



# ANNUAL TUBERCULOSIS REPORT OREGON 2008

Oregon Department of Human Services  
Public Health Division  
TB Program  
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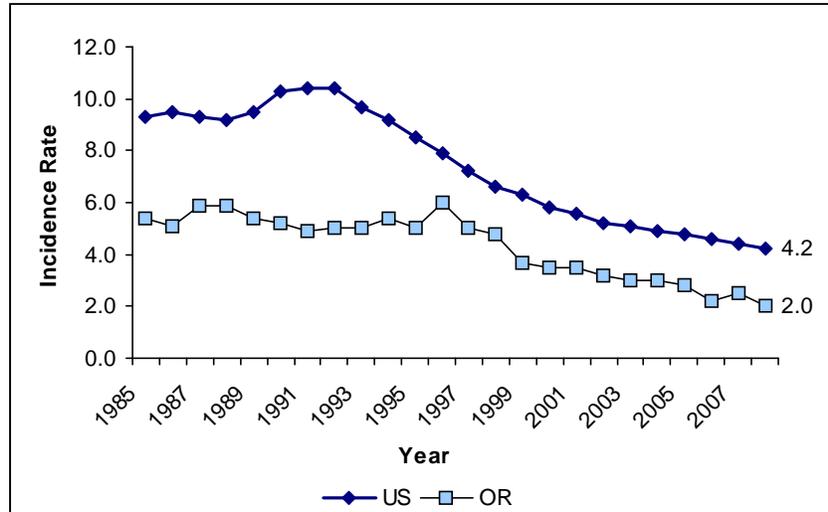
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## Tuberculosis incidence

Tuberculosis (TB) disease incidence has been declining in both the US and Oregon for the past decade. In 2008, case rates reached an all time low, both statewide and nationally. Oregon recorded 75 cases, down from 94 in 2007, with a rate of 2.0 cases per 100,000 persons. US incidence dropped from 4.4 to 4.2 cases per 100,000.

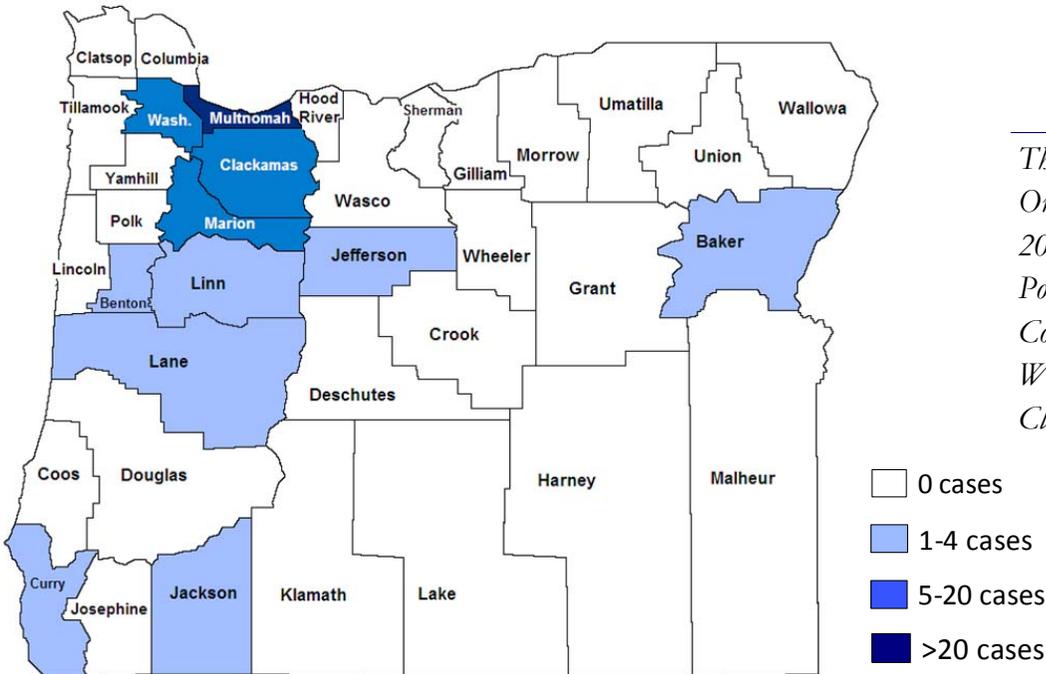
In the US, a peak in incidence occurred in the early 1990's due to a decrease in funding for TB coupled with a rise in TB cases related to the HIV epidemic. Since then the rate has been steadily declining.

**Chart 1. TB Incidence in the US and Oregon, 1985-2008**



## Tuberculosis cases by county

**Chart 2. TB Cases by County, Oregon 2008**



*The majority of Oregon's TB cases in 2008 were from the Portland Metro Counties : Multnomah, Washington, and Clackamas.*

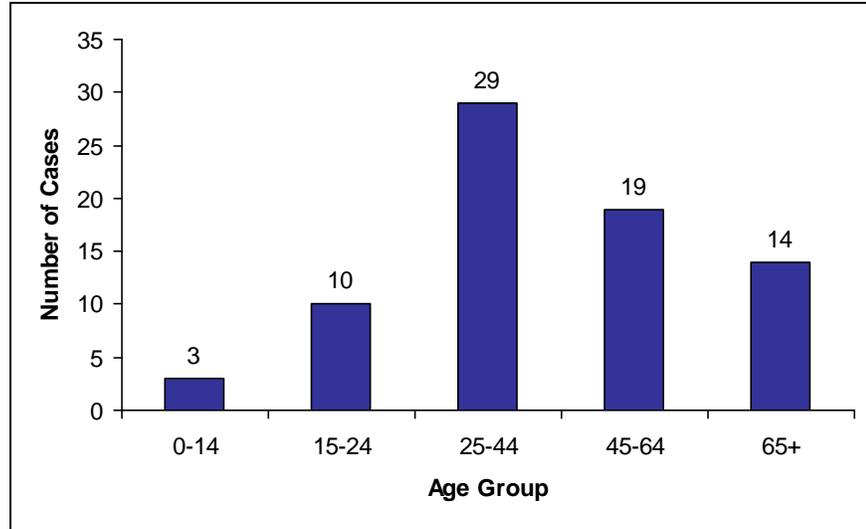
During 2008, 75 cases of TB were reported in Oregon. As in previous years, the majority of cases (72%) were from the Portland Metro counties: Multnomah (n=27), Washington (n=18), and Clackamas (n=9). Marion County had 9 cases as well. Seven other counties reported between 1 and 4 cases of TB, while the remaining 25 counties reported no cases in 2008. Overall, fewer counties reported one or more TB cases in 2008 (11 counties reported) than in 2006 (16 counties reported) or 2007 (17 counties reported).

## Tuberculosis by age group

In 2008, most cases occurred in adults 25 years of age or older. The 25-44 year old group represented the largest percent of cases (39%), with 29 cases. The mean and median ages were 44 and 39, respectively.

Three cases of pediatric TB were reported in 2008. Two of the three pediatric cases were among foreign-born children. All 14 cases 65 years of age or older were foreign-born.

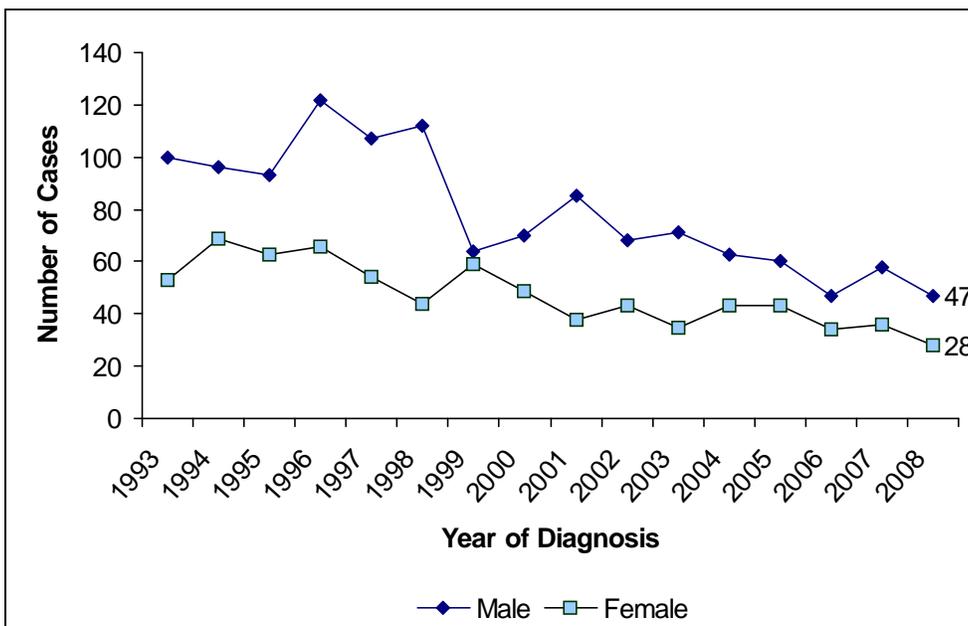
**Chart 3. Number of TB Cases by Age Group, Oregon 2008**



## Tuberculosis by sex

TB incidence historically has been higher among males than females, although this gap appears to be narrowing. In 2008, males represented 63% (n=47) of all TB cases in Oregon. The predominance of TB among males has also been seen in the US and globally. This finding may be due to differences in access to care, underlying susceptibility to TB, or distribution of TB risk factors, such as homelessness and substance abuse.

**Chart 4. Number of TB Cases by Sex, Oregon 1993-2008**



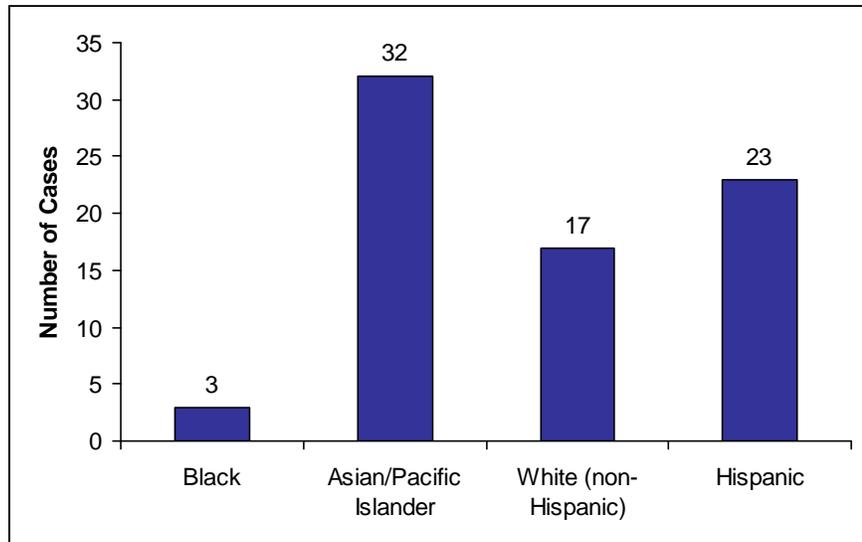
*TB incidence is higher among males than females.*

## Tuberculosis by race/ethnicity

During 2008, 43% of all cases self-identified as Asian/Pacific Islander (n=32). Twenty-three cases (31%) reported Hispanic/Latino ethnicity. Of these 23, 22 reported race as white, and one reported as American Indian (includes indigenous Central/South American). Seventeen cases of TB were reported among whites (non-Hispanic), and three cases were reported among blacks.

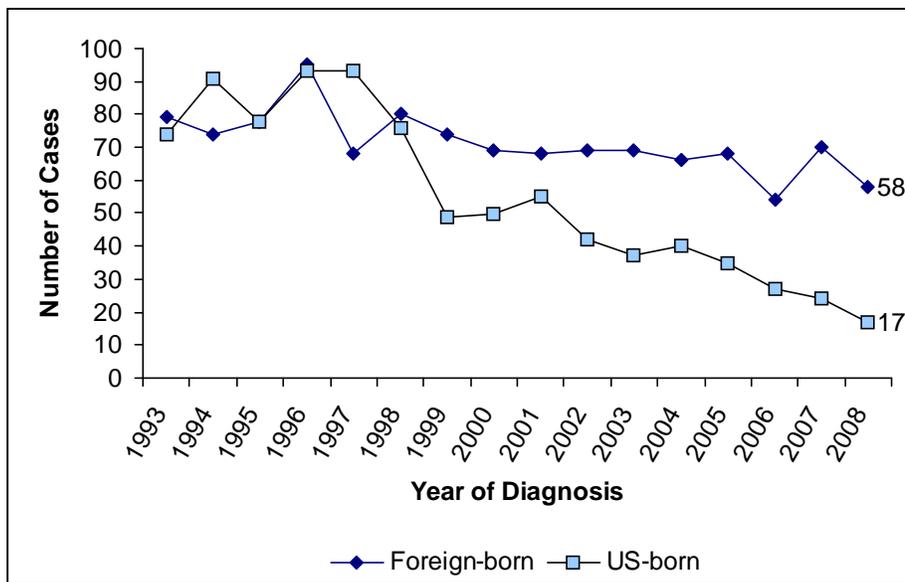
Percent foreign-born varied by race/ethnicity. Cases among whites were predominantly US-born (71%), whereas cases among the other racial/ethnic groups were predominately foreign-born. In the Asian/Pacific Islander group, nearly all cases were foreign-born (97%), and most among the Hispanic racial/ethnic group were foreign-born (87%). 66% of blacks were foreign-born.

**Chart 5. Number of TB Cases by Race/Ethnicity, Oregon 2008**



## TB cases by place of origin

**Chart 6. Number of TB Cases in Foreign-Born vs US-Born Residents, Oregon 1993-2008**



*In 2008, over 3/4 of Oregon's TB cases were foreign-born.*

In Oregon, the number of cases among US-born has been decreasing. However, the case count among foreign-born has remained relatively stable. This has resulted in an increasing proportion of Oregon's TB cases occurring in the foreign-born population. In 2008, 58 (77%) of the 75 TB cases were among foreign-born persons, for the highest proportion to date.

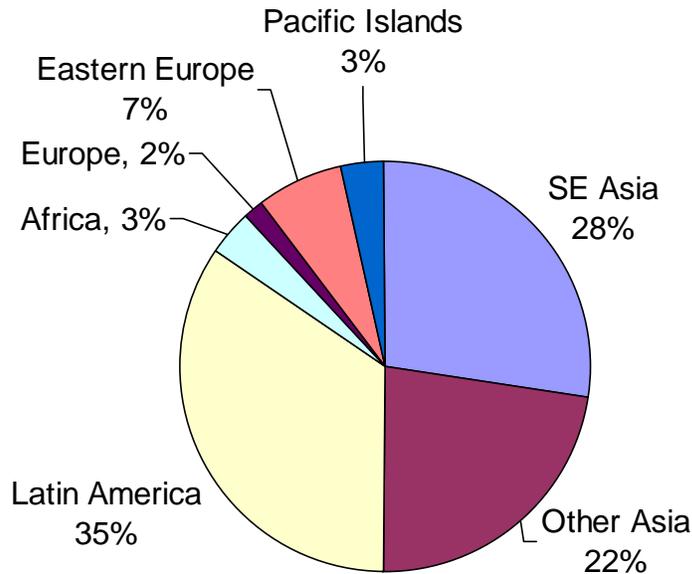
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## Tuberculosis by region of birth

Chart 7. Percentage of Foreign-Born Cases by Region of Birth, Oregon 2008

In 2008, 77% of Oregon's TB cases were reported to be foreign-born (n=58).

- Half of all 2008 foreign-born cases (n=29) were from Asia.
- Cases born in SE Asia accounted for 28% of all foreign-born cases and included 9 from Vietnam, 6 from the Philippines, and 1 from Laos.
- "Other Asia", which contributed 22% of the foreign-born cases, included cases from India (n=4), Pakistan (n=2), Nepal (n=2), Bangladesh (n=1), Korea (n=3) and Japan (n=1).
- Twenty cases (35%) were born in Latin America, which included 17 from Mexico and 3 from Guatemala.
- Four cases (7%) were originally from Eastern Europe. Ukraine had three cases and Russia had one.
- Two cases were from Africa, both born in Ethiopia.
- There was one case from the Marshall Islands and one from Fiji.
- The remaining one case born in Europe was from the United Kingdom.



## Tuberculosis by region of birth

TB incidence rates among Oregon's 2008 foreign-born tend to reflect the higher rates found in their countries of origin. Looking broadly by region, TB rates are the highest among African-born and Pacific Island-born residents in Oregon, with estimated rates of over 30 cases per 100,000 persons. Oregon has relatively few cases from these regions. The rate among Asian-born cases in Oregon is also high, at an estimated 29 cases per 100,000 persons. The incidence rate among Latin American-born Oregonians is relatively low, at 12 cases per 100,000. European-born cases in 2008 had the lowest rates, at 9 cases per 100,000 in Oregon.

**Table 1. Estimated Incidence of TB by Region of Birth, Oregon 2008**

Region of Birth	N	TB Rate per 100,000 persons (Oregon)
Europe	5	8.8
Latin America	20	11.5
Asia	29	28.8
Africa	2	30.9
Oceania	2	37.6
US	17	0.5

\*Denominator Data from the 2006 American Community Survey

By comparison, US-born TB cases in Oregon occurred at a rate of 0.5 per 100,000 persons in 2008.

**Table 2. Estimated Incidence of TB by Asian Region of Birth, Oregon 2008**

Region of Birth	N	TB Rate per 100,000 persons (Oregon)
<b>Asia</b>	29	28.8
SE Asia	16	42.5
Vietnam	9	51.7
Philippines	6	51.5
South Central Asia	9	51.5
Eastern Asia	4	9.5

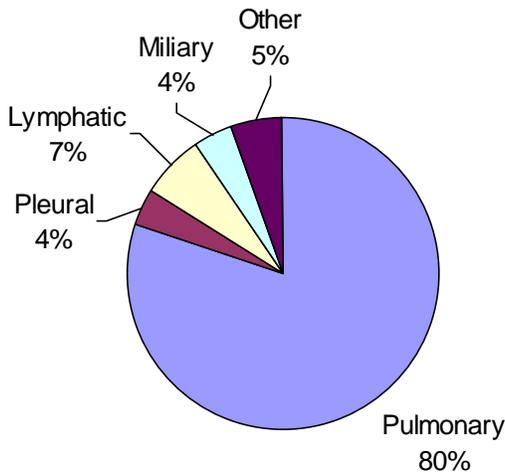
\*Denominator Data from the 2006 American Community Survey

central Asia (India, Iran, others), which is still a broad region, have similarly high case rates. Those born in Eastern Asia (China, Japan, Korea, others) had the lowest TB rates of Asian-born populations in Oregon, at 10 cases per 100,000 persons.

While the general TB case rate among Asian-born cases in Oregon is estimated at 29 cases per 100,000 persons, a further breakdown illustrates rate variability by more specific region and country. Although the numbers are small, it is interesting to note that Oregon residents born in Vietnam or the Philippines have rates of over 50 cases per 100,000 persons. Likewise, persons born in South Central Asia (India, Iran, others), which is still a broad region, have similarly high case rates. Those born in Eastern Asia (China, Japan, Korea, others) had the lowest TB rates of Asian-born populations in Oregon, at 10 cases per 100,000 persons.

## Tuberculosis cases by major site of disease

Chart 8. Reported Major Site of Disease, Oregon 2008



In 2008, 80% (n=60) of Oregon’s 75 TB cases reported pulmonary as the major site of disease. Four percent (n=3) were pleural and 4% (n=3) were miliary. The remaining 12% (n=9) were extrapulmonary, including lymphatic cases (n=5). Among the pulmonary cases, 50% were sputum-smear positive. Sputum-smear positivity as well as cavitation on chest x-ray are strong indicators of infectiousness; 15 of the 75 cases had chest-x-rays read as cavitory (all pulmonary).

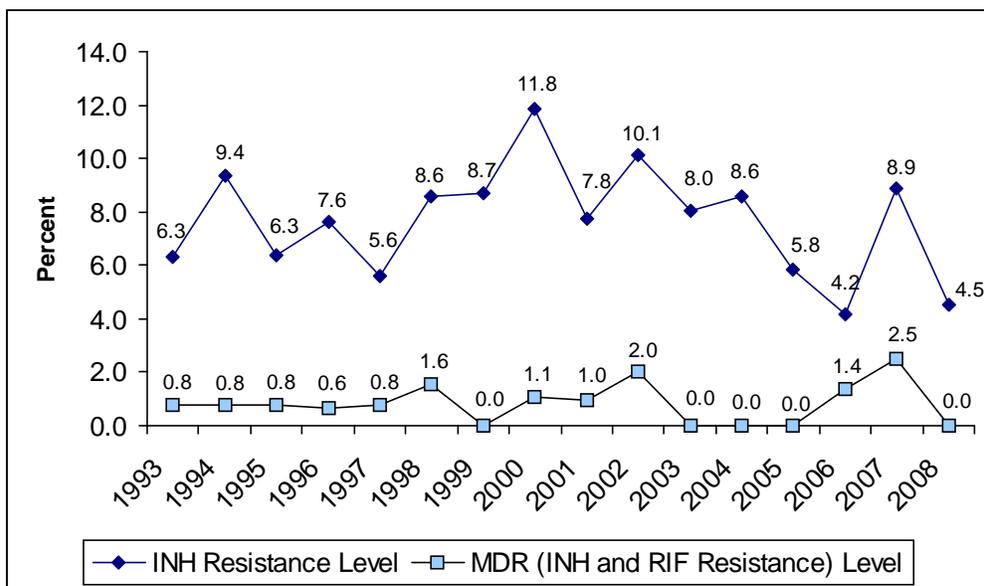
Site of disease reporting definitions changed in 2009, so reporting “miliary” as the major site of disease will no longer be an option. Rather, this term will only be used in relaying chest x-ray or chest CT scan results.

## Drug resistance and TB

Chart 9. INH Drug Resistance and MDR Levels, Oregon 1993-2008

Isoniazid (INH) resistance levels in Oregon have ranged from 4% to 12% over time. In 2008, 4.5% of cases for whom susceptibility testing was performed were resistant to INH. The US average is slightly higher, at 7% (2007 data).

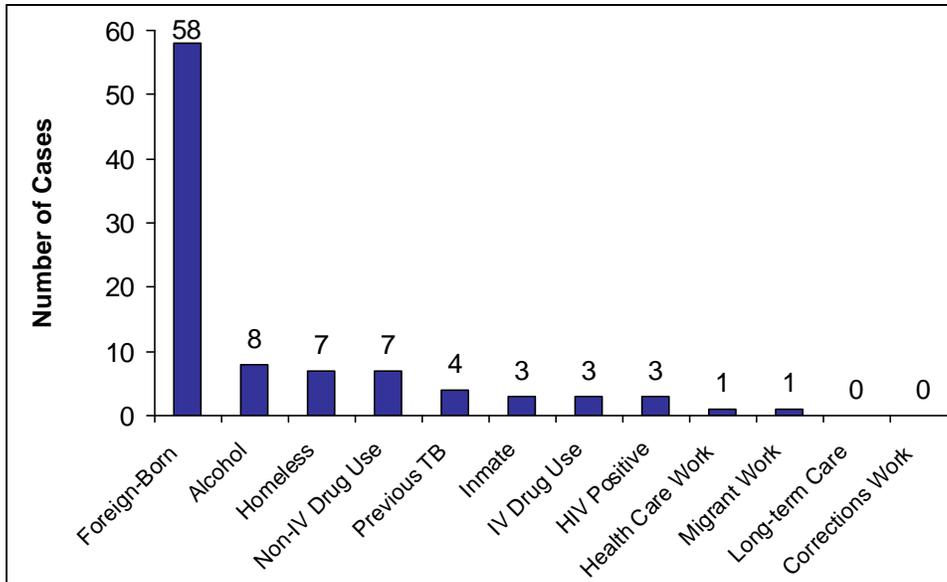
Since 1993, only 14 cases of multi-drug resistant TB (MDR TB, or TB that is resistant to both INH and rifampin) have been reported in Oregon; 13 (93%) were among foreign-born. The MDR TB rate in the US was 1.2% in 2007\*. In 2008, Oregon reported no cases of MDR TB. To date, no cases of XDR (extensively drug resistant) TB have been reported in Oregon.



\*CDC MMWR: Trends in Tuberculosis—United States, 2008. March 20, 2009 / 58(10);249-253

## Risk factors and tuberculosis disease

Chart 10. Risk factors for TB Disease, Oregon 2008



*The most prevalent risk factor among Oregon's TB cases is foreign birth.*

In 2008, the most common risk factor by far among Oregon's TB cases was being foreign-born, accounting for 77% of all cases. About 10% of cases

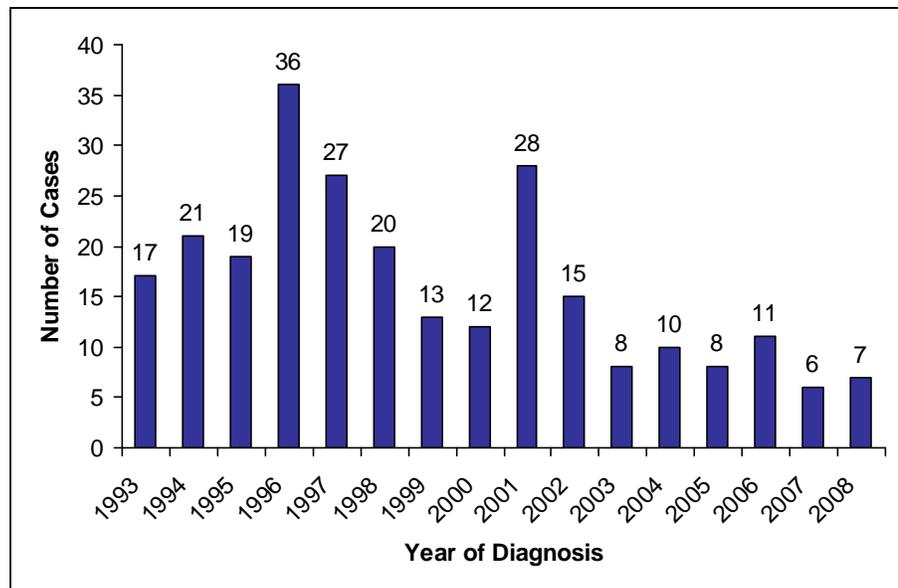
reported excess alcohol use, non-IV drug use, and/or homelessness. Four cases had a previous diagnosis of TB, and 3 were diagnosed in a correctional facility. Three cases were HIV positive, and 3 cases reported IV drug use. One case worked in health care, and one was a migrant worker.

## Tuberculosis in the homeless

Overall, the number of TB cases among the homeless has been decreasing in Oregon. In 2008, 7 cases (9% of all cases) were reported among the homeless. One case was part of a cluster that occurred in a Linn County shelter (n=3, 2007-2008).

A spike in the number of homeless cases occurred in 2001, due to a homeless shelter outbreak in Lane County; 18 of the 28 homeless cases that year were from Lane County. Cases with the 2001 Lane County outbreak strain continue to arise sporadically. Genotyping has confirmed that two of the seven homeless cases in 2008 match this outbreak strain.

Chart 11. Number and Percent of Homeless Cases, Oregon 1993-2008

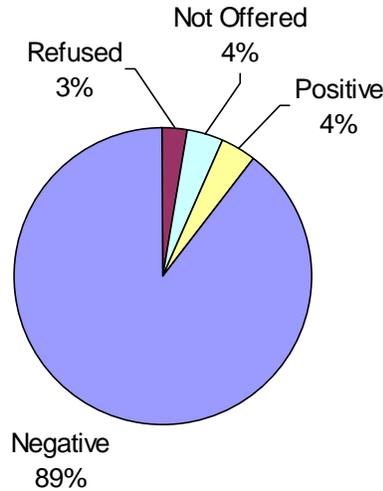


## HIV and tuberculosis

HIV status was obtained for 70 of the 75 (93%) TB cases reported in Oregon in 2008. Three cases (4%) were HIV positive, which is slightly lower than national rates (7% in 2006).

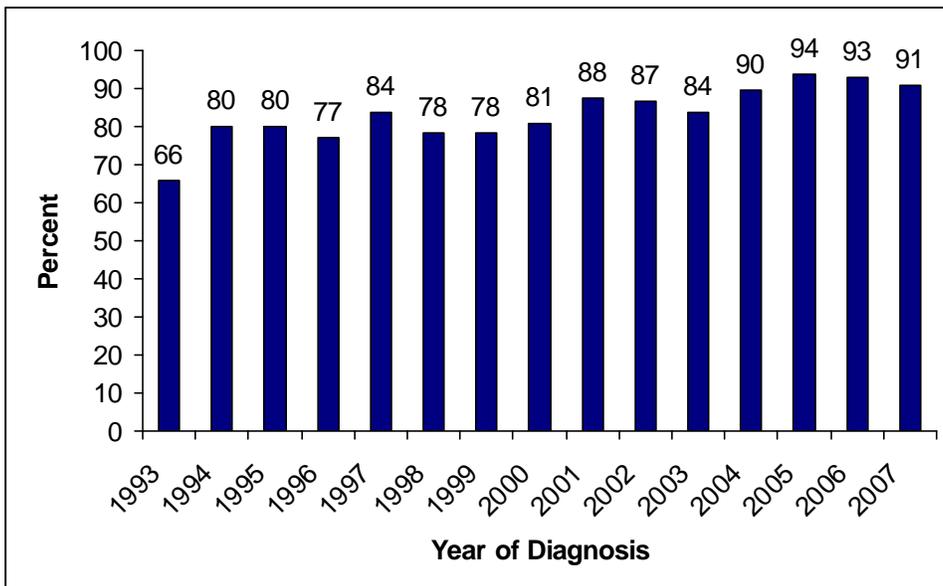
HIV status was not obtained for five individuals: two refused testing, and three were not offered testing. Included in those not offered testing were two individuals who had a test result too old to use under surveillance definitions.

**Chart 12. TB Cases by HIV Status, Oregon 2008**



## Completion of TB treatment

**Chart 13. Percent Completion of Treatment within 1 Year for Eligible Cases, Oregon 1993-2007**



In 2006, 93% of eligible cases completed treatment within one year. In 2007, 91% of eligible cases completed treatment within one year (data are provisional).

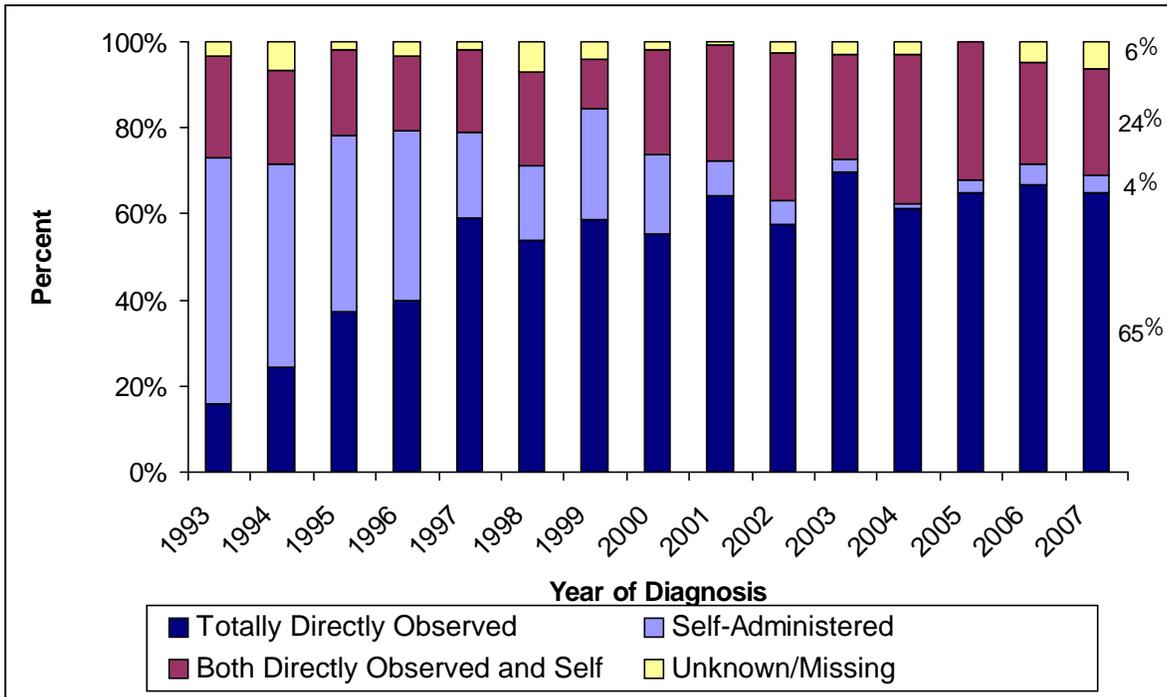
Patients who died during treatment were excluded from the calculation. Patients with resistance to rifampin, patients with meningeal TB (regardless of age) and children under age of 15 with disseminated TB (defined as miliary and/or positive blood culture), were also excluded due to expected longer duration of treatment.

## Delivery of TB Therapy

Directly observed therapy, or DOT, is the standard of care in Oregon for treatment of TB. The use of self-administered therapy alone for treatment of TB has decreased since 1993, dropping from 47% to just 4% in 2007. Use of directly observed therapy has increased over the years.

In 2007, 65% of all cases received full DOT, and another 24% received a combination of both DOT and self-administered therapy.

**Chart 14. Mode of TB Therapy, Oregon 1993-2007**



## Technical Notes:

The data presented in this report came from Oregon's Tuberculosis Information Management System (TIMS). Data are as of March 17th 2009.

Percentages may not sum to 100 due to rounding.

Age is calculated based on date case is reported to the local health department.

## Surveillance Case Definition for Oregon:

### 1. Laboratory Case Definition

- a. Isolation of M. Tuberculosis Complex from a culture of a clinical specimen, using an FDA approved test  
**or**
- b. Demonstration of M. Tuberculosis from a clinical specimen using FDA approved Nucleic Acid Amplification Test (NAAT) (a positive test means that the probe detected ribosomal RNA of the M. tuberculosis complex in the clinical specimen)
  - i. Genprobe® MTB (Mycobacterium Direct Test) of respiratory specimen
  - ii. AmpliCor® Mycobacterium Tuberculosis Test of respiratory specimen

### 2. Clinical Case Definition\*

- a. Full diagnostic evaluation
    - i. Tuberculin Skin Test (TST) or Quantiferon (QFT) test
    - ii. Chest X-ray/imaging
    - iii. Clinical specimens for culture/NAAT
    - iv. Risk factor evaluation: host factors (e.g. documented immunosuppression) and environmental factors (e.g. contact to an active case, born in a county endemic with TB, travel to endemic country)
- and**
- b. Lab test indicative of infection
    - i. Positive TST **and/or**
    - ii. Positive QFT or
    - iii. Negative TST or QFT with reason for not positive (immunosuppression)
- and**
- c. Signs or symptoms compatible with TB disease
- and**
- d. Improvement of signs or symptoms after treatment with 2 or more anti-TB drugs

\* Factors including pretest risk, other potential diagnoses, opportunity to improve on TB treatment, and site of disease (pulmonary vs extrapulmonary) may also be considered in the decision to count a clinical case.

For more information on tuberculosis or TB in Oregon, please visit our website at:

<http://www.oregon.gov/DHS/ph/tb/index.shtml>

*Acting TB Controller*  
Heidi Behm, RN, MPH  
Heidi.Behm@state.or.us

*TB Registrar*  
Gayle Wainwright, CMA  
Gayle.Wainwright@state.or.us

*TB Epidemiologist*  
Lindsey Lane, MPH  
Lindsey.M.Lane@state.or.us

