

TUBERCULOSIS IN COLORADO

A Summary of Cases Reported in 2006

Colorado Department of Public Health and Environment
Disease Control and Environmental Epidemiology Division
Tuberculosis Program
4300 Cherry Creek Drive South
Denver, Colorado 80246

(303) 692-2656

www.cdphe.state.co.us/dc/tb/tbhome.html

July 4, 2007



Colorado Department
of Public Health
and Environment

Summary

Colorado reported 124 new cases of active tuberculosis (TB) disease in 2006. This was an increase from the 101 cases reported in 2005 with the largest increase in the Asian population. Birth in a high TB prevalence country was the number one risk factor (67 percent of cases) followed by excess alcohol use (nine percent of cases). Eight cases (six percent) were also co-infected with HIV.

Seventeen of the state's 64 counties reported a new case of TB in 2006, and Denver County reported the most cases (40). Thirty counties have not reported a case in the past five years, though Otero County reported a case in 2006 after not having a case in five years.

The overall case rate for TB in Colorado was 2.6 per 100,000 population compared to the United States rate of 4.6 per 100,000. The rate in the foreign-born population (18.0 per 100,000) was 19 times that of the U.S.-born population (0.9 per 100,000). Though only 9.6 percent of Colorado's population is foreign-born, 67 percent of the TB cases in Colorado in 2006 are foreign-born. For some, TB was diagnosed upon arrival, while others have lived in the United States for many years.

The rate in the minority population (9.0 per 100,000) was 23 times the rate in the majority population (0.4 per 100,000). While minorities comprise 26 percent of the state's population, 89 percent of new TB cases occurred in racial and ethnic minorities.

The ages of persons reported with TB in 2006 ranged from less than one year to 88 years with an average of 45 years. The largest number of cases was in the 25-44 year age group, and the smallest in the less than 15 years age group. The highest incidence was in the 75-79 years age group with 12.8 cases per 100,000 population. The lowest was in the 0-3 years and 5-9 years at 0.3 cases per 100,000 population.

Thirteen of the 86 (15 percent) culture-positive TB cases in 2006 were resistant to one or more primary drugs (isoniazid-INH, rifampin-RIF, pyrazinamide-PZA, ethambutol-EMB), and one of those cases was multi-drug resistant (MDR) TB (defined as being resistant to at least INH and RIF). None of the cases had extensively drug resistant TB (XDR TB).

The usual treatment for TB is six months long and uses INH, RIF, PZA, and EMB. Of the 101 cases reported in 2005 (the most current year with treatment outcomes), three patients were dead at diagnosis, eight patients died during therapy (death was due to TB), three patients did not complete therapy (two were lost, one stopped early due to other medical conditions), and the remaining 87 cases completed an appropriate course of therapy. Of those eligible to complete within a year, 96 percent did so which exceeded the national goal of 90 percent. All new cases reported in 2006, who were alive at diagnosis, have started therapy.

In 2005 (the most current year with data available), contact investigations surrounding the 44 patients whose sputum cultures grew *Mycobacterium tuberculosis* complex (33 also had acid-fast bacilli present on smear) were completed, and 1317 exposed persons were identified. Seven persons were found to have TB disease and were treated. Another 220 persons were found to have latent TB infection and 179 initiated treatment. Preliminary data indicate 127 have completed treatment thereby reducing the risk of future disease.

Tuberculosis in Colorado A Summary of Cases Reported in 2006

Colorado reported 124 new cases of active tuberculosis (TB) disease in 2006 (**Figure 1**). Three of the cases were deceased at the time of TB diagnosis. The largest increase was in the Asian population—back to levels seen in 2002 and 2003. **Table 1** shows a comparison between 2005 and 2006 cases. Birth in a high TB prevalence country is the number one risk factor (67 percent). Other risk factors include excess alcohol use (8.9 percent), being homeless within past year (5.6 percent), and being a resident of a long-term care facility (5.6 percent).

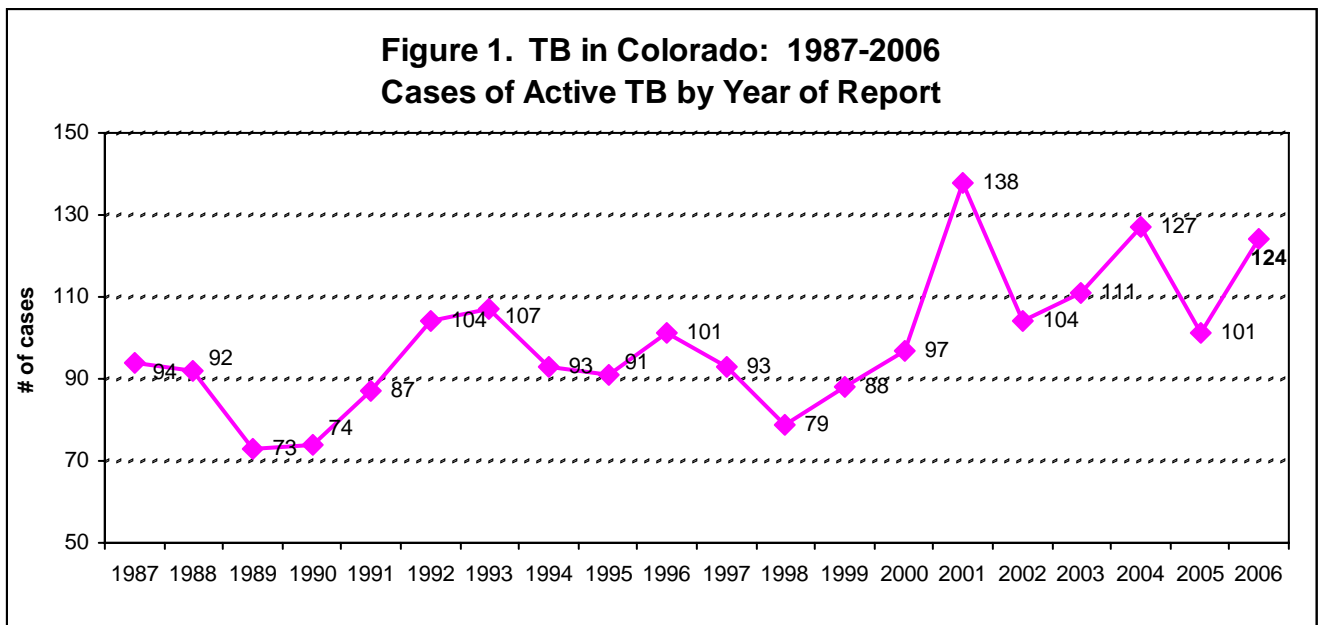


Table 1. TB in Colorado: Comparison of 2005 and 2006 Cases

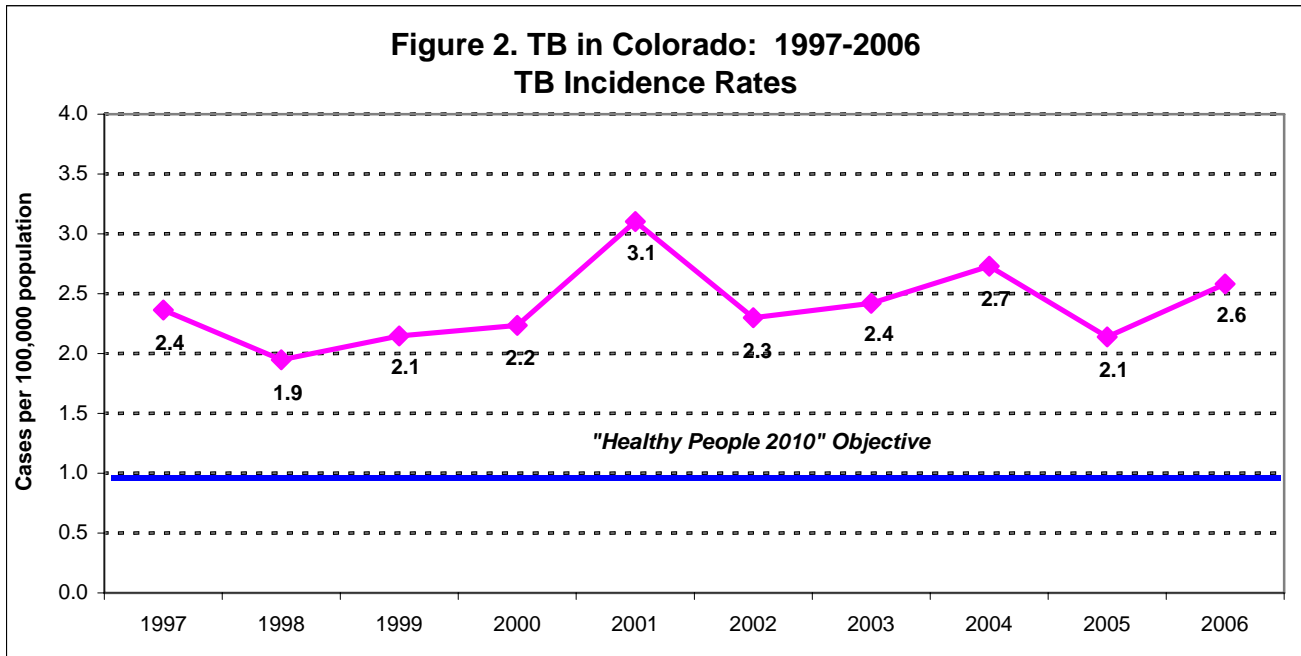
	Year reported			
	2005		2006	
	n	%	n	%
Age Group (years)				
<15	17	16.8	7	5.6
15-24	12	11.9	20	16.1
25-44	21	20.8	36	29.0
45-64	25	24.8	30	24.2
65+	26	25.7	31	25.0
TOTAL	101	100.0	124	100.0
Gender				
Male	62	61.4	66	53.2
Female	39	38.6	58	46.8
TOTAL	101	100.0	124	100.0
Race/Ethnicity				
White	17	16.8	14	11.3
Black	21	20.8	21	16.9
Hispanic	49	48.5	60	48.4
Amer Ind/AK native	1	1.0	0	0.0
Asian/Pacific Is	12	11.9	28	22.6
Multiple race	1	1.0	1	0.8
TOTAL	101	100.0	124	100.0
Region				
Denver metro ^a	74	73.3	92	74.2
Other than Denver metro	27	26.7	32	25.8
TOTAL	101	100.0	124	100.0
Country of Origin				
United States	41	40.6	41	33.1
Mexico	29	28.7	36	29.0
Other countries	31	30.7	47	37.9
TOTAL	101	100.0	124	100.0
HIV Status Among 25-44 Age Group				
Negative	16	76.2	30	83.3
Positive	3	14.3	5	13.9
Testing done, results unknown	0	0.0	0	0.0
Refused testing	0	0.0	1	2.8
Not offered	2	9.5	0	0.0
TOTAL	21	100.0	36	100.0
Risk factors^b				
Birth in a high TB prevalence country	59	58.4	83	66.9
Homeless within past year	7	6.9	7	5.6
Resident of correctional facility at diagnosis	7	6.9	1	0.8
Resident of long-term care facility	4	4.0	7	5.6
Injected drug use within past year	1	1.0	0	0.0
Non-injected drug use within past year	5	5.0	4	3.2
Excess alcohol use within past year	13	12.9	11	8.9
Health care worker within past 2 years	2	2.0	1	0.8

a. Denver metro includes: Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson counties.

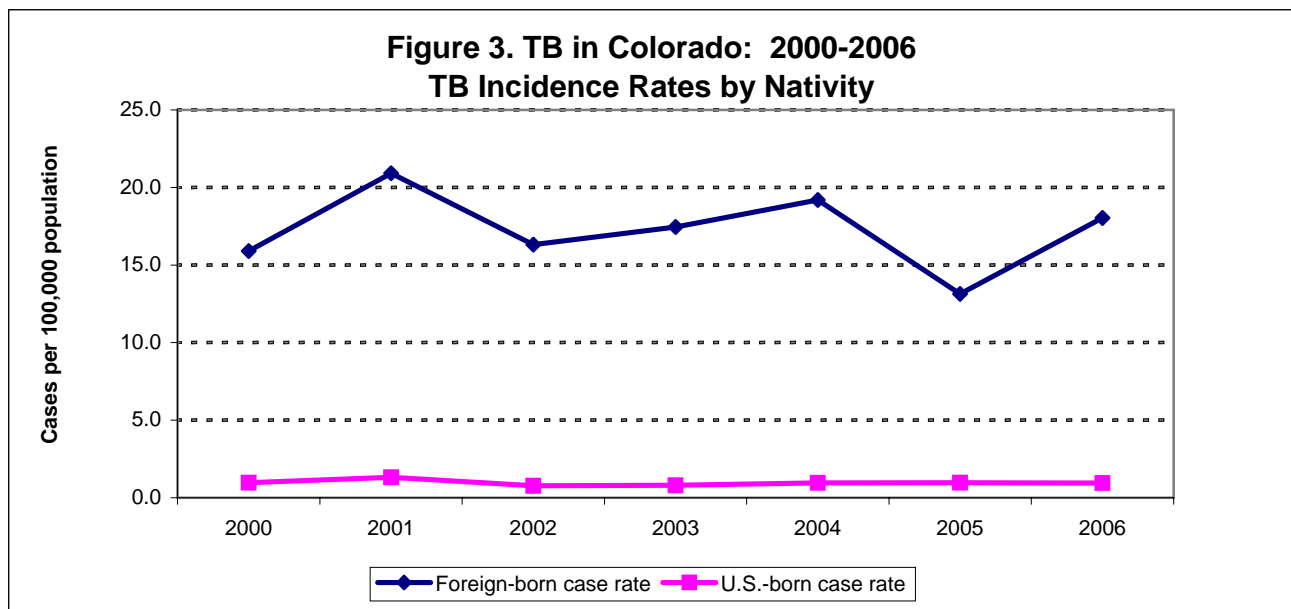
b. A case may have more than one risk factor indicated.

Incidence

In 2006, the overall case rate for TB in the U.S. was 4.6 per 100,000 population, and in Colorado it was 2.6 per 100,000 (**Figure 2**). The “Healthy People 2010” goal is 1.0 or fewer cases per 100,000 population, and Colorado will need to reduce the number of new cases by approximately 60 percent to reach this goal.



The incidence in the foreign-born population at 18.0 per 100,000 population is 19 times that of the U.S.-born population (**Figure 3**).



Though Colorado is categorized as a low incidence state (case rate of less than 3.5 per 100,000 population), case rates in most minority populations exceed the 'low incidence' threshold (**Table 2**). At 9.0 per 100,000, the case rate in the minority population is 23 times the rate in the majority population—a huge disparity.

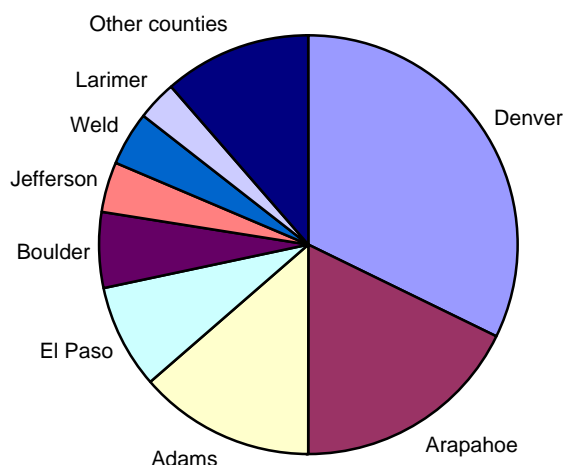
Table 2. TB in Colorado: 2006
Case Rates (per 100,000) by Race/Ethnicity

Race/ethnicity	2006		
	# cases	Pop est.	Rate
White	14	3577802	0.4
Black	21	176800	11.9
Hispanic	60	821544	7.3
Asian/Pacific Islander	28	108578	25.8
Amer Ind/AK native	0	32189	0.0
Multiple race	1	87439	1.1
TOTAL	124	4,804,353	2.6
Year 2010 goal: <=1.0 cases per 100,000 population			

Location

Seventeen of the state’s 64 counties reported a new case of TB in 2006. Denver County consistently reports the most cases. Thirty counties have not reported a case in the past five years, though Otero County reported a case in 2006 after not having a case in five years. The largest increase in cases from the previous year was in Adams County (from 6 to 17) (**Figure 4, Table 3**).

Figure 4. TB in Colorado: 2006
Reported cases by county (n=124)



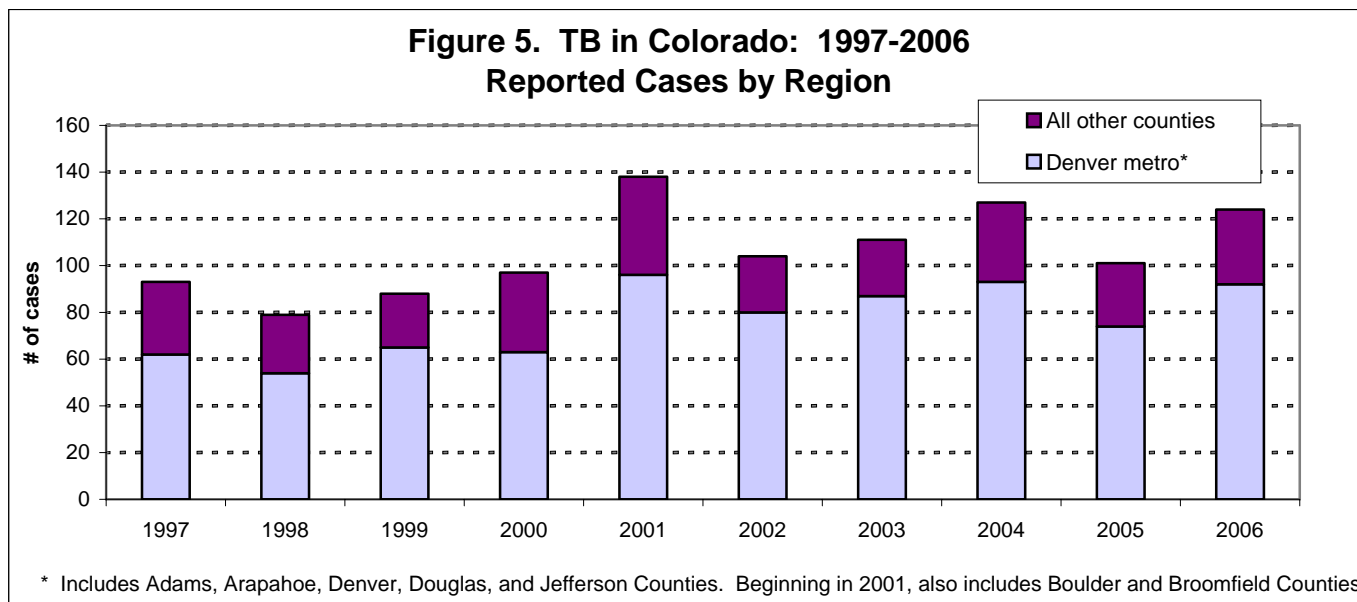
**Table 3. TB in Colorado: 1997-2006
Cases by County and Year of Report**

NOTE: Only counties reporting cases are listed.

County	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Adams	10	7	8	4	15	11	9	13	6	17
Alamosa	1	0	0	0	0	0	0	0	1	0
Arapahoe	10	6	12	11	11	20	20	18	17	22
Archuleta	0	0	0	0	0	0	1	0	0	0
Bent	0	1	0	0	0	0	0	0	0	0
Boulder	6	4	3	6	5	5	13	2	3	7
Broomfield ^a					1	0	0	0	1	0
Chaffee	0	0	0	0	0	0	1	0	0	0
Conejos	0	0	0	0	0	0	1	0	0	1
Costilla	0	0	0	0	1	0	0	0	0	0
Crowley	0	0	0	0	0	0	0	1	0	0
Delta	0	0	0	2	1	0	0	0	0	0
Denver	37	34	39	42	55	38	38	47	42	40
Douglas	1	1	1	0	0	2	0	3	0	1
Eagle	3	0	0	2	0	1	2	0	1	0
El Paso	5	4	9	7	7	5	4	9	9	10
Elbert	0	0	0	0	1	0	1	0	0	0
Fremont	1	1	0	0	0	0	2	0	1	0
Garfield	1	1	0	0	0	1	0	0	0	2
Grand	0	0	0	0	0	0	0	2	1	2
Gunnison	1	0	0	0	2	0	0	0	0	0
Jefferson	4	6	5	6	9	4	7	10	5	5
La Plata	0	0	0	1	1	1	0	1	0	0
Larimer	3	1	0	2	3	3	3	2	2	4
Las Animas	2	0	1	0	1	0	0	0	0	0
Lincoln	0	1	0	0	0	0	0	0	0	0
Logan	0	0	0	0	0	0	0	0	1	0
Mesa	1	2	0	2	4	2	2	0	0	0
Moffat	0	0	1	0	0	0	0	0	1	0
Montezuma	0	0	0	1	0	0	0	2	0	0
Montrose	1	0	0	2	1	0	0	0	0	0
Morgan	1	0	0	1	0	1	1	1	2	0
Otero	1	2	1	1	3	0	0	0	0	1
Phillips	0	0	1	0	0	0	0	0	1	0
Pitkin	0	0	0	1	1	0	0	0	1	2
Pueblo	1	5	5	0	3	6	2	3	3	2
Rio Blanco	0	0	0	0	0	0	1	1	0	0
Rio Grande	0	0	1	0	1	0	0	0	0	0
Routt	1	0	0	0	0	0	0	0	0	0
Saguache	0	0	0	0	2	0	0	0	0	0
Sedgwick	0	0	0	0	0	0	0	1	0	0
Summit	0	0	0	2	0	0	0	2	0	1
Weld	3	3	1	4	10	4	2	9	3	5
Yuma	0	0	0	0	0	0	1	0	0	2
TOTAL	94	79	88	97	138	104	111	127	101	124

a. Prior to the existence of Broomfield County in 2001, cases were counted in Adams County (1998=1, 2000=1).

Though 56 percent of the state’s population resides in the Denver Metro counties of Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson, 74 percent of the cases of TB are from those metropolitan counties (**Figure 5**).



The rates in counties with small populations may vary considerably from year to year although there may be a change of only one or two cases. In order to make a more realistic comparison, the average incidence for counties during the past five years is listed in **Table 4**.

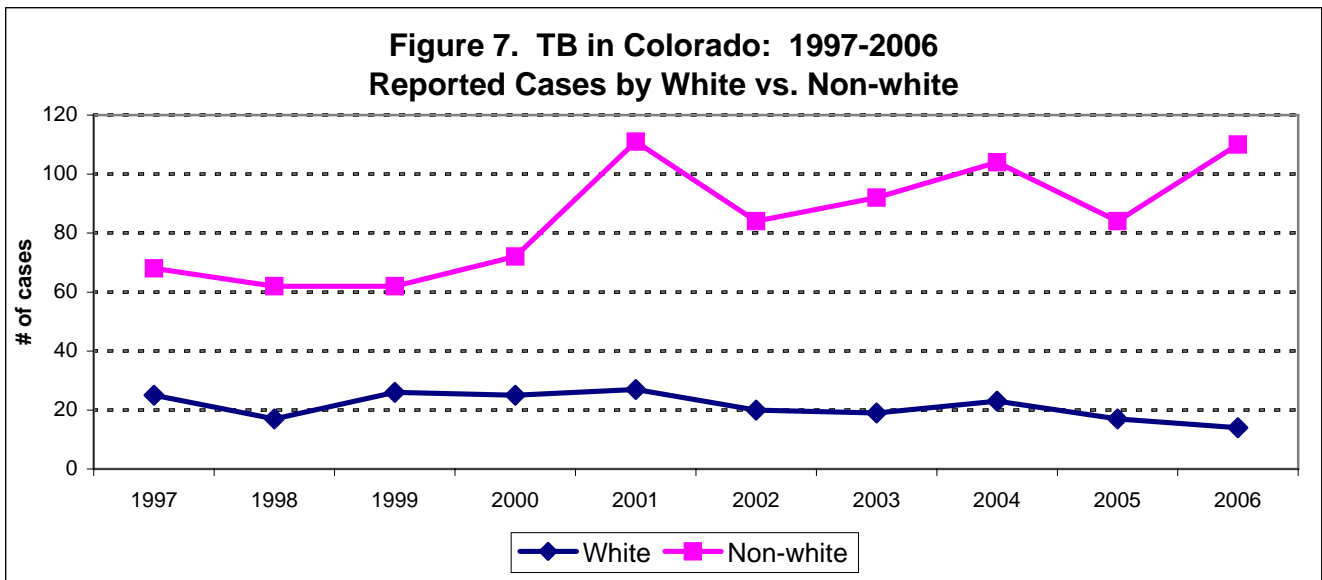
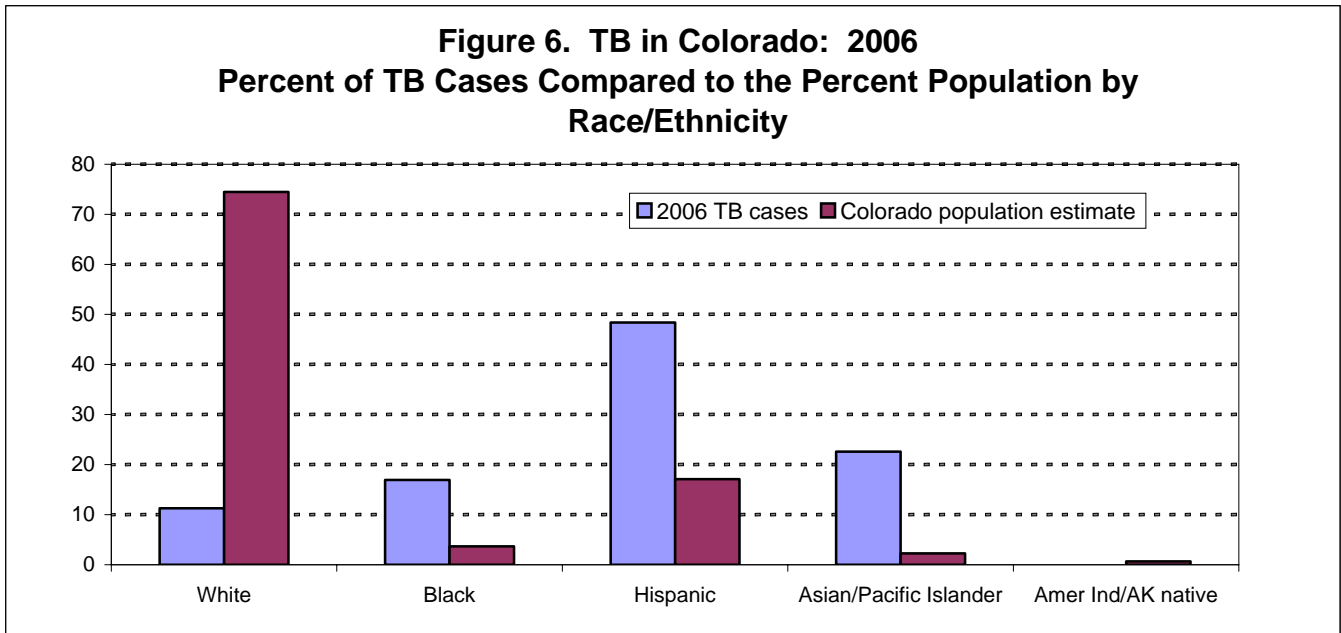
The average case rate for Colorado is 2.5 per 100,000 per year with 12 counties above that rate. At 3.3 cases per 100,000 per year, the combined incidence for the Denver metro counties (Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson) is more than twice the incidence in the rest of the state (1.4 per 100,000 per year).

**Table 4. Tuberculosis in Colorado: 2002-2006
Mean Case Rates by County**

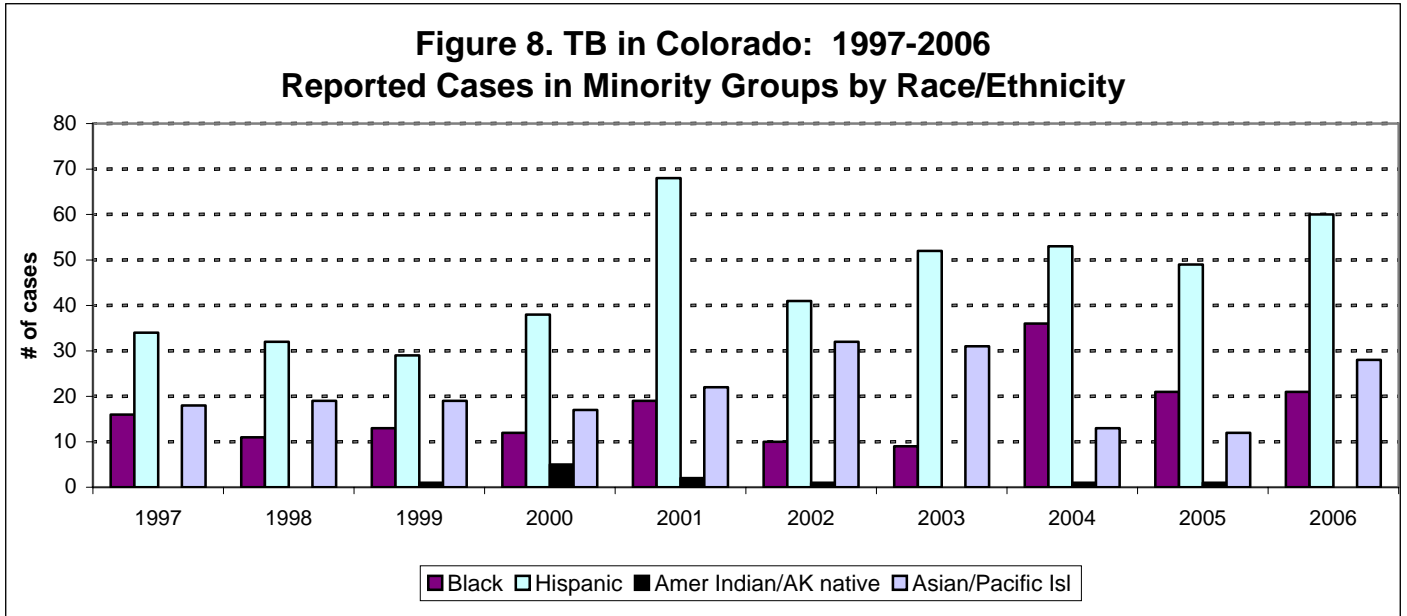
County	Mean cases 2002-2006	2004 population	Cases per 100,000 persons per year	County	Mean cases 2002-2006	2004 population	Cases per 100,000 persons per year
Sedgwick	0.2	2,698	7.4	Douglas	1.2	239,163	0.5
Denver	41	568,913	7.2	Broomfield	0.2	44,634	0.4
Grand	1	13,945	7.2	Baca	0	4,309	0.0
Rio Blanco	0.4	6,100	6.6	Bent	0	6,370	0.0
Yuma	0.6	9,965	6.0	Cheyenne	0	2,160	0.0
Conejos	0.4	8,491	4.7	Clear Creek	0	9,509	0.0
Phillips	0.2	4,614	4.3	Costilla	0	3,736	0.0
Pitkin	0.6	16,264	3.7	Custer	0	3,940	0.0
Arapahoe	19.4	527,751	3.7	Delta	0	30,078	0.0
Morgan	1	28,361	3.5	Dolores	0	1,844	0.0
Crowley	0.2	5,840	3.4	Gilpin	0	4,898	0.0
Adams	11	394,257	2.8	Gunnison	0	14,194	0.0
Summit	0.6	27,441	2.2	Hinsdale	0	830	0.0
Pueblo	3.2	149,729	2.1	Huerfano	0	7,965	0.0
Weld	4.6	217,779	2.1	Jackson	0	1,565	0.0
Boulder	6	284,996	2.1	Kiowa	0	1,525	0.0
Archuleta	0.2	11,468	1.7	Kit Carson	0	7,954	0.0
Eagle	0.8	47,982	1.7	Lake	0	7,936	0.0
Montezuma	0.4	24,825	1.6	Las Animas	0	16,239	0.0
Moffat	0.2	13,430	1.5	Lincoln	0	6,020	0.0
El Paso	7.4	554,587	1.3	Mineral	0	941	0.0
Alamosa	0.2	15,649	1.3	Montrose	0	36,929	0.0
Fremont	0.6	47,449	1.3	Ouray	0	4,180	0.0
Garfield	0.6	49,326	1.2	Park	0	16,369	0.0
Jefferson	6.4	532,723	1.2	Prowers	0	14,025	0.0
Chaffee	0.2	16,831	1.2	Rio Grande	0	13,180	0.0
Larimer	2.8	269,134	1.0	Routt	0	21,672	0.0
Otero	0.2	19,661	1.0	Saguache	0	6,516	0.0
Logan	0.2	21,826	0.9	San Juan	0	560	0.0
Elbert	0.2	22,449	0.9	San Miguel	0	7,221	0.0
La Plata	0.4	47,169	0.8	Teller	0	22,121	0.0
Mesa	0.8	127,806	0.6	Washington	0	4,962	0.0
				TOTAL	114	4,653,004	2.5

Race/Ethnicity

Though they comprise 26 percent of the state’s population, 89 percent of new TB cases occurred in racial and ethnic minorities. Forty-eight percent of the cases were classified as nonwhite Hispanic, 22 percent were classified as Asian, and 17 percent were classified as African American/Black (Figure 6 and Figure 7).

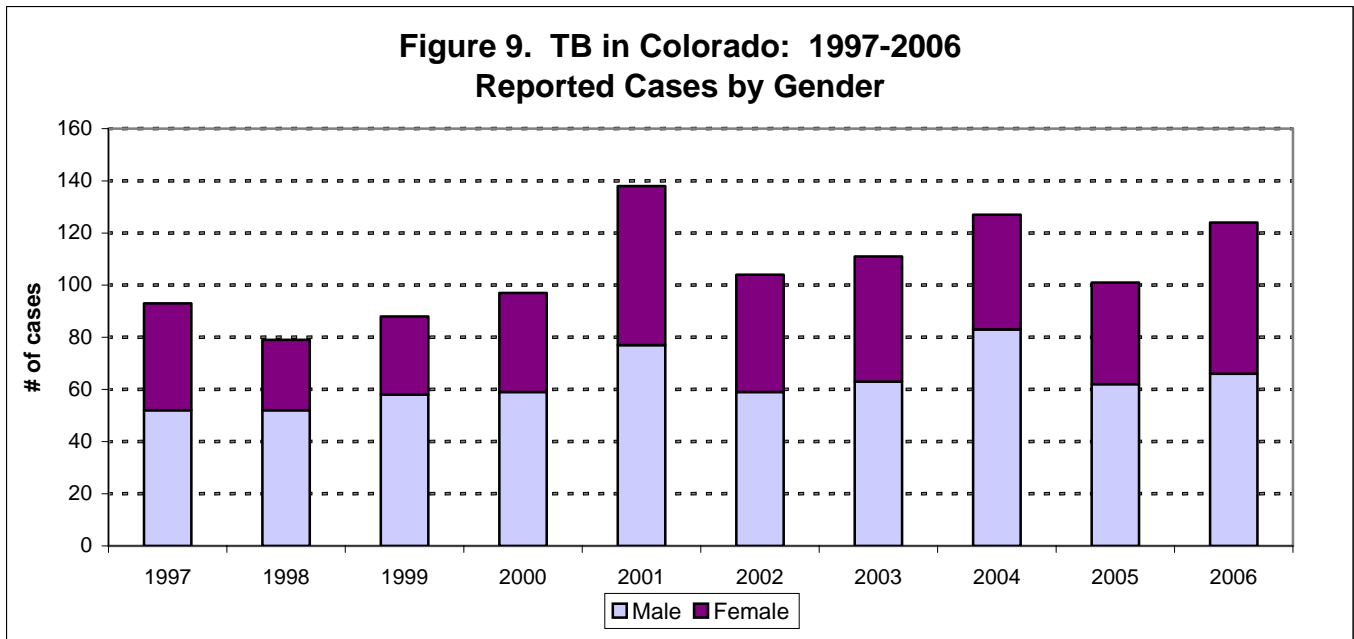


The number of TB case counts by race/ethnicity among minority groups is shown in **Figure 8**.



Gender/Age

As is true across the nation, more cases of TB occur in men (**Figure 9**).



The ages of persons reported with TB in 2006 ranged from less than one year to 88 years with an average of 45 years. As **Figure 10** shows, the largest number of cases was in the 25-44 year age group, and the smallest in the less than 15 years age group.

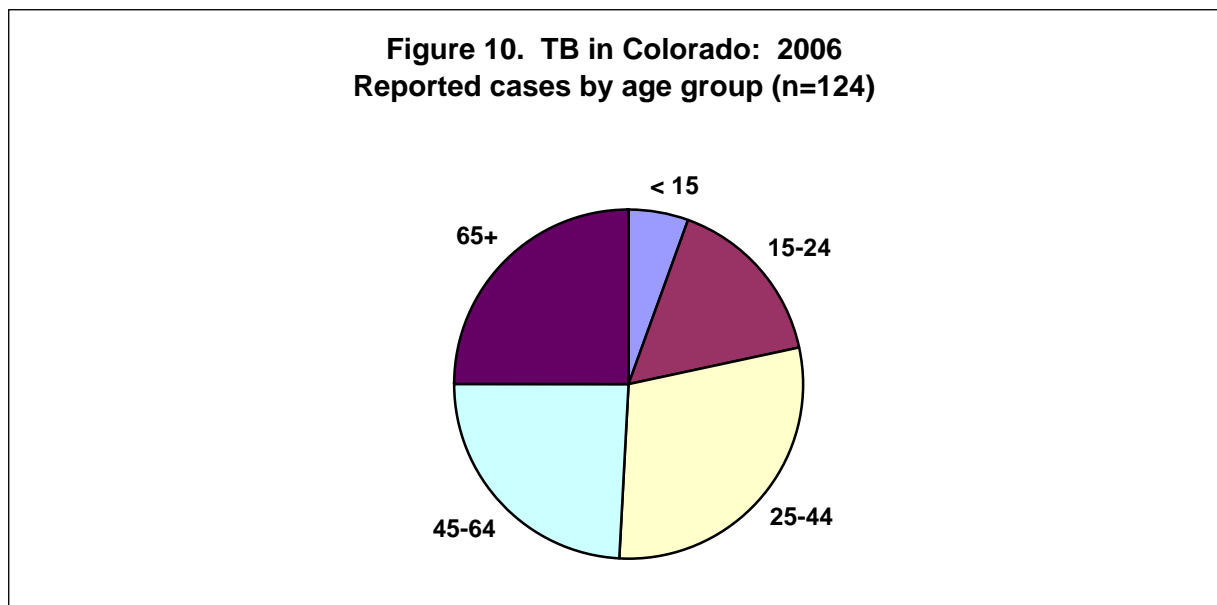


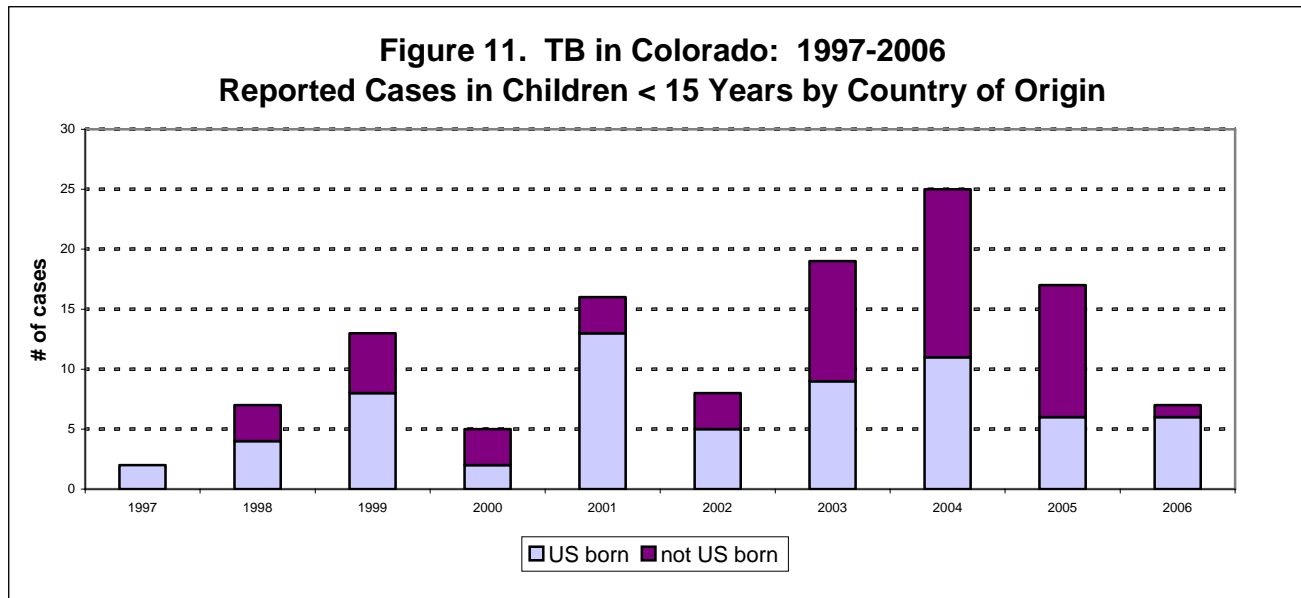
Table 5. TB in Colorado: 2006
Cases and Case Rates by Age Group and Gender

Age group	Male	Female	Total	Pop.est.	Rate*
0 to 4	1	4	5	350,948	1.4
5 to 9	0	1	1	327,316	0.3
10 to 14	0	1	1	323,858	0.3
15 to 19	6	2	8	352,676	2.3
20 to 24	7	5	12	364,036	3.3
25 to 29	6	8	14	303,215	4.6
30 to 34	5	8	13	348,697	3.7
35 to 39	4	2	6	362,569	1.7
40 to 44	3	0	3	371,575	0.8
45 to 49	4	4	8	383,213	2.1
50 to 54	4	3	7	348,334	2.0
55 to 59	5	4	9	297,795	3.0
60 to 64	3	3	6	200,791	3.0
65 to 69	2	4	6	140,651	4.3
70 to 74	3	1	4	116,352	3.4
75 to 79	8	4	12	93,910	12.8
80 to 84	2	2	4	65,201	6.1
85+	3	2	5	53,217	9.4
TOTAL	66	58	124	4,804,354	2.6

* Cases per 100,000 persons.

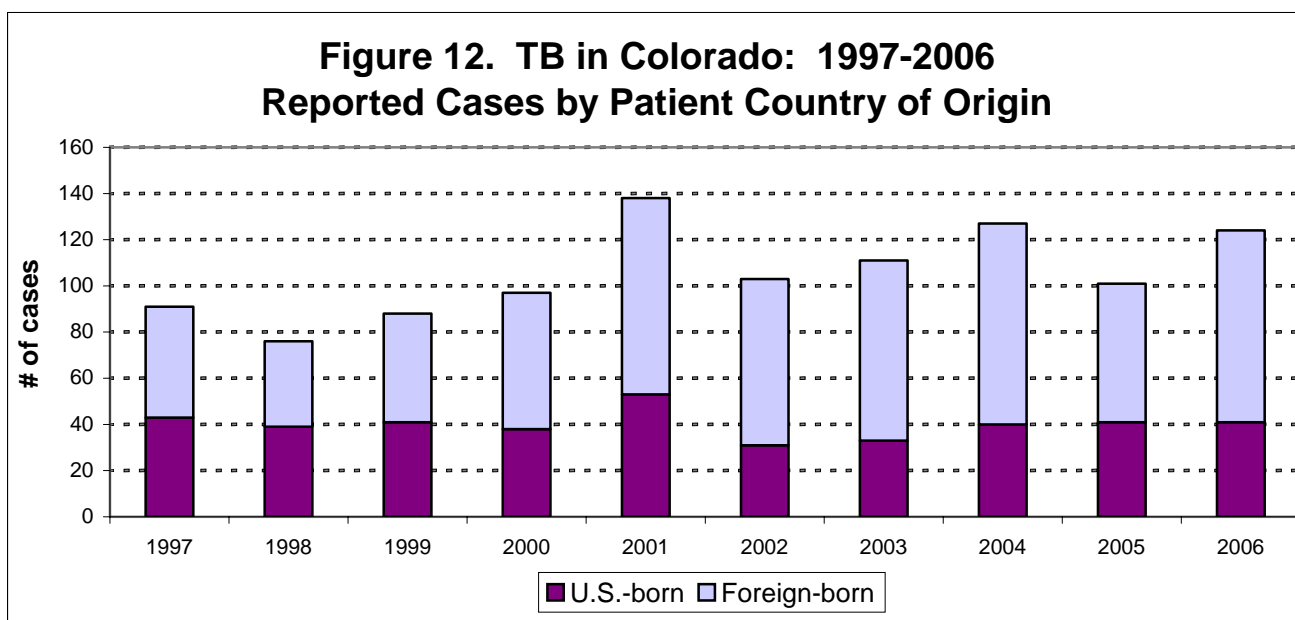
The highest incidence was in the 75-79 years age group with 12.8 cases per 100,000 population. The lowest was in the 0-3 years and 5-9 years at 0.3 cases per 100,000 population (**Table 5**).

Seven cases were in children less than 15 years and five of those were less than five years. Cases in children are especially concerning because they are a sign of recent transmission and missed opportunities for TB prevention. Six of the seven children were US-born, and one was foreign-born (**Figure 11**).



Foreign-born

Since 1999, over half the cases of TB reported in Colorado were born in other countries. Though only 9.6 percent of Colorado’s population was foreign-born, 67 percent of the TB cases in Colorado in 2006 were foreign-born (**Figure 12**).

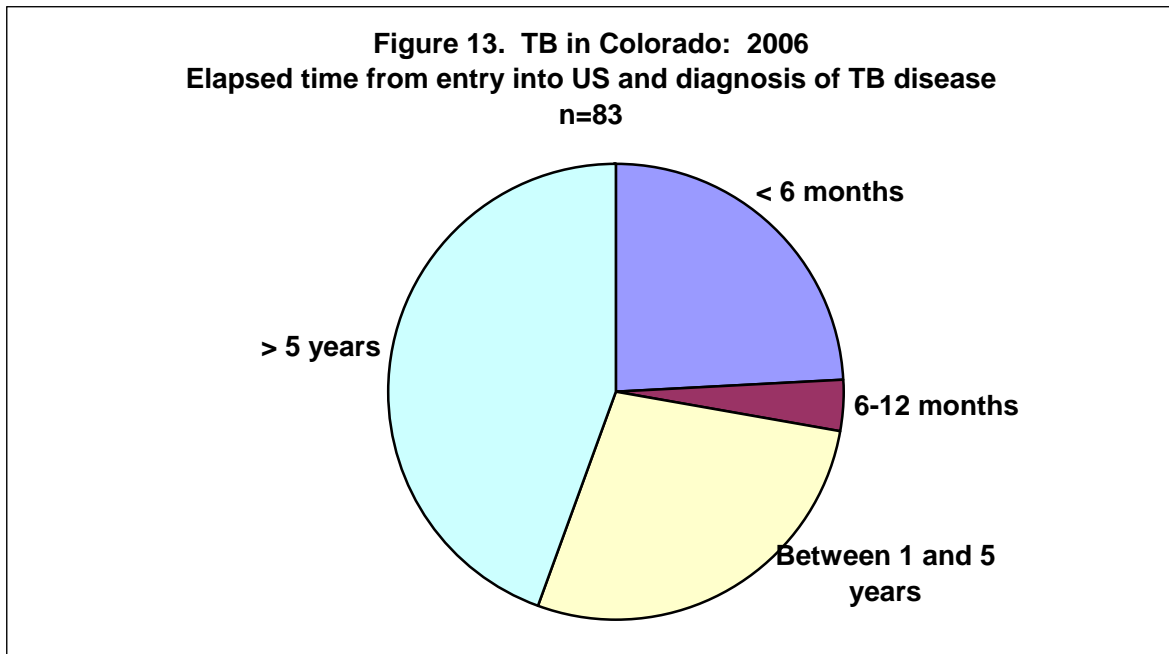


**Table 6. TB in Colorado: 2006
Patient Country of Origin**

Cases were born in 21 different countries—all with TB rates higher than the United States (**Table 6**).

Country	# of cases	Country	# of cases
Afghanistan	1	Malaysia	1
China	2	Mexico	36
El Salvador	3	Mongolia	1
Ethiopia	4	Nepal	2
Ghana	3	Peru	1
Guatemala	1	Philippines	5
Honduras	1	Somalia	4
India	3	Sudan	1
Indonesia	2	Uganda	1
Japan	1	Vietnam	8
Laos	2	TOTAL	83

Elapsed time since entry into the United States until the diagnosis of TB is shown in **Figure 13**. For some, TB was diagnosed upon arrival, while others have lived in the United States for many years.



Persons immigrating to the U.S. are required to undergo medical screening prior to entrance. Immigrants found to have “non-infectious” TB are given a designation of Class B TB and are required, upon arrival in the U.S., to report to the local health agency for further evaluation. Four persons who were designated as Class B TB were diagnosed with active TB disease upon arrival in Colorado. An additional six refugees/asylees arrived in the U.S. with active TB disease, which was not identified during the overseas screening process.

Table 7 shows the number of cases by age group for those born in the United States and those born outside the United States. Generally, foreign-born cases occur more frequently than U.S.-born cases in all age groups except the very young. Of the foreign-born cases, 29 percent were in the 25-34 age group.

**Table 7. TB in Colorado: 2006
Reported Cases by Age Group and Patient Country of Origin**

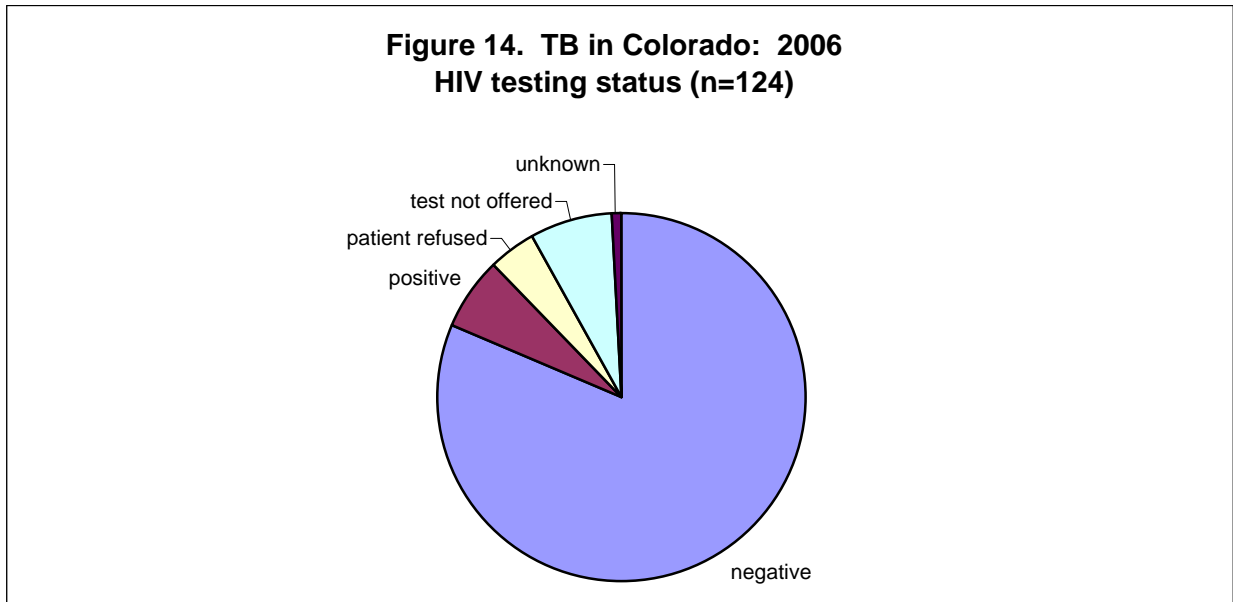
Age Group	United States	Foreign	Total
0-4	5	0	5
5-14	1	1	2
15-24	4	16	20
25-34	3	24	27
35-44	2	7	9
45-54	5	10	15
55-64	5	10	15
65-74	5	5	10
75-84	8	8	16
85+	3	2	5
TOTAL	41	83	124

Occupation

The occupational status was known for 123 of the 124 cases reported in 2006. One person was a health care worker (currently or within the past two years); one person was a migrant worker (currently or within the past two years); 51 persons worked at a variety of jobs not known to present a high risk for TB; and 70 were unemployed (including children and retired persons).

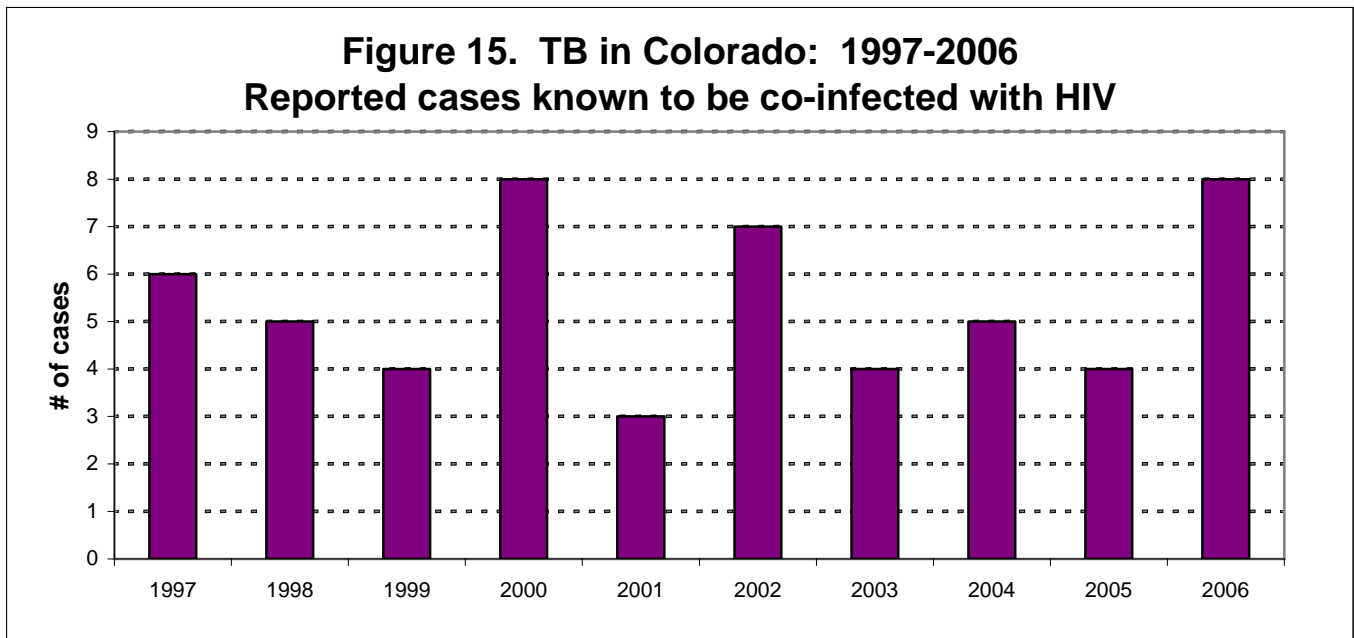
HIV/TB Co-infection

HIV testing should be done on all newly reported TB cases, and in 2006, 88 percent of the cases were tested (**Figure 14**). Eight cases of TB (three U.S.-born, five foreign-born) were also found to be co-infected with HIV (**Figure 15**).



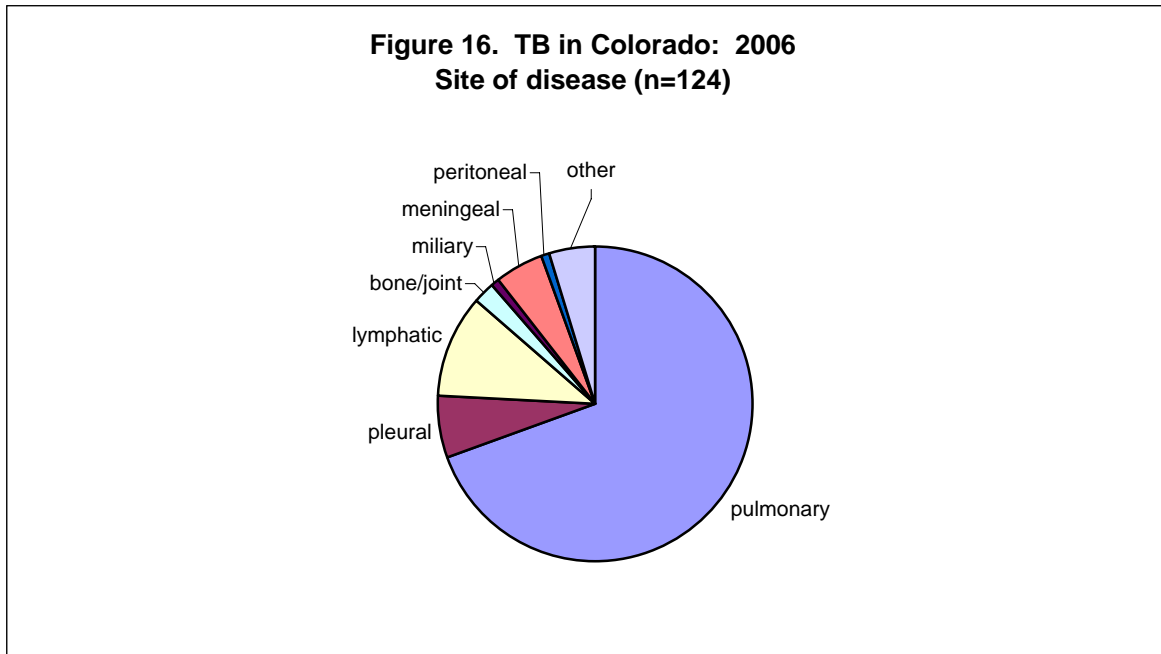
Site of Disease

Though 69 percent of TB cases were pulmonary, TB caused disease in many other

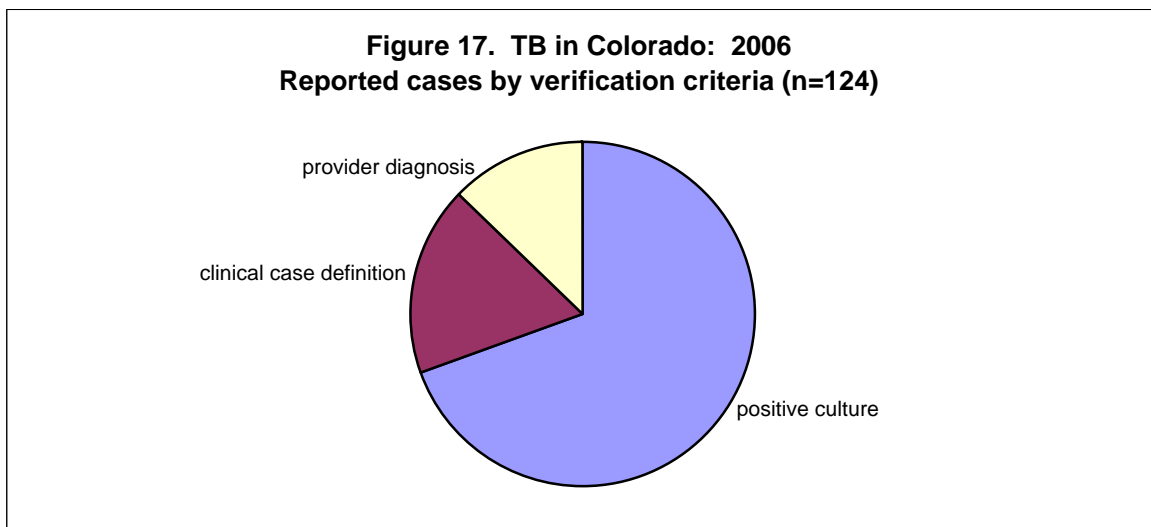


sites (**Figure 16**). Sites classified as 'other' include spleen, pericardium, pancreas, and ear.

Case Verification Criteria



Mycobacterium tuberculosis complex was isolated by culture in 69 percent of the TB cases reported in 2006. Another 18 percent met the clinical case definition (positive tuberculin skin test and chest radiograph improvement), and 13 percent were verified by provider diagnosis.



Drug Susceptibilities

Drug susceptibility results were available for the 86 culture-positive TB cases in 2006. Thirteen were resistant to one or more primary drugs (isoniazid-INH, rifampin-RIF, pyrazinamide-PZA, ethambutol-EMB), and one of those cases was multi-drug resistant (MDR) TB (defined as being resistant to at least INH and RIF). None of the cases had extensively drug resistant TB (XDR TB). Ten of the cases with drug resistance, including the MDR case, were from the Denver-metro area. Seven of the cases were foreign-born and six were U.S.-born. The primary resistance patterns were as follows:

8 INH only, 1 EMB only, 1 PZA only*, 2 INH/PZA*, 1 INH/RIF/PZA/EMB (MDR case)

*NOTE: Two isolates with resistance to PZA were *Mycobacterium bovis*, which is part of the MTB complex and causes tuberculosis in humans, cattle, and other warm-blooded animals. It is characteristically resistant to PZA.

Table 8 describes the 16 cases of MDR TB in Colorado from the past ten years. Two cases, though diagnosed in other countries, were managed and treated in Colorado.

Table 8. TB in Colorado: 1997-2006
Cases of multi-drug resistant (MDR) TB^a

Report year	Age group at diagnosis (years)	Sex	County	Country of origin	Resistant to ^b	Completion of therapy
1997	20-24	F	Boulder	India	IRP	moved after 6 months of therapy outcome unknown
1997	45-49	M	Denver	Viet Nam	IRPES	completed (26 months)
1997	25-29	F	Adams	Mexico	IRPE	died after 11 months of therapy
2000	20-24	F	Boulder	Mexico	IRP	completed (26 months)
transfer ^c 2000	30-34	F	Larimer	Mexico	IR	completed (25 months)
2000	35-39	F	Adams	Mexico	IRPES	completed (26 months)
2000	35-39	M	Denver	Mexico	IR	completed (28 months)
2001	60-64	F	Denver	China	IRP	moved after 6 months of therapy outcome unknown
transfer ^c 2001	40-44	M	El Paso	Korea	IRPES	completed (18 months)
2001	65-69	M	Adams	Peru	IRS	completed (18 months)
2003	25-29	F	Boulder	China	IRPES	completed (18 months)
2004	30-34	M	Denver	Sudan	IRS	completed (18 months)
2004	10-14	M	Denver	Sudan	IRS	clinical case, contact of MDR case
2004	10-14	M	Denver	Sudan	IRS	clinical case, contact of MDR case
2004	5-9	M	Denver	Sudan	IRS	clinical case, contact of MDR case
2006	15-19	M	Denver	Somalia	IRPES	currently on therapy ^d

a. Defined as resistance to at least isoniazid and rifampin.

b. I=isoniazid, R=rifampin, P=pyrazinamide, E=ethambutol, S=streptomycin

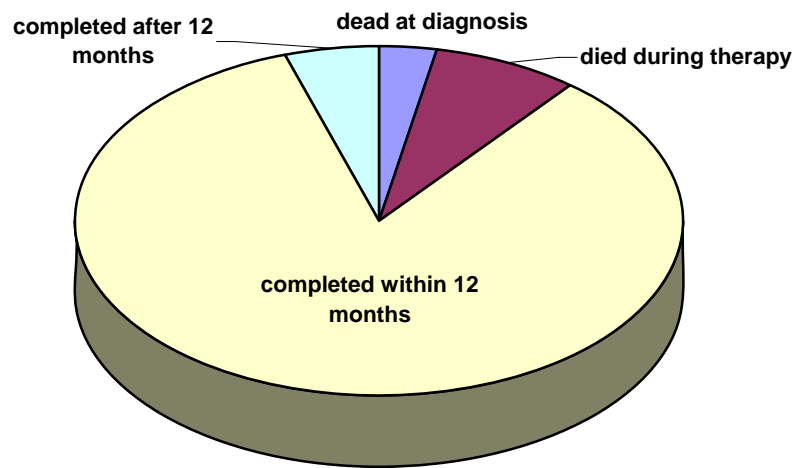
c. Cases are counted in the reporting area where they are diagnosed.

d. As of 2/2007.

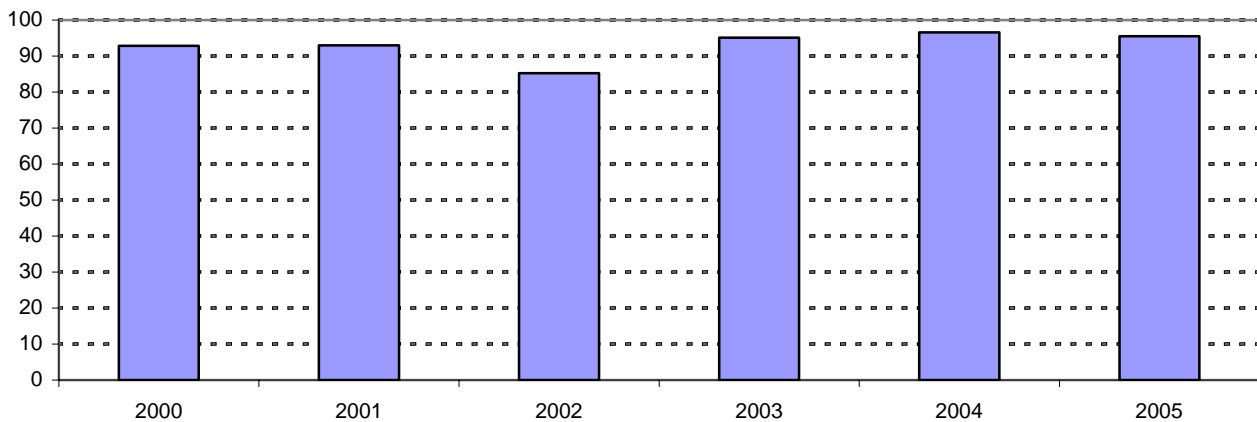
Completion of Therapy

The usual treatment for TB is six months long and uses INH, RIF, PZA, and EMB. In 2005 (the latest year with treatment completion data available), three patients were dead at diagnosis and eight patients died during therapy. Of the remaining cases, 89 were eligible to complete therapy within a year, and one case required extended treatment (**Figure 18**). Of those eligible to complete within a year, 85 (96 percent) did so which exceeded the national goal of 90 percent (**Figure 19**). All new cases reported in 2006, who were alive at diagnosis, have started therapy.

**Figure 18. TB in Colorado: 2005
Patient outcomes (n=101)**



**Figure 19. TB in Colorado: 2001-2005
Percent completing therapy within one year^a by year of report**



a. Excludes patients with 1) initial resistance to rifampin, 2) bone, meningeal, or miliary TB in children (<15 years), and 3) those who died during treatment.

Contact Investigations

It is a public health responsibility to conduct contact investigations on all cases of infectious (pulmonary and laryngeal) TB. Contacts are 75 times more likely to be infected with TB than the general public. Thus it is critical to find, evaluate, and treat infected contacts when appropriate. **Table 9** gives a summary of contact investigations since 2000. In 2005 (the most current year with data available), 44 investigations were completed and 1317 exposed persons were identified. Four of these investigations were quite large—involving more than 100 persons each. Preliminary data for 2006 are not available until August 2007.

Table 9. TB in Colorado: 2000-2005
Follow-up and Treatment for Contacts to Tuberculosis Cases

	2000	2001	2002	2003	2004	2005 ^a
Number of sputum smear or culture positive cases	53	77	60	45	48	44
Total contacts	860	1107	1388	593	1462	1317
Average contacts per infectious case	16.2	14.4	23.1	13.1	30.5	29.9
Number (%) of contacts evaluated ^b	529 (62%)	864 (78%)	1017 (73%)	489 (82%)	1170 (80%)	1113 (85%)
Number (%) of contacts with latent TB infection	229 (43%)	329 (38%)	253 (25%)	111 (23%)	351 (30%)	220 (20%)
Number (%) of infected contacts starting treatment	153 (67%)	233 (71%)	164 (65%)	89 (80%)	276 (79%)	179 (81%)
Number (%) of contacts starting treatment who finished treatment	86 (56%)	149 (64%)	121 (74%)	63 (71%)	187 (68%)	127 (71%)
Number (%) of contacts with active TB disease	1 (<1%)	15 (1%)	2 (<1%)	3 (<1%)	16 (1%)	7 (1%)
a. Preliminary data						
b. Evaluated=symptom check and tuberculin skin test, chest x-ray, sputum studies as indicated.						