

NATIONAL TUBERCULOSIS INDICATORS

2015 STATE COMPARISON

The Centers for Disease Control and Prevention (CDC) collects information from state and local health departments about each newly reported case of tuberculosis (TB) in the United States (U.S.). Reporting areas (i.e., the 50 states, the District of Columbia, several large U.S. cities, Puerto Rico, and other U.S.-affiliated jurisdictions in the Pacific and Caribbean) submit their information about TB cases to CDC's National TB Surveillance System (NTSS) with a standard form, the Report of Verified Case of Tuberculosis (RVCT). The initial case report includes a patient's demographic data, occupation, initial drug regimen, and information on HIV status, substance abuse, homelessness, and residence in correctional or long term-care facilities. Follow-up reports collect drug susceptibility test results for *Mycobacterium tuberculosis* isolates and treatment status, among other items.

CDC also collects information from reporting areas about their contact investigation activities: finding and examining persons who have had contact with TB cases, and treating those found to have TB disease or latent TB infection (LTBI). Data for contact investigation are reported by each TB control jurisdiction annually through the Aggregate Reports for Program Evaluation (ARPE).

National TB Indicators are key process and outcome measures for TB control programs in the United States. These indicators are selected by CDC in cooperation with partners in state and local health departments. Data for calculating these indicators are derived from existing surveillance systems such as NTSS and ARPE. CDC publishes TB indicator data to assist in evaluating progress toward achievement of national objectives through monitoring of TB program performance, assessment of needs for education and technical assistance, and identification of areas that need improvement.^{1,2}

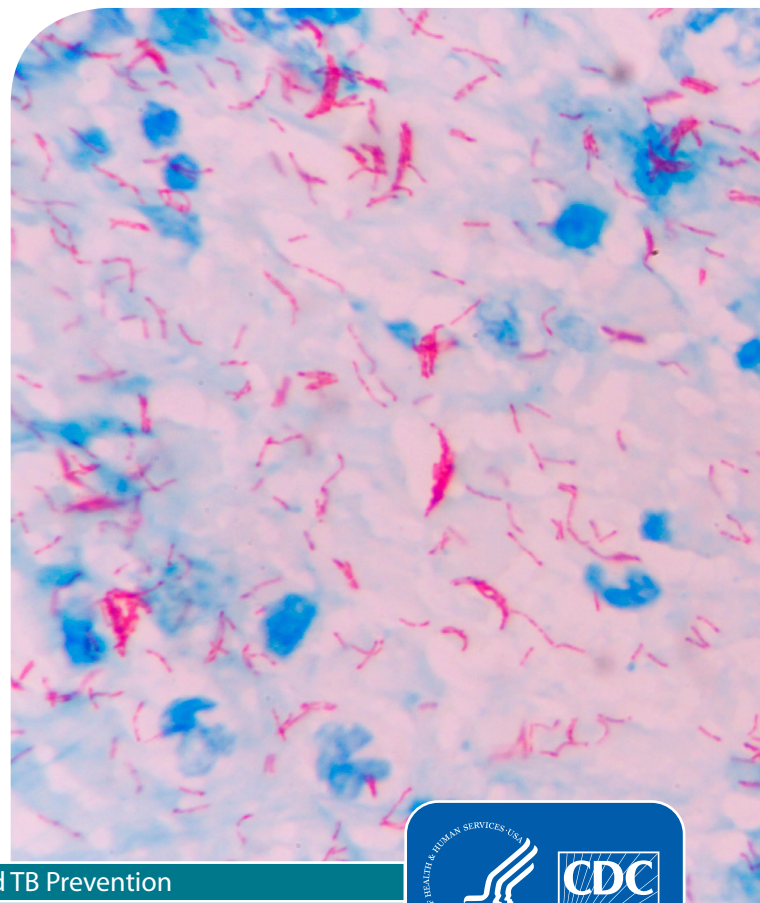
Incidence³

Elimination of TB is defined as reducing TB disease incidence in the United States to less than 1 case per million persons per year. Therefore, measuring the number of new cases occurring each year remains the best overall indicator of progress toward TB elimination. In 2015, TB incidence in the United States was 3.0 overall TB cases (including U.S.-born and foreign-born persons) per 100,000 persons (30 per million). Overall, TB incidence has begun to level off over the past few years and the nation has not yet achieved the 2020 national target of ≤ 1.4 cases per 100,000 (Figures 1 and 2).

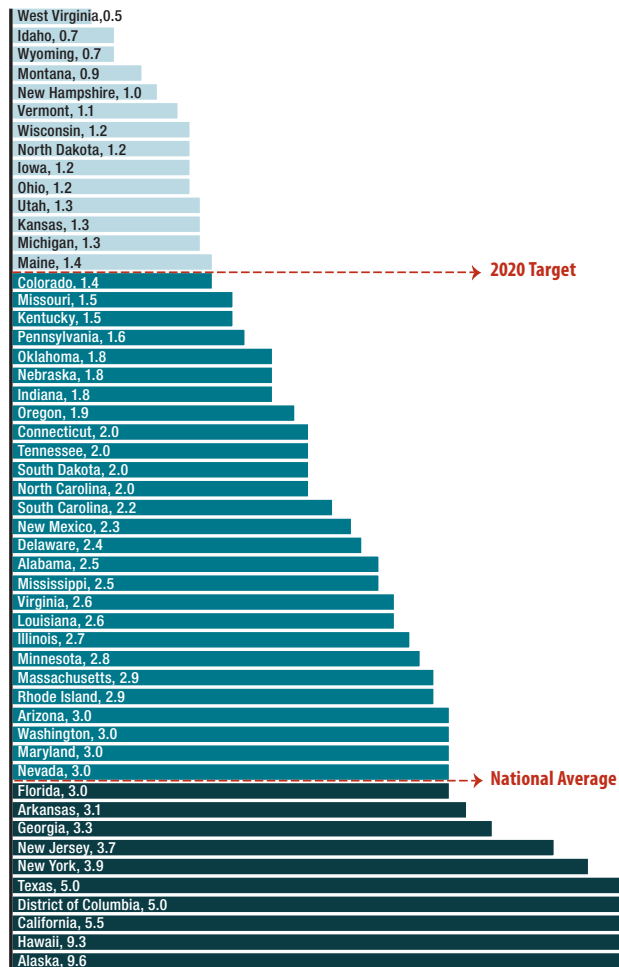
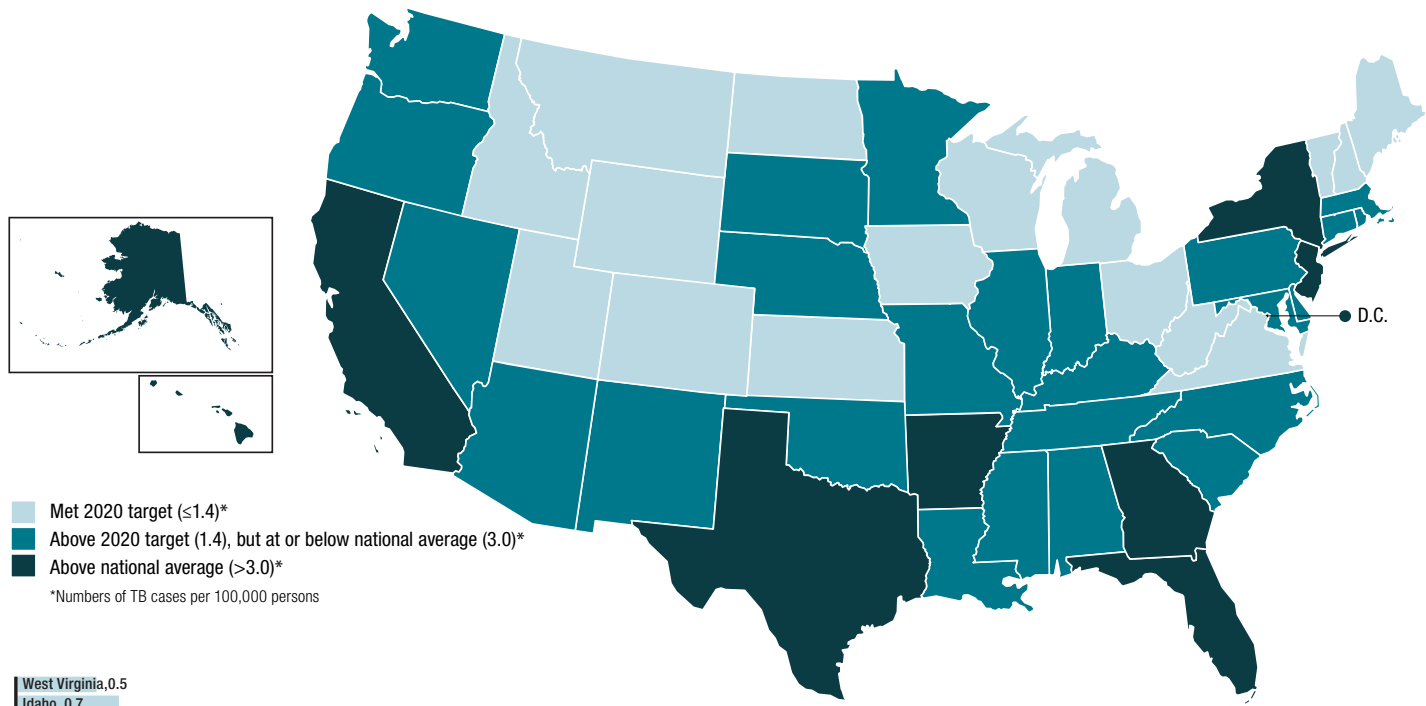
¹Data in this report are based on the final 2015 dataset from the National TB Surveillance System (NTSS).

²For more information about the *National TB Program Objectives and Performance Targets for 2020* please visit <http://www.cdc.gov/tb/programs/evaluation/indicators/default.htm>.

³Salinas J, Mindra G, Haddad M, Pratt R, Price S, Langer A. Leveling of Tuberculosis Incidence—United States, 2013–2015. *MMWR Morb Mortal Wkly Rep.* 2016;65(11):273–8.



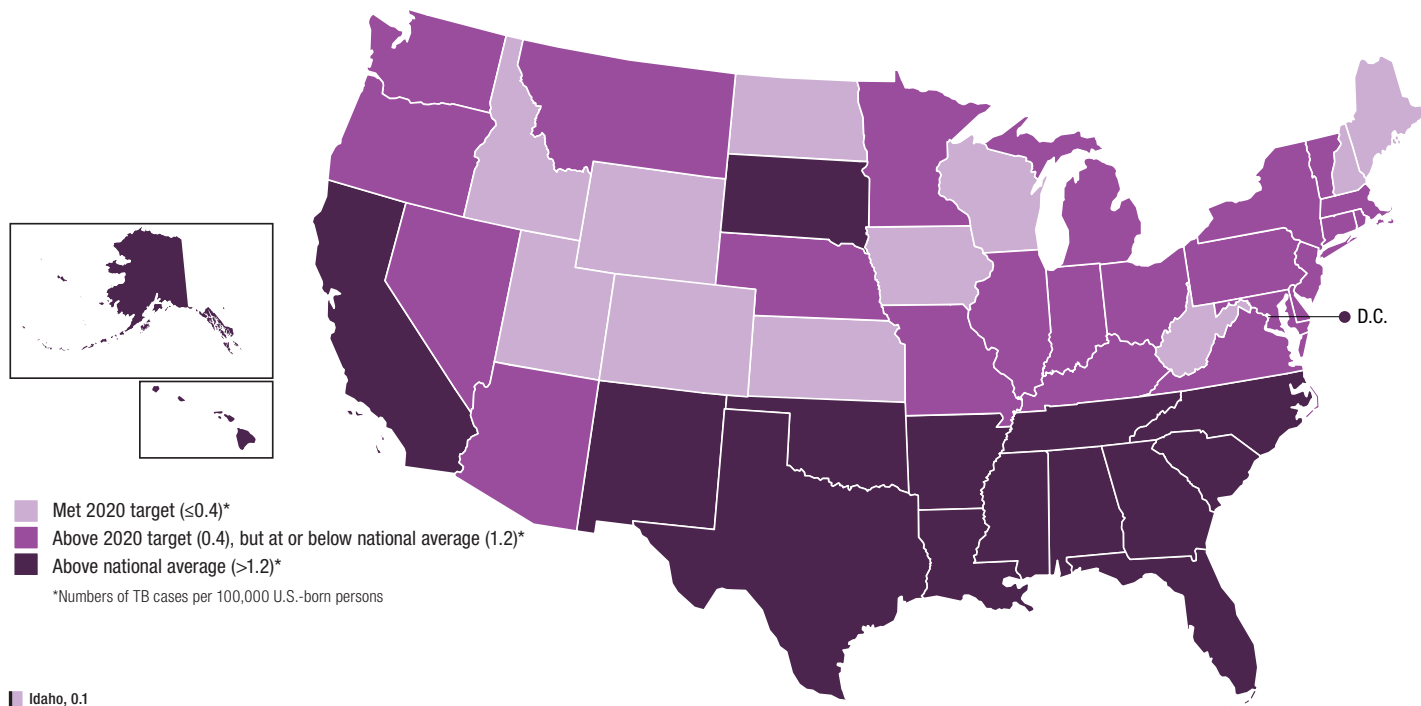
Figures 1 and 2. Overall TB Incidence*, United States, 2015



In 2015, nine states and the District of Columbia reported incidences above the national average of 3.0 cases per 100,000. Incidences in 41 states were at or below the national average of 3.0 cases per 100,000.

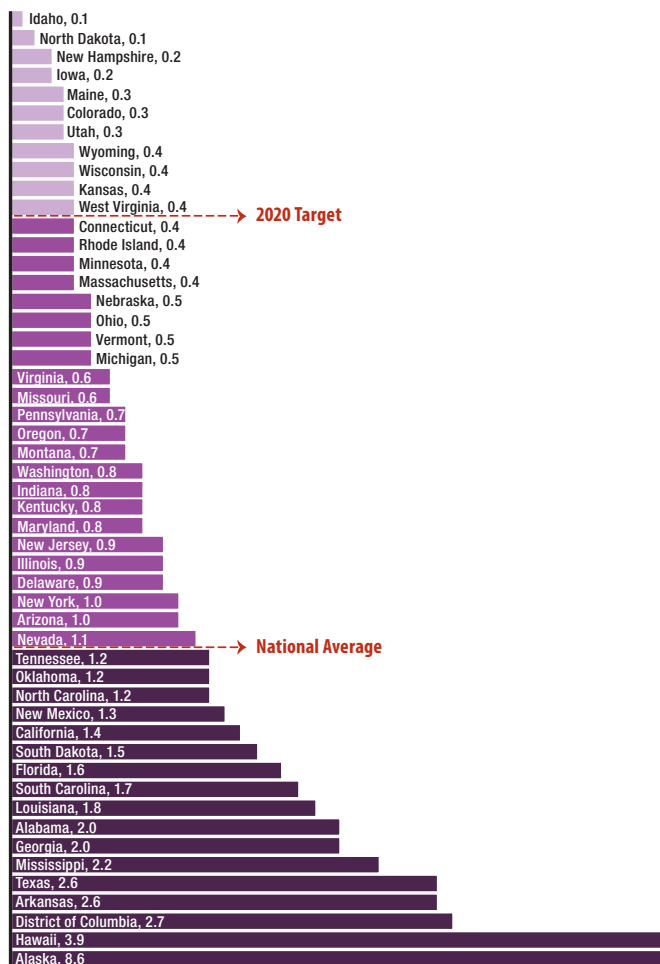
*Numbers of TB cases per 100,000 persons. Data source: NTSS.

Figures 3 and 4. TB Incidence*, US-born Persons, United States, 2015



- Met 2020 target (≤0.4)*
- Above 2020 target (0.4), but at or below national average (1.2)*
- Above national average (>1.2)*

*Numbers of TB cases per 100,000 U.S.-born persons

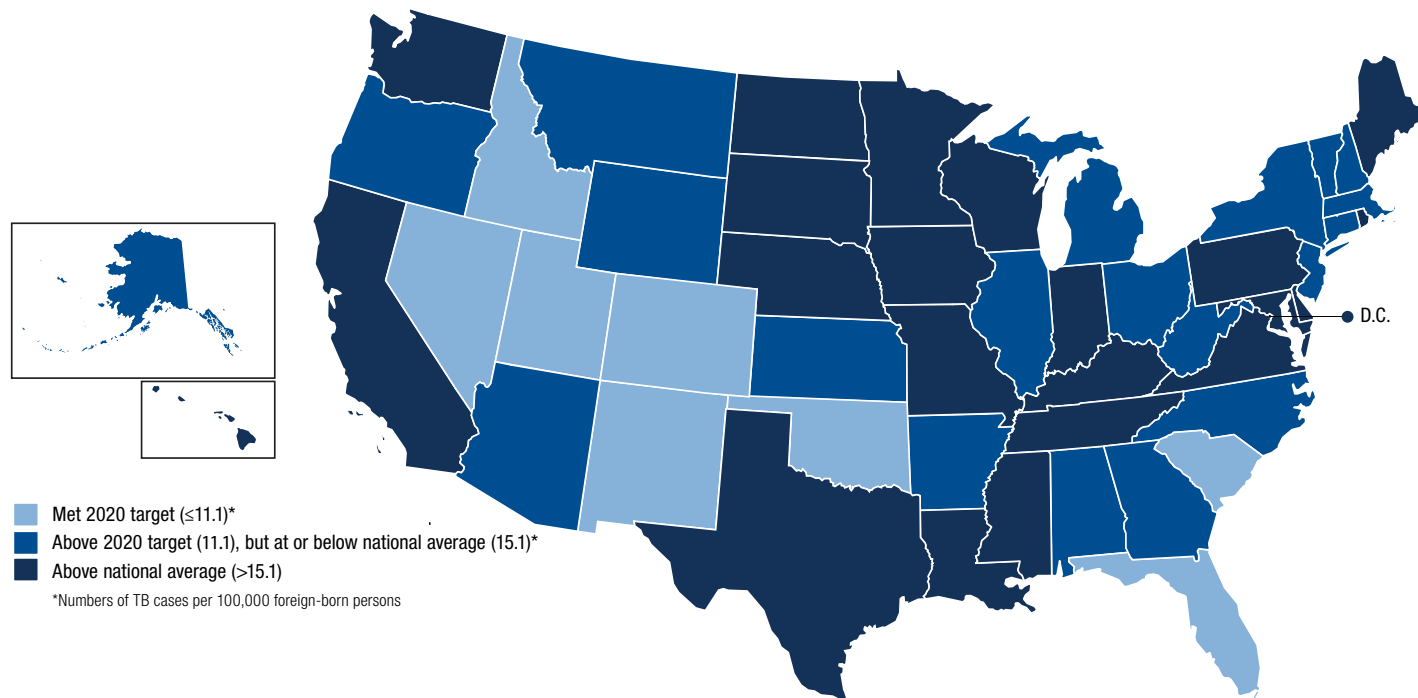


In 2015, a total of 11 states met the 2020 national target of 0.4 cases per 100,000 U.S.-born persons; 23 states were short of the 2020 target, but reported incidences less than the national average of 1.2 cases per 100,000 U.S.-born persons.

Note: To ensure better consistency with annual published TB incidences, U.S. and foreign-born state incidences included in this report were calculated using the U.S. Census Bureau's Current Population Survey. Therefore, U.S. and foreign-born state incidences presented in this report may differ from U.S. and foreign-born state incidences calculated using population data from other sources, such as the American Community Survey.

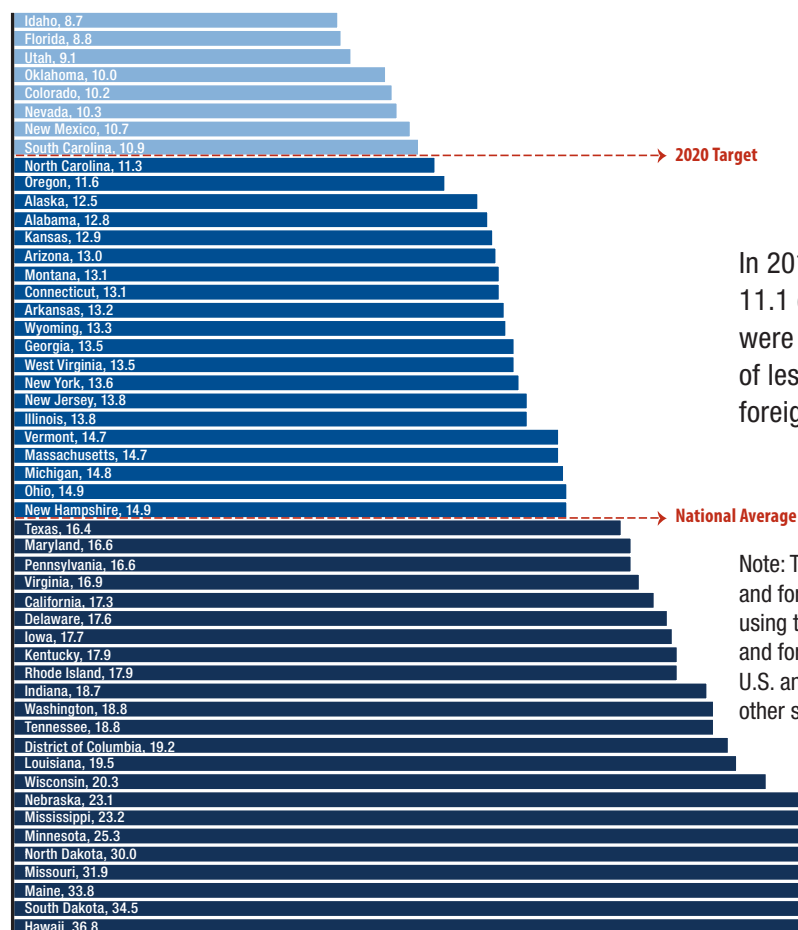
*Numbers of TB cases per 100,000 U.S.-born persons. Data source: NTSS.

Figures 5 and 6. TB Incidence*, Foreign-born Persons, United States, 2015



- Met 2020 target (≤ 11.1)*
- Above 2020 target (11.1), but at or below national average (15.1)*
- Above national average (> 15.1)

*Numbers of TB cases per 100,000 foreign-born persons

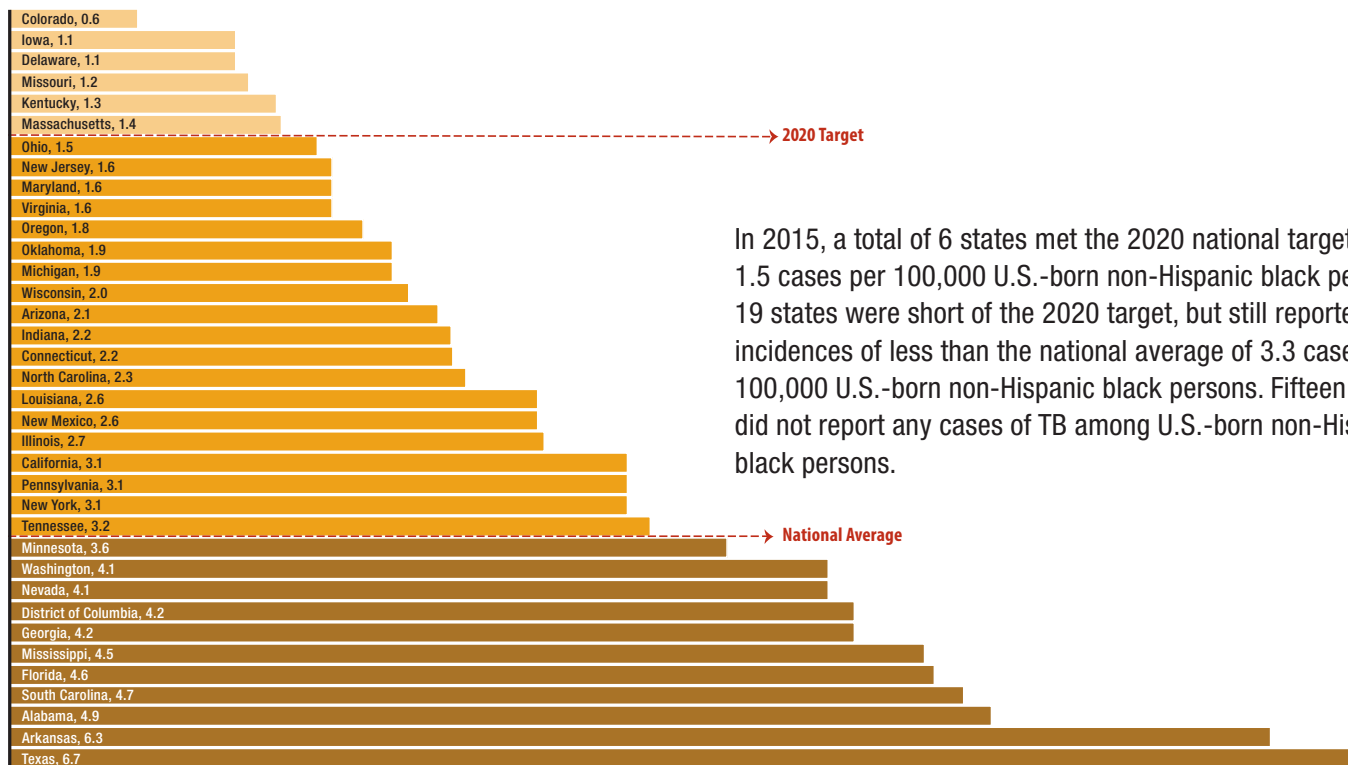
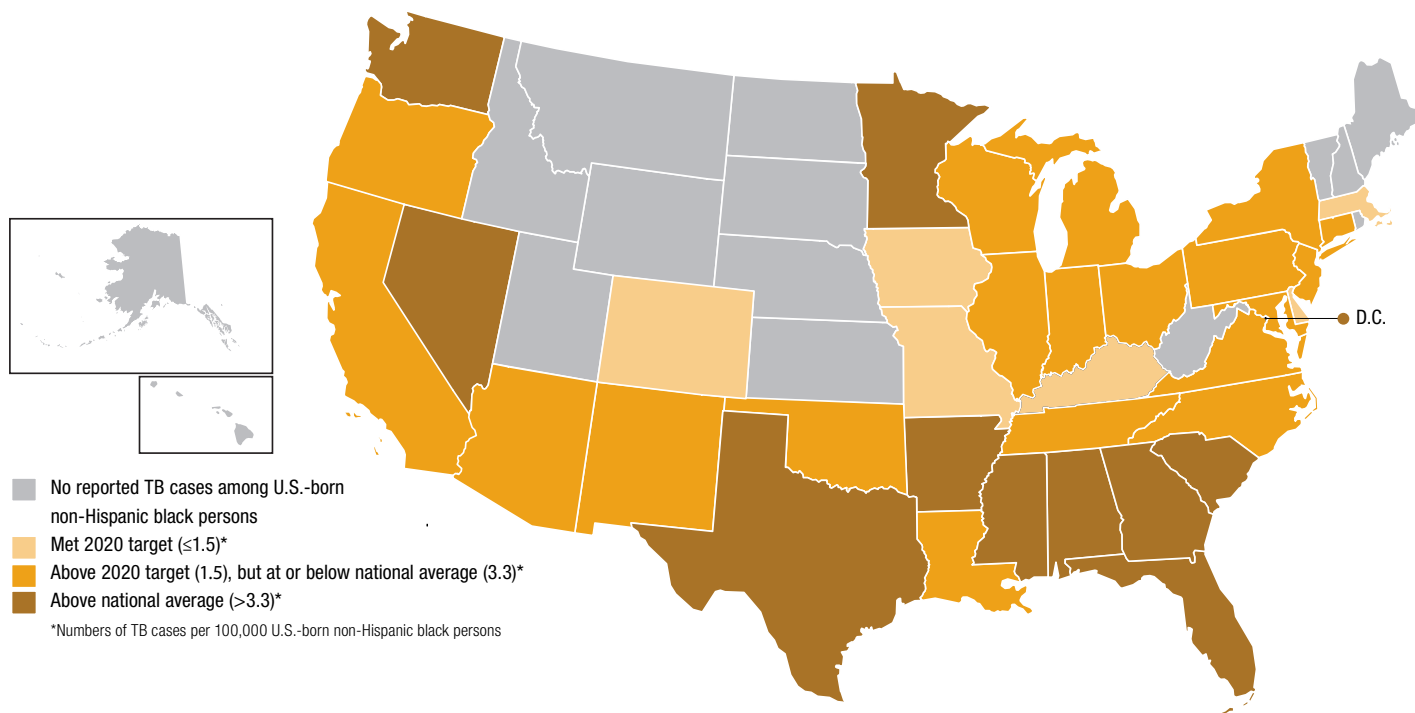


In 2015, a total of 8 states met the 2020 national target of 11.1 cases per 100,000 foreign-born persons; 20 states were short of the 2020 target, but still reported incidences of less than the national average of 15.1 cases per 100,000 foreign-born persons.

Note: To ensure better consistency with annual published TB incidences, U.S. and foreign-born state incidences included in this report were calculated using the U.S. Census Bureau's Current Population Survey. Therefore, U.S. and foreign-born state incidences presented in this report may differ from U.S. and foreign-born state incidences calculated using population data from other sources, such as the American Community Survey.

*Numbers of TB cases per 100,000 foreign-born persons. Data source: NTSS.

Figures 7 and 8. TB Incidence*, US-born Non-Hispanic Blacks or African Americans, United States, 2015



In 2015, a total of 6 states met the 2020 national target of 1.5 cases per 100,000 U.S.-born non-Hispanic black persons; 19 states were short of the 2020 target, but still reported incidences of less than the national average of 3.3 cases per 100,000 U.S.-born non-Hispanic black persons. Fifteen states did not report any cases of TB among U.S.-born non-Hispanic black persons.

*Numbers of TB cases per 100,000 U.S.-born non-Hispanic black persons. Data source: NTSS.

For more information, see *Reported Tuberculosis in the United States, 2015* at <http://www.cdc.gov/tb/statistics/default.htm>. If you need additional state-specific data not available in this report, you can contact your state TB control office at <http://www.cdc.gov/tb/links/tboffices.htm>.

Completion of Therapy

Fully treating and, therefore, preventing further spread of *Mycobacterium tuberculosis* is key to TB control and elimination. If TB drugs are stopped too soon or not taken correctly, a person may become sick again or drug resistance may develop, enabling the further spread of TB. Each patient is unique, and there are many reasons why a patient might be unable or unwilling to complete TB treatment such as no longer experiencing symptoms of TB, not fully understanding the treatment regimen, not being willing or able to manage side effects of their treatment regimen, cultural beliefs, language barriers, difficulty getting health care, substance abuse, or mental health issues. Completion of therapy among persons who have experienced homelessness or been incarcerated can be particularly challenging due to difficulty locating patients for follow up care and treatment, and also particularly important because of the risk of transmission through shelter and jail or prison systems. There are several ways to increase treatment completion. These include directly observed therapy (in which patients are observed to ingest each dose of anti-TB medications) and use of incentives and enablers (e.g., giftcards for food or bus fare for transportation to get to and from the health department).

TB treatment is complex and can take several months to complete. It can take up to 2 years to have full treatment information reported for each TB patient. As a result, the most recent information available on completion of therapy is from 2013. For these patients, 12 states met or exceeded the 2020 national target of 95.0% of TB cases completing a full treatment regimen in 12 months or less; 16 states were short of the 2020 target, but exceeded the national average (89.6%) (Figure 9 on page 8). However, in 2013 there were 11 states that reported 9 or more TB patients, 15 years of age or older who were homeless; 6 of these states exceeded the national average of 85.2% completion of therapy among homeless TB patients (Table 1 on page 12). There were 8 states in 2013 that reported 5 or more TB patients, 15 years of age or older who were incarcerated; 4 of these states exceeded the national average of 79.8% completion of therapy among incarcerated TB patients (Table 2 on page 12).

HIV Status

People living with HIV are more likely than others to become sick with TB if they are exposed and infected. The risk of death from TB is also higher in HIV-infected persons. Untreated LTBI (*see below*) may quickly progress to TB disease in people living with HIV because the immune system is already weakened. Without treatment, TB disease can progress from sickness to death rapidly. Measuring the number of TB patients who are also tested for HIV and have a known HIV status is not only important in terms of saving lives, but also in interrupting the spread of TB and HIV to others.

In 2015, 24 states and the District of Columbia performed above the national average (88.5%) and 9 states met the 2020 national target of having HIV status known among at least 98.0% of reported TB cases (Figure 10 on page 9).

Treatment for LTBI

When a person with infectious TB coughs, droplet nuclei containing *M. tuberculosis* are expelled into the air. If another person inhales air containing these droplet nuclei, he or she may become infected. However, not everyone infected with TB bacteria develops symptoms of TB. As a result, two TB-related conditions exist: LTBI and TB disease. Persons with LTBI do not feel sick and do not have any symptoms. They are infected with *M. tuberculosis*, but do not have TB disease. The only sign of LTBI is a positive reaction to a TB skin test or TB blood test. Persons with LTBI are not infectious and cannot spread TB infection to others. However, at some point in their lives, 5–10% of all people with normal immune systems who have LTBI will become sick with TB disease. As previously described, the chances of progression from LTBI to TB disease are higher for persons with weakened immune systems, such as those infected with HIV. LTBI can be treated to prevent progression to TB disease. Thus, it is important, in terms of accelerating the decline in TB incidence, to measure how many people with LTBI begin and complete treatment.

TB programs work to identify persons who are at high risk for LTBI or at high risk for developing symptom of TB once infected so that they can be offered testing and treatment for LTBI. High-risk persons include known close contacts of someone with infectious TB disease, persons from regions of the world with high TB incidence, and those who work or reside in facilities or institutions with people who are also at high risk for TB. Risk factors for developing TB disease once infected include HIV infection, injection drug use, evidence of prior healed TB, diabetes, or low body weight. Infants and children under the age of five years are also at higher risk of getting sick with TB disease once infected.

In 2014, the most recent year for which data are available, 10 states met or exceeded the 2020 national target of initiating treatment for 91.0% of people diagnosed with LTBI found during contact investigations; 26 states and the District of Columbia were short of the 2020 target, but exceeded the national average (71.6%) (Figure 11 on page 10).

In 2014, 20 states and the District of Columbia met or exceeded the 2020 national target of treatment completion for 81.0% of people diagnosed with LTBI through contact investigation and initiated treatment; 12 states were short of the 2020 target, but met or exceeded the national average of 73.5% (Figure 12 on page 11).

For more information about TB disease and TB prevention and control activities in the United States, visit the National TB Controllers Association website at: <http://www.tbcontrollers.org> and the CDC TB website at: <http://www.cdc.gov/tb>.

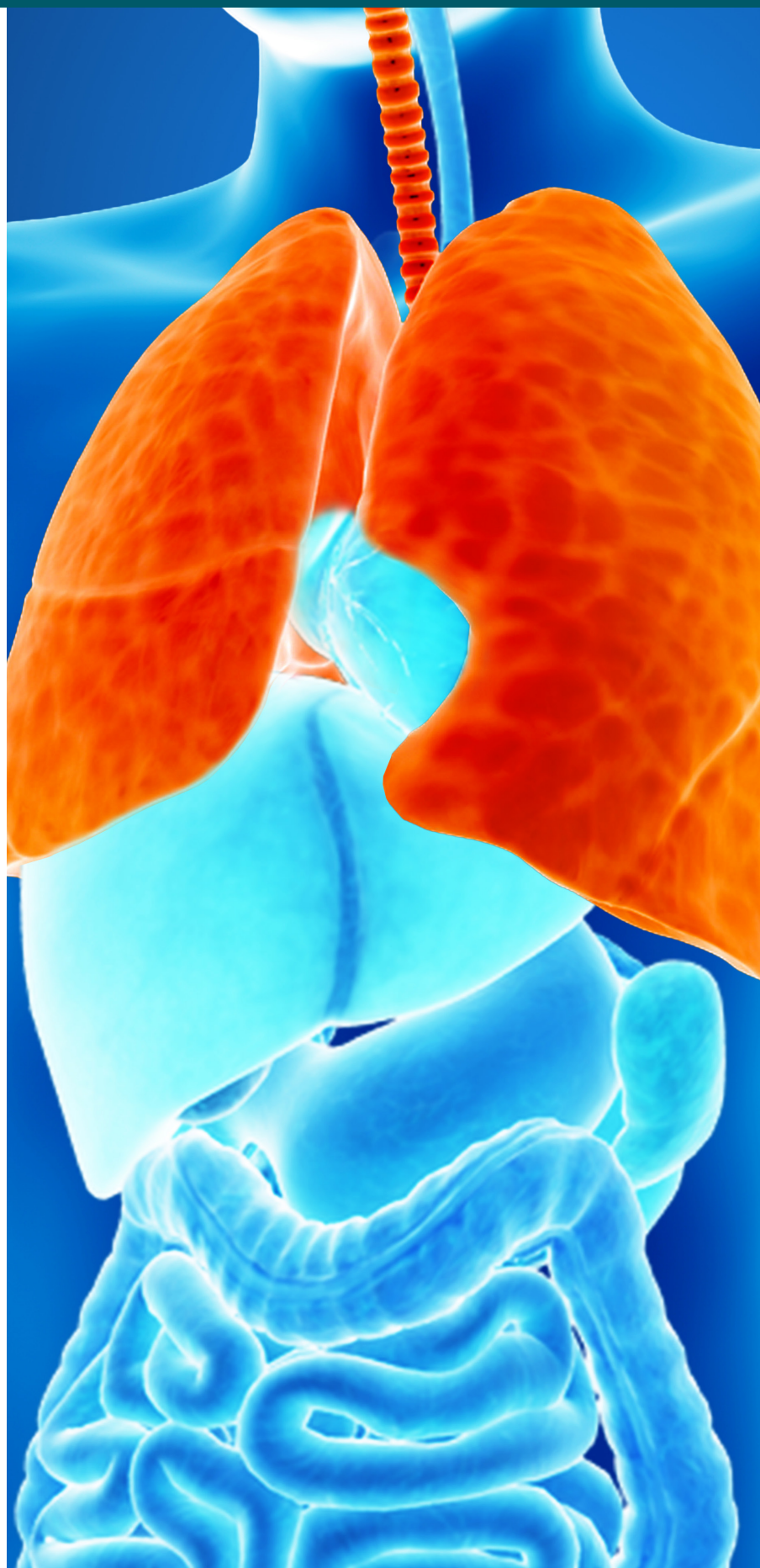
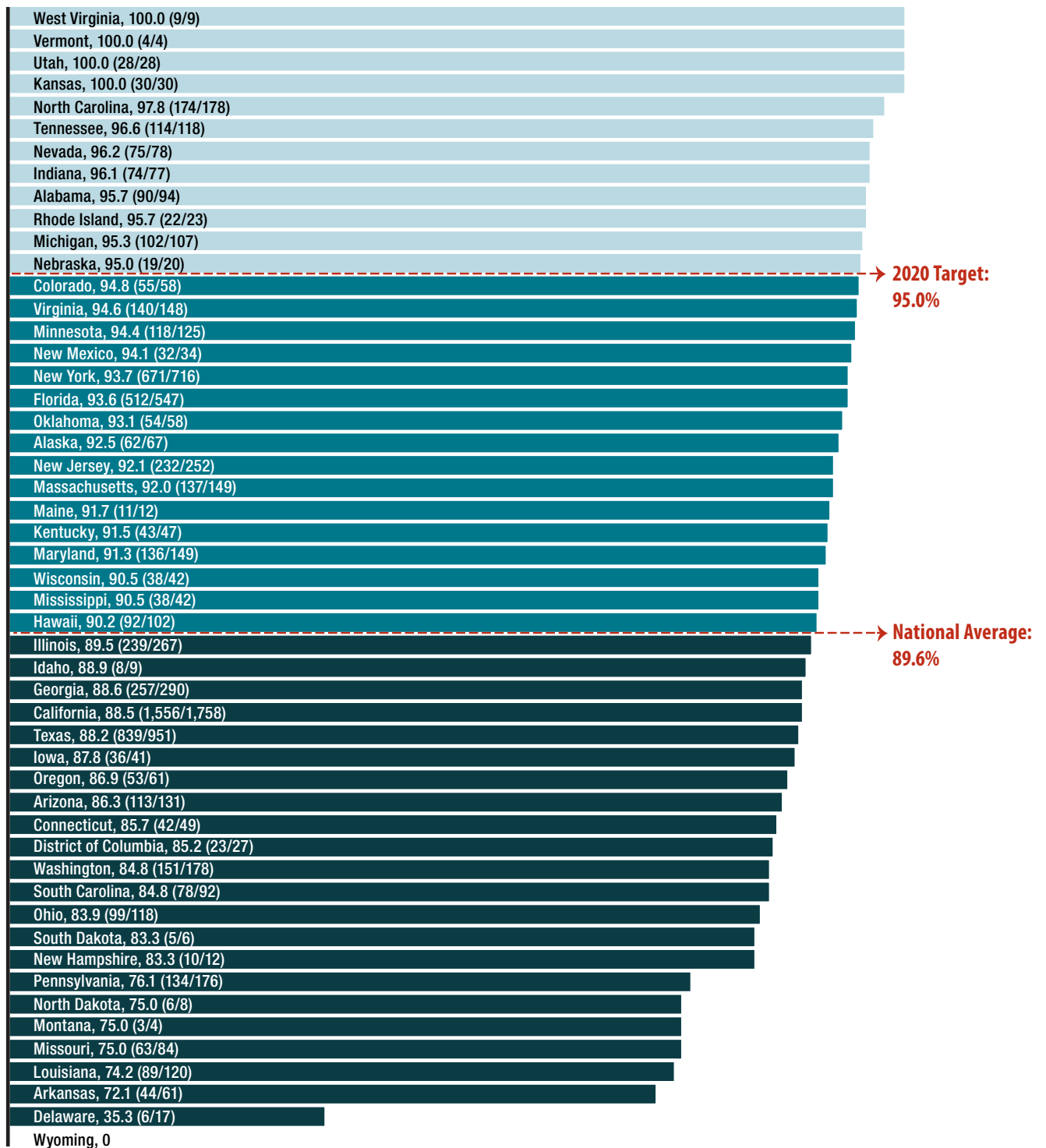
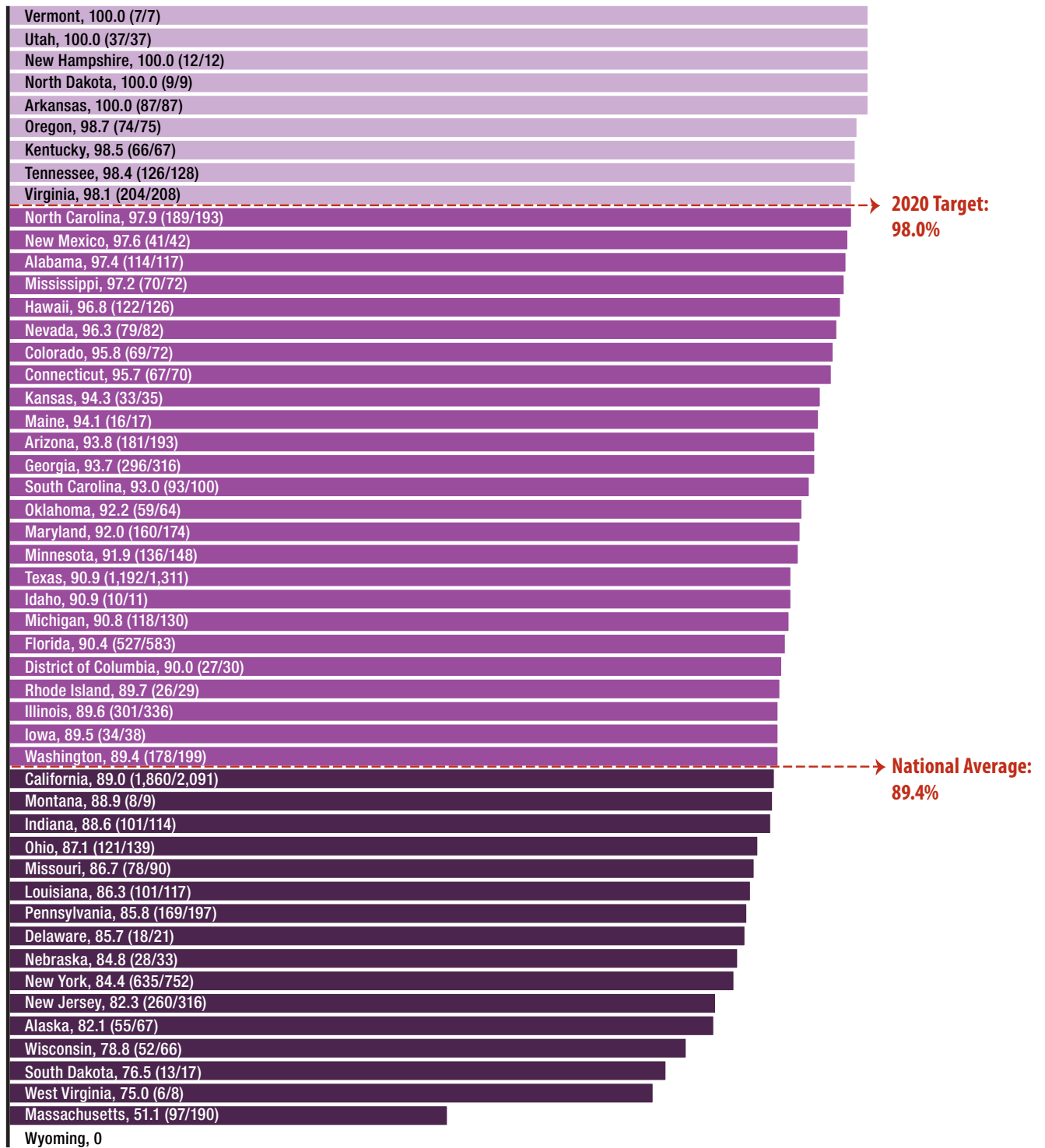


Figure 9: Percentage of Newly Diagnosed TB Cases Completing Treatment ≤12 Months, United States, 2013



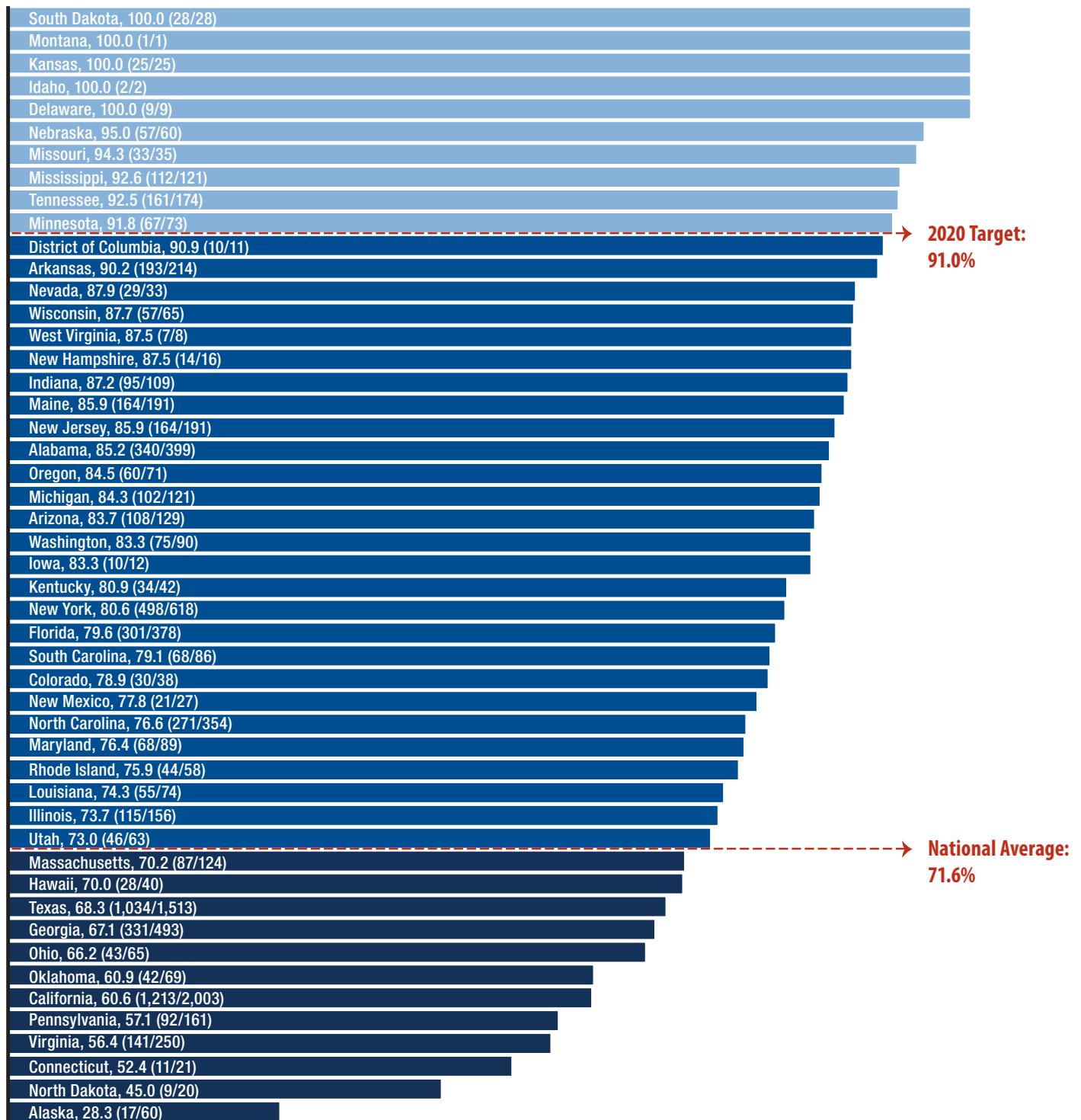
Note: DC, DE, IA, ID, KS, ME, MT, ND, NE, NH, NM, RI, SD, UT, VT, WI, WV, and WY reported 50 or fewer TB cases in 2013. Due to the small denominator, data should be interpreted with caution. The fraction in each parenthesis reports the number of TB patients who completed treatment within 12 months out of the total number of patients who were eligible to complete treatment within 12 months. *Data source: NTSS.*

Figure 10: Percentage of TB Cases with Known HIV Status (Positive or Negative), United States, 2015



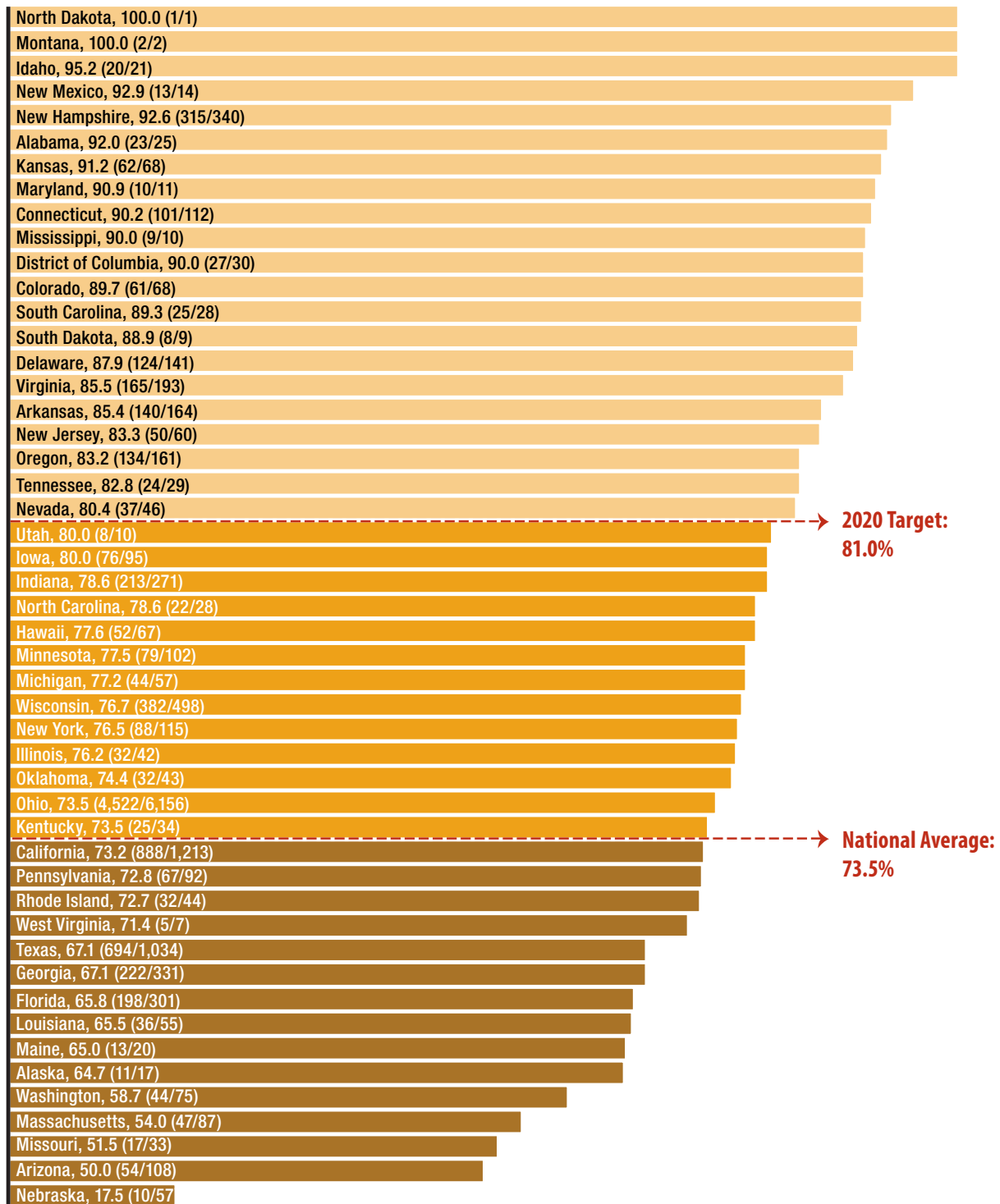
Note: DC, DE, IA, ID, KS, ME, MT, ND, NE, NH, NM, RI, SD, UT, VT, WI, WV, and WY reported 50 or fewer TB cases in 2013. Due to the small denominator, data should be interpreted with caution. The fraction in each parenthesis reports the number of TB patients with either positive or negative HIV test results out of the total number of TB patients. *Data source: NTSS.*

Figure 11: Percentage of Contacts (to Sputum Acid-Fast Bacilli Smear-Positive TB Patients) Newly Diagnosed with LBTI Who Began Treatment, United States, 2014



Note: MT and WY reported zero contacts diagnosed with TB infection. Data should be interpreted with caution because of the small denominator. The fraction in each parenthesis reports the number of contacts who started treatment out of those contacts newly diagnosed with TB infection. Data source: Aggregate Reports for Program Evaluation.

Figure 12: Percentage of Contacts (to Sputum Acid-Fast Bacilli Smear-Positive TB Patients) Newly Diagnosed with LBTI Who Completed Treatment, United States, 2014



Note: MT and WY reported zero contacts diagnosed with TB infection. Data should be interpreted with caution because of the small denominator. The fraction in each parenthesis reports the number of contacts newly diagnosed with TB infection who completed treatment out of those contacts who started treatment. *Data source: Aggregate Reports for Program Evaluation.*

Table 1. Treatment Completion within ≤12 Months among Newly Diagnosed TB Patients Age ≥15 Who were Homeless within the Year Prior to Diagnosis, United States, 2013

States ^a with 1 to 3 TB patients age ≥15 who were homeless	Percentage of homeless patients age ≥15 who completed treatment within 12 months ^b	Percentage of all patients who completed treatment within 12 months ^c	States ^a with 4 to 8 TB patients age ≥15 who were homeless	Percentage of homeless patients age ≥15 who completed treatment within 12 months ^b	Percentage of all patients who completed treatment within 12 months ^c	States ^a with 9 or more TB patients age ≥15 who were homeless	Percentage of homeless patients age ≥15 who completed treatment within 12 months ^b	Percentage of all patients who completed treatment within 12 months ^c
Dist. of Columbia	100	85	Alaska	100	93	Indiana	100	96
Kansas	100	100	Alabama	100	96	North Carolina	100	98
Kentucky	100	91	Colorado	100	95	Florida	98	94
Massachusetts	100	92	Michigan	100	95	Georgia	92	89
Maryland	100	91	Tennessee	100	97	Arizona	89	86
Minnesota	100	94	Virginia	100	95	New York	87	94
Mississippi	100	90	Hawaii	80	90	Texas	83	88
North Dakota	100	75	Louisiana	75	74	California	81	89
New Hampshire	100	83	Pennsylvania	75	76	New Jersey	78	92
New Mexico	100	94	South Carolina	75	85	Illinois	73	90
Nevada	100	96	Washington	75	85	Arkansas	50	72
Oregon	100	87	Ohio	60	84			
Utah	100	100						
Wisconsin	100	90						
Connecticut	67	86						
Iowa	67	88						
Oklahoma	33	93						
Maine	0	92						
Missouri	0	75						

^aCategorized based on lower third, middle third, and upper third numbers of cases reported among homeless persons age ≥15 who were eligible to complete treatment within 12 months;

^bAmong those age ≥15 who were eligible to complete treatment within 12 months; and Among all patients of any age who were eligible to complete treatment within 12 months.

Note: DE, ID, MT, NE, RI, SD, VT, WV, WY did not report TB cases among persons age ≥15 experiencing homelessness who were eligible to complete treatment.

Table 2. Treatment Completion within ≥12 Months among Newly Diagnosed TB Patients Age ≥15 Who were Incarcerated at the Time of Diagnosis, United States, 2013

States ^a with < 2 TB patients age ≥15 who were incarcerated	Percentage of incarcerated patients age ≥15 who completed treatment within 12 months ^b	Percentage of all patients who completed treatment within 12 months ^c	States ^a with 2 to 4 TB patients age ≥15 who were incarcerated	Percentage of incarcerated patients age ≥15 who completed treatment within 12 months ^b	Percentage of all patients who completed treatment within 12 months ^c	States ^a with 5 or more TB patients age ≥15 who were incarcerated	Percentage of incarcerated patients age ≥15 who completed treatment within 12 months ^b	Percentage of all patients who completed treatment within 12 months ^c
Alaska	100	93	Illinois	100	90	New York	100	94
Colorado	100	95	Kentucky	100	91	Tennessee	100	97
Hawaii	100	90	Michigan	100	95	Arizona	85	86
Iowa	100	88	Oklahoma	100	93	North Carolina	80	98
Kansas	100	100	Oregon	100	87	California	79	89
New Hampshire	100	83	Arkansas	100	72	Texas	78	88
New Jersey	100	92	Mississippi	100	90	Florida	76	94
Nevada	100	96	Louisiana	75	74	Georgia	70	89
Wisconsin	100	90	South Carolina	75	85			
Massachusetts	0	92	Pennsylvania	50	76			
			Washington	33	85			
			Missouri	0	75			

^aCategorized based on lower third, middle third, and upper third numbers of cases reported among incarcerated persons age ≥15 who were eligible to complete treatment within 12 months;

^bAmong those age ≥15 who were eligible to complete treatment within 12 months; and ^cAmong all patients of any age who were eligible to complete treatment within 12 months.

Note: AL, CT, DC, DE, ID, IN, MD, ME, MN, MT, ND, NE, NM, OH, RI, SD, UT, VA, VT, WV, WY did not report TB cases among incarcerated persons age ≥15 who were eligible to complete treatment.