

2007

Tuberculosis In the Commonwealth of Pennsylvania



December 2008

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Tuberculosis in Pennsylvania – 2007 Annual Report Program Summary

I. State Program Strategies

The Tuberculosis (TB) Program has three priority strategies for TB prevention and control: a) identify and treat persons who have active TB disease; b) locate and test persons who have been exposed to someone with active TB disease to determine whether they have acquired TB disease or latent tuberculosis infection (LTBI); and c) provide for the effective medical and epidemiological management of TB disease and latent TB infection.

- *Program Services and Scope:*
The Tuberculosis Program has the overall responsibility for statewide TB control efforts which include ensuring the provision of effective and efficient surveillance, diagnostic, treatment and prevention services. The TB Program central office staff works cooperatively with the six District Offices of the Department of Health, all ten county and municipal health departments, the private medical sector and other public and community-based agencies to provide and support a variety of TB-related services. These services include: TB-related training and education; comprehensive diagnostic and treatment services for patients with suspected or confirmed TB disease or Latent Tuberculosis Infection (LTBI); investigation of close contacts to all potentially infectious TB cases and suspects; and provision of epidemiological oversight and guidance to public health field staff.

- *Funding for Services:*
Funding for the Tuberculosis Program in Pennsylvania comes from three sources: the Federal Public Health and Human Services (PHHS) block grant, a grant from the Federal Centers for Disease Control and Prevention (CDC) and a fiscal appropriation from the Commonwealth of Pennsylvania.

The Federal Public Health and Human Services (PHHS) block grant funds are used to support one district tuberculosis nurse consultant, laboratory funding and the Flick Clinic located in Philadelphia. CDC (Federal) funds are used to support three and one half TB Program central office positions, six field based outreach workers, laboratory services and travel expenses. State funds are used to support direct patient care services, including diagnostic testing, physician services, hospitalizations and medications and supplies.

- *Outbreak Response Plan:*
The central office of the Tuberculosis Program is responsible for the preparation and implementation of the Tuberculosis Outbreak Response Plan. The Plan is updated annually and distributed to the six District Offices of the Department of Health and all ten county and municipal health departments. When the plan is implemented to address an outbreak, the overall operational aspects are the responsibility of the respective district office or county/municipal health department.

II. Tuberculosis Morbidity in Pennsylvania

Tuberculosis continues to be a significant public health problem for Pennsylvania. In 2007, a total of 276 cases of tuberculosis were reported, representing an 18.1 percent decrease from the 337 reported in 2006. Of those 276 cases, 27 (9.9 percent) were resistant to the primary drug Isoniazid (INH) on initial culture. In 2006, ten percent were reported as resistant to Isoniazid. The Centers for Disease

Control and Prevention (CDC) has set a threshold of four percent resistance to INH. The higher rates in Pennsylvania indicate the importance of four anti-Tuberculosis drugs on original treatment plans.

Data for cases counted in 2006 (the most recent year for which completed therapy data are available) show a statewide completion of therapy rate of 84 percent. While this is up from 75 percent in 2005, it does not meet the CDC's goal of 90 percent.

In 2007, 16 of the 276 cases (5.8 percent) reported also had a diagnosis of HIV/AIDS. Fifty-three percent of TB cases in 2007 were foreign-born individuals, with the case rate in the Asian population being exceptionally high: 31 cases per 100,000 population. This rate for Asians is 14 times greater than the overall rate for the commonwealth.

Data Reporting:

The Pennsylvania National Electronic Disease Surveillance System (PA-NEDSS) is the surveillance database that the Pennsylvania Department of Health utilizes for reporting tuberculosis cases. In 2006, 337 cases of TB were reported; in 2007, the number of reported cases was 276. Part of the decrease can be attributed to the late reporting of cases into PA-NEDSS, resulting in the fact that some cases that should have been reported in 2007 were not reported until 2008. Reasons for the late reporting include staffing shortages in local county health clinics, personnel vacancies and changes in the TB Program's Central Office, and the complex data entry factors of PA-NEDSS. Therefore, as a result of the under reporting of TB cases in 2007, the statewide case count for 2008 will probably reflect an artificial increase.

Future Efforts:

As tuberculosis continues to be a public health issue in the commonwealth, maintaining a decline in morbidity and reaching the goal of eliminating tuberculosis requires sustained prevention and control efforts. These efforts include: rapid diagnosis; increasing completion of therapy rate; prompt and complete reporting; and thorough contact investigations. Since persons infected with both HIV and the tubercle bacillus (i.e. LTBI) are at high risk of developing TB disease, it is important to obtain the HIV status of patients. In addition, case management is more complex when patients are co-infected with TB and HIV. Therefore, HIV testing should be offered to all patients during their first examination. The elimination of tuberculosis will also require the coordinated efforts of public health agencies, voluntary health associations, healthcare providers, and community groups, as well as the continuation of strong case-management procedures.

2007 Tuberculosis Annual Report

The 2007 Tuberculosis Annual Report is a summary of tuberculosis (TB) morbidity (incidence) for the Commonwealth of Pennsylvania. The population and surveillance data is provided for the six geographic District Health offices of the PA Department of Health and for the Philadelphia Department of Public Health.

Cases and Case Rates:

During 2007, 276 cases of TB were reported in the Commonwealth, for a rate of 2.2 per 100,000 population. This represents an overall decrease of 18.1 percent from the previous year. Part of the decrease can be attributed to the late reporting of cases into PA-NEDSS, resulting in the fact that some cases that should have been reported in 2007 were not reported until 2008. The 2007 national TB rate is 4.4. The national report ranks Pennsylvania as 33rd out of the 50 states by case rate (2.2 per 100,000). Pennsylvania is ranked 12th in the nation by the number of TB cases. Philadelphia reported 133 cases in 2007; the six Health Districts of the PA Department of Health reported 143 cases (Table 1).

In 2007, 22 counties (33 percent) in the commonwealth reported between one and four cases of TB and only three counties (four percent) reported more than 20 cases. The counties reporting 20 or more cases were Philadelphia (133), Montgomery (23) and Allegheny (23). Thirty-four counties (51 percent) in the Commonwealth reported no cases of TB during 2007. Table 3 on page 6 lists the number of tuberculosis cases and case rates reported for the state, counties and major cities for 2007.

Age:

In 2007, 27 children under 14 years of age developed TB in Pennsylvania, compared to 34 children in 2006, which represents a 21 percent decrease. Since TB disease in children indicates recently acquired infection and transmission, this data is of sentinel importance.

The number of cases among persons 65 years of age and older for 2007 was 56. Eight of the 56 cases resided in long-term care facilities. Table 2 portrays the total number of cases and case rates by age category for the state, Health District and Philadelphia.

Table 1: Tuberculosis Cases and Case Rates Health Districts, Philadelphia, and State Total: Pennsylvania, 2007

Health District	Number of Cases	2007 Census Estimate	Rate per 100,000
Northwest	13	926,466	1.4
North Central	0	679,404	-
Northeast	14	1,559,723	0.9
Southwest	35	2,705,761	1.3
South Central	24	1,626,055	1.5
Southeast (except Philadelphia)	57	3,485,749	1.6
Subtotal Districts	143	10,983,158	1.3
Philadelphia	133	1,449,634	9.2
State Total	276	12,432,792	2.2

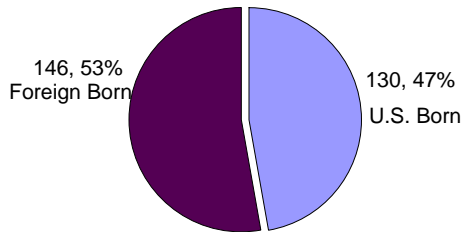
Table 2: Tuberculosis Cases and Case Rates (per 100,000) by Age: Health Districts, Philadelphia, and State Total: Pennsylvania, 2007

Age	Pennsylvania		Health District		Philadelphia	
	No.	Rate	No.	Rate	No.	Rate
Under 5	14	1.9	6	0.05	8	0.55
5-13	13	1.0	2	0.02	11	0.76
14-24	28	1.5	14	0.13	14	0.97
25-44	79	2.5	44	0.40	35	2.41
45-64	86	2.6	39	0.36	47	3.24
65+	56	3.0	38	0.35	18	1.24
Total	276	2.2	143	1.3	133	9.2

Origin of Birth:

During 2007, TB cases in Pennsylvania among persons born outside the United States accounted for 53 percent of the total cases (147), in comparison to 51 percent for 2006. In addition, the number of cases among persons born in the United States decreased by 21 percent from 2006 to 2007.

Figure 1: Reported Cases of Tuberculosis for U.S.-born and Foreign-born: Pennsylvania, 2007



Approximately 56 percent of all foreign-born persons diagnosed with TB in 2007 were from Asian countries. The case rate for the Asian population in 2007 is 31.8 per 100,000 population. Table 7 on page 10 shows the US-born and foreign-born cases reported for the state, the six Health Districts and Philadelphia for 2007. Figure 3 on page 10 identifies the main countries of origin for foreign-born cases.

The percentage of foreign-born cases has increased over a ten-year period (1997-2007). Figure 5 on page 12 demonstrates the relationship of foreign-born to US-born cases by showing annual percentages for the years 1997 through 2007.

HIV Co-Infection and Other Risk Factors:

The Pennsylvania Department of Health Tuberculosis Program has directed that all suspected or confirmed TB patients are to be offered counseling and testing for human immunodeficiency virus (HIV)

infection. It is important to know the HIV status of TB patients, since persons infected with both HIV and the tubercle bacillus (i.e. LTBI) are at high risk of developing TB disease, and the medical management of TB disease and LTBI may need to be altered with the presence of HIV co-infection. A total of 195 patients (70 percent) were tested for HIV in 2007. Of those, 16 (eight percent) also had a diagnosis of HIV infection. Forty-seven patients were not offered the test, and thirty-two refused.

For TB cases with occupational information available (173), there were eight cases that involved healthcare workers in 2007.

For patients with drug use information available, four cases had injected drug use, 17 cases had non-injected drug use, and 16 cases reported excessive alcohol use within the past year. Table 8 on page 13 displays tuberculosis cases by selected risk factors for 2007.

Among correctional facility inmates, there were four cases of TB reported for 2007.

Eleven cases of TB among homeless persons were reported in 2007; five of these cases reported excessive alcohol use and two reported injected drug use.

Drug Resistance:

Of the 276 cases for 2007, 211 (76 percent) were reported as culture positive. Drug susceptibility tests were performed for 205 of these cases (97 percent) with drug resistance found in 36 cases and multi-drug resistant TB (MDR-TB) reported in two others. Resistance to at least one first-line drug, primarily isoniazid, was found in 27 cases.

Treatment:

For 2006, the most recent year for which data is available, 85 percent of cases completed therapy.

For 2007, 243 cases (88 percent) were treated with the recommended four first-line drug regimen.

Since Directly Observed Therapy (DOT) regimens are known to be cost effective, increased emphasis has been placed on the number of patients treated by this method.

For cases reported in 2007, 42 percent were treated entirely with DOT. In addition, 45 percent received a combination of DOT and self-administered therapy. Thus, 87 percent of tuberculosis cases were treated either entirely or in part by DOT. The method of treatment was not reported for about four percent of cases.

Tables and Figures

Table 3: Tuberculosis Cases and Case Rates State, County, and Major Cities: Pennsylvania, 2007

State/ County	2007 Census Estimate	Number of Cases	Rate per 100,000	Major Cities in County	Number of Cases by Major City	2007 Census Estimate	Rate per 100,000
Pennsylvania	12,432,792	276	2.2				
Adams	100,779	2	2.0				
Allegheny	1,219,210	23	1.9	Pittsburgh	12	311,218	3.9
Armstrong	69,059	1	1.4				
Beaver	173,074	3	1.7				
Bedford	49,650	1	2.0				
Berks	401,955	1	0.2	Reading	1	80,769	1.2
Blair	125,527	1	0.8				
Bradford	61,471	0	-				
Bucks	621,144	15	2.4				
Butler	181,934	0	-				
Cambria	144,995	3	2.1				
Cameron	5,349	1	18.7				
Carbon	63,242	0	-				
Centre	144,658	0	-				
Chester	486,345	5	1.0				
Clarion	40,028	0	-				
Clearfield	81,452	0	-				
Clinton	37,213	0	-				
Columbia	64,726	0	-				
Crawford	88,663	1	1.1				
Cumberland	228,019	6	2.6				
Dauphin	255,710	7	2.7	Harrisburg	3	47,196	6.4
Delaware	554,399	13	2.3	Chester	0	36,695	-
Elk	32,610	0	-				
Erie	279,092	6	2.1	Erie	4	103,650	3.9
Fayette	144,556	0	-				
Forest	6,955	0	-				
Franklin	141,665	5	3.5				
Fulton	14,939	0	-				
Greene	39,503	0	-				
Huntingdon	45,556	0	-				
Indiana	87,690	0	-				
Jefferson	45,135	0	-				
Juniata	23,168	0	-				
Lackawanna	209,330	6	2.9	Scranton	6	72,485	8.3
Lancaster	498,465	0	-				

Continuation of Table 3: Tuberculosis Cases and Case Rates by State, County, and Major Cities:
 Pennsylvania, 2007

State/ County	2007 Census Estimate	Number of Cases	Rate per 100,000	Major Cities in County	Number of Cases by Major City	2007 Census Estimate	Rate per 100,000
Lawrence	90,991	3	3.3				
Lebanon	127,889	1	0.8				
Lehigh	337,343	1	0.3	Allentown	0	107,117	-
Luzerne	312,265	3	1.0	Wilkes-Barre	2	41,069	4.9
Lycoming	116,811	0	-				
McKean	43,633	0	-				
Mercer	116,809	1	0.9				
Mifflin	46,941	0	-				
Monroe	164,722	1	0.6				
Montgomery	776,172	23	3.0				
Montour	17,817	0	-				
Northampton	293,522	1	0.3	Bethlehem	0	72,531	-
Northumberland	91,003	0	-				
Perry	45,163	0	-				
Philadelphia	1,449,634	133	9.2	Philadelphia	133	1,449,634	9.2
Pike	58,633	0	-				
Potter	16,987	0	-				
Schuylkill	147,269	0	-				
Snyder	38,113	0	-				
Somerset	77,861	1	1.3				
Sullivan	6,200	0	-				
Susquehanna	41,123	2	4.9				
Tioga	40,681	0	-				
Union	43,724	0	-				
Venango	54,763	1	1.8				
Warren	40,986	0	-				
Washington	205,553	2	1.0				
Wayne	51,708	0	-				
Westmoreland	362,326	2	0.6				
Wyoming	27,835	0	-				
York	421,049	1	0.2	York	1	40,226	2.5

FIGURE 2
DENSITY OF REPORTED TUBERCULOSIS CASES BY COUNTY
PENNSYLVANIA, 2007

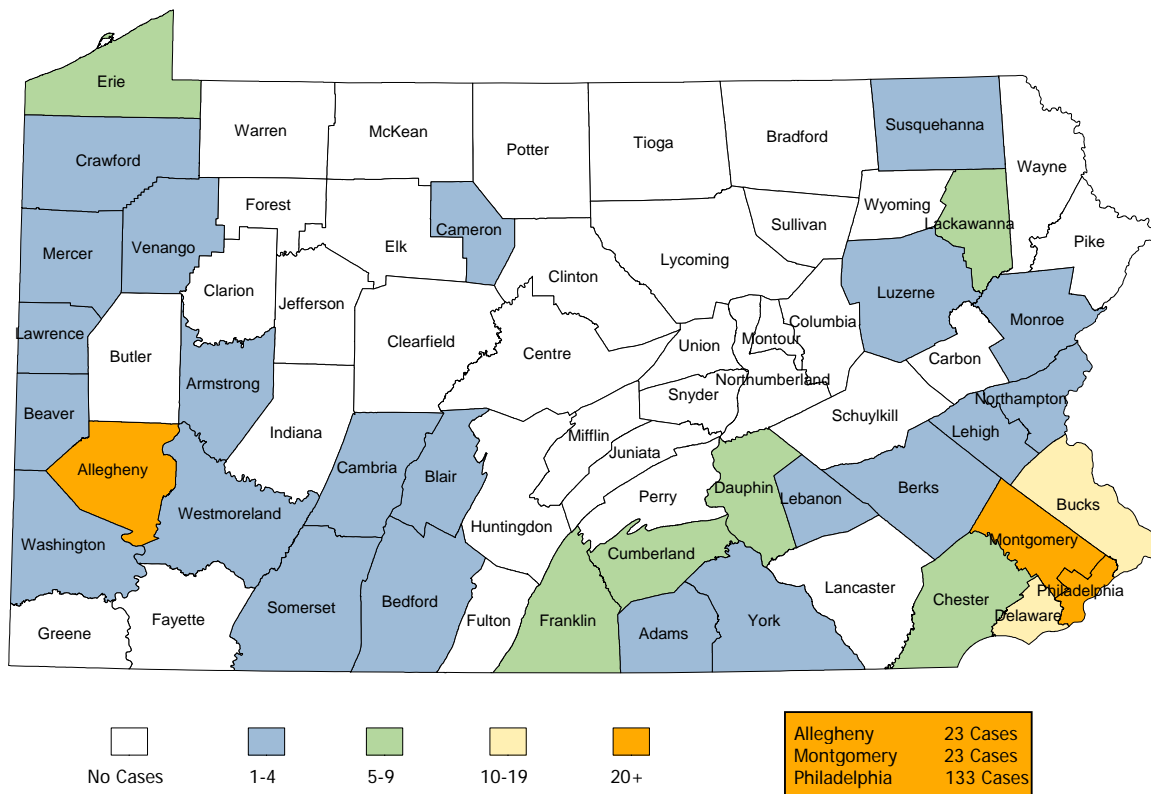


Table 4: Tuberculosis Cases and Case Rates per 100,000 By Sex:
Health Districts and Philadelphia: Pennsylvania, 2007

Area	Total Cases		Male		Female	
	Number	Rate	Number	Rate	Number	Rate
Health Districts (all counties except Philadelphia)	143	1.3	74	0.7	69	0.6
Philadelphia	133	9.2	69	4.8	64	4.4
Total	276	2.2	143	1.2	133	1.1

Table 5: Tuberculosis Cases and Case Rates per 100,000 by Race/Ethnicity: Health Districts
and Philadelphia: Pennsylvania, 2007

Area	White		Black/African American		Asian		Hispanic*	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Health Districts (all counties except Philadelphia)	67	0.67	30	4.5	45	21.8	10	2.5
Philadelphia	20	2.9	66	10.0	46	57.8	7	4.5
TOTAL	87	0.8	96	7.2	91	31.8	17	3.1

*Can be of any race

Table 6: Tuberculosis Cases (Number and Percent) by Site of Disease: Health Districts and
Philadelphia: Pennsylvania, 2007

Area	Total Cases	Pulmonary		Extra Pulmonary*		Both	
	Number	Number	%	Number	%	Number	%
Health Districts (all counties except Philadelphia)	143	92	64.3	43	30.1	8	5.6
Philadelphia	133	100	75.2	22	16.5	11	8.3
TOTAL	276	192	69.6	65	23.6	19	6.9

*Bone/joint, Lymphatic, Miliary/Meningeal, Pleural, Genitourinary, Peritoneal, Other
Note: Percents may not add to 100.0 due to rounding.

Table 7: Tuberculosis Cases (Number and Percent) for U.S.-born and Foreign-born: Health Districts and Philadelphia: Pennsylvania, 2007

Area	Total Cases	US Born		Foreign Born		Of Foreign Born: Those Who Arrived in US 5 or Less Years Prior to Diagnosis	
		Number	Percent	Number	Percent	Number	Percent
Health Districts (all counties except Philadelphia)	143	66	46.2	77	53.8	29	37.7
Philadelphia	133	64	48.1	69	51.9	28	40.6
TOTAL	276	130	47.1	146	52.8	57	38.8

Figure 3: Reported Cases of Tuberculosis Among Foreign-Born Persons by Countries With More Than Five Cases: Pennsylvania, 2007

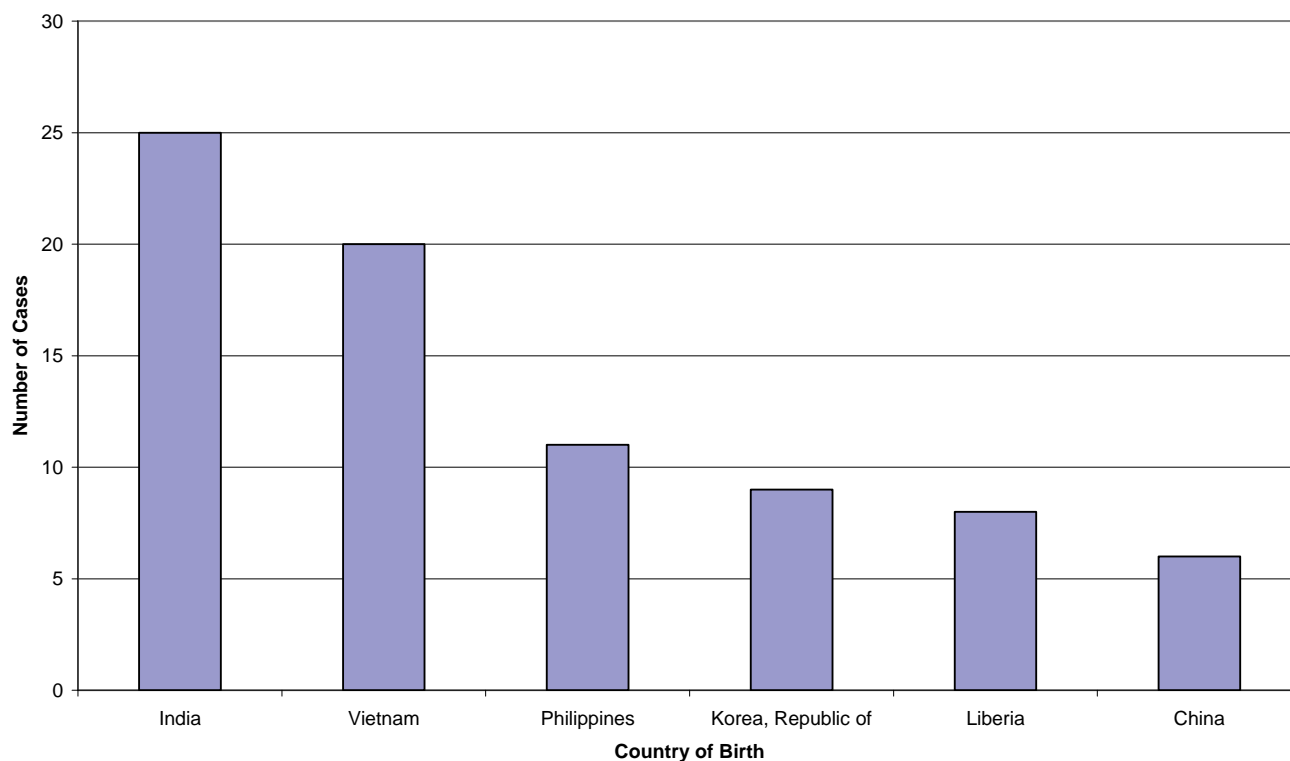


Figure 4: Tuberculosis Cases in Pennsylvania--1997 to 2007

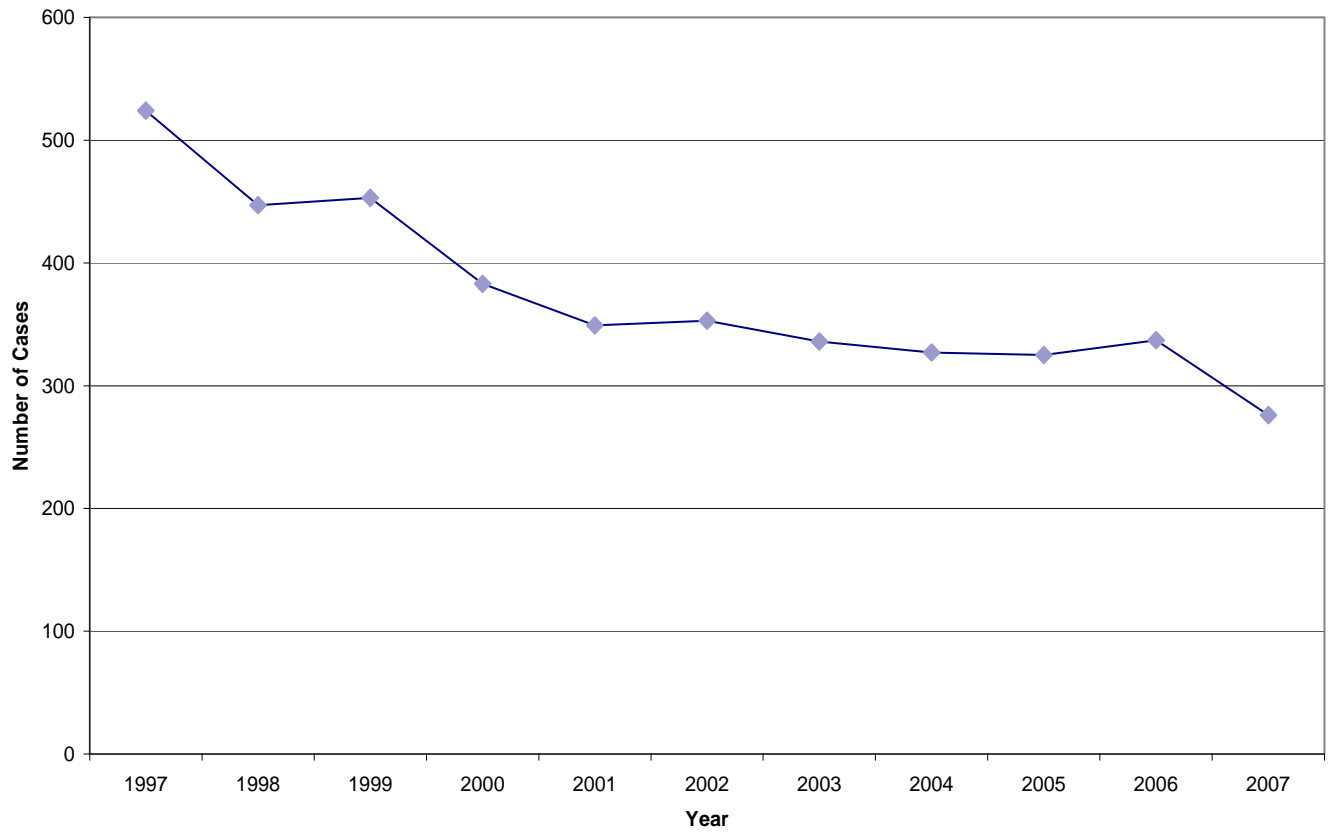


Figure 5: Number of All TB Cases and Foreign-Born Cases and Percent of Foreign-Born Cases to All Cases, Pennsylvania, 1997-2007

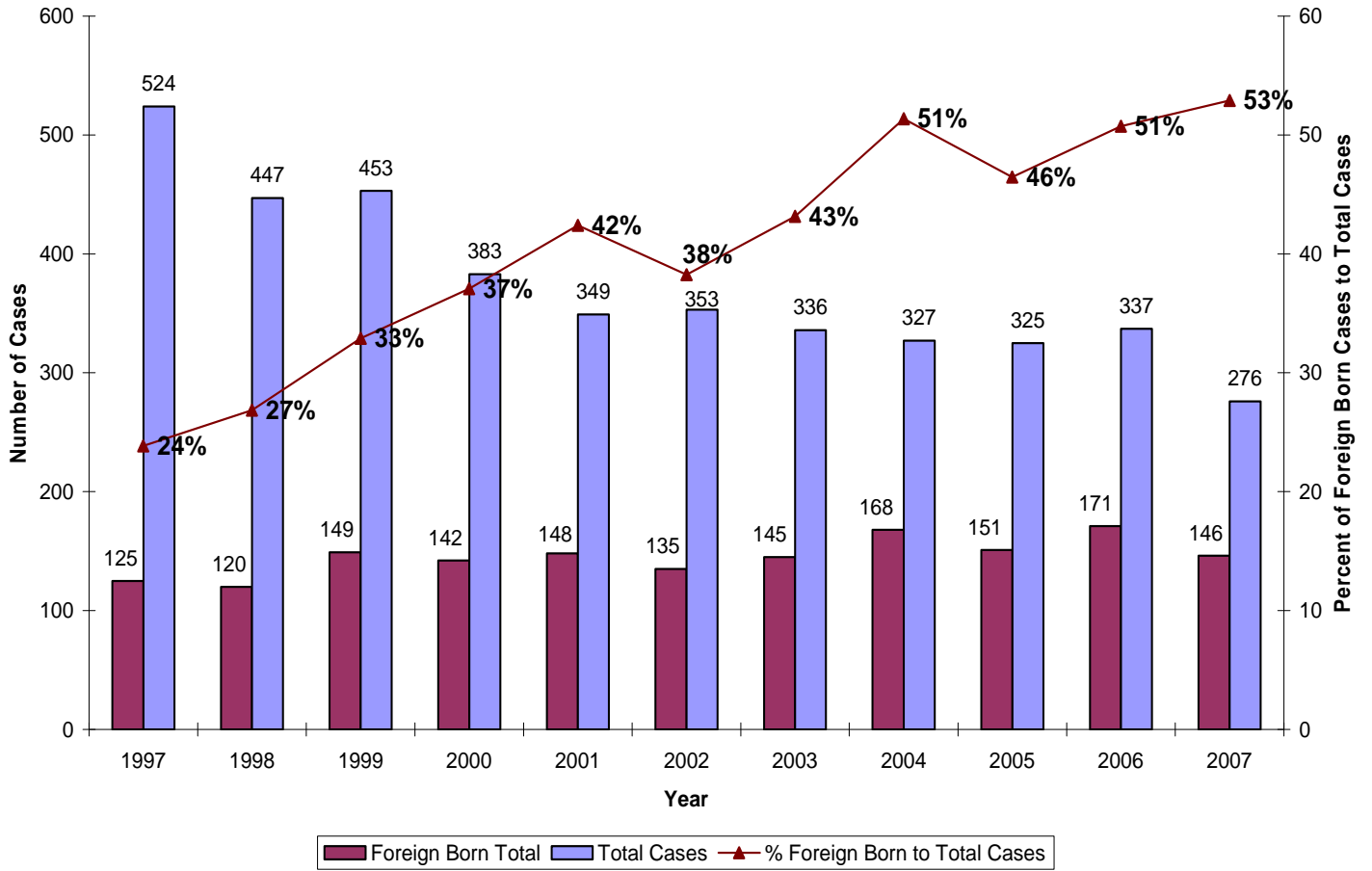


Table 8: Tuberculosis Cases by Selected Risk Factors--PA: 2005 to 2007						
Total Cases	2005		2006		2007	
	325		337		276	
Rick factor	No.	%	No.	%	No.	%
Occupation						
Health care	0	0.0%	0	1.8%	8	2.9%
Migratory agricultural worker	0	0.0%	0	0.6%	0	0.0%
Correctional employee	0	0.0%	0	0.0%	0	0.0%
Type of Residence						
Long term care	16	4.9%	12	3.6%	11	4.0%
Prison/jail	3	0.9%	4	1.2%	4	1.4%
Homeless	7	2.2%	10	3.0%	11	4.0%
Co-Infection						
HIV	18	5.6%	21	6.2%	16	5.8%
Substance Use						
Injected Drug Use (IDU)	5	1.5%	3	0.9%	4	1.5%
Non IDU	12	3.7%	12	3.6%	17	6.2%
Alcohol	20	6.2%	19	5.6%	16	5.8%
US-born Minorities/Foreign-born						
Foreign-born	152	46.8%	171	50.7%	146	53.0%
U.S.-born minorities	65	20.0%	98	29.1%	74	26.8%
Smear Results						
Smear positive pulmonary	139	42.8%	128	38.0%	100	36.2%
HD	73	52.5%	63	49.2%	49	49.0%
Philly	66	47.5%	65	50.7%	51	51.0%
Drug Resistance Type						
MDR TB	2	0.6%	7	2.1%	2	0.7%

Note: Unknowns excluded in percent calculations.

Data Notes

Asian race is selected by the disease investigator when entering cases into PA-NEDSS. Asian population for Pennsylvania was taken from the 2007 estimated total from the U.S. Census Bureau at <http://www.census.gov/popest/states/asrh/>.

Completion of therapy is defined as cases of tuberculosis that completed a prescribed course of therapy or when a physician approved stopping therapy. Patients that died while during therapy were not included in the denominator.

Major city data, as shown on table 3, is determined by the disease investigator. When entering the patient's place of residence, a field is selected that indicates the place of residence is within city limits.

Population data for statewide total, county totals, and major city totals were taken from the U.S. Census Bureau population estimates for 2007.
<http://www.census.gov/popest/states>.

Pennsylvania is divided into six geographical health districts, which include ten municipal health centers, and consists of 67 counties.

Special thanks is given to the Bureau of Health Statistics for their assistance in the preparation of this report.

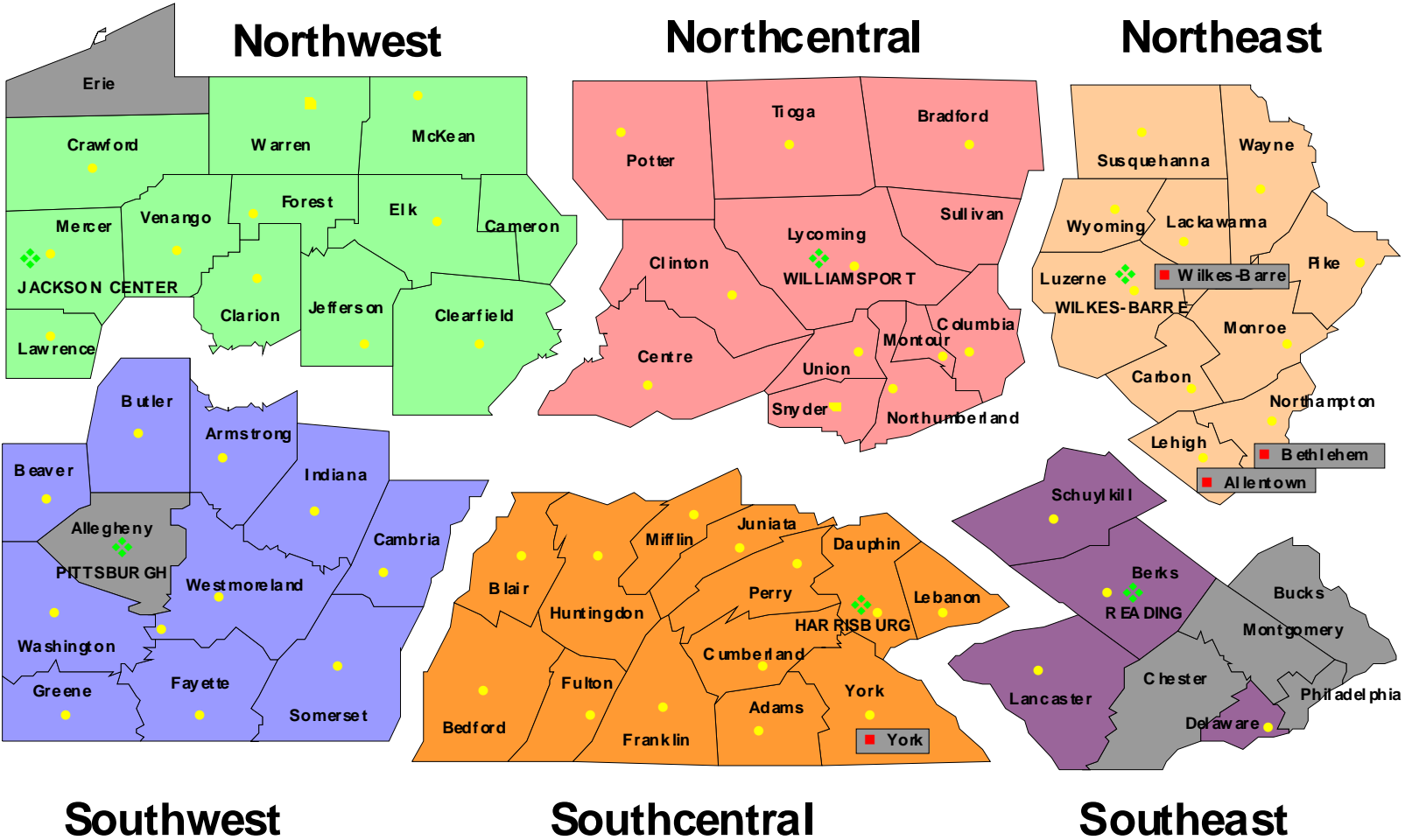
Pennsylvania Department of Health Community Health Districts

County Health Departments

District Offices

Municipal Health Departments

State Health Centers



To obtain additional information about Tuberculosis

Call: 1-877-PAHEALTH or 717-787-6267

Write to: Pennsylvania Department of Health
Bureau of Communicable Diseases
TB Program
Room 1013 H&W Building
625 Forster Street
Harrisburg, PA 17120

OR Visit our Websites:

Pennsylvania Department of Health:
www.health.state.pa.us

Tuberculosis Program:
<http://www.health.state.pa.us/tb>

