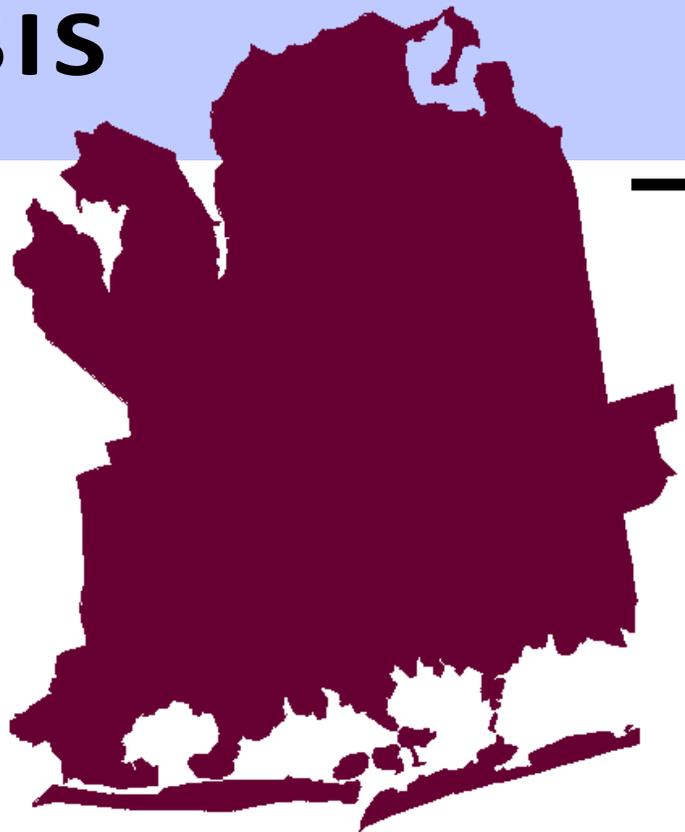

EPIDEMIOLOGY OF TUBERCULOSIS



Nassau County Department of Health |
Tuberculosis Control | September 2015

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METHODS

All data on Tuberculosis (TB) cases in Nassau County 1993-2014 was obtained from the New York State Communicable Disease Electronic Surveillance System (CDESS). Countries, territories, and Nassau County localities are all based on CDESS entries and codes. Data was downloaded as a Microsoft Excel document and analyzed using Microsoft Excel. All graphs were created in Microsoft Excel.

All population data was obtained from the United States Census Bureau. This includes population by county, populations by sex, populations by age, populations by race, populations by ethnicity, and populations by zip code. Rates were calculated using decennial census data from 1990, 2000, and 2010. Rates were based on the decennial census data from the start of each decade (1990-1999 rates were calculated with 1990 census data, 2000-2009 were calculated with 2000 census data, and 2010-2014 were calculated with 2010 census data).

All data reflects the most complete available as of September, 2015.

EXECUTIVE SUMMARY

- In 2014, the total rate of TB in Nassau County was 2.5 per 100,000. This represents a 21% decrease from 2013, and a 75% decrease from 1993. This is also lower than the national rate of 3.0 per 100,000.
- While the overall rates for each age have decreased over time, TB remains highest in the senior population. In 2014, patients ages 65 years and older saw the highest rate of TB at 6.4 per 100,000. Patients ages 0-17 years saw the lowest rate at <1 per 100,000.
- Since 1994, The rates of TB for males and females were nearly equal with males seeing a slightly higher rate. The latest data from 2014, demonstrates males with TB rate of 2.8 per 100,000, as compared with 2.2 per 100,000 for females.
- Since 1994, Blacks saw the largest decrease in TB incidence with a 95% decrease, compared with a 68% decrease for Whites and a 53% decrease for Asian/Pacific-Islanders.
- The overall TB rate trend for Hispanics has decreased over time compared with a near linear trend for non-Hispanics. In 2014, the rate of TB for Hispanics was nearly double that of Non-Hispanics (4.1 per 100,000 compared with 2.2 per 100,000).
- The number of TB patients of foreign-birth has exceeded those of U.S.-birth every year since 1996, seeing only a 59% decrease in cases since 1993 compared with an 89% decrease for U.S.-born patients. Foreign-born patients made up 79% of all TB cases in Nassau County in 2014.
- Since 1993, the top ten countries of birth for foreign-born TB patients were El Salvador, India, Haiti, Honduras, Philippines, Peru, Pakistan, China, Guatemala, and Mexico. The only countries to each contribute to at least 10% of all TB cases in Nassau County since 1993 were El Salvador, India, and Haiti.
- The top 10 towns, by number of cases, since 1993 were Hempstead, Freeport, Westbury, Uniondale, Elmont, East Meadow, Hicksville, New Hyde Park, Long Beach, and Roosevelt.
- 2014 was the only year from 1993-2014 in which pulmonary only cases made up fewer than half of all TB cases.
- The percent of TB patients with HIV dropped significantly from 1993 to 2014. In 1993, 13% of all TB cases were HIV positive, while in 2014 only 3% of cases were.
- With an upward trend towards treatment completion since 1993, 100% of those eligible completed treatment within 365 days in 2014.

CORE ACTIVITIES

SURVEILLANCE

The Nassau County Department of Health Tuberculosis Control (NCDOH TBC) keeps records for all suspected and confirmed cases of TB as well as contacts to confirmed cases of TB. The Electronic Clinical Laboratory Reporting System (ECLRS) requires laboratories to report cases of suspected and confirmed TB to the health department. Patient information from the health department is reported to the state through the Communicable Disease Electronic Surveillance System (CDESS). Use of electronic reporting for both reporting to and from TBC allows for faster and more efficient transmission of case information.

TBC evaluates and monitors newly arrived immigrants participating in the B1/B2 program. Immigrants suspected of having TB based on their TST (TB skin test screening for infection) and x-ray are reported to the state through CDESS, and information is recorded so that follow-ups may be done.

DIRECTLY OBSERVED THERAPY

Directly Observed Therapy (DOT) is the standard of care for TB patients in Nassau County. It is the most effective way to ensure that patients adhere to and are able to complete their treatments. With DOT, patients are observed in person as they take their medications by TBC staff to guarantee proper maintenance of their anti-TB drug regimen. TBC offers DOT to all patients receiving medication for TB disease. In addition to watching patients take medication, the TBC staff members also provide referrals and serve as liaisons to TBC.

SKYPE™ OBSERVED THERAPY

TBC has implemented Skype™ Observed Therapy (SOT) to overcome challenges of DOT as well as increase effectiveness and efficiency of observed therapy. With SOT, rather than going to patients homes, TBC staff use Skype™ to watch patients take their medications via live video. In addition to being less intrusive, SOT saves a significant amount of both time and money. From July 2012 to March 2015, 20% of those offered SOT chose it over DOT.

Total mileage savings	\$9,929.07
Total time savings	614 hours
Total salary savings	\$23,342.26

CORE ACTIVITIES

CONTACT INVESTIGATION

In order to identify and prevent the spread of TB, TBC performs contact investigations, testing individuals who have been exposed to patients with TB. Pulmonary TB cases have contacts identified. Once identified, contacts are evaluated for TB disease and latent TB infection (LTBI). Those with active TB disease are treated, as well as those with LTBI. Identifying those at risk for active TB disease allows TBC to prevent the transmission of TB bacteria and recommend treatment for LTBI.

	Target	2014
Smear positive cases with contacts identified ¹	97%	100%
Contacts evaluated ²	82%	46%
Contacts who initiated treatment	75%	77%

¹267 contacts to active TB patients were identified. Smear positive refers to sputum specimens where acid fast bacilli are visible.

²17% of evaluated contacts were found to have LTBI.

TB TRACK

TB Track was created in order to facilitate tracking contacts in large-scale contact investigations to control the spread of TB while still interfacing with the existing reporting system on the NYS Health Commerce System (HCS). From November 2013 to June 2014, TB Track was implemented in a large-scale contact investigation of 345 with 76% evaluation success and 78% treatment success. Further implementation of TB Track will streamline the follow up process for tracking contacts, their evaluation status and treatment in large-scale investigations in order to increase the proportion of contacts evaluated and treated.

COMMUNITY OUTREACH

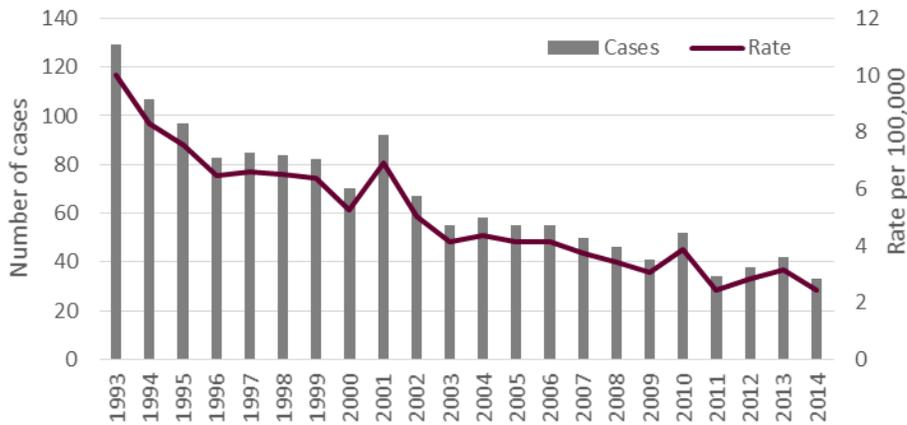
TBC is highly involved in the Nassau County community and works to keep the community healthy and informed. Aside from providing DOT to TB patients, TBC provides information to the community to create awareness of TB symptoms, treatments, and prevention methods. Information is given by TBC staff at site visits during large-scale investigations through presentations.

Additionally, materials for patients and providers, or anyone interested in more information on TB are available on the NCDOH website: <http://www.nassaucountyny.gov/>

PROFILE OF TB CASES

TOTAL

Figure 1: Tuberculosis cases and rates¹, Nassau County, 1993-2014



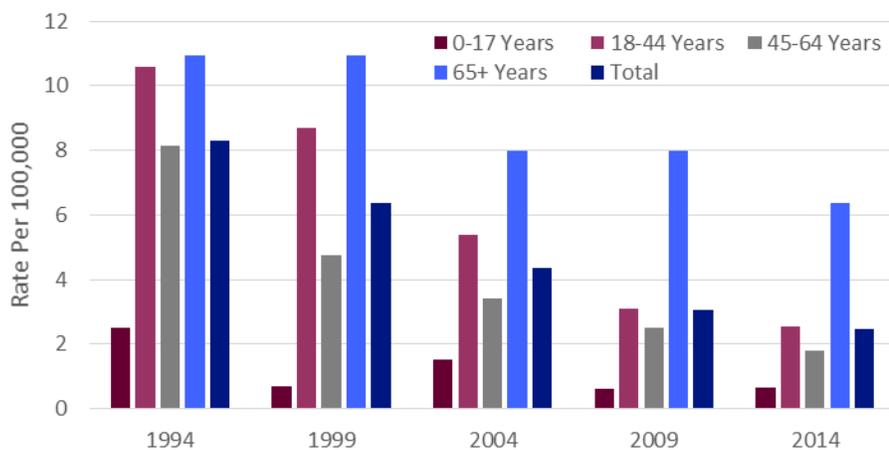
Over the past two decades, both the cases and incidence of tuberculosis in Nassau County have been steadily decreasing. In 2014, the rate was the lowest it has been at **2.5 per 100,000**.

This is a 21% decrease from 2013, and a **75% decrease from 1993**.

This is also **below the national rate** of tuberculosis, which for 2014 was 3.0 per 100,000.

AGE

Figure 2: Tuberculosis rates¹ by age in years, Nassau County, 1994, 1999, 2004, 2009, and 2014



In 2014, as well as the majority of years from 1993 to 2014, **patients age 65 years and older had the highest rate of TB**.

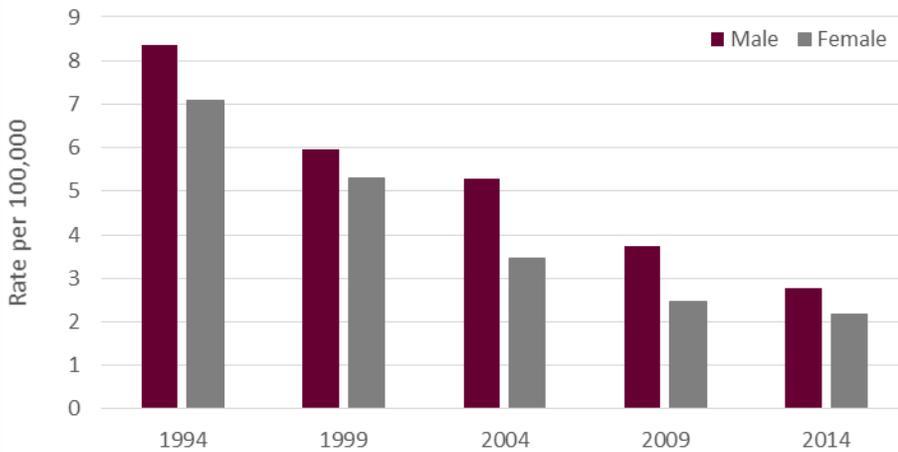
The age group with the lowest rate of TB in 2014 and the majority of years from 1993-2014 was 0-17 years.

¹Rates based on decennial census data

PROFILE OF TB CASES

SEX

Figure 3: Tuberculosis rates¹ by sex, Nassau County, 1994, 1999, 2004, 2009, and 2014

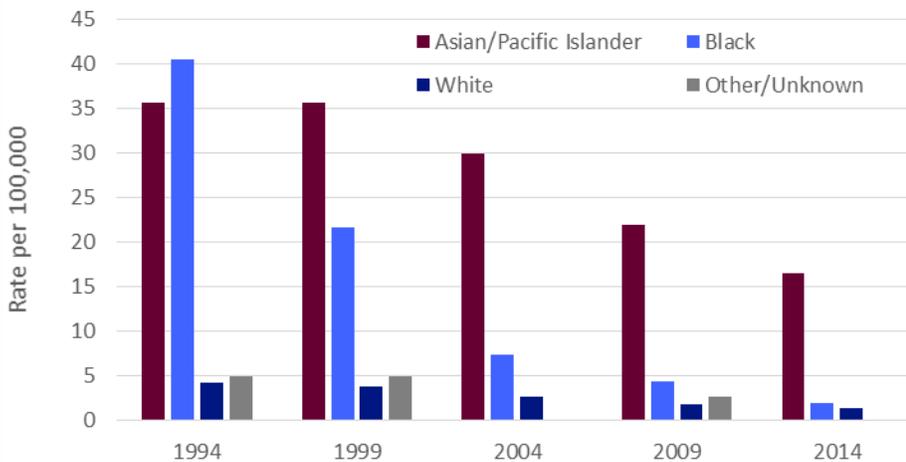


Males and females made up 55% and 45% of all cases since 1994, respectively.

The rate of TB for males exceeded that of TB for females in **19 of the 23 years** reported (83%).

RACE

Figure 4: Tuberculosis rates¹ by race, Nassau County, 1994, 1999, 2004, 2009, and 2014



Between 1994 and 2014, Blacks saw a **95% decrease in TB incidence**, compared with a 68% decrease for Whites and a 53% decrease for Asian/Pacific-Islanders.

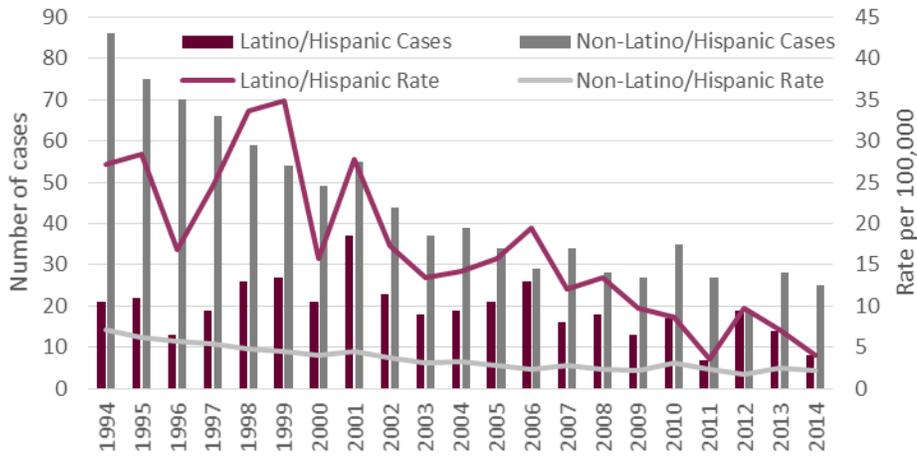
2011 was the first year in which the number of cases among Asian/Pacific-Islanders was greater than the number of cases among Whites.

In 2014, the rate of TB in Asian/Pacific-Islanders was nearly **13 times** that of Whites and almost 9 times that of Blacks.

PROFILE OF TB CASES

ETHNICITY

Figure 5: Tuberculosis cases and rates¹ by ethnicity, Nassau County, 1994-2014

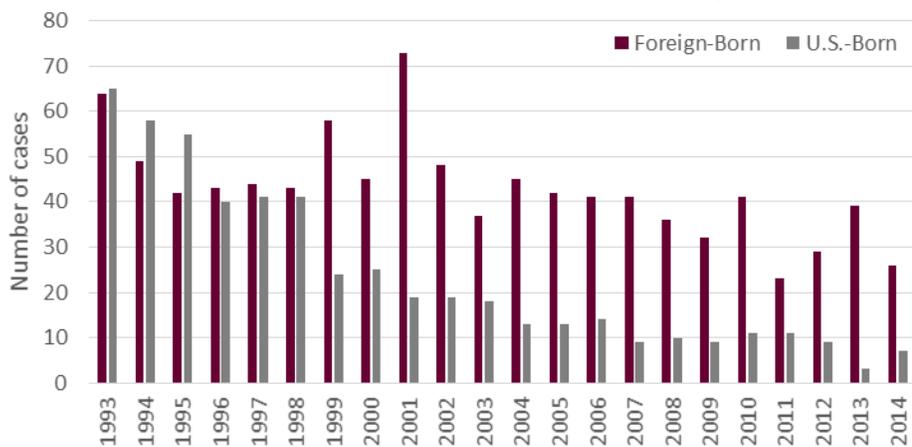


The number of cases for Non-Hispanics was over **3 times** that of Hispanics in 2014.

The rate of TB for Hispanics was **nearly double** that of Non-Hispanics in 2014.

BIRTHPLACE

Figure 6: Tuberculosis cases by birth in the United States, Nassau County, 1993-2014

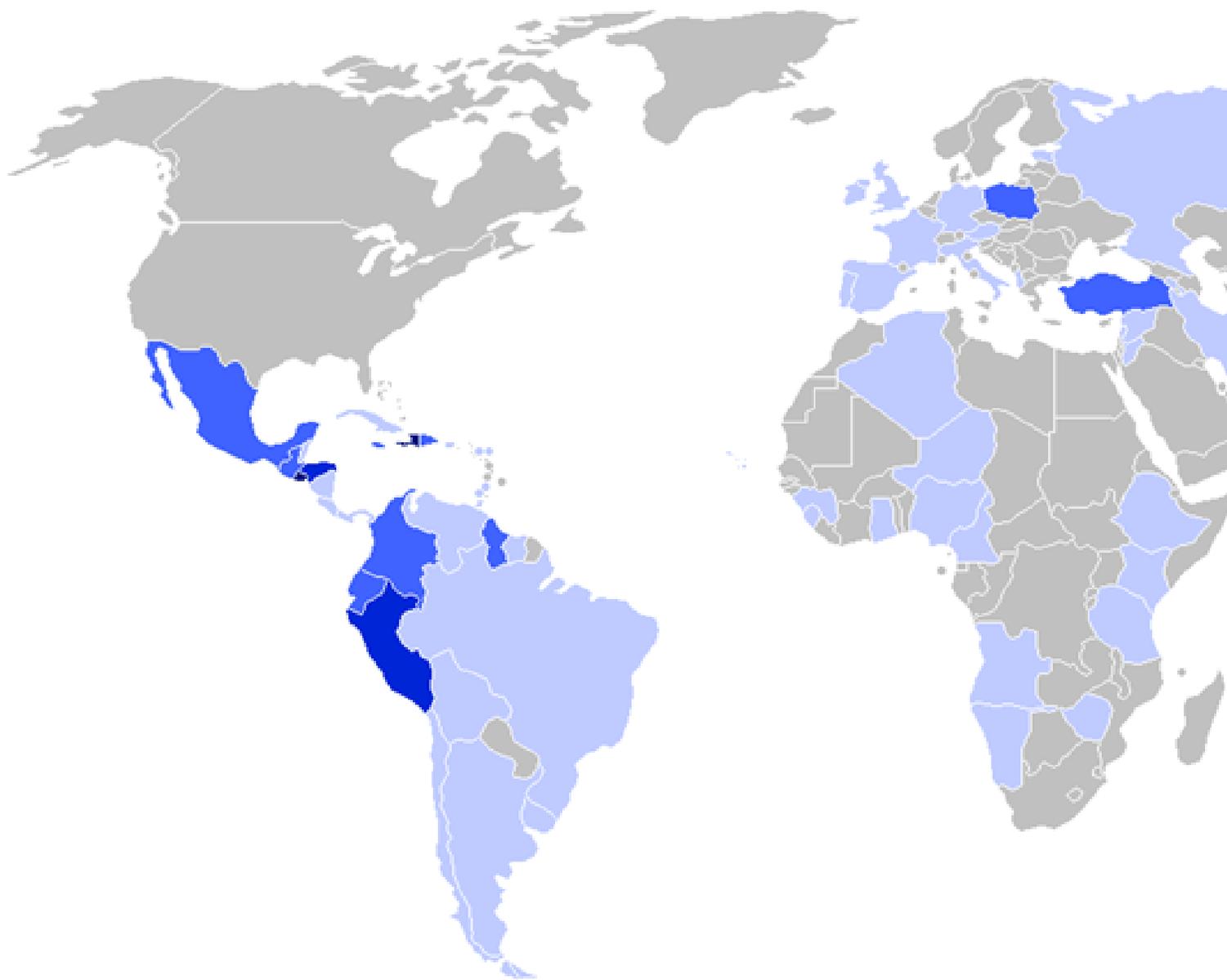


Since 1996, the first year when the number foreign-born TB patients exceeded that of U.S.-born TB patients, foreign-born TB patients have consistently outnumbered U.S.-born TB patients.

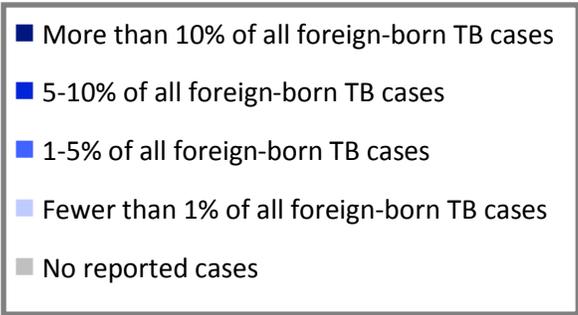
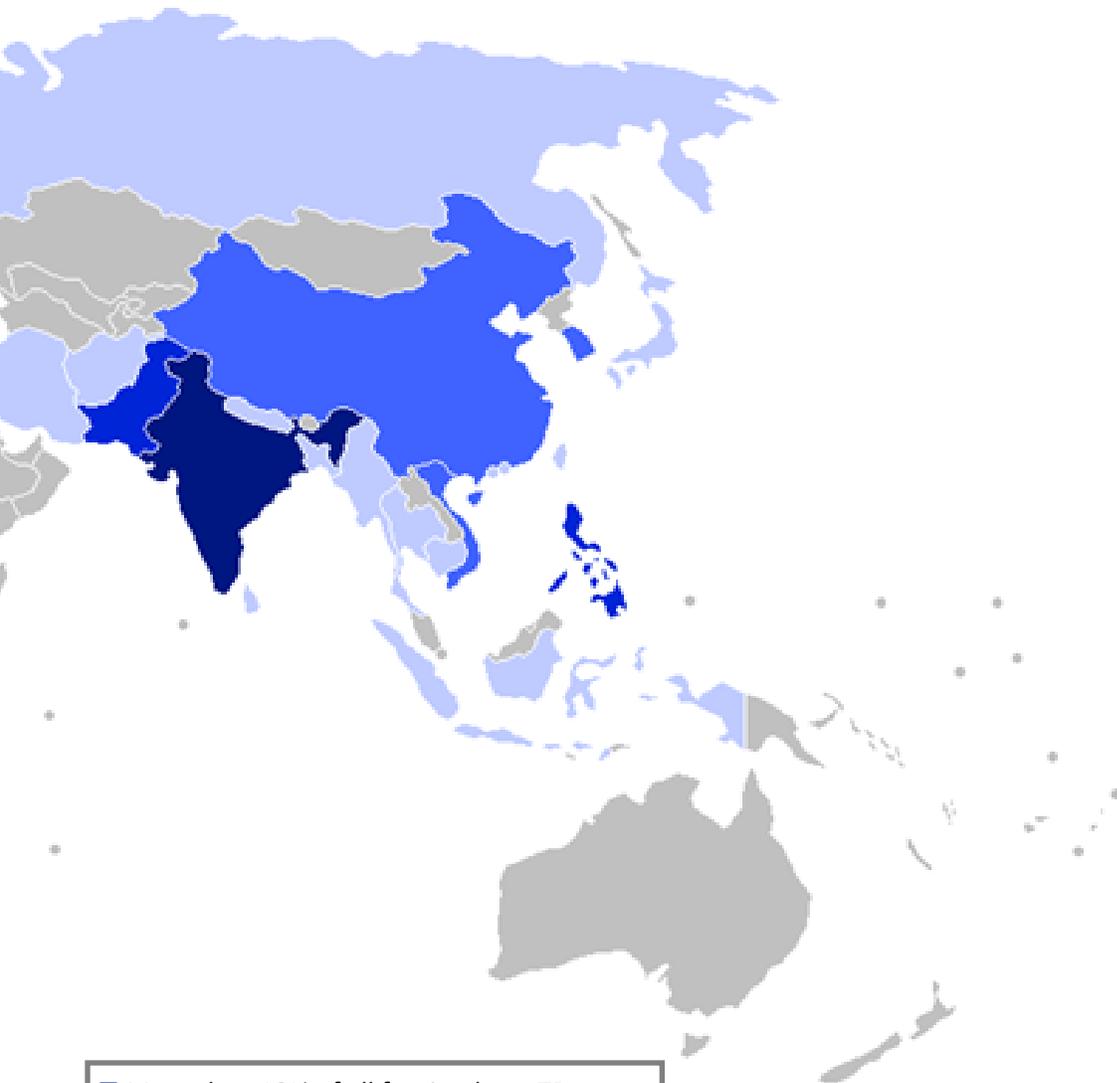
In 2014, foreign-born TB patients made up **79% of all TB cases** in Nassau County.

PROFILE OF TB CASES

COUNTRY OF BIRTH **Figure 7:** Patient country of birth as percent of all foreign-born TB cases, Nassau County, 1993-2014



²Includes Hong Kong, Macau, Taiwan, Montserrat, and the Virgin Islands



Top 10 countries of birth for foreign-born TB cases 1993-2014 by number of cases:

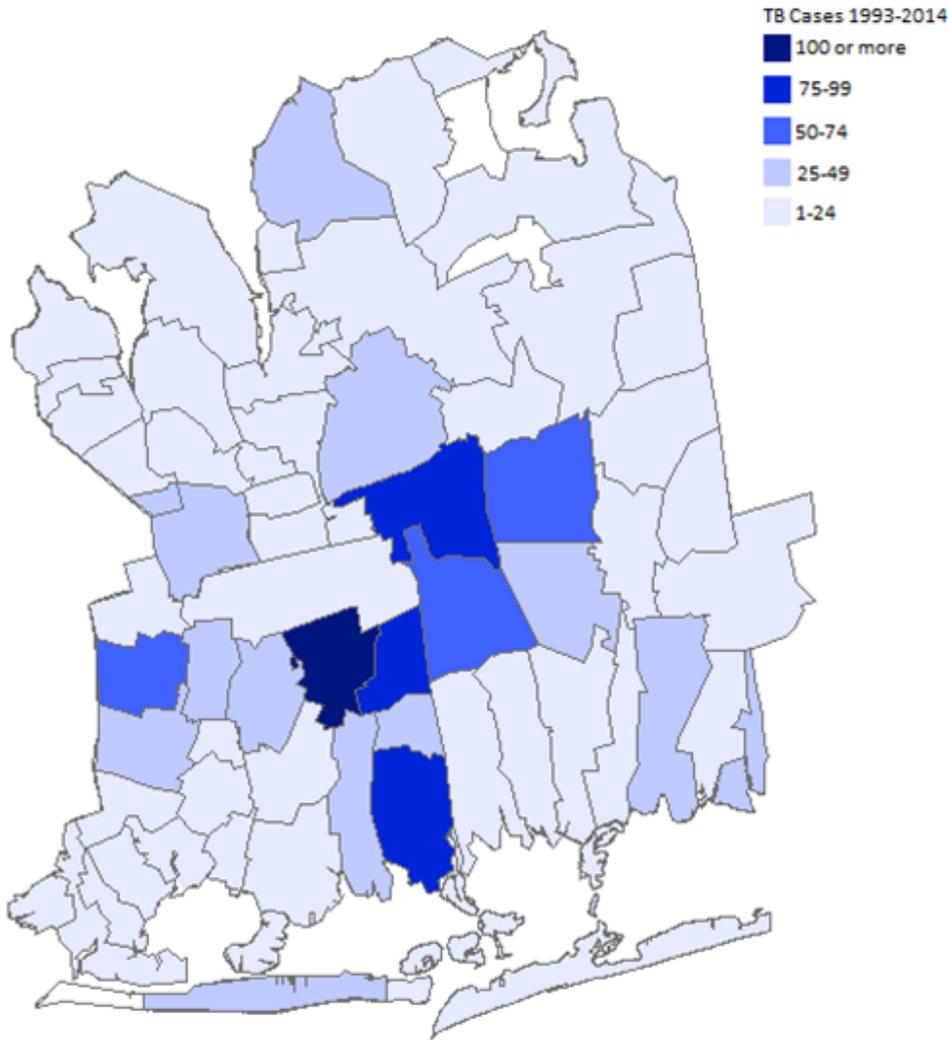
1. El Salvador
2. India
3. Haiti
4. Honduras
5. Philippines
6. Peru
7. Pakistan
8. China
9. Guatemala
10. Mexico

There were **79 unique countries and territories of birth²** represented among Nassau County TB patients between 1993 and 2014.

El Salvador, India, and Haiti were the only countries to each contribute to **at least 10% of all TB cases in Nassau County** from 1993-2014.

PROFILE OF TB CASES

ZIP CODE **Figure 8:** Number of cases by zip code, Nassau County, 1993-2014



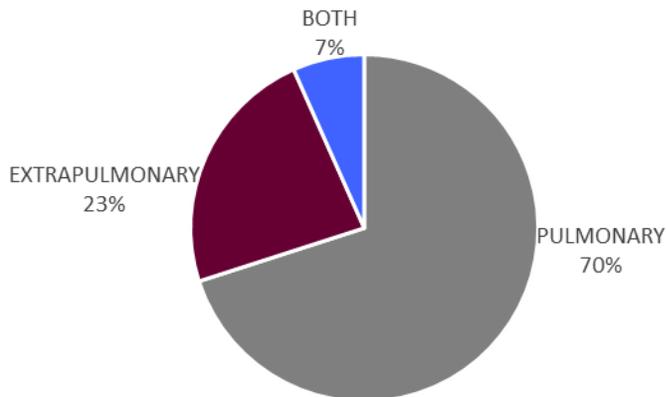
Top 10 zip codes 1993-2014 by number of cases:

1. Hempstead
2. Freeport
3. Westbury
4. Uniondale
5. Elmont
6. East Meadow
7. Hicksville
8. New Hyde Park
9. Long Beach
10. Roosevelt

Hempstead was the only zip code with **more than 100** cumulative cases of TB from 1993 to 2014.

PROFILE OF TB CASES

SITE OF DISEASE Figure 9: Tuberculosis cases by site of disease, Nassau County, 1994-2014



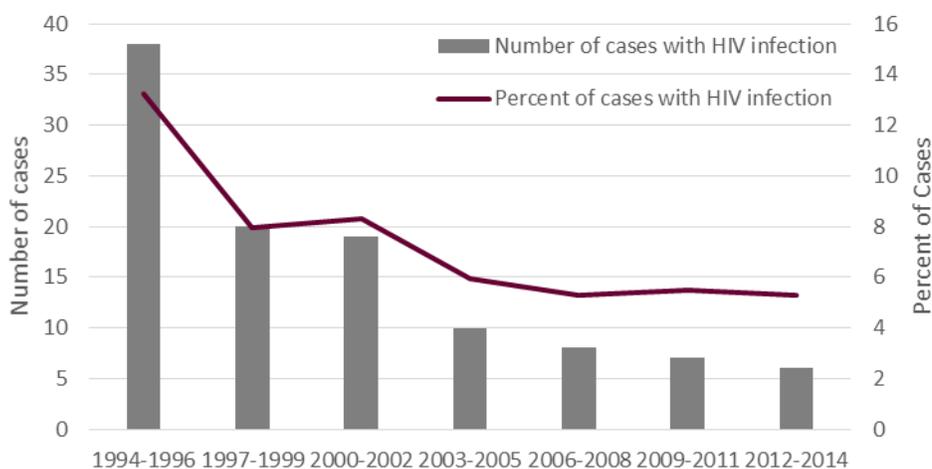
TB can occur in the lungs, somewhere other than the lungs, or both in and outside of the lungs. Common extrapulmonary sites include lymphatic, bone/joint, and pleural.

2014 was the only year from 1993-2014 in which pulmonary only cases made up **fewer than half** of all TB cases.

77% of all TB cases from 1993 to 2014 had pulmonary TB. Of these, 9% also had extrapulmonary TB.

Of extrapulmonary cases, **40% were lymphatic.**

HIV INFECTION Figure 10: HIV infection among TB cases, Nassau County, 1994-2014

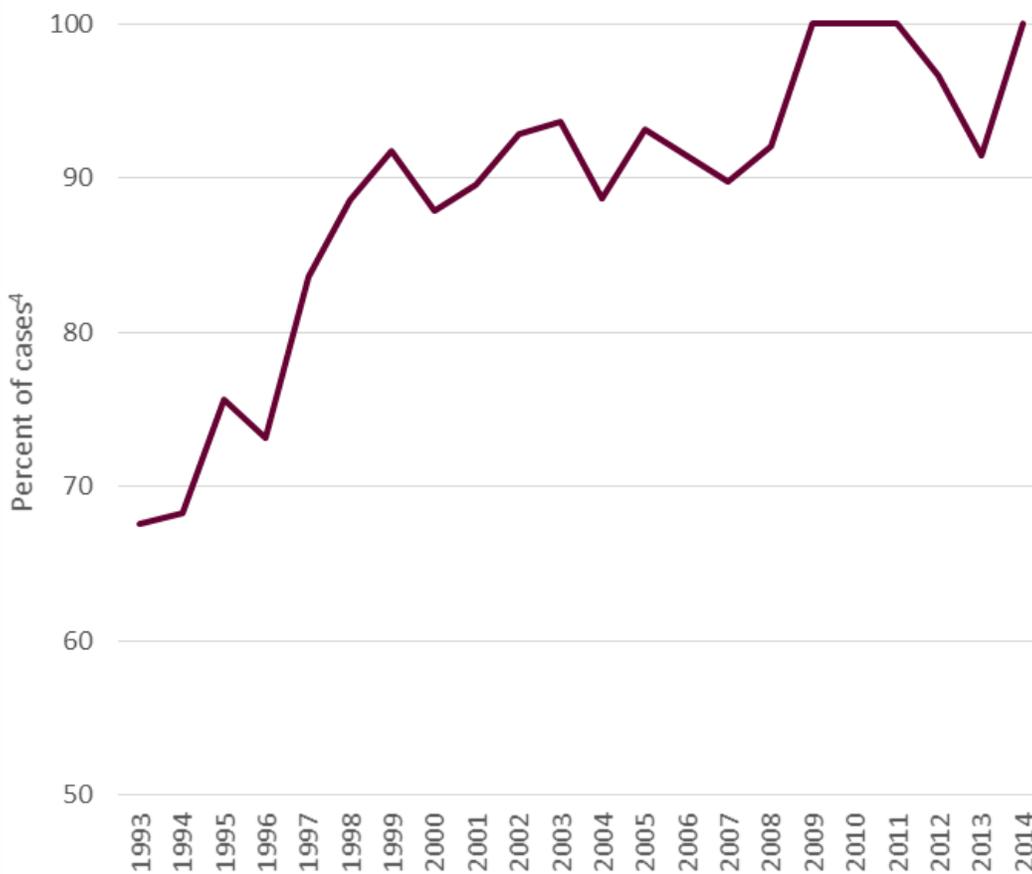


Tuberculosis is an opportunistic infection and therefore poses a much greater threat to those with weakened immune systems, such as those living with HIV infection. All patients with TB should be tested for HIV. New York State's Public Health law states that HIV testing must be offered to all persons between the ages of 13 and 64 years as part of routine care. As of 2014, oral consent rather than only written consent is acceptable to obtain consent for ordering an HIV test.

PROFILE OF TB CASES

TREATMENT COMPLETION

Figure 11: Proportion of qualifying³ tuberculosis cases that completed treatment within 365 days, Nassau County, 1993-2014



Since 1993, **86%** of the total number of patients with TB who qualified completed treatment within 365 days.

Every year since 2005 has had **over 90%** treatment completion within 365 days.

In 2009, 2010, 2011, and 2014, **100%** of those who qualified completed treatment within 365 days.

³Patients are not eligible to complete within 365 days if they have meningeal, bone/joint/skeletal, multidrug resistant, or rifampin resistant TB, or are children under 14 years with disseminated (miliary) TB.

⁴Y-axis begins at 50%.

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Project Contributors: Tavora Buchman, PhD; Celina Cabello, MPH; Puja Chadha; Claudia Mastrogiacomo.

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CONTACT US

Nassau County Department of Health

Tuberculosis Control

200 County Seat Drive

Mineola, NY, 11501

Phone: (516)-227-9664

Fax: (516)-227-9643

<http://www.nassaucountyny.gov/1652/Health-Department>



NASSAU COUNTY
LONG ISLAND, NEW YORK