

**Florida**  
**Annual TB and Refugee Health Report**  
**2006**



**Bureau of Tuberculosis and Refugee Health**

**Florida, 2006**

*James D. Cobb, Bureau Chief*

**The 2006 Annual Bureau of TB and Refugee Health Report was prepared and compiled through the contributions of several staff from the following sections:**

**Surveillance, Reporting, and Epidemiology  
Field Services and Evaluation  
Professional Services  
Refugee Health**

**The following contents of this report reflect the tremendous effort of all staff statewide who contribute daily to the prevention and control of TB in Florida and to those who provide culturally sensitive health services to persons eligible for refugee health services. We continue to serve to protect the public health interests of the residents and its visitors.**

**For more information regarding the information contained herein, please contact:**

**Yvonne Luster-Harvey, M.P.H., State TB Epidemiologist  
Director of Surveillance, Reporting and Epidemiology  
Bureau of TB and Refugee Health  
Florida Department of Health  
4052 Bald Cypress Way, BIN A20  
Tallahassee, Florida 32399  
(850) 245-4350  
[yvonne\\_luster-harvey@doh.state.fl.us](mailto:yvonne_luster-harvey@doh.state.fl.us)**

## **Executive Summary**

In 2006, Florida reported 1,038 tuberculosis (TB) cases. This represented a five percent decrease from the 1,094 cases reported in 2005. Florida's case rate decreased for the first time in three years to 5.6 per 100,000 population from 6.1 per 100,000 population reported from 2003 to 2005.

Medically underserved low-income populations, including high-risk racial and ethnic minorities, have a high rate of TB exposure and infection. These populations disproportionately represented the majority of TB cases in the state of Florida. Despite the decrease in TB morbidity for 2006, Florida still faced formidable challenges in preventing and controlling TB.

### **Children and Tuberculosis**

Undoubtedly, children are always vulnerable whenever there is an undiagnosed case of TB in the community. Such was the case in 2006, when a local daycare center was the focus of a reported tuberculosis outbreak among its pediatric population. The source case was determined to be a staff member of the daycare center. Of 52 children exposed to the index case, six had abnormal chest x-rays and were started on a three drug treatment regimen. The source case in this investigation was pan-sensitive to the anti-TB drugs and responded well to treatment. Only one of the pediatric cases grew *Mycobacterium TB organisms* from a gastric aspirate specimen. The other five children were classified as clinical cases.

### **Incarceration and Tuberculosis**

During 2005, a TB outbreak occurred in a Florida correctional facility. A 39-year-old inmate, incarcerated for approximately 11 months, was treated multiple times with various over-the-counter medications and antibiotics when the person complained of hoarseness, sore throat, chest pain, difficulty breathing, weight loss and cough. Upon release, the ex-inmate presented to a local emergency room with similar signs and symptoms and was diagnosed with suspected pulmonary and laryngeal TB. The suspect was started on anti-tuberculosis medications and a contact investigation began. Two additional cases were identified after their release from the facility.

In 2006, after another case was detected at the facility, the Bureau of TB and Refugee Health (BTBRH), in collaboration with the Department of Corrections (DOC), initiated an active case finding investigation. A total of 2,717 individuals (2,175 inmates and 542 employees) were screened and evaluated for TB disease and infection. Two additional cases were identified—one by clinical diagnosis and one by culture confirmation.

As you peruse through this report, you will see how the increase in our foreign-born cases of TB, our HIV co-infected and emerging drug resistant strains of TB continue to challenge us. However, the TB program in Florida through its excellent partnership with A.G. Holley Hospital, the TB Physicians Network, and local county health department staff continues to be recognized as a leader in the country in fighting TB.

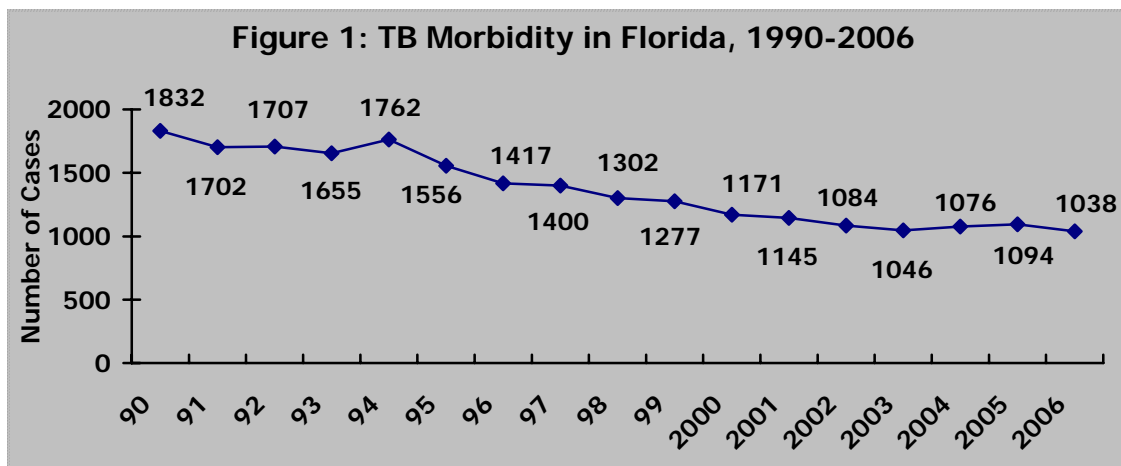
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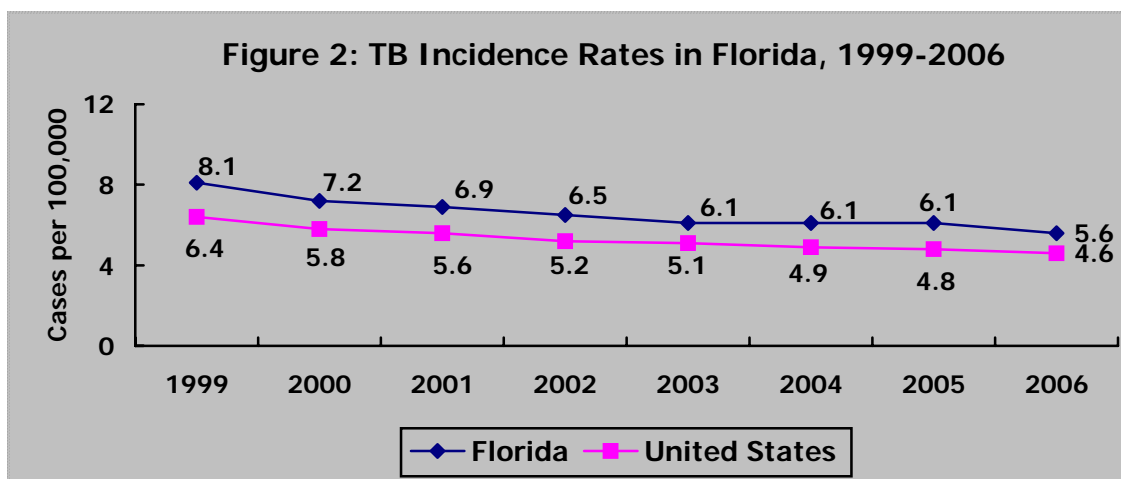
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## Tuberculosis Morbidity 2006

In 2006, Florida reported 1,038 tuberculosis cases (Figure 1). This represented a five percent decrease from the 1,094 cases reported in 2005. Florida's case rate decreased for the first time in three years to 5.6 per 100,000 population from 6.1 per 100,000 population reported from 2003 to 2005 (Figure 2).



Source: TIMS, Bureau of TB & Refugee Health



Source: TIMS, Bureau of TB & Refugee Health

### Race and Ethnicity

Medically underserved low-income populations, including high-risk racial and ethnic minorities, such as blacks, Hispanics and Asians have a high rate of TB exposure and infection. These populations disproportionately represent the majority of TB cases in the state of Florida. Non-Hispanic blacks and Hispanics accounted for 68 percent (709/1,038) of Florida's total TB morbidity for 2006 (Table 1).

- In 2006, non-Hispanic blacks comprised 40 percent (415/1,038) of Florida's TB morbidity with a case rate of 18.3 per 100,000 population. This rate is eight times higher than that of

non-Hispanic whites. The case rate for non-Hispanic blacks was twice that of Hispanics in 2006 (Figure 3).

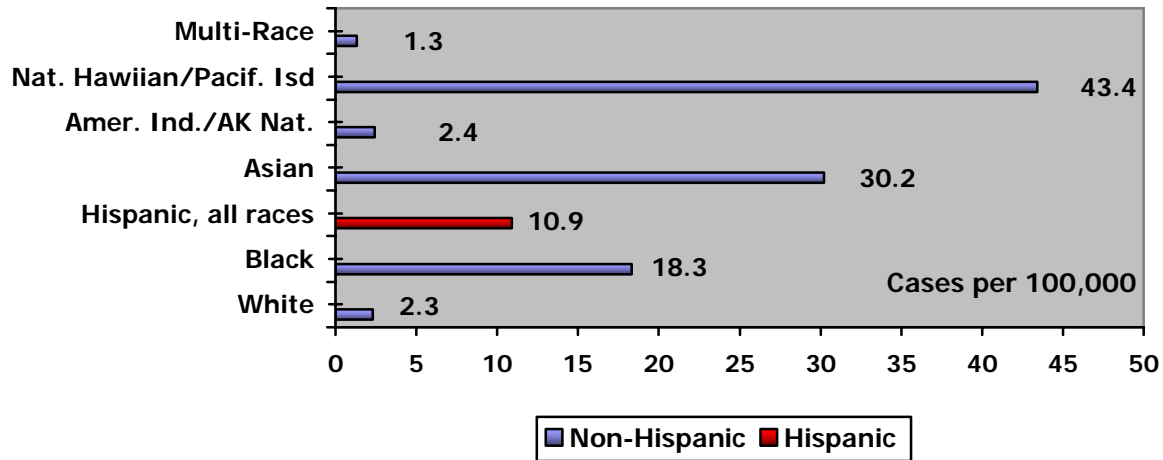
- Since 1994, the proportion of TB morbidity among Hispanics has increased from 17 percent (288/1,742) of the TB cases to 28 percent (294/1,038) in 2006. The case rate for Hispanics in 2006 was 10.9 per 100,000 population (Figure 3).
- Tuberculosis for non-Hispanic whites declined from 31 percent (542/1,742) in 1994 to 24 percent (242/1,038) in 2006, which represented an overall 55 percent decrease since 1994. The case rate for non-Hispanic whites in 2006 was 2.3 per 100,000 population (Figure 3).

**Table 1: Tuberculosis Cases by Race/Ethnicity and Place of Birth  
Florida, 2006**

	<b>No. U.S. Born Cases</b>	<b>% of U.S. Born Cases</b>	<b>No. Foreign Born Cases</b>	<b>% of Foreign Born Cases</b>	<b>Total Cases</b>	<b>% of Total Cases</b>
<b>Race/Ethnicity</b>						
Black, Non-Hispanic	294	53	122	25	415	40
Hispanic (all races)	38	7	256	52	294	28
White, Non-Hispanic	214	39	28	6	242	23
Asian Only	3	1	76	16	79	8
Amer. Indian/AK Native	1	<1	0	N/A	1	<1
Nat. Hawaiian/P. Islander	0	N/A	3	1	3	<1
Multiple Race	0	N/A	3	1	3	<1
Unknown	0	N/A	0	N/A	N/A	N/A
<b>Total</b>	<b>550</b>		<b>488</b>		<b>1,038</b>	

*Due to rounding, percents may not add to 100%*

**Figure 3: TB Incidence Rates by Race/Ethnicity  
Florida, 2006**



### Gender and Age

In Florida, as well as in most of the world, more men than women are diagnosed with tuberculosis (Figure 4).

- In 2006, men represented 66 percent (687/1,038) of Florida’s TB cases with women accounting for 34 percent (351/1,038) of TB cases.
- In Florida, the TB incidence rate for males was twice that of females for 2006.
- The gender and age specific rate was highest for males and females between the ages of 25 and 44 (Table 2).
- Overall, cases 14 years and younger comprised five percent of TB cases (57/1,038) and 15-24 year olds were 10 percent (105/1,038). Age group 25-44 represented 36 percent (375/1,038) of TB cases and 35 percent (358/1,038) were 45-64 years in age for 2006. Cases 65 years or older were 14 percent (143/1,038) of TB cases (Table 3).

**Table 2: Age and Gender Specific Cases and Incidence Rates  
Florida, 2006**

Age Groups	Males		Females		Total	
	Cases	Rates	Cases	Rates	Cases	Rates
0-4 years	17	3.0	18	3.3	35	3.2
5-14 years	11	1.0	11	1.0	22	1.0
15-24 years	71	5.8	34	2.9	105	4.4
25-44 years	242	10.0	133	6.0	375	7.8
45-64 years	255	11.3	103	4.2	358	7.6
65 and older	91	7.0	52	3.0	143	4.6

**Table 3: Tuberculosis by Age Group  
Florida, 2005 and 2006**

Age Groups	2005 Cases	% of TB (n=1,094)	2006 Cases	% of TB (n=1,038)
0-4 years	30	3	35	3
5-14 years	27	2	22	2
15-24 years	115	11	105	10
25-44 years	375	34	375	36
45-64 years	382	35	358	35
65 and older	165	15	143	14

## Pediatric Tuberculosis

Every child diagnosed with TB indicates a potentially un-diagnosed adult in the community. In 2006, five percent (57/1,038) of Florida's TB cases were pediatric cases (14 years or younger). (Figure 4).

- Foreign-born cases comprised 21 percent (12/57) of pediatric TB cases (Figure 6).
- Florida's "Big Six" counties (Miami-Dade, Broward, Duval, Hillsborough, Palm Beach and Orange) made up 61 percent (35/57) of pediatric TB cases (Figure 5). Thirty-nine percent (22/57) of pediatric cases resided in other counties (Figure 7).
- Foreign-born cases were 11 percent (4/35) of all pediatric cases in the "Big Six" counties, while cases born in the United States were 89 percent (31/35) of all pediatric cases in the "Big Six".

Figure 4: Pediatric TB Florida, 1994-2006

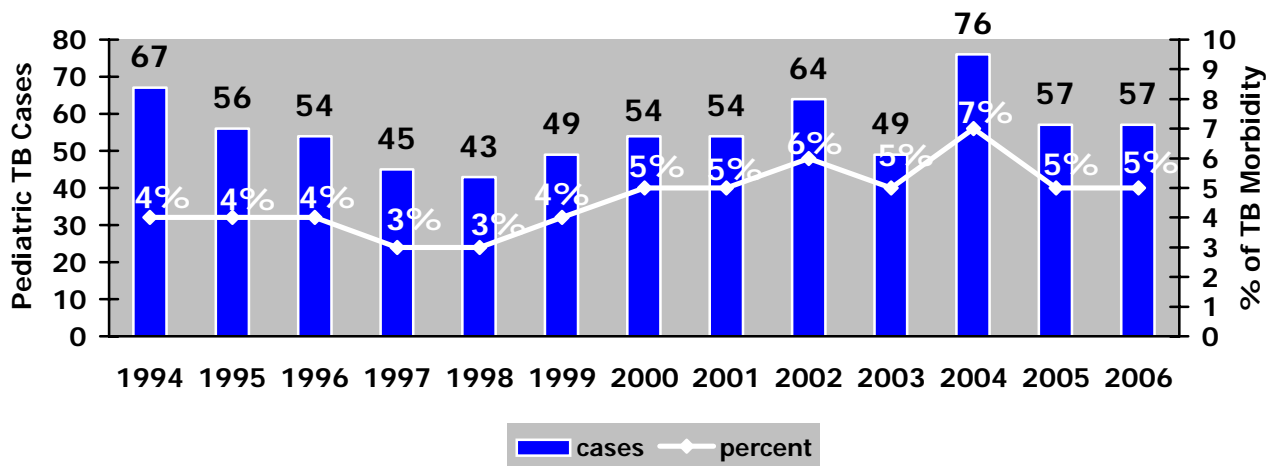
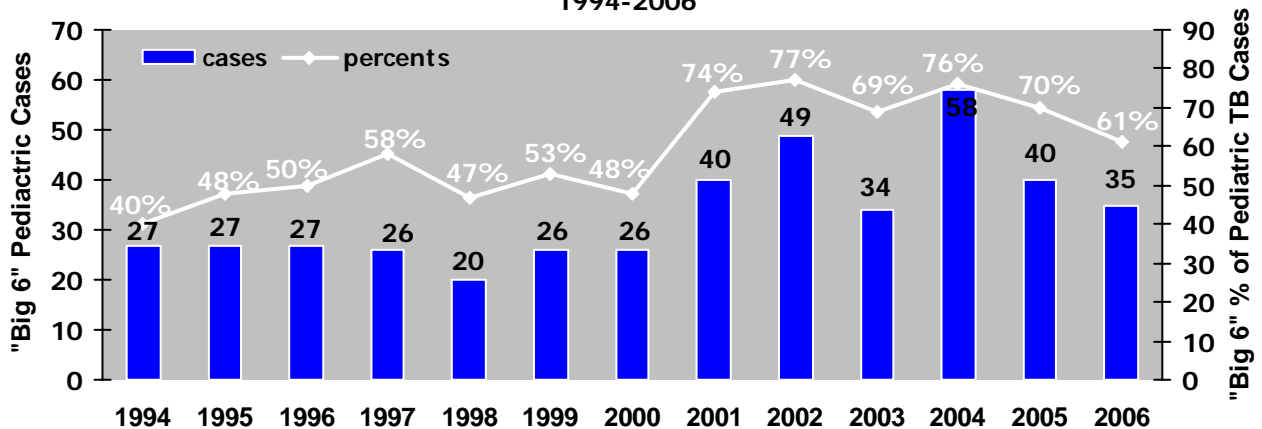
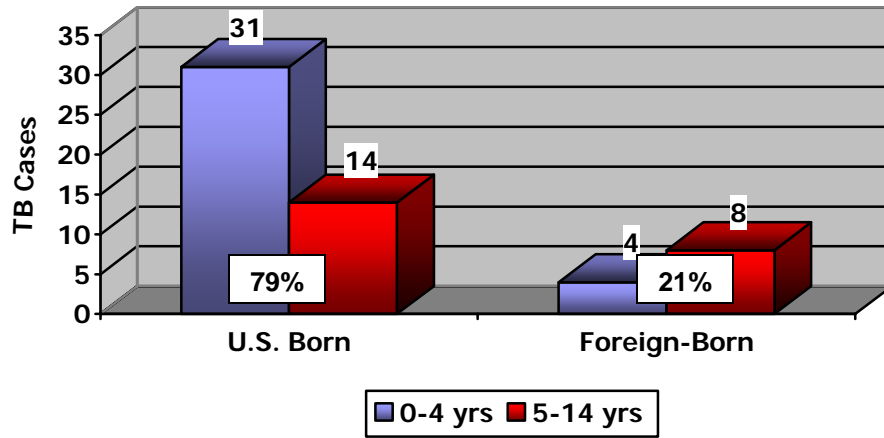


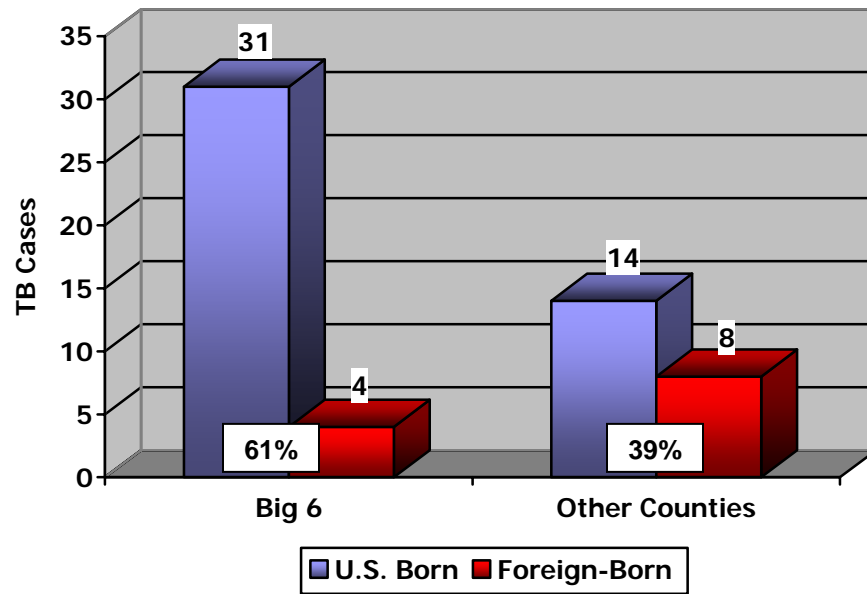
Figure 5: Proportion of Pediatric TB in Florida's "Big Six" Counties 1994-2006



**Figure 6: Pediatric TB and Place of Birth  
Florida, 2006**



**Figure 7: Pediatric TB and Place of Birth  
"Big Six" vs Other Counties, Florida, 2006**

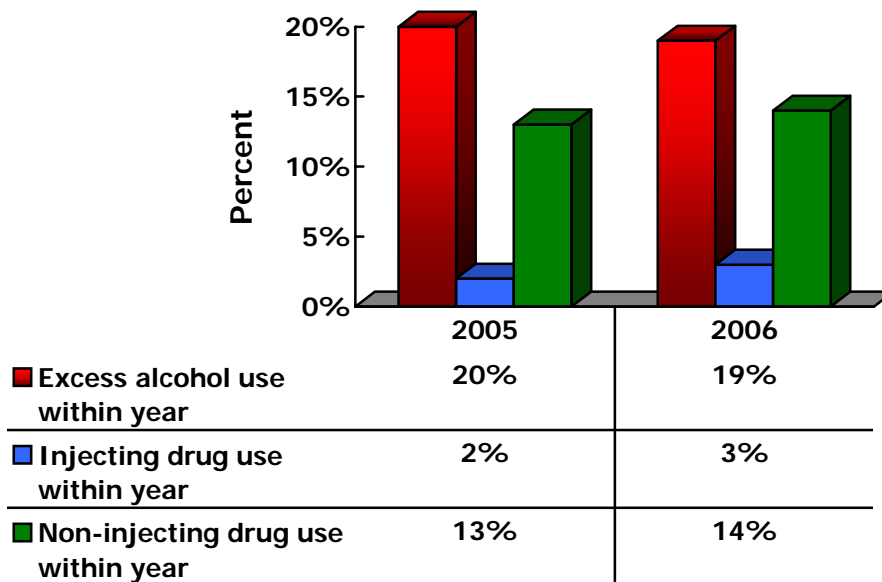


## Risk Factors and Tuberculosis

### Substance Abuse and Tuberculosis

The use of alcohol and/or drugs poses a negative impact on effective TB treatment. Clients with substance abuse issues require more intensive case management and follow-up. Only 14 percent (245/1,742) of the TB cases in 1994 reported drinking excessive amounts of alcohol, injecting drugs or using non-injectable drugs within the year of TB diagnosis. In 2004, that number increased to approximately 40 percent (432/1,076) of cases. However, the percentage of cases citing substance abuse decreased to 36 percent (373/1,038) in 2006 (Figure 8).

**Figure 8: Tuberculosis and Substance Abuse  
Florida, 2005 and 2006**

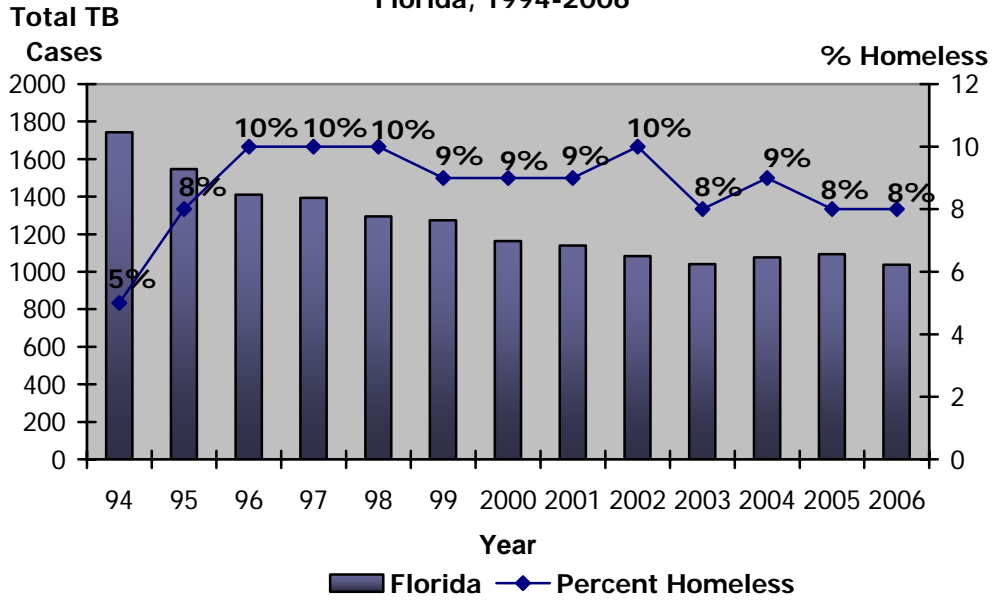


### Homelessness and Tuberculosis

The homeless are a marginalized population with issues such as poverty, poor nutrition and in some cases substance abuse. These factors increase the probability of progression from TB infection to disease. In 2005, eight percent (83/1,094) of Florida's TB cases were reported as homeless (Figure 9). The number of homeless TB cases remained at eight percent (80/1,038) in 2006 (Figure 9).

Substance abuse increases the challenges encountered while treating this population. In 2006, 65 percent (52/80) of homeless TB cases self-reported drinking excessively within the year of TB diagnosis. Fifty-eight percent (46/80) of homeless TB clients admitted to using non-injection drugs and 10 percent (8/80) admitted to injection drug use within the year of diagnosis.

**Figure 9: Tuberculosis and Homelessness  
Florida, 1994-2006**



## Incarceration and Tuberculosis

Effective TB prevention and control activities within correctional settings are essential elements to protecting the health of inmates, staff and the community. However, continuity of care should be coordinated with the local county health department in order to ensure adherence to treatment once inmates are released back into the community with active TB disease or latent TB infection. Failure to complete treatment could lead to acquiring multi-drug resistance to TB medications, developing active TB disease or exposing the general community to possible TB infection.

- In 2006, five percent (53/1,038) of Florida's TB cases were incarcerated at the time of diagnosis.
- Local jails represented 58 percent (31/53) of TB cases among those incarcerated (Figure 10).
- Federal and state prisons were 38 percent (20/53) of cases diagnosed during incarceration, and four percent (2/53) were assigned to Krome Detention Center (a federal facility that houses both criminal and non-criminal aliens destined for deportation) (Figure 10).
- Incarcerated persons comprised six percent (11/189) of all TB/HIV cases. Of the 53 TB cases diagnosed while incarcerated, 21 percent (11/53) were HIV co-infected. In local jails, the proportion of cases reported as TB/HIV was 16 percent (5/31) in 2006. Overall, 45 percent (5/11) of incarcerated TB/HIV cases were identified in local jails (Figure 11).

**Figure 10: Tuberculosis in Correctional Facilities, Florida, 2006**

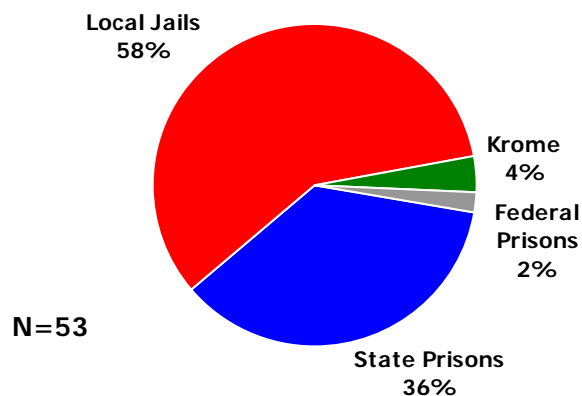
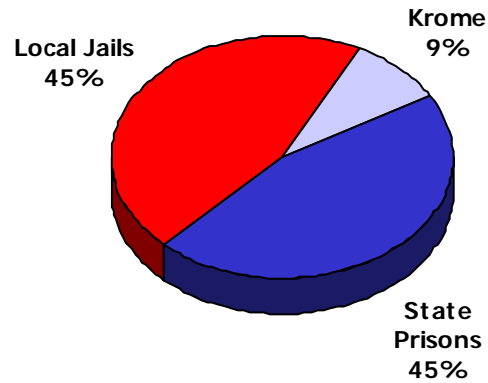
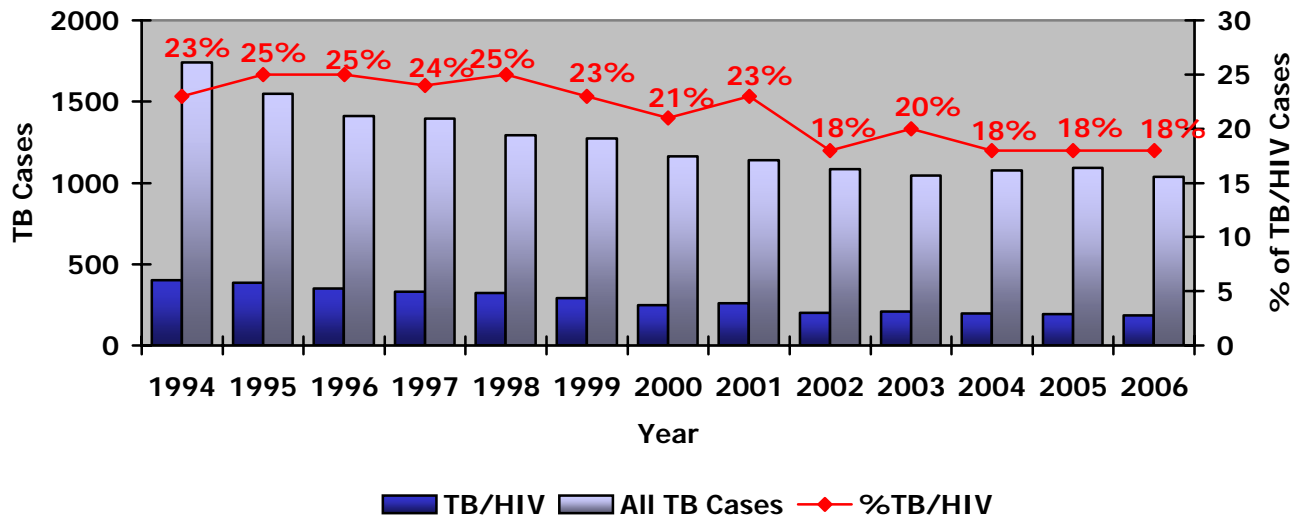


Figure 11: TB/HIV in Correctional Facilities, Florida, 2006



HIV Co-infection (TB/HIV)

Figure 12: Trend of TB/HIV, Florida, 1994-2006

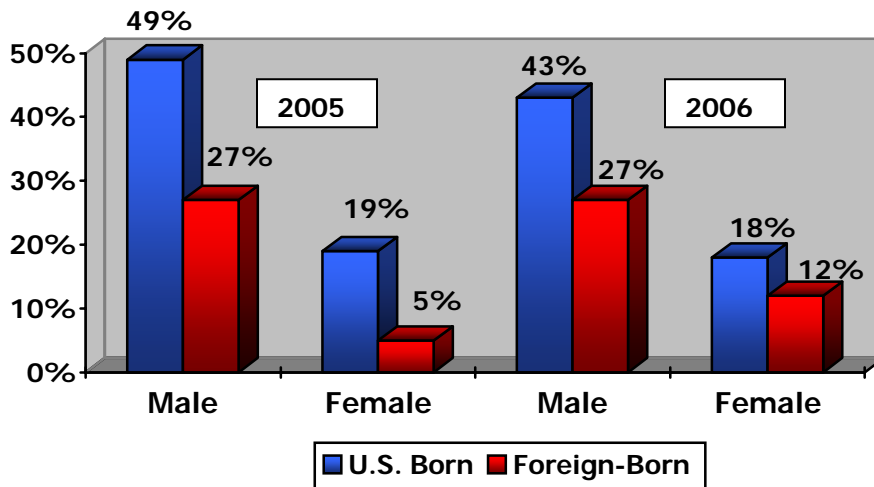


Worldwide, TB is the leading cause of death for people with HIV infection. Co-infection with HIV complicates the treatment of TB. Drug interactions and malabsorption are two examples of challenges that must be overcome in case management of co-infected clients.

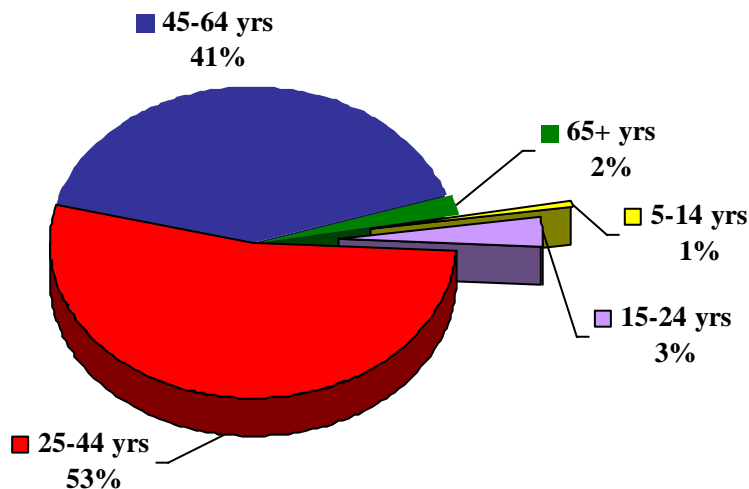
In Florida, HIV co-infection declined from 20 percent (208/1,046) in 2003 to 18 percent (184/1,038) in 2006. From 1994-2001, 20 percent of Florida's TB cases were reported to be co-infected with HIV (Figure 12).

- Males born in the United States comprised 43 percent (82/189) of 2006 TB/HIV cases, a 13 percent decrease since 2005 (Figure 13).
- Foreign-born males represented 27 percent (51/189) of 2006 TB/HIV cases (Figure 13).
- Women born in the United States comprised 18 percent (34/189) of TB/HIV cases (an eight percent decrease since 2005). Foreign-born women were 12 percent (22/189) of TB/HIV cases in 2006, a 144% increase since 2005 (Figure 13).
- Age group 25-44 made up 53 percent (100/189) of TB/HIV cases in 2006 (Figure 14).
- Non-Hispanic blacks were 69 percent (131/189) of TB/HIV cases (a three percent increase since 2005), 19 percent (35/189) were Hispanic, 10 percent (19/189) were non-Hispanic white and one percent (1/189) was Asian (Figure 15).

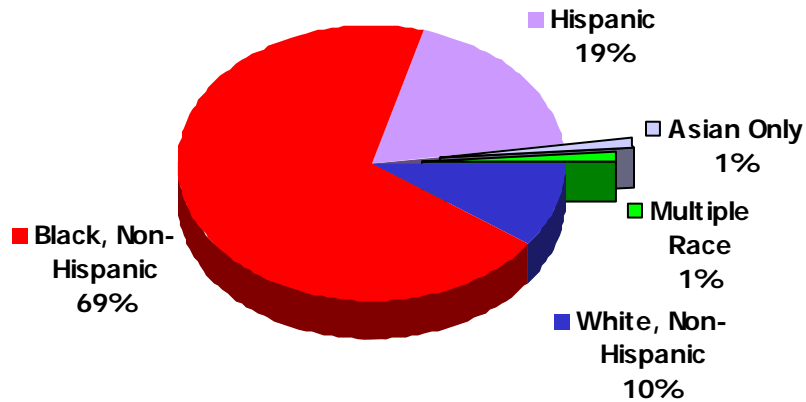
**Figure 13: TB/HIV by Gender and Place of Birth, Florida, 2005 and 2006**



**Figure 14: TB/HIV Cases by Age, Florida, 2006**



**Figure 15: TB/HIV Cases by Race and Ethnicity  
Florida, 2006**



### Country of Origin

In Florida, the percent of foreign-born TB cases has been steadily rising since 1993. The increase in the proportion of cases among the foreign-born is a major contributing factor to the increase in Florida's TB morbidity. Between 1990 and 2000, Florida's foreign-born population grew by 61 percent from 1.7 million to 2.7 million. In 1994, 15 percent (65/430) of cases were from countries where TB is endemic. By 2004, 18 percent (96/525) of Florida's foreign-born cases were from countries where tuberculosis is endemic. In 2002 and 2003, the foreign-born represented 44 and 46 percent of TB cases in Florida. In 2004, the proportion rose to almost 50 percent (526/1,076) (Figure 8). The proportion of cases among foreign-born decreased to 45 percent (496/1,094) in 2005 then increased to represent 47 percent (488/1,038) of cases in 2006 (Figure 16).

- Forty-three percent (207/486)\* of foreign-born TB cases had been in the United States for less than five years before being reported with TB (Figure 17).
- Haitians comprised 23 percent (110/488) of the foreign-born cases and 11 percent (110/1,038) of all TB cases for Florida in 2006 (Figures 18 and 19).
- Mexicans represented 17 percent (85/488) of TB morbidity in foreign-born cases and eight percent (85/1,038) of total TB morbidity for 2006 (Figures 18 and 19).
- Cubans were five percent (23/488) of foreign-born cases and two percent (23/1,038) of total TB morbidity for 2006 (Figure 18).

\*Dates of U.S. entry unavailable for two cases.

Miami-Dade, Broward, Palm Beach, Orange, Hillsborough, and Duval counties (the “Big Six”) represented 62 percent (644/1,038) of all TB cases counted in Florida for 2006. In 2006, 70 percent (342/488) of foreign-born cases were in Florida’s “Big Six.

Figure 16: Trends in Foreign-Born TB, Florida, 1994-2006

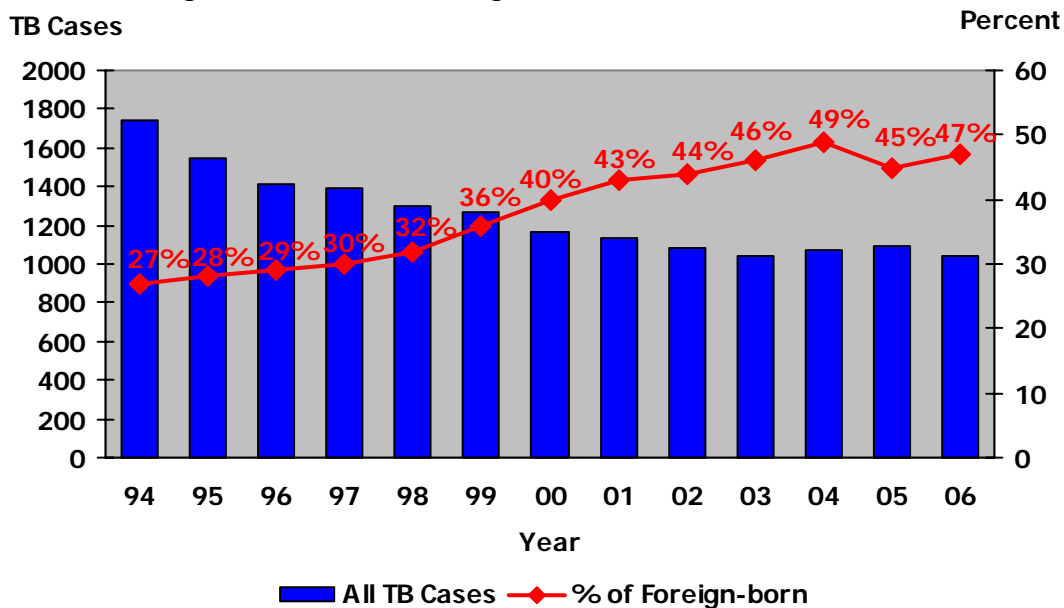


Figure 17 Foreign-Born and Years in the United States Before TB Diagnosis, Florida, 2006

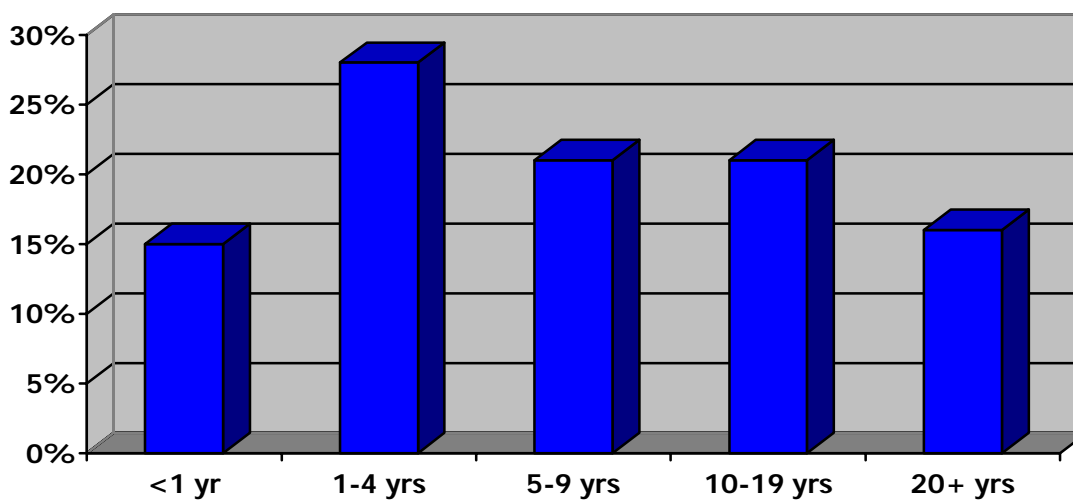


Figure 18: Foreign Born TB and Countries of Origin, Florida 2006

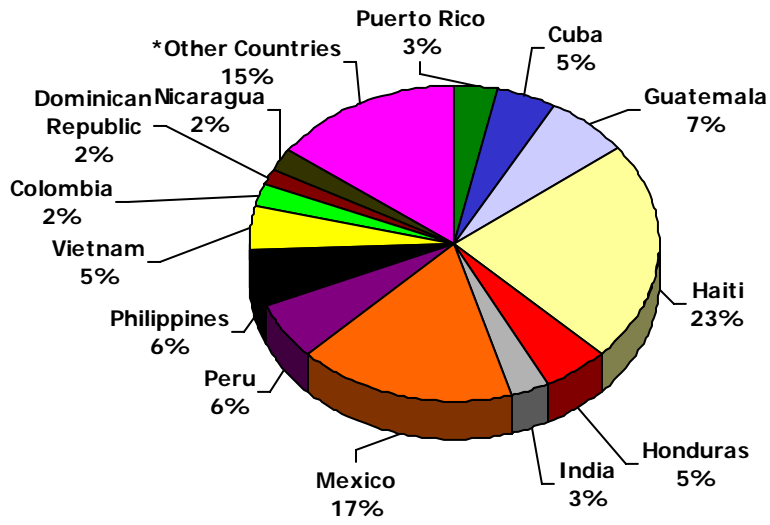
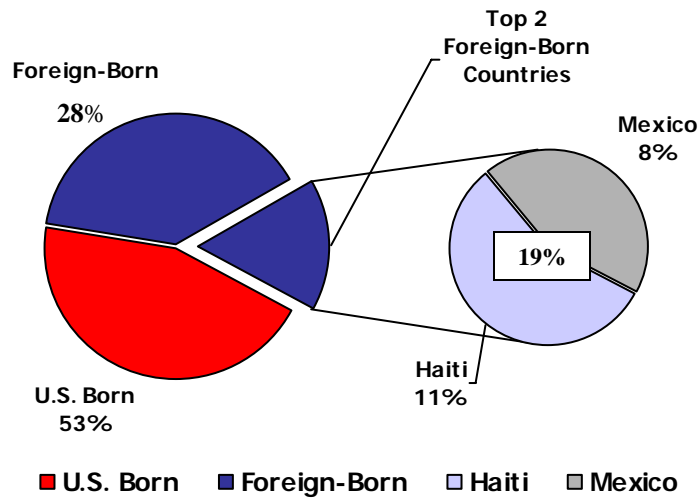


Figure 19: Tuberculosis: U.S. Born vs. Foreign-Born Florida, 2006

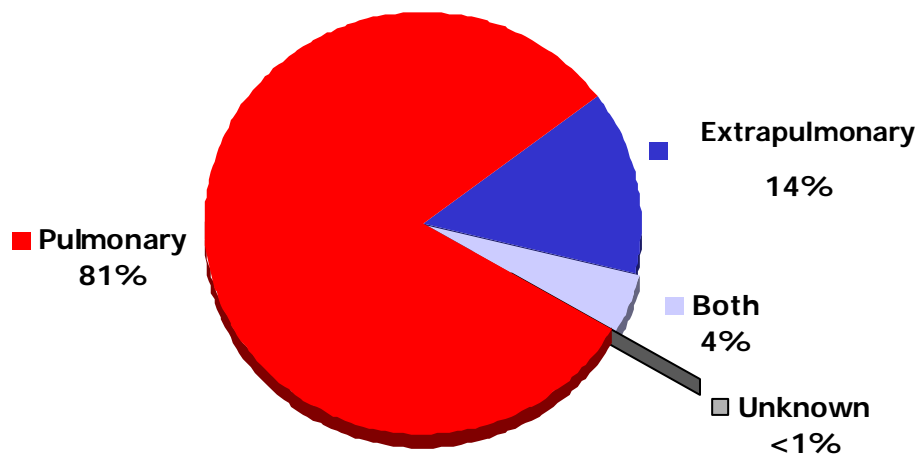


## Clinical Distribution

In 2006, 98 percent (1,013/1,038) of TB cases were alive at diagnosis. Five percent (53/1,038) of cases reported previous treatment for TB disease. Pulmonary TB cases comprise the greatest proportion of active TB cases (Figure 20 & Table 4).

- Eighty-one percent (844/1,038) of Florida's TB cases were pulmonary, 14 percent (148/1,038) were extra-pulmonary and four percent (45/1,038) were both. Less than 1% of cases were unknown (Figure 20).
- Positive sputum smears are indicators of infectious cases. Thirty-eight percent (394/1,038) of TB cases had positive sputum smears, and 45 percent (470/1,038) were smear negative. Smears were not done for 17 percent of the cases (173/1,038). Sputum smear results were unknown for one case (less than 1%).
- Positive bacteriologic cultures for *Mycobacterium tuberculosis* confirm the diagnosis of TB. In 2006, 81 percent (845/1,038) of TB cases were confirmed with positive cultures, 11 percent (117/1,038) were confirmed clinically and seven percent (73/1,038) were confirmed by provider diagnosis.

**Figure 20: Tuberculosis Cases by Site of Disease  
Florida, 2006**



**Table 4: Major Site of Disease, Florida, 2006**

<b>Site of Disease</b>	<b>Cases</b>
Pulmonary*	865
Pleural	31
Lymphatic: Cervical	31
Lymphatic: Intra Thoracic	7
Lymphatic: Other	20
Lymphatic: Unknown	1
Bone/Joint	12
Genitourinary	8
Miliary	5
Meningeal	13
Peritoneal	8
Other	36
Site not stated	1
<b>Total</b>	<b>1,038</b>

*\*Includes some cases that were reported as both pulmonary and extra-pulmonary*

## Results of TB Contact Investigations

All tuberculosis cases were once TB contacts. Effective contact identification, evaluation and treatment for latent tuberculosis infection (LTBI) activities prevent future cases of tuberculosis.

- In 2005, 2,850 contacts to sputum smear positive TB cases were evaluated for latent TB infection (LTBI) (Table 5). The LTBI rate was 30 percent (860/2,850). The infection rate for contacts to cases that were sputum smear negative, but culture positive was 22 percent (202/928).
- Among the contacts to sputum smear positive cases in 2005 who started treatment 56 percent (306/547) completed treatment (decreased from year 2004, 60 percent) (Table 5). The treatment completion rate for contacts to cases that were sputum smear negative, but culture positive was 69 percent (95/137), an increase from 55 percent in 2004.
- Thirty-nine contacts to sputum smear positive cases and nine of the contacts to sputum smear negative/culture positive cases were diagnosed with active TB disease (1.4 percent and 1.0 percent disease rate respectively).

**Table 5: Results of TB Contact Investigations, Florida, 2005**

	Types of Cases for Investigation	
	Sputum Smear (+)	Sputum Smear (-), Culture (+)
Number of Contacts	3,575	1,217
Evaluated	2,850	928
Latent TB Infection	860	202
Latent Infection Rate	30.2%	21.8%
Treatment Completion Rate	55.9%	69.3%

Data from final ARPES, Follow-up & Treatment of Contacts to TB Cases, 2005

## Drug Therapy and Resistance and Treatment of TB Cases

It is one of the goals of the Florida TB Program to increase the number of persons who start the Centers for Disease Control and Prevention (CDC) recommended initial four drug regimen of Isoniazid, Rifampin, Pyrazinamide and Ethambutol (with exceptions, for example, pregnant women/young children). This initial phase of treatment is crucial for preventing the emergence of drug resistance and determining the ultimate outcome of the regimen.

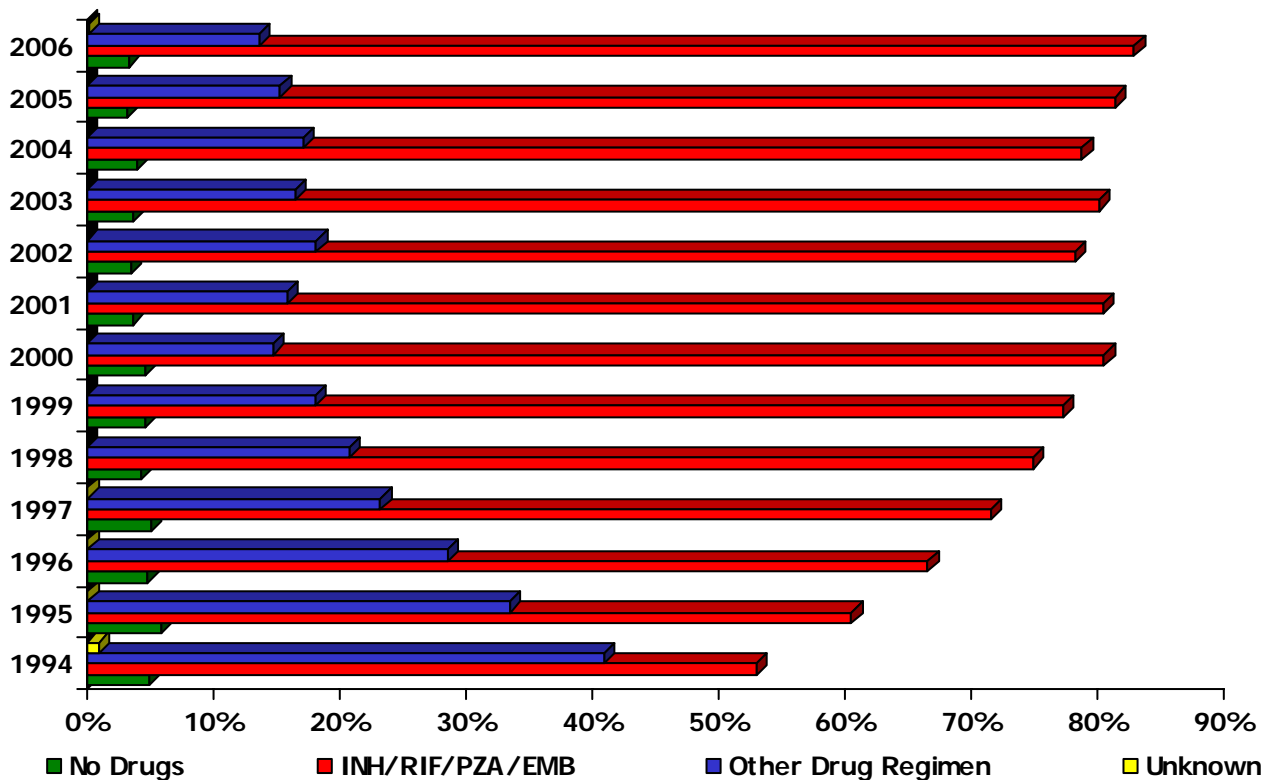
- In 1994, 53 percent of TB clients started the recommended initial four drug regimen. In 2006, the percentage of clients starting the CDC recommended initial therapy increased to 83 percent (861/1,038) (Figure 21).
- The initial treatment regimen is adjusted when drug susceptibility test results are known. These tests determine if the TB organism infecting a client can or cannot be killed or inhibited by TB drugs. It is a goal of the Florida TB Program to increase the percentage of positive cultures with drug susceptibility results. In 2005, 98 percent (838/851) of culture positive

cases had drug susceptibility results. The percentage of culture positive cases with drug susceptibility results in 2006 was also 98 percent (802/828).

Although Florida’s TB Program has made significant strides in reducing the number of multi-drug resistant (MDR) cases, all drug resistant cases require additional resources and expert medical consultation in order to ensure completion of therapy to cure. Drug resistant cases present significant challenges that local health departments must address, such as complex and expensive treatment regimens and extended time on Directly Observed Therapy (DOT).

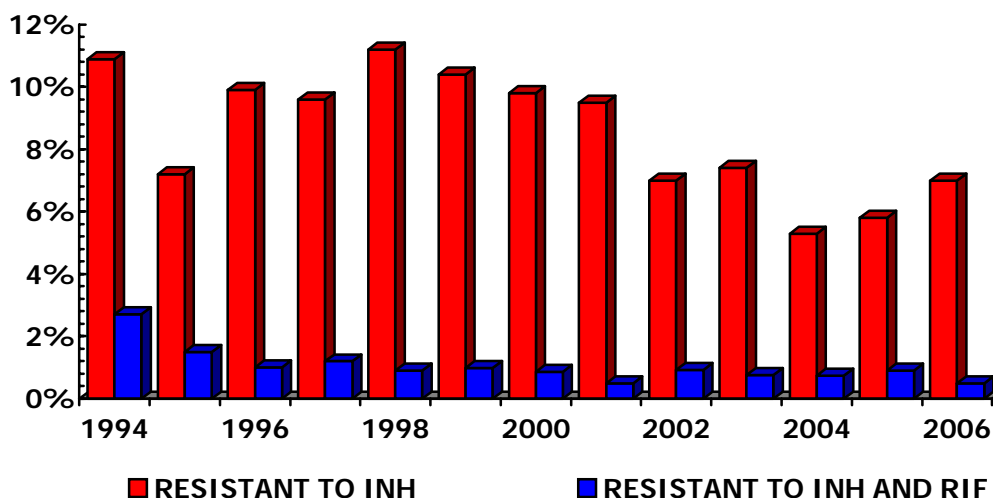
- Seven percent (70/1,038) of Florida’s TB cases in 2006 were resistant to Isoniazid (INH) (Figure 22).
- Less than one percent (5/1,038) of Florida’s TB cases in 2006 was resistant to Isoniazid (INH) and Rifampin (RIF) – MDR (Figure 27).
- The foreign-born comprised 100 percent (5/5) of MDR cases (Table 6).
- Florida did not report any XDR (Extensively Drug Resistant) cases in 2006.

**Figure 21: Proportion of Active TB Cases Started on Preferred Initial Four-Drug Regimen\*, Florida, 1994-2006**



\*Note: A four-drug regimen is not an appropriate course of therapy for all people

**Figure 22: Proportion of TB Cases with Resistance to Isoniazid (INH) or INH and Rifampin, Florida, 1994-2006**



**Table 6: Multiple Drug Resistant (MDR) TB Cases by County and Country of Origin, Florida, 2006**

County	Country	Number of Cases
Collier	Haiti	1
Miami-Dade	Haiti, Philippines	2
Flagler	Russia	1
Martin	Guatemala	1

**Total MDR cases: 5**  
**2006 MDR incidence rate: 0.50%**

### Completion of TB Treatment

Completion of treatment of active TB cases is the first priority for Florida's TB Program. Florida consistently completes treatment for over 90 percent of its TB cases. The program strives to ensure that all clients complete treatment in a timely manner (within 12 months of initiation), where medically indicated.

- Currently, 93 percent of active TB cases counted in 2004 have completed treatment (Appendix B-3).
- 85 percent of the cases that started treatment in 2004 completed treatment within one year (365 days) (Appendix B-4).

- Currently, 93 percent of active TB cases counted in 2005 have completed treatment (Appendix B-5).
- 87 percent of the cases that started treatment in 2005 completed treatment within one year (365 days) (Appendix B-6).

### Tuberculosis and Mortality

It is imperative that TB control programs locate and treat to completion all active TB cases as well as strongly impress upon those high-risk latent TB infections the importance of starting and completing treatment. In 2006, there were 30 deaths in Florida attributable to TB disease (Table 11). Knowing the signs and symptoms of TB disease and early treatment can reduce the risk of complications and enhance the effectiveness of treatment.

**Table 7: Tuberculosis Mortality by County  
Florida 2006**

<b>Counties</b>	<b>Cases</b>
Brevard	1
Clay	1
Collier	1
Duval	1
Escambia	1
Gadsden	1
Hardee	1
Hernando	1
Hillsborough	1
Marion	1
Miami-Dade	3
Orange	6
Palm Beach	3
Pinellas	2
Polk	1
Putnam	1
Sarasota	1
St. Lucie	2
Volusia	1
<b>Total</b>	<b>30</b>

Data Source: Florida Department of Health, Office of Vital Statistics  
Provisional data as of 9/10/2007

**APPENDIX A**  
**NOTABLE TUBERCULOSIS OUTBREAKS**

## **Tuberculosis in a Correctional Facility Florida, 2005-2006**

During 2005, a TB outbreak occurred in a Florida correctional facility. A 39 year old inmate incarcerated for approximately 11 months, was treated multiple times with various over-the-counter medications and antibiotics when the person complained of hoarseness, sore throat, chest pain, difficulty breathing, weight loss and cough. Upon release, the ex-inmate presented to a local emergency room with similar signs and symptoms and was diagnosed with suspected pulmonary and laryngeal TB. The suspect was started on anti-tuberculosis medications and a contact investigation began.

The initial phase of the contact investigation resulted in 742 employees and 2,119 inmates screened for exposure to TB. Over the course of several months, one staff member and 23 inmates were diagnosed with active TB disease. Two additional cases were identified after their release from the facility. Of the aforementioned cases, 16 were culture positive for *M. tuberculosis*. All of the culture positive cases were genotypically matched (using molecular methods for DNA fingerprinting). This indicated the 39 year old ex-inmate as the source for this chain of infection. Further comparison of genotyped data indicated the index case for this outbreak was a contact to a community case in 2003. At that time the index case was tuberculin skin test positive and refused isoniazid therapy for the treatment of latent TB infection. Drug susceptibility testing was conducted on all culture positive cases and found to be sensitive to first line TB medications.

In 2006, after another case was detected at the facility, the Bureau of TB and Refugee Health in collaboration with the DOC initiated an active case finding investigation. A total of 2,717 individuals (2,175 inmates and 542 employees) were screened and evaluated for TB disease and infection. Two additional cases were identified—one by clinical diagnosis and one by culture confirmation. Both cases completed treatment in 2007.

This outbreak highlights the importance of collaboration between DOH and DOC and the need for continued vigilance in congregate settings for the early detection of TB to quickly stop the spread of this communicable disease.

## Local Daycare Center Yields Six Pediatric Tuberculosis Cases

Cynthia Benjamin, Ana Alvarez, M.D., Annette Rodgers, R.N., Vivian Stubbs, L.P.N.

**Introduction:** In 2006, a daycare center reported a tuberculosis outbreak among its pediatric population.

**Background:** In March, a two-year-old was hospitalized with what appeared to be an Upper Respiratory Infection (URI). The child had symptoms consisting of a cough and fever. A chest X-ray was done and looked suspicious for tuberculosis. A TB skin test (TST) was done and was positive, 10mm. The child was started on three-drug therapy immediately: INH, RIF, and PZA.

The two-year-old attended a daycare center. The center houses children from ages 0-5, but also serves as an after school site for children ages 6-14. This center primarily serves low income, single mothers who receive governmental financial assistance.

**Methods:** In April 2006, a source case investigation was initiated. The family members and other household contacts for the two year old were TST negative. On April 5, 2006, the investigation was expanded to the child's daycare center. All full-time staff (7), plus two student volunteers were tested. Three out of nine (33%) tested positive for *Mycobacterium tuberculosis* (MTB). There was one staff member with a history of a previous positive TST. This staff member received a chest X-ray which showed a normal chest.

On April 9, 2006, a 47-year-old female staff member of the daycare in question was hospitalized with possible pneumonia. She exhibited symptoms of fever, cough, night sweats, and weight loss. This person's previous skin test during the initial contact investigation at the daycare center was negative. A full-scale contact investigation was started and all of the children attending the daycare were skin tested.

**Results:** A total of 52 children were skin tested (100%). There were 24 positives (46%), 26 negatives (50%), and two children were lost to follow-up, and did not have their skin tests read (4%). Of the 52 children exposed to the index case, six had abnormal CXR's and were started on a three drug treatment regimen. All of the children who had an initial negative TST were retested in 8 to 10 weeks. All of the contacts who tested positive were placed on LTBI treatment for nine months.

**Conclusions:** The source case in this investigation was pan-sensitive to the anti-TB drugs and responded well to treatment. Only one of the pediatric cases grew MTB from a gastric aspirate specimen. The other five children were classified as clinical cases. Currently, they all have responded well to therapy, have had chest X-ray improvement, and have completed treatment. Upon follow-up skin testing, the 26 children that were originally negative were all retested and only one converter was identified after 8 to 10 weeks.

**APPENDIX B**  
**TABLES and FIGURES**

**B-1: Overall TB Treatment Completion Rates, Florida, 2003**

COUNTIES	Cases	Dead at Diagnosis	Died During Treatment	Completed Treatment	Percent Completed
ALACHUA	6	0	1	5	100%
BAKER	0	0	0	0	N/A
BAY	14	0	1	13	100%
BRADFORD	2	0	0	1	50%
BREVARD	12	0	2	10	100%
BROWARD	111	2	4	101	96%
CALHOUN	0	0	0	0	N/A
CHARLOTTE	1	0	0	1	100%
CITRUS	2	0	0	2	100%
CLAY	4	0	0	4	100%
COLLIER	20	1	0	19	100%
COLUMBIA	0	0	0	0	N/A
DE SOTO	3	0	0	2	67%
DIXIE	0	0	0	0	N/A
DUVAL	70	5	6	57	97%
ESCAMBIA	18	2	3	13	100%
FLAGLER	0	0	0	0	N/A
FRANKLIN	1	0	0	1	100%
GADSDEN	1	0	0	1	100%
GILCHRIST	0	0	0	0	N/A
GLADES	1	0	0	1	100%
GULF	0	0	0	0	N/A
HAMILTON	1	0	0	1	100%
HARDEE	3	0	0	2	67%
HENDRY	2	0	0	2	100%
HERNANDO	3	0	0	3	100%
HIGHLANDS	5	1	0	4	100%
HILLSBOROUGH	78	1	5	71	99%
HOLMES	3	0	0	3	100%
INDIAN RIVER	6	0	1	5	100%
JACKSON	3	0	0	3	100%
JEFFERSON	1	0	0	1	100%
LAFAYETTE	1	0	0	1	100%
LEON	10	0	0	10	100%
LEVY	0	0	0	0	N/A

**B-1: Overall TB Treatment Completion Rates, Florida, 2003 (cont.)**

<b>COUNTIES</b>	<b>Cases</b>	<b>Dead at Diagnosis</b>	<b>Died During Treatment</b>	<b>Completed Treatment</b>	<b>Percent Completed</b>
LIBERTY	1	0	0	1	100%
MADISON	1	0	0	1	100%
MANATEE	10	0	2	8	100%
MARION	8	0	1	7	100%
MARTIN	5	0	0	5	100%
MIAMI-DADE	239	0	20	198	90%
MONROE	4	0	0	4	100%
NASSAU	0	0	0	0	N/A
OKALOOSA	5	0	0	5	100%
OKEECHOBEE	2	1	0	1	100%
ORANGE	83	2	10	71	100%
OSCEOLA	5	0	0	5	100%
PALM BEACH	86	3	7	68	89%
PASCO	9	0	0	9	100%
PINELLAS	52	3	2	46	98%
POLK	29	0	0	29	100%
PUTNAM	3	0	0	3	100%
SAINT JOHNS	8	0	1	7	100%
SAINT LUCIE	22	3	1	17	94%
SANTA ROSA	2	0	0	2	100%
SARASOTA	17	1	1	15	100%
SEMINOLE	6	0	1	5	100%
SUMTER	1	0	0	1	100%
SUWANNEE	2	1	0	1	100%
TAYLOR	0	0	0	0	N/A
UNION	0	0	0	0	N/A
VOLUSIA	23	2	2	20	105%
WAKULLA	1	0	0	1	100%
WALTON	1	0	0	1	100%
WASHINGTON	0	0	0	0	N/A
STATE PRISONS	8	0	0	8	100%
FLORIDA	1041	30	72	899	96%

**B-2: Completion of Treatment in 365 Days, Florida, 2003**

Counties	Cases	Starting Treatment	Died During Treatment	Completed Treatment	Percent Completed
ALACHUA	6	6	1	4	80%
BAKER	0	0	0	0	N/A
BAY	14	14	1	11	85%
BRADFORD	2	2	0	0	0%
BREVARD	12	12	2	8	80%
BROWARD	111	104	4	82	82%
CALHOUN	0	0	0	0	N/A
CHARLOTTE	1	1	0	1	100%
CITRUS	2	2	0	2	100%
CLAY	4	4	0	4	100%
COLLIER	20	19	0	18	95%
COLUMBIA	0	0	0	0	N/A
DE SOTO	3	3	0	2	67%
DIXIE	0	0	0	0	N/A
DUVAL	70	65	6	49	83%
ESCAMBIA	18	16	3	13	100%
FLAGLER	0	0	0	0	N/A
FRANKLIN	1	1	0	1	100%
GADSDEN	1	1	0	0	0%
GILCHRIST	0	0	0	0	N/A
GLADES	1	1	0	0	0%
GULF	0	0	0	0	N/A
HAMILTON	1	1	0	1	100%
HARDEE	3	2	0	2	100%
HENDRY	2	2	0	2	100%
HERNANDO	3	3	0	3	100%
HIGHLANDS	5	4	0	2	50%
HILLSBOROUGH	78	77	5	67	93%
HOLMES	3	3	0	3	100%
INDIAN RIVER	6	6	1	5	100%
JACKSON	3	3	0	3	100%
JEFFERSON	0	0	0	0	N/A
LAFAYETTE	1	1	0	1	100%
LIBERTY	1	1	0	1	100%
MADISON	1	1	0	1	100%

**B-2: Completion of Treatment in 365 Days, Florida, 2003 (cont.)**

Counties	Cases	Starting Treatment	Died During Treatment	Completed Treatment	Percent Completed
MANATEE	10	10	2	8	100%
MARION	8	8	1	5	71%
MARTIN	5	5	0	4	80%
MIAMI-DADE	239	232	19	163	77%
MONROE	4	3	0	2	67%
NASSAU	0	0	0	0	N/A
OKALOOSA	5	5	0	5	100%
OKEECHOBEE	2	1	0	1	100%
ORANGE	83	81	10	66	93%
OSCEOLA	5	5	0	3	60%
PALM BEACH	86	79	7	58	81%
PASCO	9	9	0	9	100%
PINELLAS	52	49	2	44	94%
POLK	29	29	0	28	97%
PUTNAM	3	3	0	3	100%
SAINT JOHNS	8	8	1	6	86%
SAINT LUCIE	22	19	1	15	83%
SANTA ROSA	2	2	0	3	150%
SARASOTA	17	16	1	15	100%
SEMINOLE	6	6	1	4	80%
SUMTER	1	1	0	1	100%
SUWANNEE	2	1	0	1	100%
TAYLOR	0	0	0	0	N/A
UNION	0	0	0	0	N/A
VOLUSIA	23	22	2	15	75%
WAKULLA	1	1	0	1	100%
WALTON	1	1	0	1	100%
WASHINGTON	0	0	0	0	N/A
STATE PRISONS	8	8	0	8	100%
FLORIDA	1040	993	71	787	85%

**B-3: Overall TB Treatment Completion Rates, Florida, 2004**

COUNTIES	Cases	Dead at Diagnosis	Died During Treatment	Completed Treatment	Percent Completed
ALACHUA	5	0	1	4	100%
BAKER	0	0	0	0	N/A
BAY	12	1	3	8	100%
BRADFORD	2	0	0	2	100%
BREVARD	8	1	1	6	100%
BROWARD	87	1	6	77	96%
CALHOUN	2	0	0	2	100%
CHARLOTTE	1	0	0	1	100%
CITRUS	3	0	0	3	100%
CLAY	5	0	0	5	100%
COLLIER	21	0	1	19	95%
COLUMBIA	1	0	0	1	100%
DE SOTO	7	0	2	5	100%
DIXIE	0	0	0	0	N/A
DUVAL	81	4	7	69	99%
ESCAMBIA	9	0	0	8	89%
FLAGLER	1	0	0	1	100%
FRANKLIN	0	0	0	0	N/A
GADSDEN	4	0	0	4	100%
GILCHRIST	1	0	0	1	100%
GLADES	0	0	0	0	N/A
GULF	1	0	0	1	100%
HAMILTON	0	0	0	0	N/A
HARDEE	2	0	0	1	50%
HENDRY	9	1	0	8	100%
HERNANDO	2	0	1	1	100%
HIGHLANDS	8	0	1	6	86%
HILLSBOROUGH	73	2	5	64	97%
HOLMES	1	0	0	1	100%
INDIAN RIVER	8	0	0	8	100%
JACKSON	3	0	0	3	100%
JEFFERSON	0	0	0	0	N/A
LAFAYETTE	0	0	0	0	N/A
LAKE	8	0	0	7	88%
LEE	21	1	0	19	95%

**B-3: Overall TB Treatment Completion Rates, Florida, 2004 (cont.)**

LEON	9	1	1	7	100%
LEVY	1	0	0	1	100%
LIBERTY	0	0	0	0	N/A
MADISON	1	0	1	0	N/A
MANATEE	14	0	1	11	85%
MARION	10	1	0	9	100%
MARTIN	14	0	0	13	93%
MIAMI-DADE	269	4	18	226	91%
MONROE	0	0	0	0	N/A
NASSAU	3	1	0	2	100%
OKALOOSA	7	0	0	7	100%
OKEECHOBEE	6	0	1	5	100%
ORANGE	97	4	11	77	94%
OSCEOLA	6	0	0	6	100%
PALM BEACH	99	2	8	75	84%
PASCO	13	1	1	11	100%
PINELLAS	31	2	3	21	81%
POLK	26	2	4	20	100%
PUTNAM	3	0	0	3	100%
SAINT JOHNS	1	0	0	1	100%
SAINT LUCIE	24	0	4	20	100%
SANTA ROSA	3	0	0	2	67%
SARASOTA	7	0	1	5	83%
SEMINOLE	12	0	1	11	100%
SUMTER	0	0	0	0	N/A
SUWANNEE	2	0	0	2	100%
TAYLOR	0	0	0	0	N/A
UNION	0	0	0	0	N/A
VOLUSIA	14	1	3	9	90%
WAKULLA	0	0	0	0	N/A
WALTON	7	0	0	7	100%
WASHINGTON	0	0	0	0	N/A
STATE PRISONS	9	1	0	8	100%
FLORIDA	1,074	31	86	894	93%

**B-4: Completion of Treatment in 365 Days, Florida, 2004**

Counties	Cases	Starting Treatment	Died During Treatment	Completed Treatment	Percent Completed
ALACHUA	5	5	1	4	100%
BAKER	0	0	0	0	N/A
BAY	12	11	3	8	100%
BRADFORD	2	2	0	2	100%
BREVARD	8	7	1	4	67%
BROWARD	87	86	6	69	86%
CALHOUN	2	2	0	1	50%
CHARLOTTE	1	1	0	1	100%
CITRUS	3	3	0	2	67%
CLAY	5	5	0	5	100%
COLLIER	21	21	1	15	75%
COLUMBIA	1	1	0	1	100%
DE SOTO	7	6	1	5	100%
DIXIE	0	0	0	0	N/A
DUVAL	81	76	7	65	94%
ESCAMBIA	9	9	0	8	89%
FLAGLER	1	1	0	1	100%
FRANKLIN	0	0	0	0	N/A
GADSDEN	4	4	0	4	100%
GILCHRIST	1	1	0	1	100%
GLADES	0	0	0	0	N/A
GULF	1	1	0	1	100%
HAMILTON	0	0	0	0	N/A
HARDEE	2	1	0	1	100%
HENDRY	9	8	0	7	88%
HERNANDO	2	2	1	1	100%
HIGHLANDS	8	6	1	5	100%
HILLSBOROUGH	73	69	5	61	95%
HOLMES	1	1	0	1	100%
INDIAN RIVER	8	8	0	8	100%
JACKSON	3	3	0	3	100%
JEFFERSON	0	0	0	0	N/A
LAFAYETTE	0	0	0	0	N/A
LAKE	8	8	0	7	88%
LEE	21	20	0	18	90%

**B-4: Completion of Treatment in 365 Days, Florida, 2004 (cont.)**

Counties	Cases	Starting Treatment	Died During Treatment	Completed Treatment	Percent Completed
LEON	9	8	1	7	100%
LEVY	1	1	0	1	100%
LIBERTY	0	0	0	0	N/A
MADISON	1	1	1	0	N/A
MANATEE	14	13	1	11	92%
MARION	10	9	0	7	78%
MARTIN	14	14	0	10	71%
MIAMI-DADE	269	256	17	192	80%
MONROE	0	0	0	0	N/A
NASSAU	3	2	0	2	100%
OKALOOSA	7	7	0	6	86%
OKEECHOBEE	6	6	1	5	100%
ORANGE	97	91	11	63	79%
OSCEOLA	6	6	0	6	100%
PALM BEACH	99	94	8	67	78%
PASCO	13	12	1	9	82%
PINELLAS	31	26	3	19	83%
POLK	26	24	4	18	90%
PUTNAM	3	3	0	3	100%
SAINT JOHNS	1	1	0	1	100%
SAINT LUCIE	24	24	4	18	90%
SANTA ROSA	3	3	0	2	67%
SARASOTA	7	7	1	4	67%
SEMINOLE	12	12	1	10	91%
SUMTER	0	0	0	0	N/A
SUWANNEE	2	2	0	1	50%
TAYLOR	0	0	0	0	N/A
UNION	0	0	0	0	N/A
VOLUSIA	14	12	3	9	100%
WAKULLA	0	0	0	0	N/A
WALTON	7	7	0	7	100%
WASHINGTON	0	0	0	0	N/A
STATE PRISONS	9	8	0	7	88%
FLORIDA	1,074	1,017	84	794	85%

**B-5: Overall TB Treatment Completion Rates, Florida, 2005**

Counties	Cases	Starting Treatment	Died During Treatment	Completed Treatment	Percent Completed
ALACHUA	10	1	0	9	100%
BAKER	1	0	0	1	100%
BAY	12	0	0	10	83%
BRADFORD	0	0	0	0	N/A
BREVARD	14	0	1	13	100%
BROWARD	99	2	5	84	91%
CALHOUN	0	0	0	0	N/A
CHARLOTTE	6	0	0	6	100%
CITRUS	2	0	0	2	100%
CLAY	3	0	0	3	100%
COLLIER	24	0	1	21	91%
COLUMBIA	1	0	0	1	100%
DE SOTO	4	0	2	2	100%
DIXIE	0	0	0	0	N/A
DUVAL	81	5	6	66	94%
ESCAMBIA	10	0	0	8	80%
FLAGLER	1	0	0	1	100%
FRANKLIN	0	0	0	0	N/A
GADSDEN	5	0	1	3	75%
GILCHRIST	6	0	0	6	100%
GLADES	1	0	1	0	N/A
GULF	0	0	0	0	N/A
HAMILTON	1	0	0	1	100%
HARDEE	1	0	0	1	100%
HENDRY	5	0	1	2	50%
HERNANDO	1	0	0	1	100%
HIGHLANDS	3	1	1	1	100%
HILLSBOROUGH	90	1	6	78	94%
HOLMES	1	0	0	1	100%
INDIAN RIVER	4	0	0	4	100%
JACKSON	0	0	0	0	N/A
JEFFERSON	0	0	0	0	N/A
LAFAYETTE	0	0	0	0	N/A
LAKE	6	1	1	3	75%
LEE	16	0	0	15	94%

**B-5: Overall TB Treatment Completion Rates, Florida, 2005 (cont.)**

COUNTIES	Cases	Dead at Diagnosis	Died During Treatment	Completed Treatment	Percent Completed
LEON	15	0	1	14	100%
LEVY	0	0	0	0	N/A
LIBERTY	0	0	0	0	N/A
MADISON	0	0	0	0	N/A
MANATEE	16	1	1	11	79%
MARION	7	1	0	6	100%
MARTIN	7	0	0	7	100%
MIAMI-DADE	228	1	14	191	90%
MONROE	6	0	0	6	100%
NASSAU	3	0	0	3	100%
OKALOOSA	7	0	2	4	80%
OKEECHOBEE	4	0	0	4	100%
ORANGE	90	1	4	81	95%
OSCEOLA	10	0	1	9	100%
PALM BEACH	92	4	6	77	94%
PASCO	8	2	1	5	100%
PINELLAS	26	1	1	24	100%
POLK	53	0	4	49	100%
PUTNAM	3	0	0	3	100%
SAINT JOHNS	5	0	0	5	100%
SAINT LUCIE	19	2	2	13	87%
SANTA ROSA	0	0	0	0	N/A
SARASOTA	13	0	0	13	100%
SEMINOLE	14	0	2	11	92%
SUMTER	3	0	0	2	67%
SUWANNEE	10	2	4	6	150%
TAYLOR	1	0	0	1	100%
UNION	0	0	0	0	N/A
VOLUSIA	8	0	1	6	86%
WAKULLA	1	0	0	1	100%
WALTON	2	0	0	2	100%
WASHINGTON	1	0	0	1	100%
STATE PRISONS	33	1	4	28	100%
FLORIDA	1,093	27	74	926	93%

**B-6: Completion of Treatment in 365 Days, Florida, 2005**

<b>Counties</b>	<b>Cases</b>	<b>Starting Treatment</b>	<b>Died During Treatment</b>	<b>Completed Treatment</b>	<b>Percent Completed</b>
ALACHUA	10	9	0	9	100%
BAKER	1	1	0	1	100%
BAY	12	12	0	9	75%
BRADFORD	0	0	0	0	N/A
BREVARD	14	14	1	12	92%
BROWARD	99	95	5	74	82%
CALHOUN	0	0	0	0	N/A
CHARLOTTE	6	6	0	6	100%
CITRUS	2	2	0	2	100%
CLAY	3	3	0	3	100%
COLLIER	24	23	1	20	91%
COLUMBIA	1	1	0	1	100%
DE SOTO	4	4	2	2	100%
DIXIE	0	0	0	0	N/A
DUVAL	81	74	6	54	79%
ESCAMBIA	10	10	0	7	70%
FLAGLER	1	1	0	1	100%
FRANKLIN	0	0	0	0	N/A
GADSDEN	5	5	1	3	75%
GILCHRIST	6	6	0	5	83%
GLADES	1	1	1	0	N/A
GULF	0	0	0	0	N/A
HAMILTON	1	1	0	1	100%
HARDEE	1	1	0	1	100%
HENDRY	5	5	1	2	50%
HERNANDO	1	1	0	1	100%
HIGHLANDS	3	2	1	0	0%
HILLSBOROUGH	90	88	6	72	88%
HOLMES	1	1	0	1	100%
INDIAN RIVER	4	4	0	4	100%
JACKSON	0	0	0	0	N/A
JEFFERSON	0	0	0	0	N/A
LAFAYETTE	0	0	0	0	N/A
LAKE	6	5	1	3	75%
LEE	16	16	0	15	94%
LEON	15	15	1	13	93%

**B-6: Completion of Treatment in 365 Days, Florida, 2005 (cont.)**

Counties	Cases	Starting Treatment	Died During Treatment	Completed Treatment	Percent Completed
LEVY	0	0	0	0	N/A
LIBERTY	0	0	0	0	N/A
MADISON	0	0	0	0	N/A
MANATEE	16	14	1	11	85%
MARION	7	6	0	6	100%
MARTIN	7	7	0	7	100%
MIAMI-DADE	228	223	14	172	82%
MONROE	6	6	0	6	100%
NASSAU	3	3	0	3	100%
OKALOOSA	7	6	1	3	60%
OKEECHOBEE	4	4	0	4	100%
ORANGE	90	87	4	73	88%
OSCEOLA	10	9	0	9	100%
PALM BEACH	92	88	6	77	94%
PASCO	8	6	1	5	100%
PINELLAS	26	25	1	24	100%
POLK	53	50	4	45	98%
PUTNAM	3	3	0	3	100%
SAINT JOHNS	5	5	0	4	80%
SAINT LUCIE	19	17	2	12	80%
SANTA ROSA	0	0	0	0	N/A
SARASOTA	13	13	0	12	92%
SEMINOLE	14	14	2	10	83%
SUMTER	3	3	0	1	33%
SUWANNEE	10	10	4	6	100%
TAYLOR	1	1	0	1	100%
UNION	0	0	0	0	N/A
VOLUSIA	8	7	1	5	83%
WAKULLA	1	1	0	1	100%
WALTON	2	2	0	2	100%
WASHINGTON	1	1	0	1	100%
STATE PRISONS	33	32	4	28	100%
FLORIDA	1,093	1,049	72	853	87%

**Source for all tables:** TIMS as of June 21, 2007, Bureau of TB and Refugee Health

*(Cases who were dead at diagnosis are not reflected in this chart since they did not start treatment. However, if a case started treatment prior to dying before a TB diagnosis they were regarded as being alive at time of diagnosis (per CDC reporting protocol).*

Florida's case completion rates are indicators used to show program efficacy. The variables used are those that allow opportunity for intervention by healthcare professionals in order to improve outcomes. The **overall** percentage of cases completing treatment is calculated by the following formula:

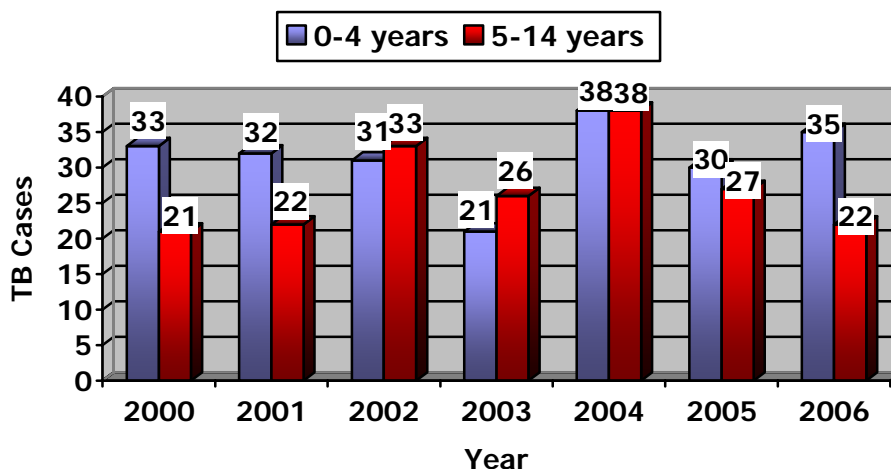
$$\frac{\text{Cases Completing Treatment}}{\text{Total TB Cases - (Dead at Diagnosis + Died During Treatment)}} \times 100$$

The percentage of cases completing treatment **within one year** (365 days) is calculated using the following formula:

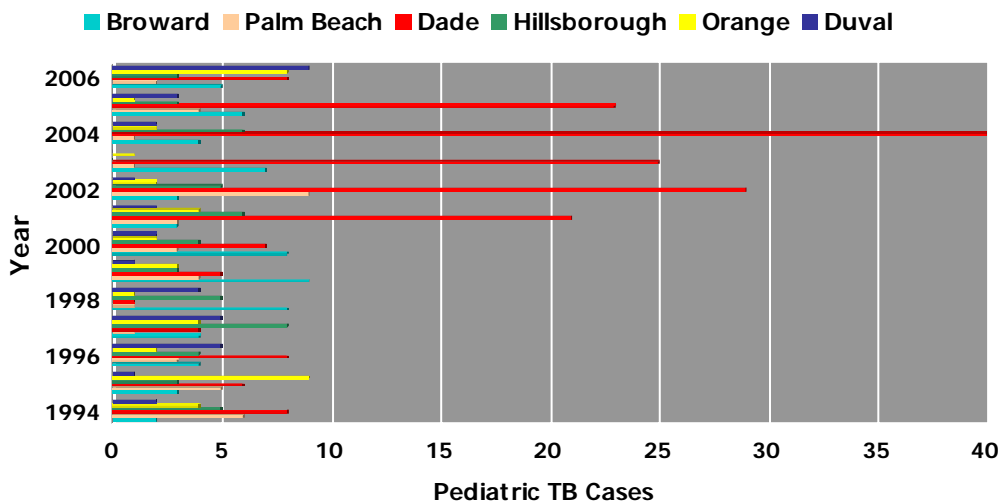
$$\frac{\text{Cases Completing Treatment}}{\text{*TB Cases Starting Treatment - (Dead at Diagnosis + Died During Treatment)}} \times 100$$

\*These cases started treatment and were not *complicated* cases. Complicated cases are defined as multiple drug resistant (Isoniazid and Rifampin), resistant to Rifampin, or cases less than 15 years of age who are diagnosed with meningeal, bone/joint, or miliary TB (all generally require more than one year of treatment).

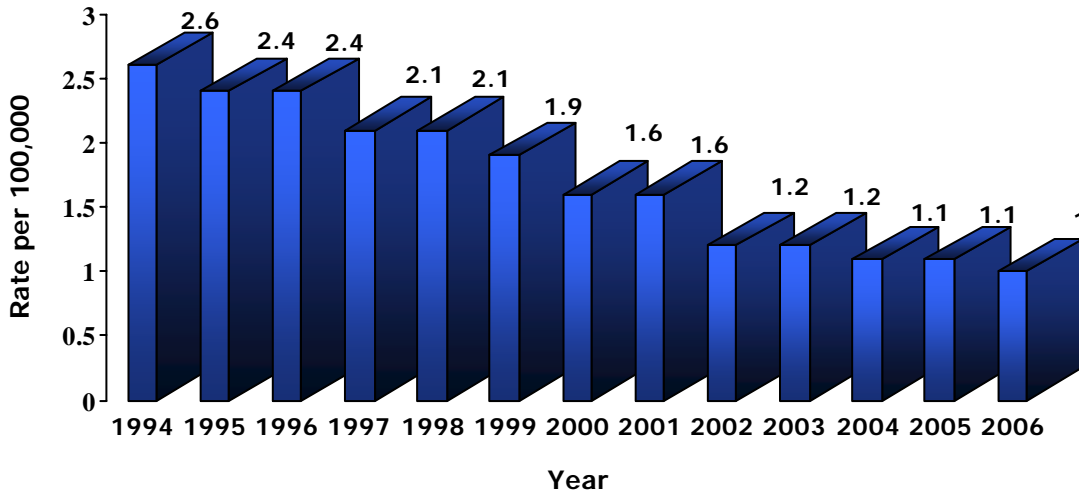
**B-7: Pediatric TB By Age Group, Florida, 2000-2006**



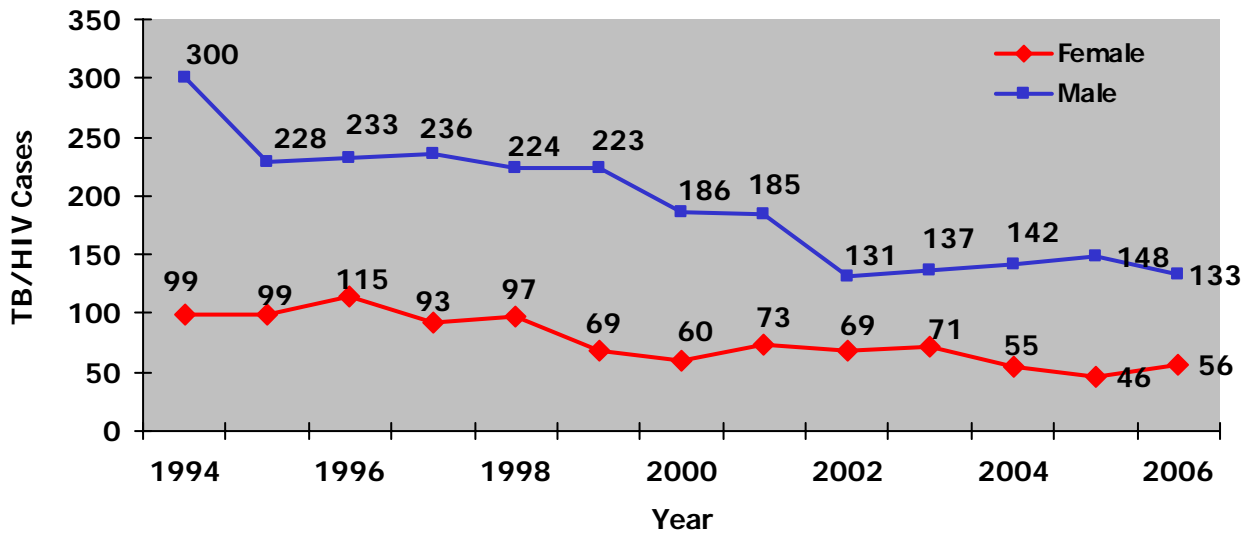
**B-8: Florida's "Big Six" and Pediatric TB, 1994-2006**



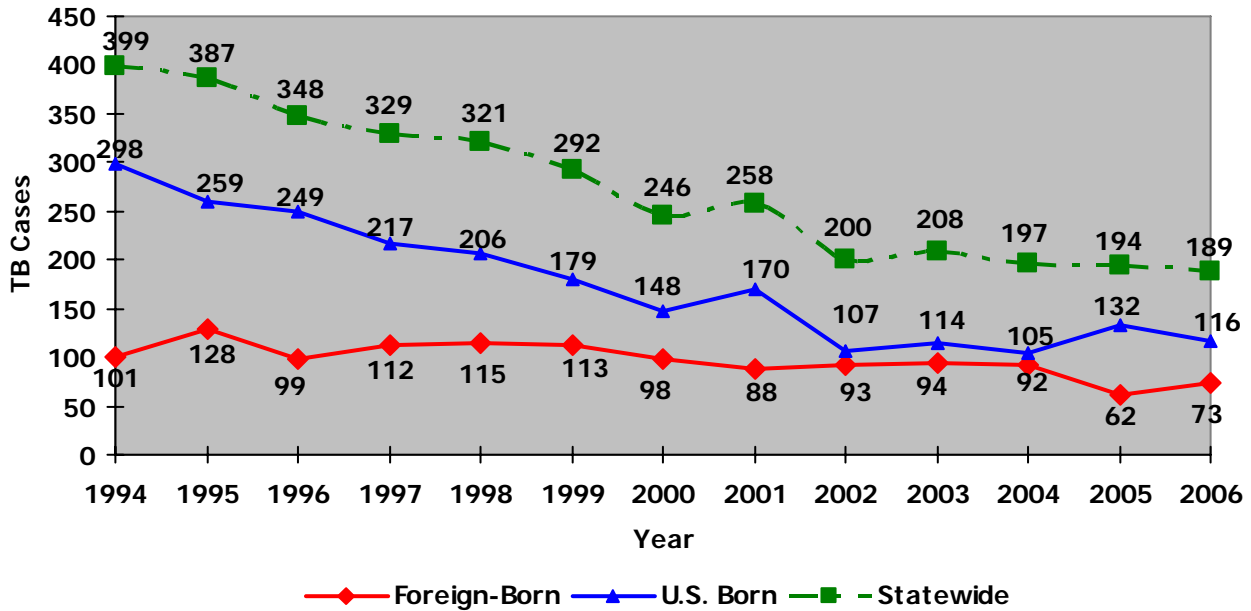
**B-9: TB/HIV Case Rates, Florida, 1994-2006**



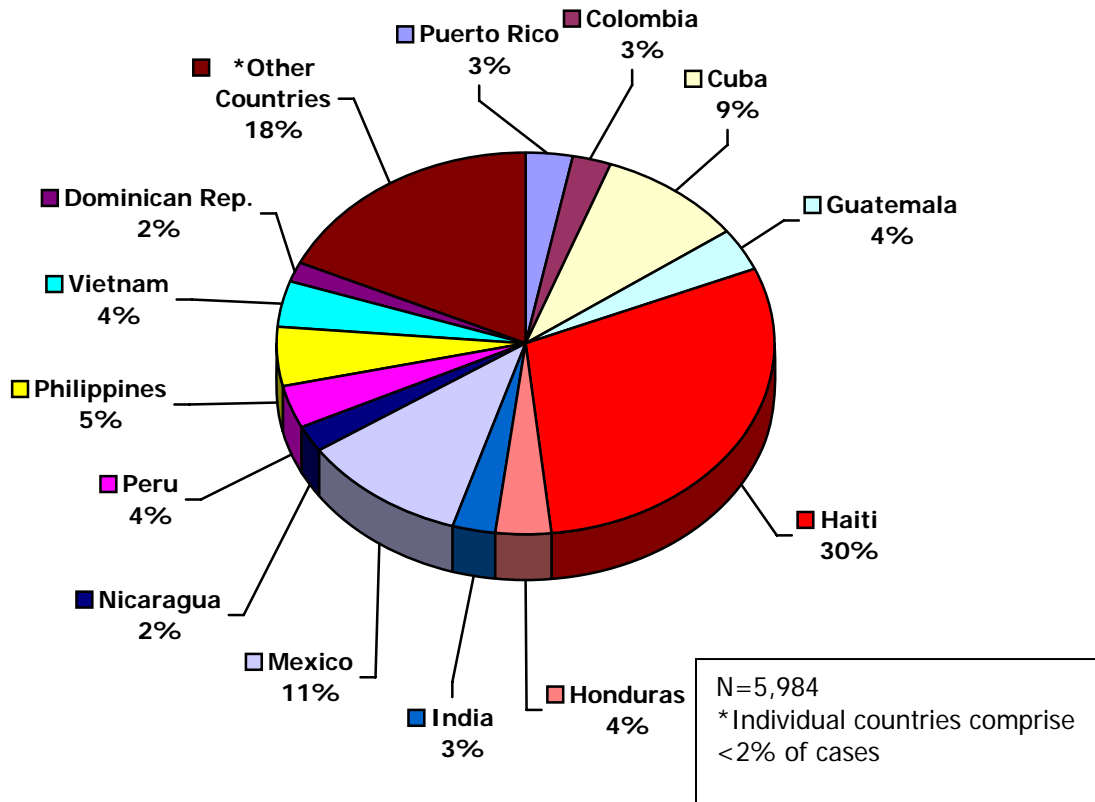
**B-10: TB/HIV by Gender  
Florida, 1994-2006**



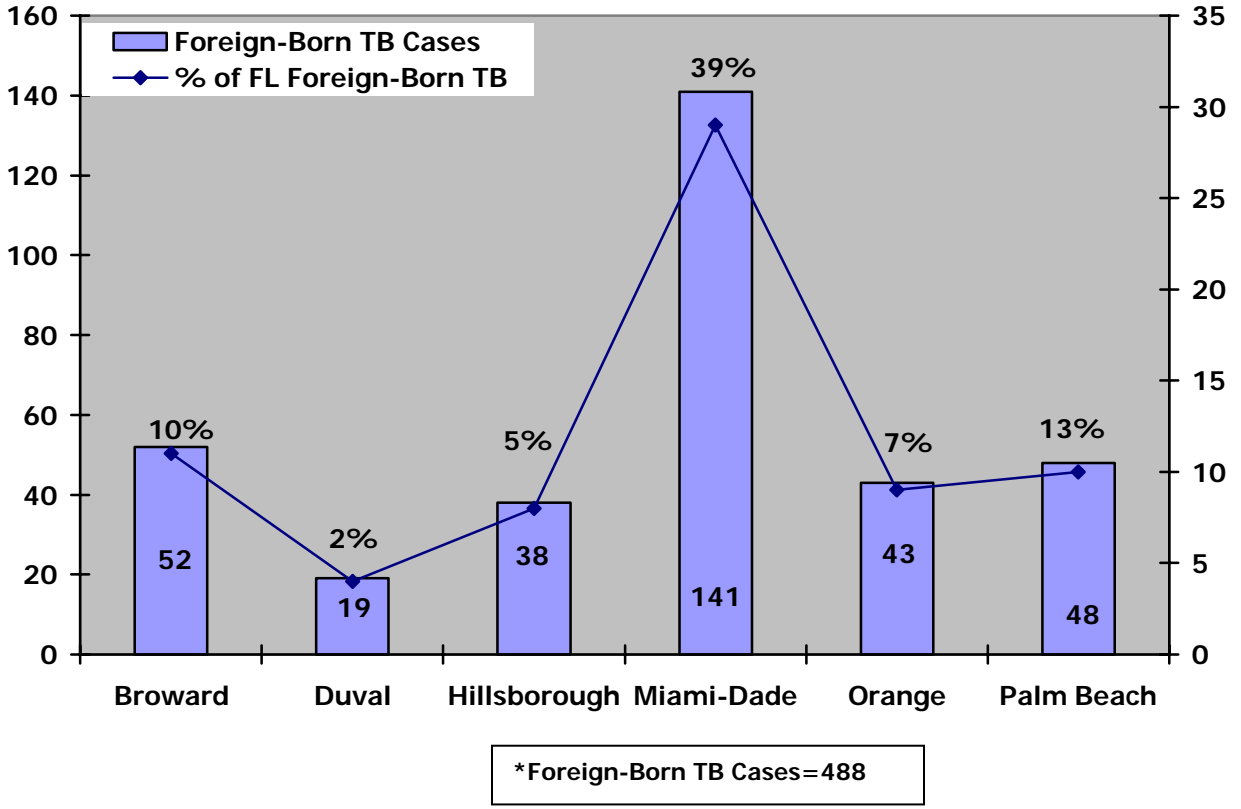
B-11: TB/HIV Among Foreign-Born and U.S. Born  
Florida, 1994-2006



B-12: Countries of Origin  
Foreign-Born and Florida, 1994-2006



**B-13: Foreign-Born TB, Florida and Select Counties, 2006**



**B-14: TB Medication Method of Administration, Florida, 1994-2006<sup>1</sup>**

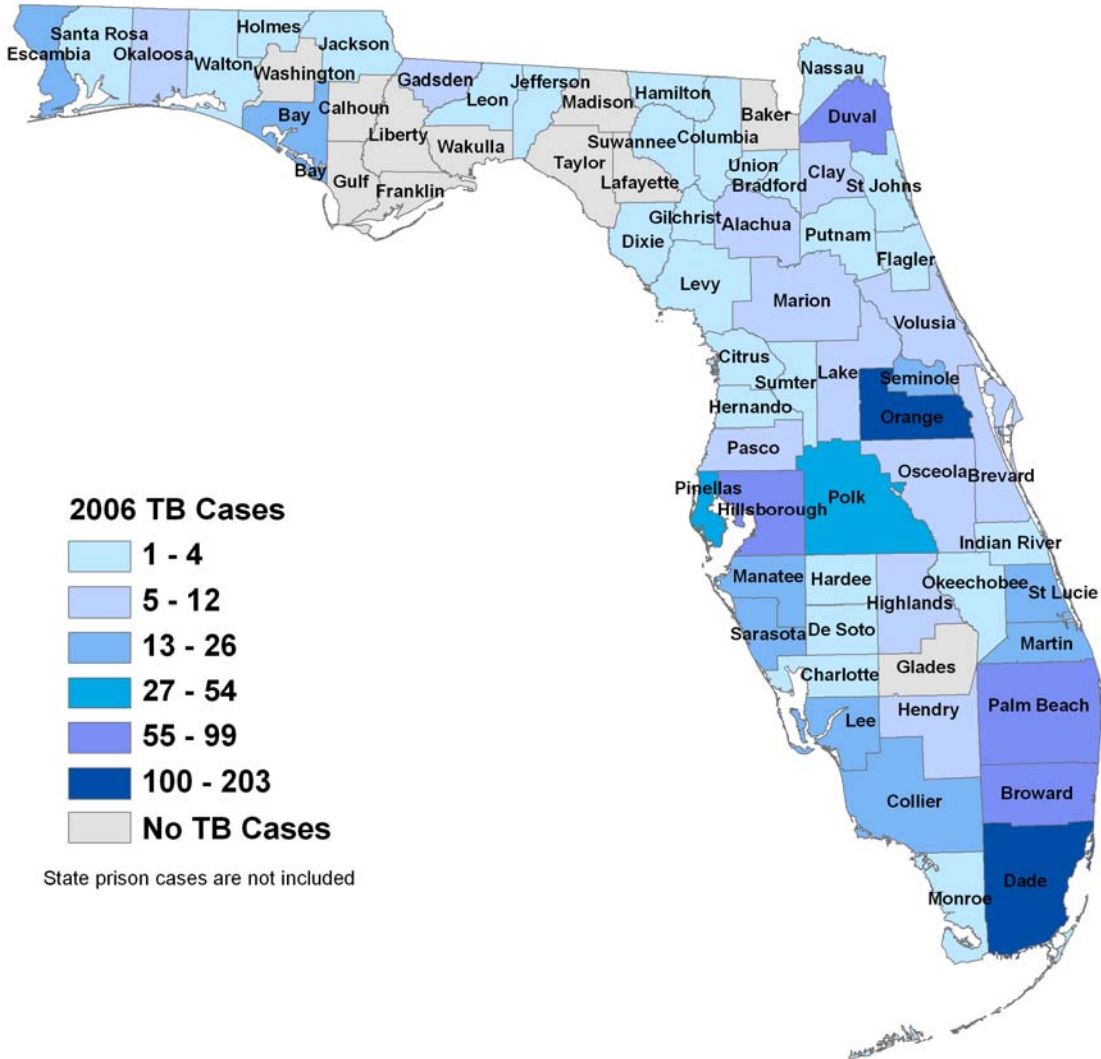
<b>Year</b>	<b>Self Administered</b>	<b>Directly Observed</b>	<b>Self and DOT</b>	<b>Unknown</b>	<b>Total</b>	<b>Percent on DOT<sup>2</sup></b>
1994	654	496	315	219	1684	48%
1995	409	632	346	124	1511	65%
1996	298	614	406	44	1362	75%
1997	290	546	494	13	1343	77%
1998	223	520	504	6	1253	82%
1999	180	515	520	2	1217	85%
2000	111	506	494	0	1111	90%
2001	88	586	420	7	1101	91%
2002	77	589	377	6	1049	92%
2003	64	506	397	1	968	93%
2004	15	225	170	5	415	95%
2005	37	377	328	3	745	95%
2006	17	246	286	1	569	93%
<b>Total</b>	<b>2463</b>	<b>6358</b>	<b>5057</b>	<b>431</b>	<b>14328</b>	<b>80%</b>

<sup>1</sup> Bureau has not received all case completion reports. Data as of June 5, 2007

<sup>2</sup> Calculated from cases with available DOT data

**APPENDIX C**  
**TB MORBIDITY MAP**

# 2006 Florida TB Cases



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**REFUGEE HEALTH**

**FLORIDA, 2006**

## Florida Refugee Health Program Annual Report 2006

### Overview

The vision of the Florida Refugee Health Program (RHP) is to provide culturally sensitive health services that will enhance the personal health status and self-sufficiency of persons eligible for federal refugee benefits.<sup>1</sup> As an important secondary function, the program offers testing and treatment (or referral for treatment) of communicable diseases which could be a threat to public health.

Based on the most recent two-year estimates, Florida continues to receive the largest population (41,427) of persons eligible for the federal Refugee Resettlement Program. In comparison, California resettled 18,520 persons and Minnesota provided resettlement to 14,055 eligible arrivals. New York (7,381) and Washington (5,505) each followed with fewer than 10,000 eligible new arrivals.<sup>2</sup>

### *Services Offered*

Pre-arrival, the majority of refugee health clients are required to have an overseas medical exam to identify conditions, that would preclude their entry into the United States (i.e. active and infectious tuberculosis). Post-arrival, the RHP (through the county health departments) offers a voluntary health assessment and immunization services at no charge to eligible clients if the initial assessment is performed within 90 days after their arrival.<sup>3</sup> Although participation in the RHP is voluntary, eligible persons can greatly benefit from the services through improved health status or completion of requirements for employment, school entry, or for an adjustment of immigration status ("Green Card").

The comprehensive health services offered by the RHP include communicable and chronic disease screening, immunizations, health education, mental health screening, and domestic violence screening. Interpreter training, telephone interpretation services, face-to-face interpretation services, and document translation services were also offered in 2006.

## Program Statistics (Data Date: August 21, 2007)

### *Arrivals and Screenings*

In calendar year 2006, Florida received 24,922 new arrivals eligible for the RHP, with 87.61% (21,834) having received health assessment and immunization services (Table 1). The updated screening rate for the previous calendar year 2005 is 90.14% (19,927 screened/22,107 arrivals). Common reasons eligible arrivals do not access refugee health services included: persons did not show up for their appointment; persons resettled to another county or state; and the location

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<sup>1</sup> Persons eligible for refugee benefits include: refugees, asylees, Cuban/Haitian entrants, Victims of Human Trafficking, and Unaccompanied Refugee Minors.

<sup>2</sup> Proposed FY 2006 Social Services Formula Notice ([http://www.acf.hhs.gov/grants/open/RS0115\\_table.html](http://www.acf.hhs.gov/grants/open/RS0115_table.html))

<sup>3</sup> Federal Refugee Medical Assistance (RMA) fund are used to reimburse county health departments for refugee health services provided. In FFY 05-06, Florida's county health departments provided **\$9,654,270** in RMA services.

of the person was unknown or an insufficient address was provided to the county health department. A small number of persons were reported to have refused the services.

In 2006, Miami was the main port of entry for the majority (15,622) of refugee health clients. In addition, a significant number came to the United States outside of the normal resettlement process, either through Texas (5,362) or as an irregular maritime arrival (2,694).<sup>4</sup> Cuba is the primary country of origin for those entering through Texas.

### *Client Population*

In 2006 as in the previous year, the majority of refugee health clients originated from Cuba (22,468), Haiti (824), or Colombia (743). Counties that received more than 100 new arrivals in 2006 included: Miami-Dade, Hillsborough, Palm Beach, Broward, Collier, Orange, Duval, Lee, Seminole, Pinellas, and Sarasota. Miami-Dade County received the most eligible new arrivals (19,386) in 2006 and provided health services to 90.92% (17,624).

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<sup>4</sup> The U.S. Customs and Border Protection processes the irregular maritime arrivals and arranges for them to receive health assessment and immunization services at the Miami-Dade Refugee Health Assessment Center prior to being released to a voluntary agency, primarily Catholic Charities or Church World Service.

**Table 1: New Arrivals, Number Screened, and Percent Screened by Resettlement County, Florida Refugee Health Program, 2006**

<b>County</b>	<b>Screened</b>	<b>Percent</b>
DADE	17,624	90.92%
HILLSBOROUGH	891	72.26%
BROWARD	577	84.11%
COLLIER	533	87.66%
PALM BEACH	484	65.05%
ORANGE	460	78.23%
DUVAL	379	85.17%
LEE	203	63.24%
SEMINOLE	169	96.02%
PINELLAS	155	92.26%
SARASOTA	89	74.79%
MONROE	59	68.60%
POLK	44	58.67%
PASCO	42	71.19%
SAINT LUCIE	25	92.59%
OSCEOLA	22	34.92%
FLAGLER	19	90.48%
GLADES	10	100.00%
CHARLOTTE	9	60.00%
VOLUSIA	7	87.50%
HIGHLANDS	6	66.67%
MARTIN	5	100.00%
BREVARD	5	45.45%
LEON	4	80.00%
ALACHUA	3	75.00%
HAMILTON	2	100.00%
SUWANNEE	2	40.00%
HENDRY	0	0.00%
BAY	1	100.00%
SAINT JOHNS	1	100.00%
HOLMES	1	50.00%
LAKE	1	7.69%
MARION	1	25.00%
MANATEE	1	20.00%
CLAY	0	0.00%
COLUMBIA	0	0.00%
INDIAN RIVER	0	0.00%
<b>TOTAL</b>	<b>21,834</b>	<b>87.61%</b>

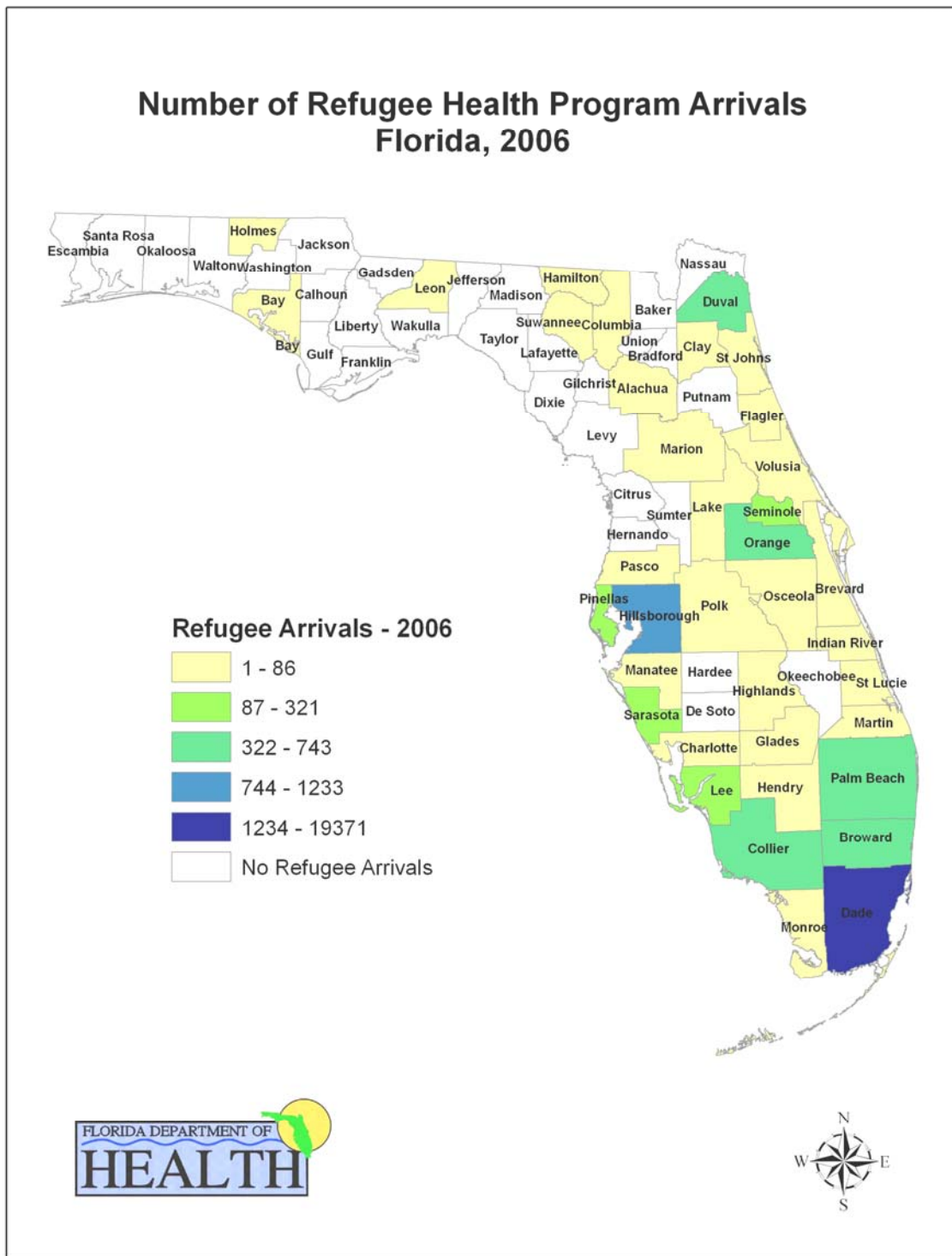
**Source: Refugee Domestic Health Assessment System**  
**Data Date: August 21, 2007**

**Table 2: New Arrivals, Number Screened, and Percent Screened by Country of Origin, Florida Refugee Health Program, 2006**

Country	Arrivals	Screened	Percent	Country	Arrivals	Screened
CUBA	22,468	20,081	89.32%	AFGHANISTAN	2	0
HAITI	824	470	57.04%	BURUNDI	2	2
COLOMBIA	743	561	75.50%	CHAD	2	2
VENEZUELA	196	157	80.10%	ESTONIA	2	1
BURMA	88	71	80.68%	NIGERIA	2	2
RUSSIA	83	62	74.70%	SOUTH AFRICA	2	0
UKRAINE	76	73	96.05%	AZERBAIJAN	1	0
UZBEKISTAN	65	65	100.00%	CENTRAL AFRICAN REP.	1	0
VIETNAM	36	35	97.22%	CONGO	1	0
CHINA	35	9	25.71%	INDIA	1	1
IRAN	29	28	96.55%	IVORY COAST	1	1
SUDAN	28	28	100.00%	LATVIA	1	1
LIBERIA	26	24	92.31%	LEBANON	1	1
CAMEROON	21	17	80.95%	MACEDONIA	1	1
ETHIOPIA	18	14	77.78%	MALAYSIA	1	1
SOMALIA	14	13	92.86%	MAURITANIA	1	1
THAILAND	11	10	90.91%	MEXICO	1	1
ZAIRE	10	9	90.00%	UGANDA	1	1
GEORGIA	9	6	66.67%	YUGOSLAVIA	1	1
ERITREA	8	8	100.00%	TOTAL	24,922	21,834
PAKISTAN	8	4	50.00%			
PERU	8	8	100.00%			
HONDURAS	7	4	57.14%			
SIERRA LEONE	7	7	100.00%			
ARMENIA	6	0	0.00%			
KAZAKHSTAN	6	5	83.33%			
KENYA	6	1	16.67%			
RWANDA	6	6	100.00%			
BELARUS	5	5	100.00%			
BOSNIA	5	4	80.00%			
ECUADOR	5	5	100.00%			
GUATEMALA	5	3	60.00%			
SENEGAL	5	5	100.00%			
SERBIA	5	5	100.00%			
TOGO	5	2	40.00%			
COSTA RICA	4	4	100.00%			
EGYPT	4	2	50.00%			
PHILIPPINES	4	3	75.00%			
ALBANIA	3	1	33.33%			
GHANA	3	2	66.67%			
GUYANA	3	0	0.00%			

**Source: Refugee Domestic Health Assessment System  
Data Date: August 21, 2007**

**Figure 1: Map of Florida's New Arrivals by Resettlement County, Florida Refugee Health Program, 2006**



**Source: Refugee Domestic Health Assessment System**  
**Data Date: August 21, 2007**

**Table 3: TB Skin Test Results by Client's Country of Origin, Florida Refugee Health Program, 2006**

<i>Country</i>	<i>A</i>	<i>N</i>	<i>Total</i>	<i>% Tests Abnormal</i>	<i>Country</i>	<i>A</i>	<i>N</i>	<i>Total</i>	<i>% Tests Abnormal</i>
ALBANIA	0	1	1	0.00%	PAKISTAN	1	3	4	25.00%
BELARUS	5	0	5	100.00%	PERU	1	7	8	12.50%
BOSNIA	4	0	4	100.00%	PHILIPPINES	1	2	3	33.33%
BURMA	26	34	60	43.33%	RUSSIA	25	31	56	44.64%
BURUNDI	2	0	2	100.00%	RWANDA	3	3	6	50.00%
CAMEROON	2	13	15	13.33%	SENEGAL	2	3	5	40.00%
CHAD	1	0	1	100.00%	SERBIA	2	3	5	40.00%
CHINA	4	5	9	44.44%	SIERRA LEONE	4	3	7	57.14%
COLOMBIA	78	433	511	15.26%	SOMALIA	1	10	11	9.09%
COSTA RICA	2	1	3	66.67%	SUDAN	6	20	26	23.08%
CUBA	934	18,035	18,969	4.92%	THAILAND	1	5	6	16.67%
ECUADOR	1	3	4	25.00%	UGANDA	0	1	1	0.00%
EGYPT	0	2	2	0.00%	UKRAINE	37	33	70	52.86%
ERITREA	3	4	7	42.86%	UZBEKISTAN	21	41	62	33.87%
ESTONIA	0	1	1	0.00%	VENEZUELA	16	130	146	10.96%
ETHIOPIA	2	10	12	16.67%	VIETNAM	9	21	30	30.00%
GEORGIA	4	2	6	66.67%	YUGOSLAVIA	0	1	1	0.00%
GHANA	1	1	2	50.00%	ZAIRE	0	9	9	0.00%
GUATEMALA	0	2	2	0.00%	<b>TOTAL</b>	<b>1,416</b>	<b>19,171</b>	<b>20,587</b>	<b>6.88%</b>
HAITI	197	252	449	43.88%					
HONDURAS	0	4	4	0.00%					
INDIA	0	1	1	0.00%					
IRAN	3	24	27	11.11%					
IVORY COAST	0	1	1	0.00%					
KAZAKHSTAN	2	2	4	50.00%					
LATVIA	1	0	1	100.00%					
LIBERIA	12	12	24	50.00%					
MACEDONIA	1	0	1	100.00%					
MAURITANIA	1	0	1	100.00%					
MEXICO	0	1	1	0.00%					
NIGERIA	0	1	1	0.00%					

**A=abnormal, N=normal**

**Source: Refugee Domestic Health Assessment System**

**Data Date: August 21, 2007**