable genotype

92% Proportion of culture positive cases with WGS results available

1. Defined as a case with an isolate that has exact-matching 24-loci mycobacterial interspersed repetitive unit–variable number tandem repeat (MIRU) results and spacer oligonucleotide typing (spoligotyping) results to another NYC case verified since January 1, 2009. 2. Having both spoligotype and MIRU results; 440 (87%) cases verified in 2017 had a complete genotype as of January 22, 2018. 3. U.S.-born includes individuals born in the U.S. and U.S. territories; two cases had unknown country of birth. 4. Among patients born in the U.S. 5. Excludes four patients with unknown or multiple race/ethnicity. 6. Among patients born outside the U.S. 7. Time in the U.S. is not available for all patients. 8. In the 12 months before TB diagnosis.

NYC Health

SELECT DEMOGRAPHIC CHARACTERISTICS AMONG TUBERCULOSIS CASES BY BIRTH IN THE UNITED STATES (U.S),[1] NEW YORK CITY, 2016-2017

Characteristics	2016						2017					
	U.S.-born[1]		Foreign-born		Total		U.S.-born[1]		Foreign-born		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Age Group												
0-17	12	15	8	2	20	4	16	19	3	1	19	3
18-44	30	37	211	45	241	43	28	34	224	42	253	41
45-64	28	34	147	31	175	31	22	27	169	32	191	31
65+	12	15	108	23	120	22	17	20	132	25	150	24
Sex												
Female	28	34	189	40	217	39	27	33	197	37	225	37
Male	54	66	285	60	339	61	56	67	331	63	388	63
Race/ethnicity												
White Non-Hispanic	16	20	31	7	47	8	16	19	31	6	47	8
Black Non-Hispanic	37	45	70	15	107	19	36	43	81	15	117	19
Hispanic	18	22	104	22	122	22	23	28	132	25	157	26
Asian Non-Hispanic	9	11	248	52	257	46	4	5	259	49	263	43
Multiple/Other	2	2	21	4	23	4	4	5	23	4	27	4
Time in the U.S. (at reporting)												
< 1 year	n/a	n/a	60	13	60	13	n/a	n/a	68	13	68	13
1-5 years	n/a	n/a	109	23	109	23	n/a	n/a	121	23	121	23
> 5 years	n/a	n/a	304	64	304	64	n/a	n/a	326	63	326	63
Total	**82**	**15**	**474**	**85**	**556**	-	**83**	**14**	**528**	**86**	**613**	-

1. U.S.-born includes individuals born in the U.S. and U.S. territories.

NYC Health

SELECT CLINICAL CHARACTERISTICS AMONG TUBERCULOSIS CASES BY BIRTH IN THE UNITED STATES (U.S),[1] NEW YORK CITY, 2016-2017

Characteristics	2016						2017					
	U.S.-born[1]		Foreign-born		Total		U.S.-born[1]		Foreign-born		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Ever respiratory smear positive	36	52	194	52	230	52	29	46	239	56	269	55
Sputum smear positive	29	81	196	99	225	96	26	90	225	93	251	93
NAA positive[2]	3	60	3	14	6	23	2	20	4	27	6	24
Culture positive	62	76	386	81	448	81	58	70	446	84	506	83
Pulmonary only site of disease	53	65	308	65	361	65	53	64	334	63	389	63
Extra-pulmonary only site of disease	13	16	103	22	116	21	20	24	103	20	123	20
Both pulmonary and extra-pulmonary	16	20	63	13	79	14	10	12	91	17	101	16
Cavities present on chest x-ray ever[3]	23	33	81	22	104	24	17	27	92	22	109	22
Multidrug resistance[4]	1	2	10	3	11	2	2	4	12	3	14	3
Extensive drug resistance[5]	0	0	1	0	1	0	1	2	0	0	1	0
Non-MDR INH resistance[4]	3	5	32	8	35	8	3	5	36	8	39	8
Non-MDR RIF resistance[4]	0	0	0	0	0	0	1	2	1	0	2	0
History of TB disease	7	9	33	7	40	7	4	5	29	5	33	5
HIV status												
Infected	13	16	14	3	27	5	8	10	22	4	31	5
Not infected	50	61	400	84	450	81	58	70	414	78	472	77
Refused testing	16	20	52	11	68	12	9	11	62	12	71	12
Not offered/done or unknown	3	4	8	2	11	2	8	10	30	6	39	6
TNF-alpha antagonist therapy[6]	2	2	9	2	11	2	2	2	8	2	10	2
Non-HIV related immunosuppression	5	6	25	5	30	5	5	6	30	6	35	6
Diabetes	10	12	94	20	104	19	9	11	107	20	116	19
Total	**82**	**15**	**474**	**85**	**556**	-	**83**	**14**	**528**	**86**	**613**	-

1. U.S.-born includes individuals born in the U.S. and U.S. territories. 2. Column sums may not equal applicable totals due to missing country of birth data. 3. Among patients with negative culture and nucleic amplification assay performed. 4. Percent is among patients with a pulmonary site of disease. 5. MDR TB is defined as resistance to at least isoniazid and rifampin. Percent is among patients with susceptibility testing performed for isoniazid and rifampin. 6. XDR TB is defined as resistance to at least isoniazid and rifampin plus a flouroquinilone and a second-line injectable anti-TB medication. Percent is among patients with susceptibility testing performed for isoniazid, rifampin, any fluoroquinolone and any second-line injectable anti-TB medication. 7. Use within 24 months before TB diagnosis

SELECT GEOGRAPHIC AND SOCIAL CHARACTERISTICS AMONG TUBERCULOSIS CASES BY BIRTH IN THE UNITED STATES (U.S),[1] NEW YORK CITY, 2016-2017

Characteristics	2017							2017					
	U.S.-born[1]		Foreign-born		Total			U.S.-born[1]		Foreign-born		Total	
	n	%	n	%	n	%		n	%	n	%	n	%
Borough of residence													
Manhattan	16	20	51	11	67	12		9	11	55	10	64	10
Bronx	20	24	59	12	79	14		21	25	84	16	106	17
Brooklyn	30	37	132	28	162	29		35	42	148	28	184	30
Queens	14	17	225	47	239	43		16	19	231	44	247	40
Staten Island	2	2	7	1	9	2		2	2	10	2	12	2
Homeless[2]	10	12	6	1	16	3		9	11	14	3	23	4
Employed[2,3]	25	36	233	50	258	48		31	46	223	42	254	43
Health care worker[2,3]	0	0	22	9	22	9		2	6	14	6	16	6
Drug use[2,3]	18	22	17	4	35	6		16	19	12	2	28	5
Excessive alcohol use[2,3]	4	5	13	3	17	3		2	2	23	4	25	4
Neighborhood poverty[4]													
Very high (30 to 100%)	36	44	95	20	131	24		26	31	127	24	155	25
High (20 to < 30%)	11	13	121	26	132	24		22	27	134	25	156	25
Medium (10 to < 20%)	25	30	226	48	251	45		29	35	225	43	254	41
Low (< 10%)	10	12	32	7	42	8		6	7	40	8	46	8
Total	**82**	**15**	**474**	**85**	**556**	-		**83**	**14**	**528**	**86**	**613**	-

1. U.S.-born includes individuals born in the U.S. and U.S. territories. 2. Column sums may not equal applicable totals due to missing country of birth data. 3. In the 12 months before TB diagnosis. 4. Among patients 18 years of age and older. 5. Area-based poverty level is based on 2011-2015 American Community Survey data on the proportion of ZIP code residents living below the federal poverty level. Cases were assigned to a ZIP code based on their residence at TB diagnosis.

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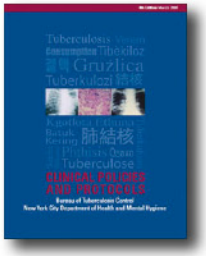
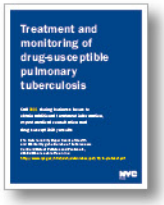
TB EDUCATIONAL RESOURCES FOR HEALTH CARE PROVIDERS AND THE PUBLIC



CLINICAL POLICIES AND PROTOCOLS

4th Edition.

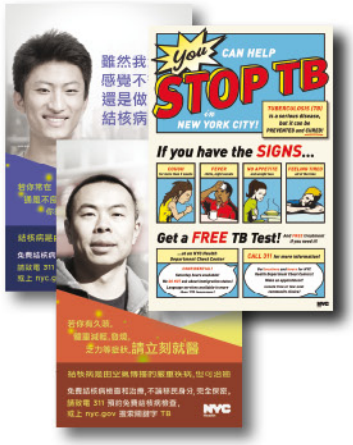
Describes policies, protocols and recommendations for the prevention, treatment and control of TB



POCKET-SIZED REFERENCE GUIDE FOR PROVIDERS

Treatment and monitoring of drug-susceptible pulmonary tuberculosis

Provides concise information about treatment and monitoring for pulmonary TB

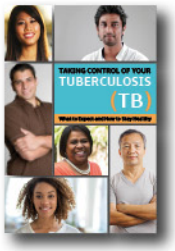


EDUCATIONAL POSTERS

"You Can Stop TB" 11x17 posters provide basic TB information and includes illustrations with captions. Available in English, Spanish, French, Haitian Creole, Hindu, Urdu, Bengali, Tibetan, Tagalog and Chinese.

Get tested/Get Treated 11x17 posters highlight the benefits of TB testing and encourage evaluation and treatment for symptoms of TB disease. These posters are only available in Chinese.

To request information or posters in hard copy or digital formats, please email *tbtraining@health.nyc.gov*



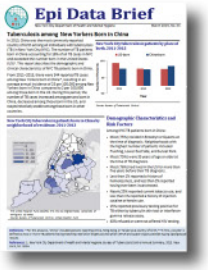
PATIENT BROCHURE

Taking Control of Your Tuberculosis (TB): What to Expect and How to Stay Healthy

General information for patients starting treatment for latent TB infection or active TB disease. Available in 18 languages.

TB EPIQUERY

Data on TB cases reported to the BTBC from 2001 to 2012 are now available on TB EpiQuery. EpiQuery is an interactive, user-friendly system designed to guide users through basic data analyses. Reported TB cases and case rates are available by select demographic and geographic characteristics. On a citywide level, select characteristics that are important to the epidemiology of TB are also available, including country of birth and HIV infection. To access TB EpiQuery, go to: **http://nyc.gov/health/epiquery**



NYC HEALTH EPI DATA BRIEFS:

Epi Data Briefs are short publications that highlight data findings from varying Health Department programs and projects. For more information and to access recently-published reports, go to: **http://www.nyc.gov/html/doh/html/data/epidata.shtml**

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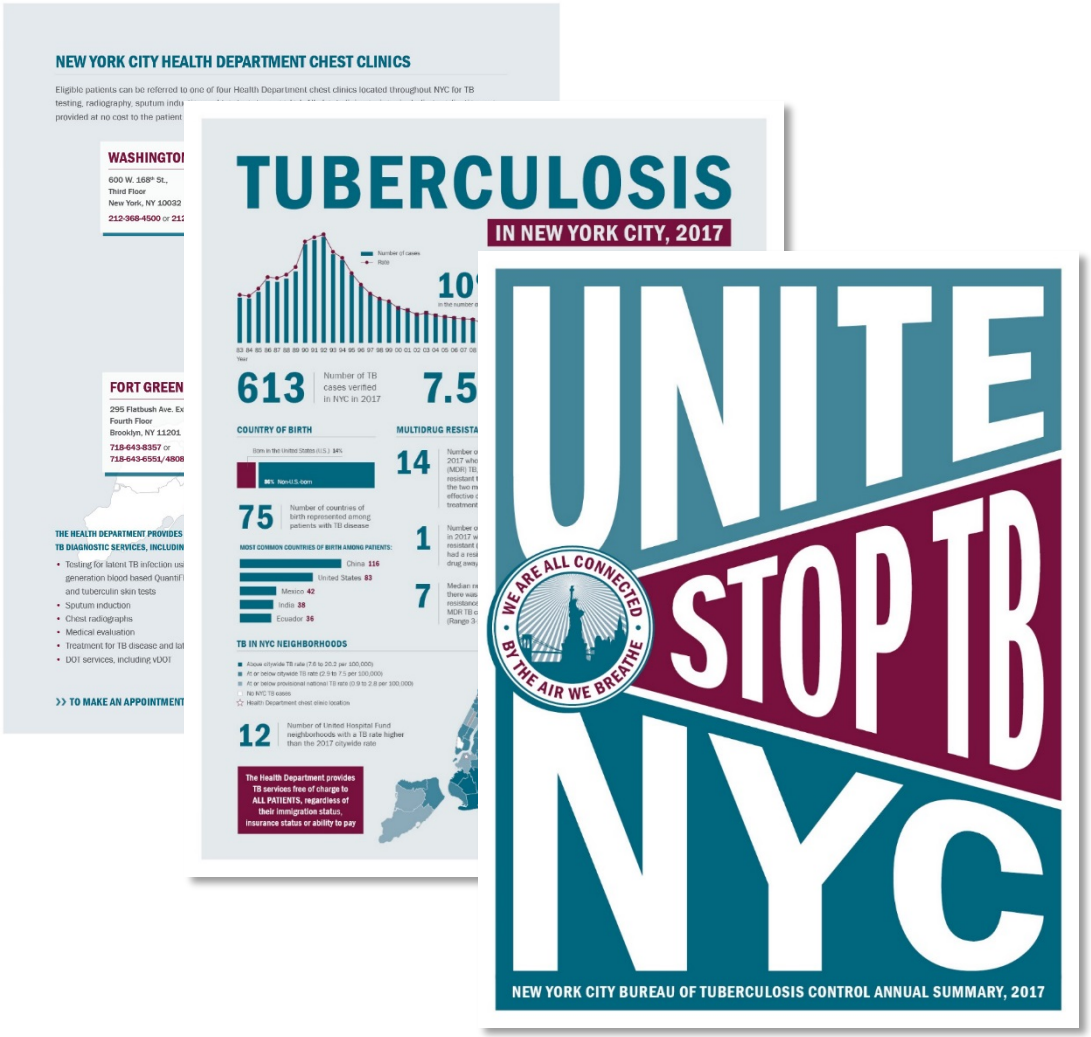
INFOGRAPHICS, MAPS, AND HARD COPIES OF THE ANNUAL TB SUMMARY ARE AVAILABLE



Online:
nyc.gov/health/tb

Hard copies:
Email tb-epi@health.nyc.gov

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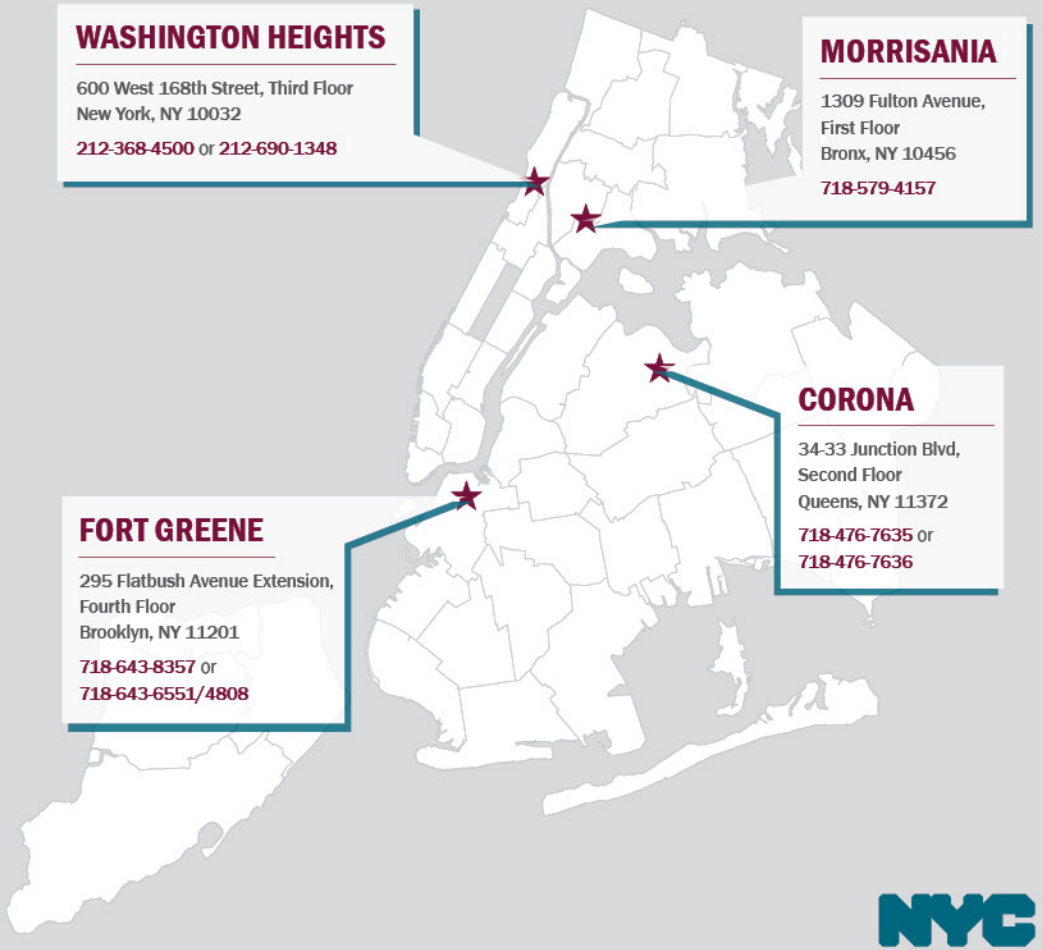
NEW YORK CITY HEALTH DEPARTMENT CHEST CLINICS

THE HEALTH DEPARTMENT PROVIDES AN ARRAY OF TB DIAGNOSTIC SERVICES INCLUDING:

- Testing for latent TB infection using the latest generation blood-based QuantiFERON®-TB Gold test and tuberculin skin tests
- Sputum induction
- Chest radiographs
- Medical evaluation
- Treatment for TB disease and latent TB infection
- Directly Observed Therapy (DOT) services, including video-based DOT

ADDITIONAL CLINICAL SERVICES PROVIDED AT EACH CHEST CLINIC INCLUDE:

- Outpatient medical and nursing care
- Phlebotomy services
- Social services referrals
- Human immunodeficiency virus (HIV) education and testing regardless of person's need for TB care
- TB evaluation for newly arrived immigrants and refugees referred by the Centers for Disease Control and Prevention



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