

# NATIONAL TUBERCULOSIS INDICATORS

## 2014 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. 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 the reason therapy was stopped, 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. Each TB control jurisdiction reports aggregate contact investigation data annually through the Aggregate Reports for Program Evaluation (ARPE).

National TB Indicators are key process and outcome measures for TB control programs in the U.S. 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.<sup>1,2</sup>

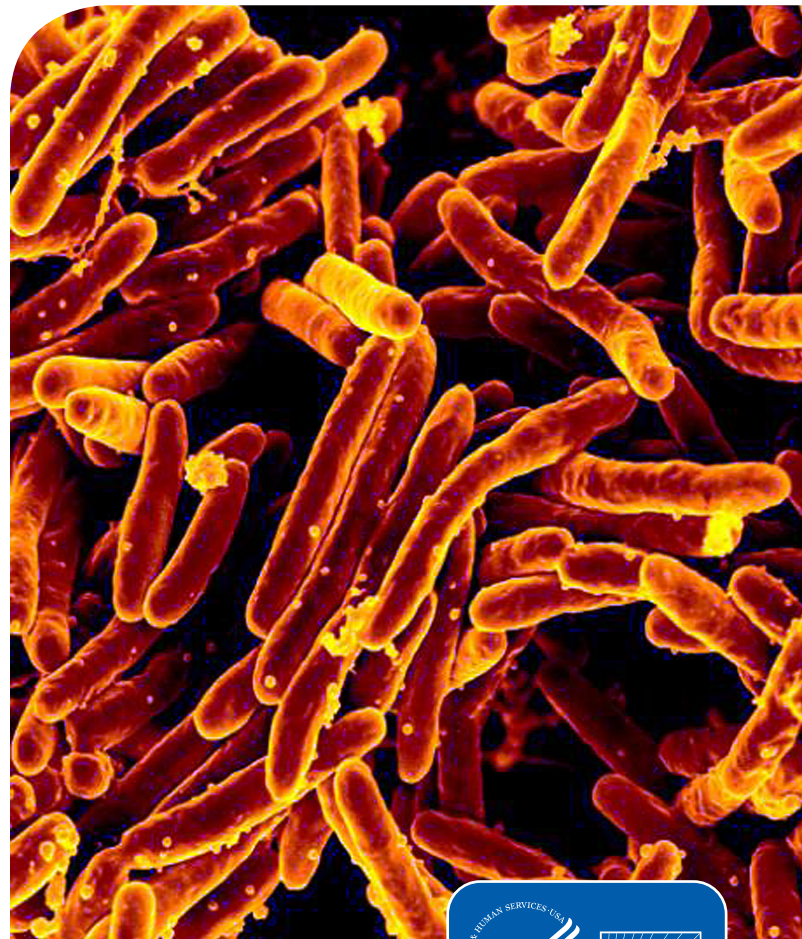
### Incidence<sup>3</sup>

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 2014, TB incidence in the United States was 3.0 cases per 100,000 (30 per million). 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. 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).

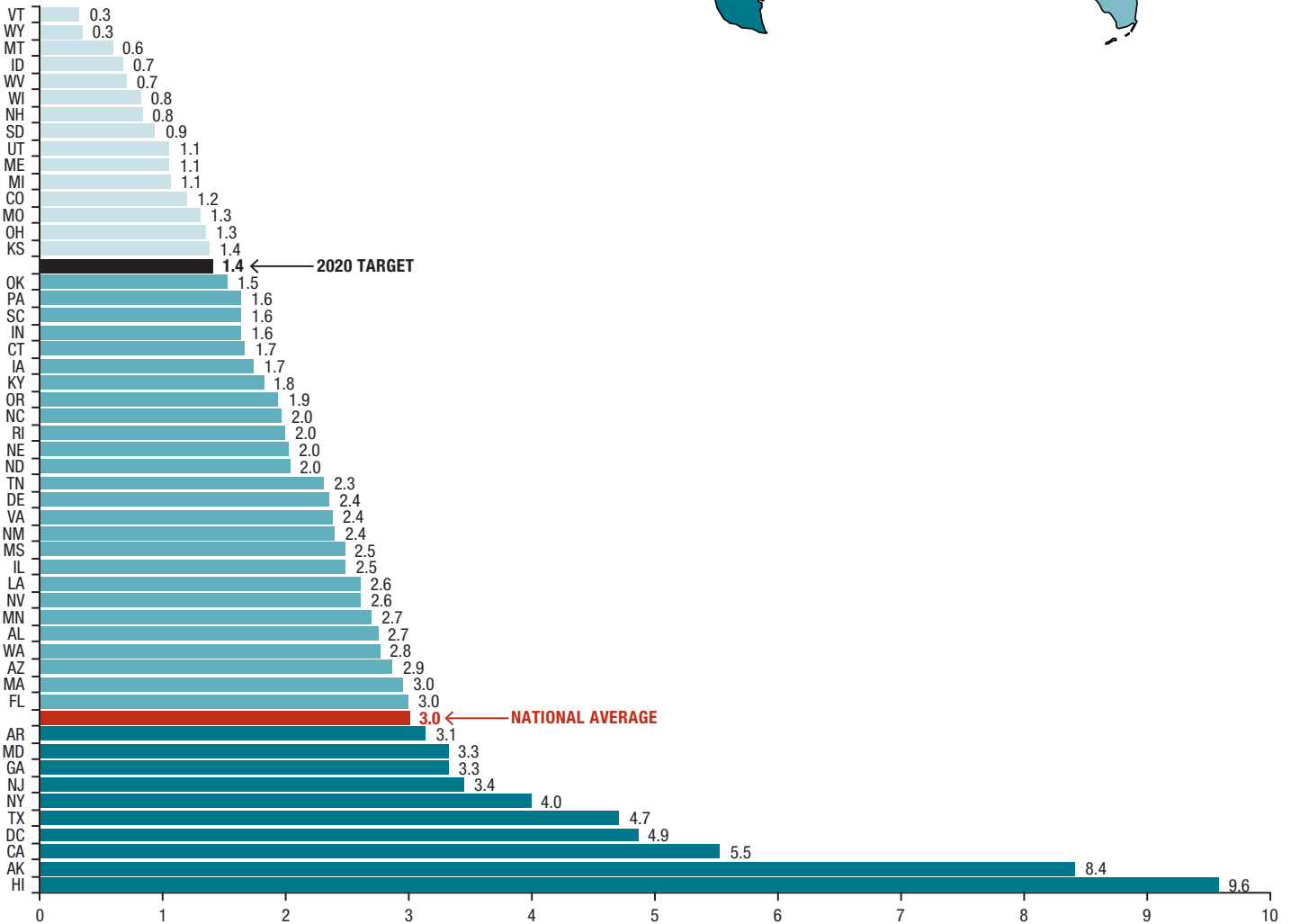
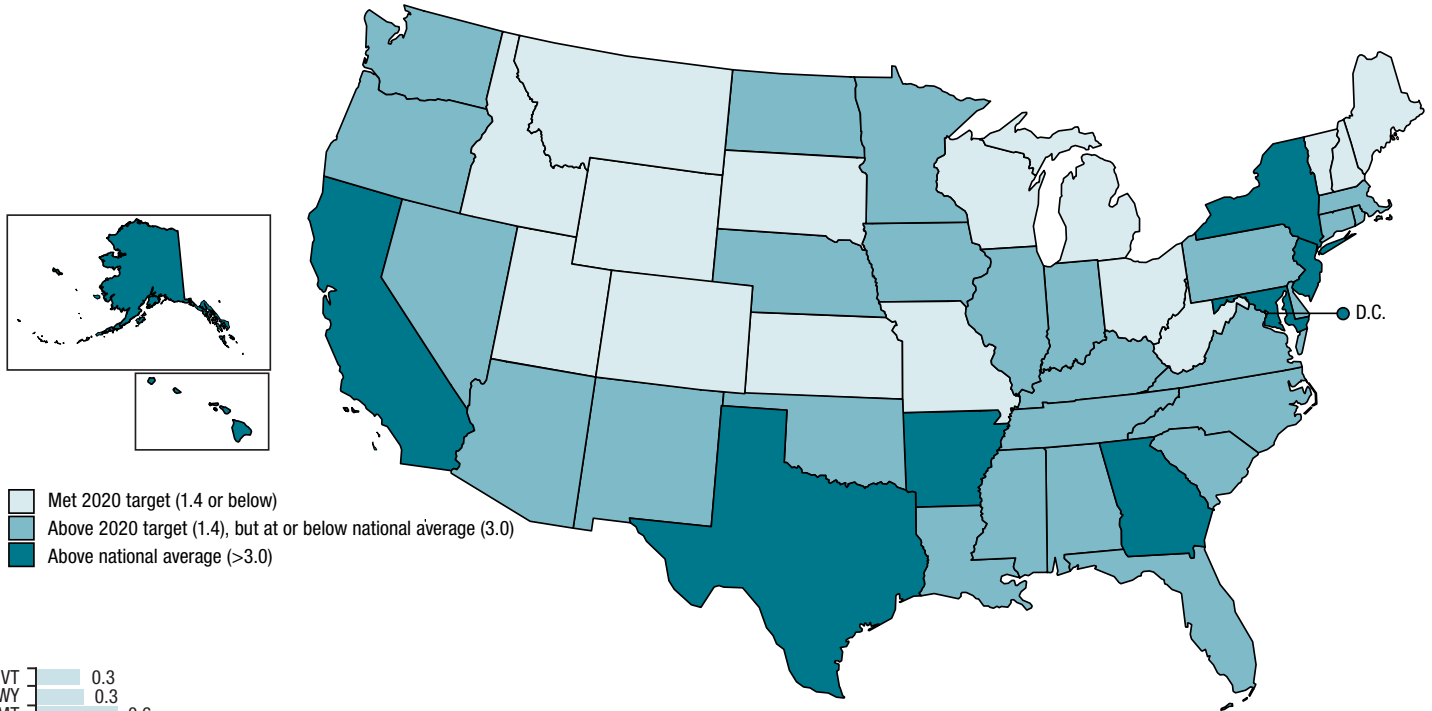
<sup>1</sup>Data in this report are based on the final 2014 dataset from NTSS.

<sup>2</sup>For 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>.

<sup>3</sup>Scott C, Kirking HL, Jeffries C, Price SF, Pratt R. Tuberculosis trends—United States, 2014. *MMWR*. 2015 Mar 20;64(10):265–9.



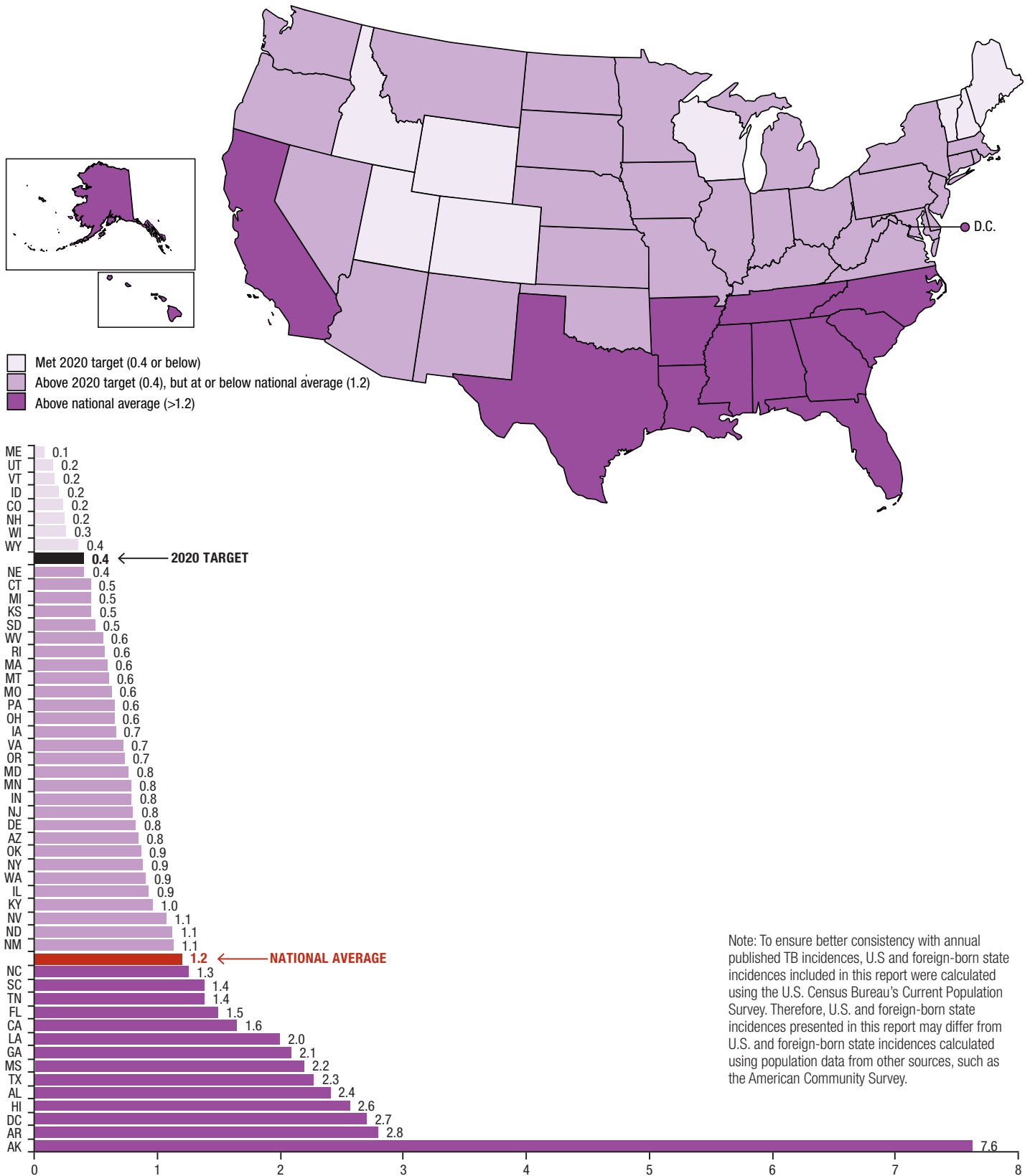
Figures 1 and 2. TB Incidence\*, United States, 2014



\*Cases per 100,000. Data source: NTSS.

In 2014, a total of 8 states met the 2020 national target of 0.4 cases per 100,000 U.S.-born persons; 29 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 (Figures 3 and 4).

Figures 3 and 4. TB Incidence\*, US-born Persons, United States, 2014

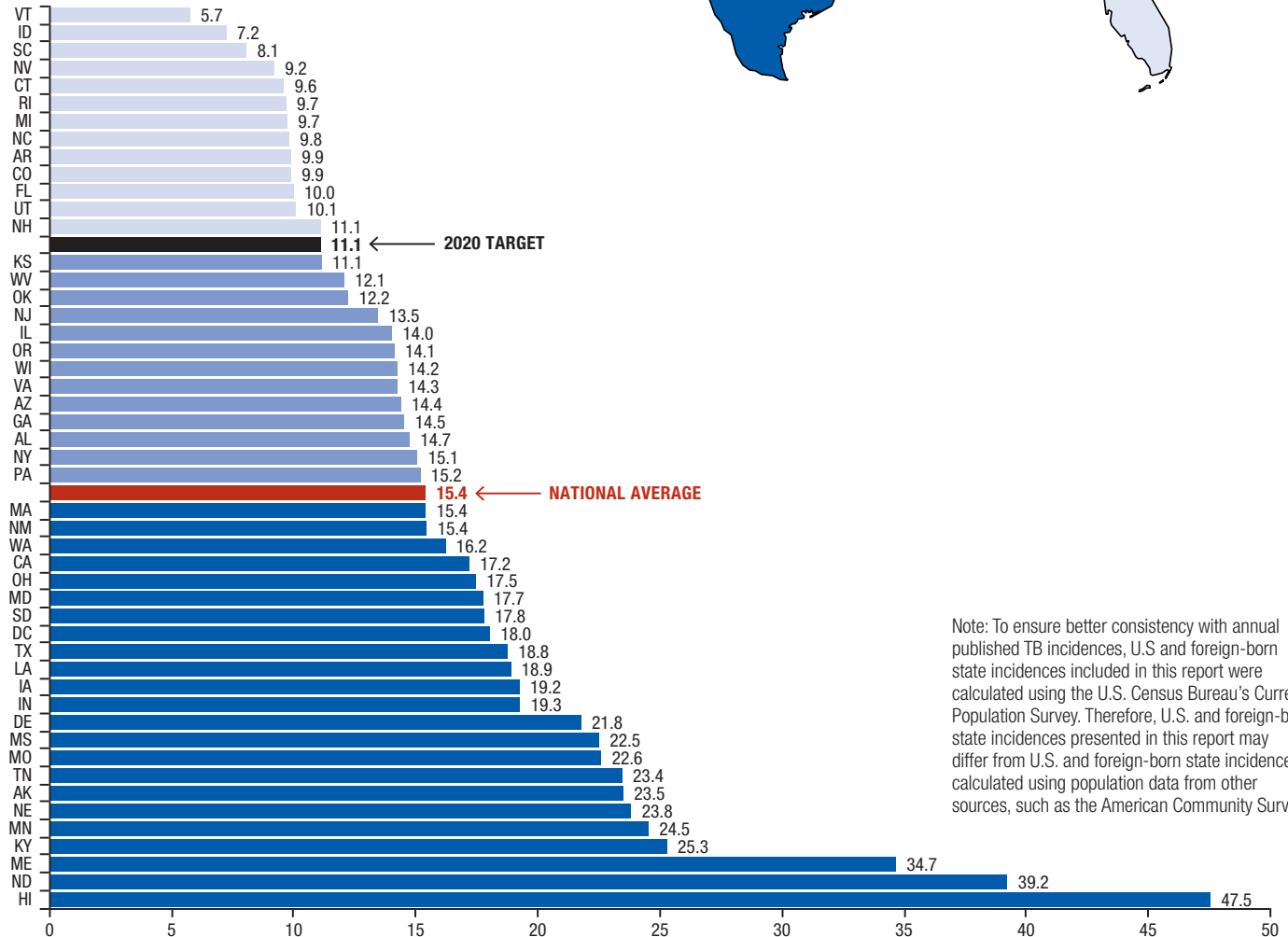
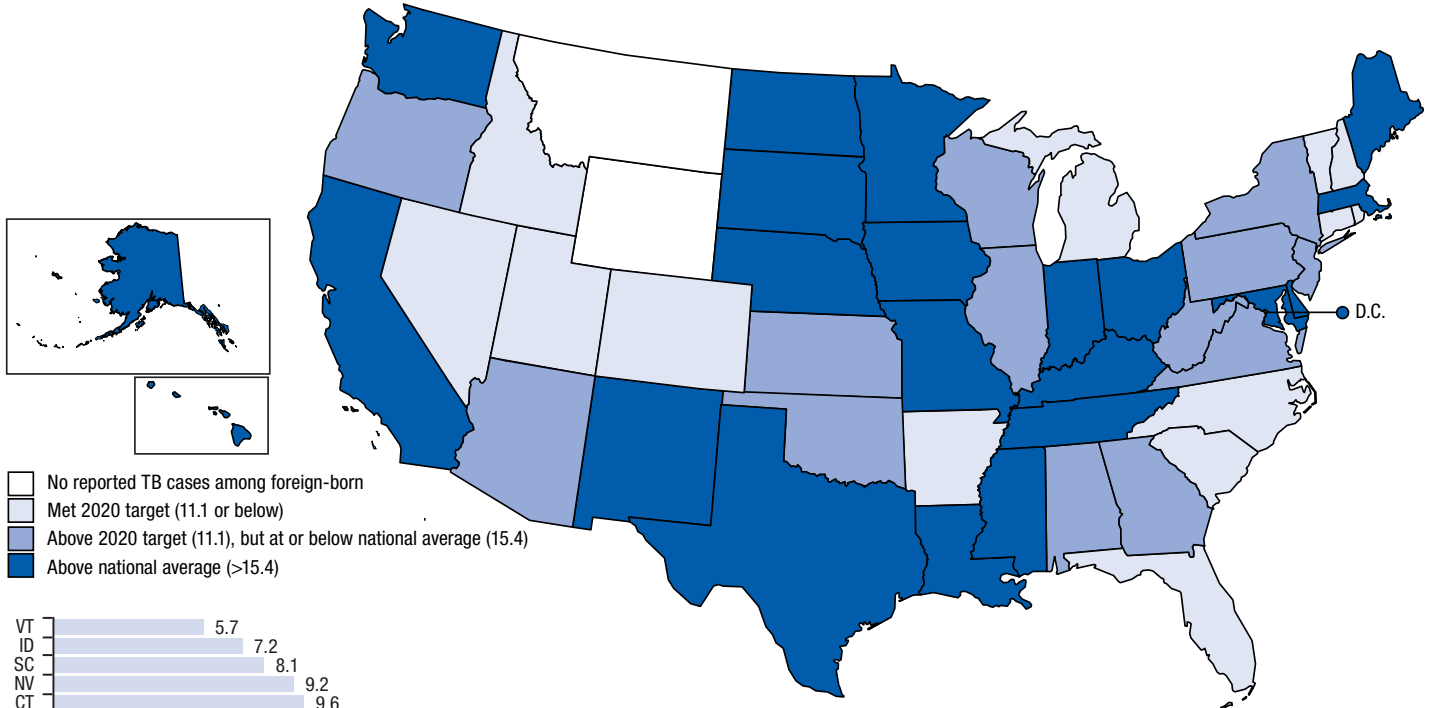


Note: To ensure better consistency with annual published TB incidences, U.S and foreign-born state incidences included in this report were calculated using the U.S. Census Bureau's Current Population Survey. Therefore, U.S. and foreign-born state incidences presented in this report may differ from U.S.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

\*Cases per 100,000. Data source: NTSS.

In 2014, a total of 13 states met the 2020 national target of 11.1 cases per 100,000 foreign-born persons; 13 states were short of the 2020 target, but still reported incidences of less than the national average of 15.4 cases per 100,000 foreign born persons. Two states did not report any cases of TB among foreign-born persons in 2014 (Figures 5 and 6).

Figures 5 and 6. TB Incidence\*, Foreign-born Persons, United States, 2014

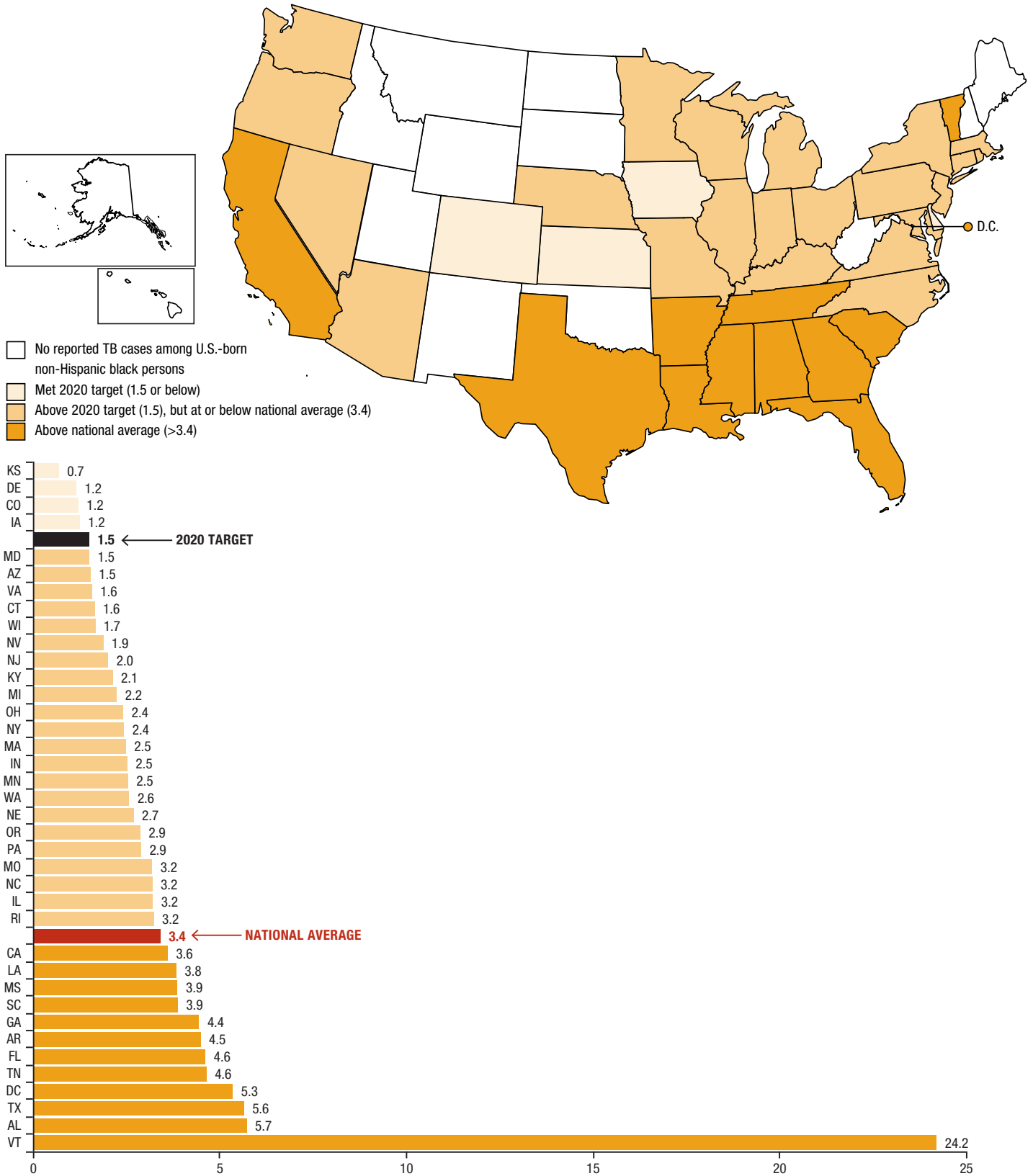


Note: To ensure better consistency with annual published TB incidences, U.S and foreign-born state incidences included in this report were calculated using the U.S. Census Bureau's Current Population Survey. Therefore, U.S. and foreign-born state incidences presented in this report may differ from U.S.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

\*Cases per 100,000. Data source: NTSS.

In 2014, a total of 4 states met the 2020 national target of 1.5 cases per 100,000 U.S.-born non-Hispanic black persons; 22 states were short of the 2020 target, but still reported incidences of less than the national average of 3.4 cases per 100,000 U.S.-born black persons. Thirteen states did not report any cases of TB among U.S.-born non-Hispanic black persons (Figures 7 and 8).

**Figures 7 and 8. TB Incidence\*, US-born Non-Hispanic Blacks or African Americans, United States, 2014**



\*Cases per 100,000. Data source: NTSS.

For more information, see *Reported Tuberculosis in the United States, 2014* 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, not fully understanding the 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 antituberculosis 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 2012. In 2012, a total of 11 states met or exceeded the 2020 national target of 95.0% of TB cases completing a full treatment regimen in 12 months or less; 19 states were short of the 2020 target, but exceeded the national average (89.0%) (Figure 9 on page 8). However, in 2012 there were 14 states that reported 8 or more TB patients, 15 years of age or more who were homeless; 9 of these states exceeded the national average of 83.7% completion of therapy among homeless TB patients (Table 1 on page 12). There were 13 states in 2012 that reported 6 or more TB patients, 15 years of age or more who were incarcerated; 8 of these states exceeded the national average of 78.7% 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 become infected. The risk of death from TB is also higher in HIV-infected persons. Untreated latent TB infection (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 2014, a total of 14 states and the District of Columbia performed above the national average (88.5%) and 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 Latent Tuberculosis Infection

When a person with infectious TB coughs or sneezes, 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 becomes sick. As a result, two TB-related conditions exist: latent TB infection and TB disease. Persons with latent TB infection 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 TB infection is a positive reaction to the tuberculin skin test or TB blood test. Persons with latent TB infection 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 latent TB infection will become sick with TB disease. As previously described, the chances of progression from latent TB infection to TB disease are higher for persons with weakened immune systems, such as those infected with HIV. Latent TB infection 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 latent TB infection begin and complete treatment.

TB programs use targeted testing to select, examine, and treat persons who are at high risk for TB infection or at high risk for getting sick with TB once infected. 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, and 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.

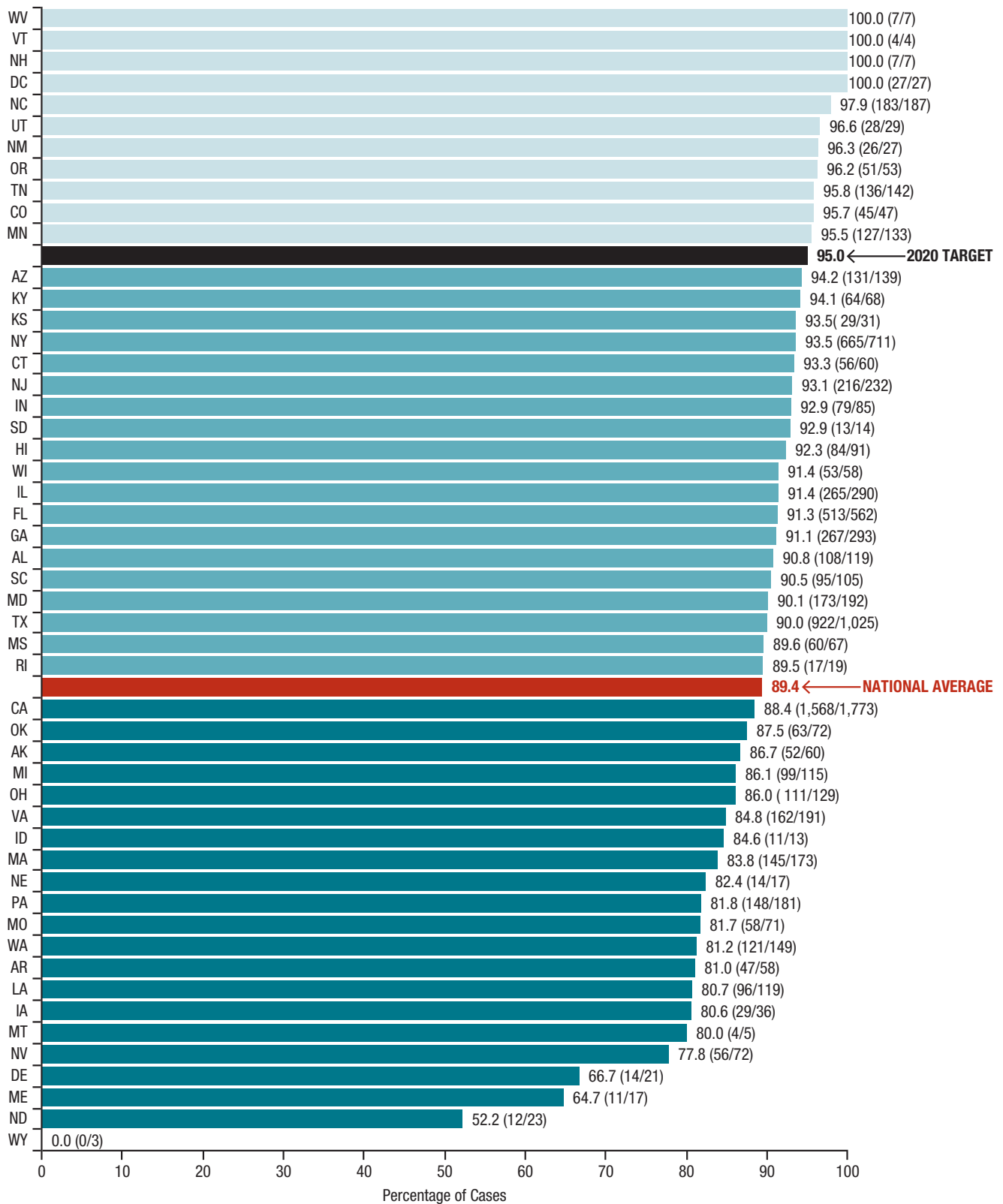
In 2012, the most recent year for which data are available, a total of 13 states met or exceeded the 2020 national target of initiating treatment for 91.0% of people diagnosed with latent TB infection found during contact investigations; 25 states were short of the 2020 target, but exceeded the national average (67.6%) (Figure 11 on page 10).

In 2012, a total of 16 states met or exceeded the 2020 national target of treatment completion for 81.0% of people diagnosed with latent TB infection through contact investigation; 18 states and the District of Columbia were short of the 2020 target, but exceeded the national average of 65.9% (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>.



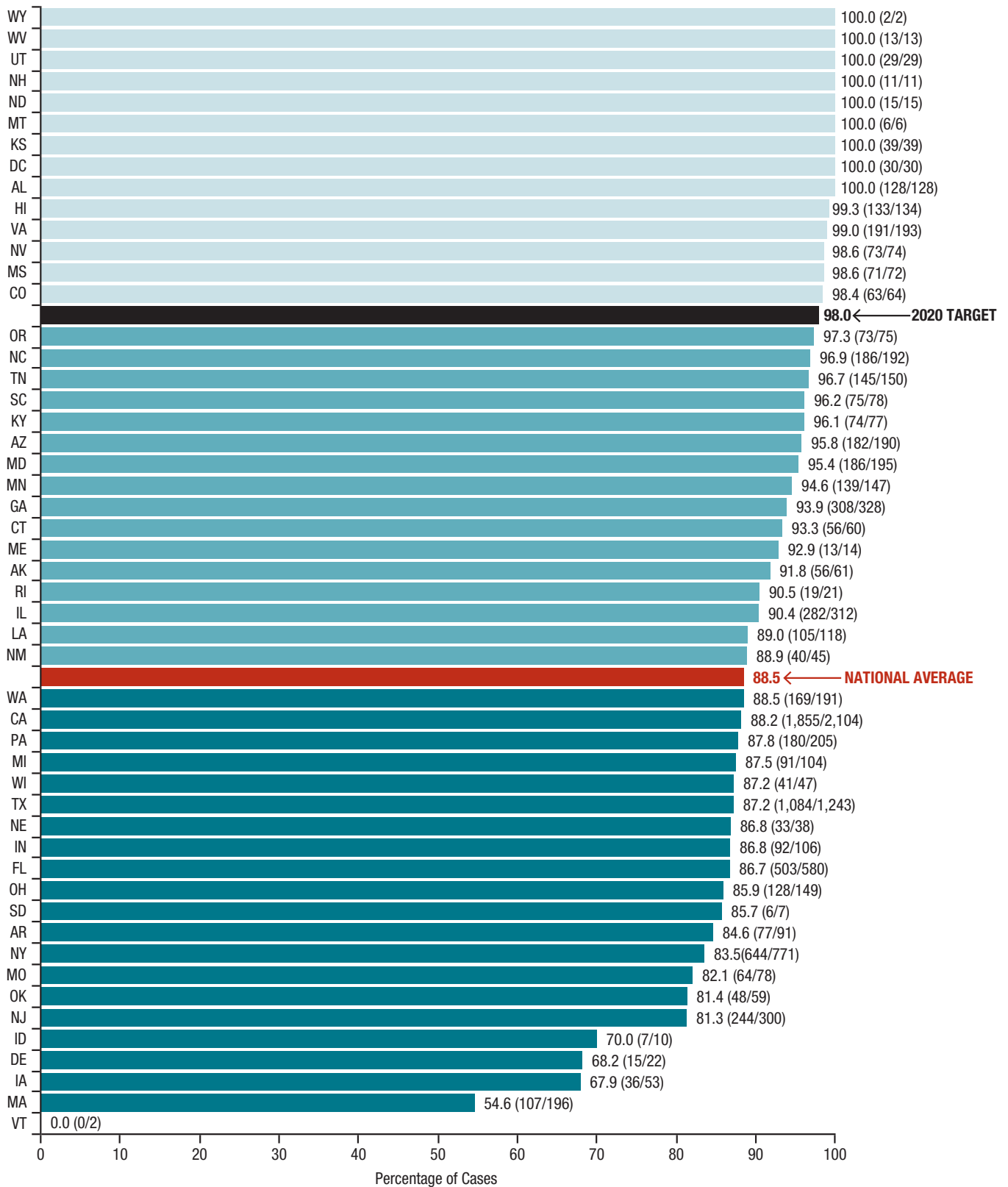
Figure 9: Percentage of Newly Diagnosed TB Cases Completing Treatment ≤12 Months, United States, 2012



Note: DC, DE, IA, ID, KS, ME, MT, ND, NE, NH, NM, RI, SD, UT, VT, WV, and WY reported 50 or fewer TB cases in 2012. 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.*

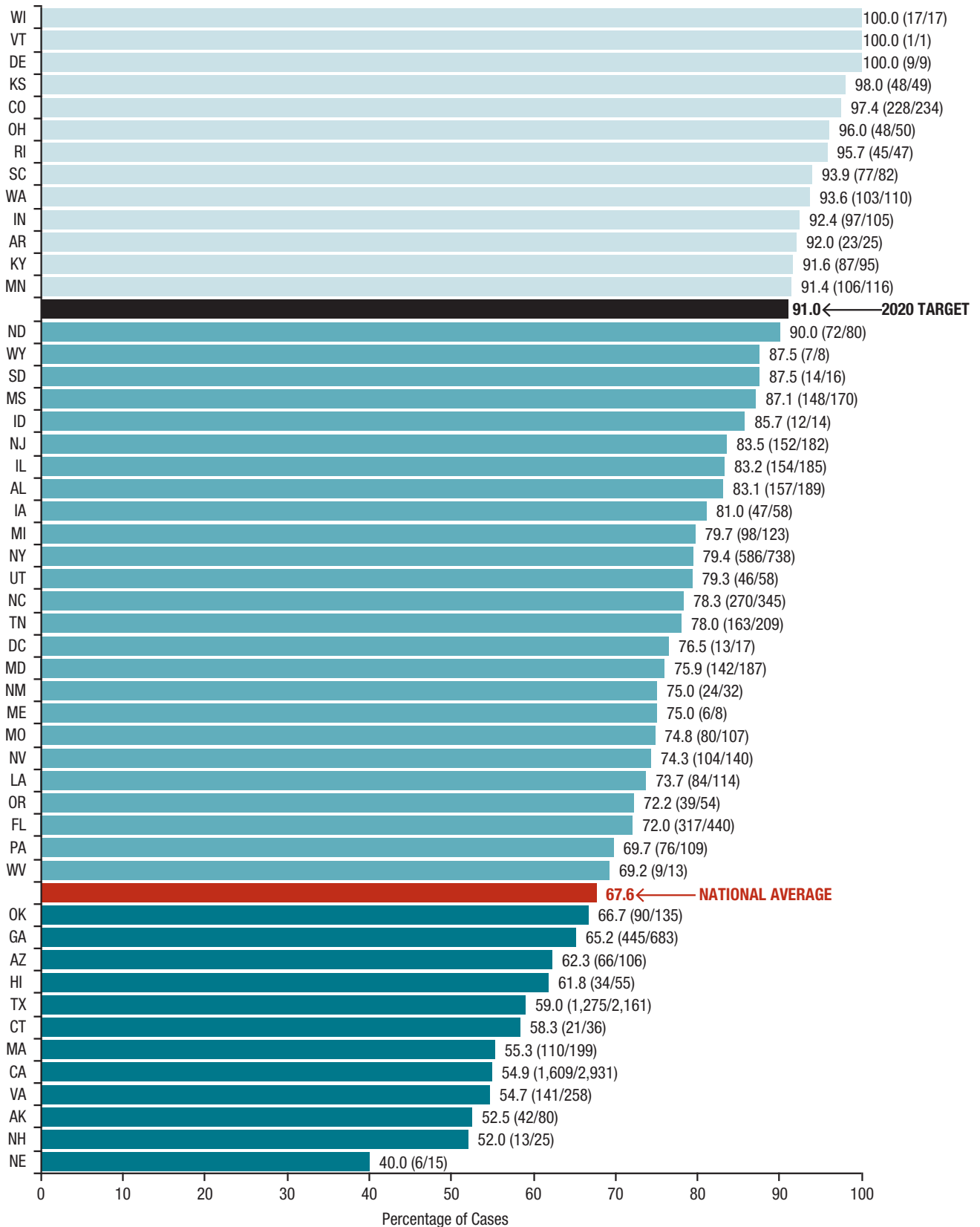


Figure 10: Percentage of TB Cases with Known HIV Status (Positive or Negative), United States, 2014



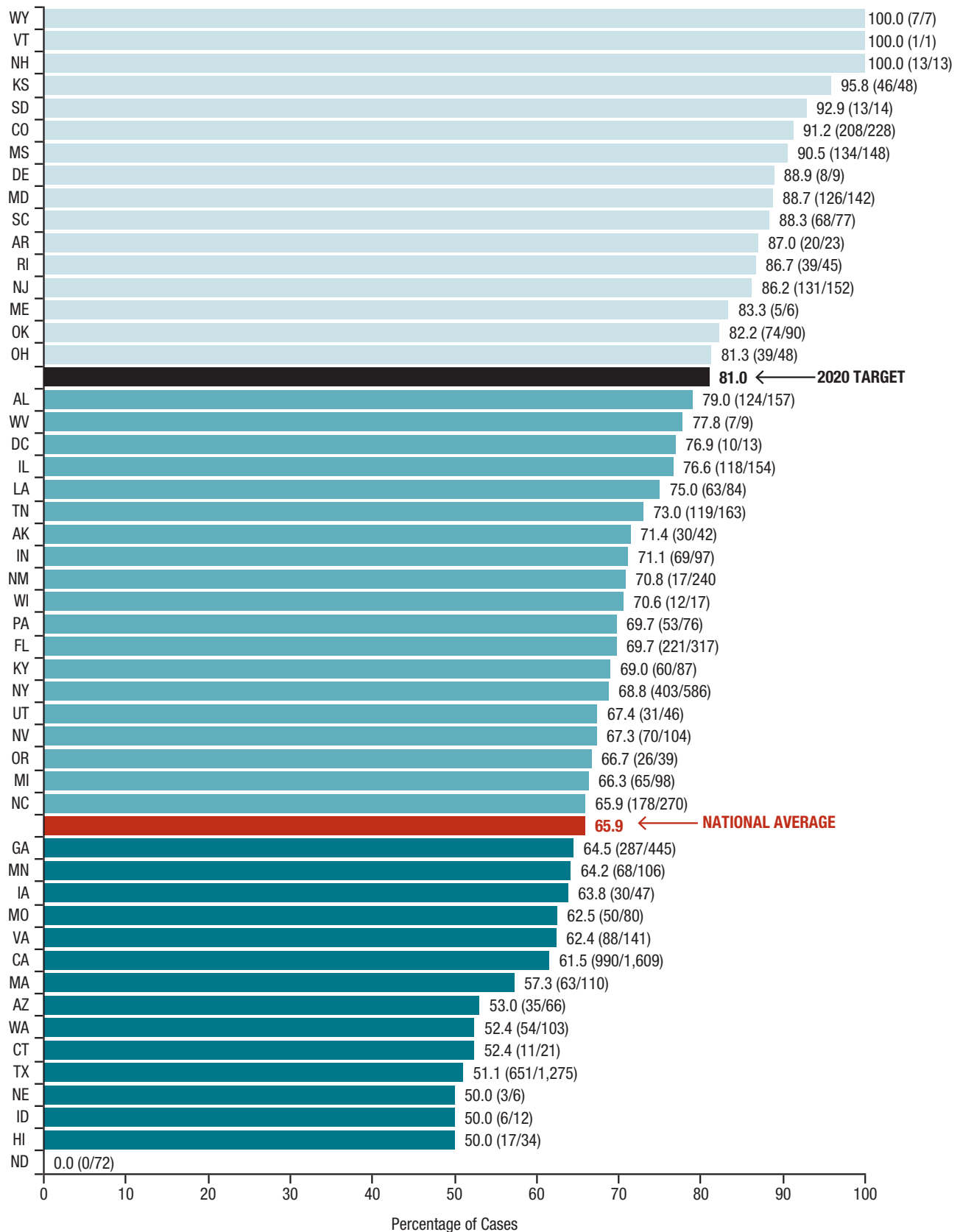
Note: DC, DE, ID, KS, ME, MT, ND, NE, NH, NM, RI, SD, UT, VT, WI, WV, and WY reported 50 or fewer TB cases in 2014. Due to the small denominator, data should be interpreted with caution. The fraction in each parenthesis reports the number of TB cases with known HIV status (either positive or negative HIV test results) out of the total number of TB cases. Data source: NTSS.

**Figure 11: Percentage of Contacts (to Sputum AFB Smear-Positive TB Patients) Newly Diagnosed with Latent TB Infection Who Began Treatment, United States, 2012**



Note: MT 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: ARPE.*

**Figure 12: Percentage of Contacts (to Sputum AFB Smear-Positive TB Patients) Newly Diagnosed with Latent TB Infection Who Completed Treatment, United States, 2012**



Note: MT 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: ARPE.*

**Table 1. Treatment Completion within 12 Months or Less among Newly Diagnosed TB Patients Age ≥15 Who were Homeless within the Year Prior to Diagnosis, United States, 2012**

States <sup>a</sup> with 1 to 3 TB patients age ≥15 who were homeless	Percentage of homeless patients age ≥15 who completed treatment within 12 months <sup>b</sup>	Percentage of all patients who completed treatment within 12 months <sup>c</sup>	States <sup>a</sup> with 4 to 7 TB patients age ≥15 who were homeless	Percentage of homeless patients age ≥15 who completed treatment within 12 months <sup>b</sup>	Percentage of all patients who completed treatment within 12 months <sup>c</sup>	States <sup>a</sup> with 8 or more TB patients age ≥15 who were homeless	Percentage of homeless patients age ≥15 who completed treatment within 12 months <sup>b</sup>	Percentage of all patients who completed treatment within 12 months <sup>c</sup>
KY	100.0	94.1	AZ	100.0	94.2	IN	100.0	92.9
ME	100.0	64.7	MA	100.0	83.8	SC	100.0	90.5
MO	100.0	81.7	NC	100.0	97.9	MS	90.0	89.6
MT	100.0	80.0	NV	100.0	77.8	VA	90.0	84.8
NE	100.0	82.4	OK	100.0	87.5	NY	89.5	93.5
NJ	100.0	93.1	TN	100.0	95.8	FL	87.5	91.3
PA	100.0	81.8	LA	85.7	80.7	MD	87.5	90.1
UT	100.0	96.6	AK	83.3	86.7	GA	84.4	91.1
CO	66.7	95.7	AL	66.7	90.8	IL	84.2	91.4
OR	66.7	96.2	AR	66.7	81.0	CA	83.3	88.4
DE	50.0	66.7	WA	60.0	81.2	TX	78.8	90.0
MN	0.0	95.5	ND	0.0	52.2	KS	75.0	93.5
NM	0.0	96.3				OH	70.0	86.0
						MI	66.7	86.1

<sup>a</sup>Categorized 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.

<sup>b</sup>Among those ≥15 who were eligible to complete therapy within 12 months.

<sup>c</sup>Among all patients of any age who were eligible to complete treatment within 12 months.

Note: CT, DC, HI, IA, ID, NH, RI, SD, VT, WI, 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 or Less among Newly Diagnosed TB Patients Age ≥15 Who were Incarcerated at the Time of Diagnosis, United States, 2012**

States <sup>a</sup> with 1 to 2 TB patients age ≥15 who were incarcerated	Percentage of incarcerated patients age ≥15 who completed treatment within 12 months <sup>b</sup>	Percentage of all patients who completed treatment within 12 months <sup>c</sup>	States <sup>a</sup> with 3 to 4 TB patients age ≥15 who were incarcerated	Percentage of incarcerated patients age ≥15 who completed treatment within 12 months <sup>b</sup>	Percentage of all patients who completed treatment within 12 months <sup>c</sup>	States <sup>a</sup> with 5 or more TB patients age ≥15 who were incarcerated	Percentage of incarcerated patients age ≥15 who completed treatment within 12 months <sup>b</sup>	Percentage of all patients who completed treatment within 12 months <sup>c</sup>
CO	100.0	95.7	IN	100.0	92.9	AL	100.0	90.8
DC	100.0	100.0	MS	100.0	89.6	TN	100.0	95.8
ID	100.0	84.6	OK	100.0	87.5	AZ	94.1	94.2
KS	100.0	93.5	PA	100.0	81.8	CA	90.7	88.4
MO	100.0	81.7	AK	50.0	86.7	FL	86.4	91.3
NE	100.0	82.4	SC	50.0	90.5	GA	84.6	91.1
NJ	100.0	93.1	ND	0.0	52.2	KY	80.0	94.1
NV	100.0	77.8				NC	80.0	97.9
WV	100.0	100.0				TX	70.9	90.0
LA	50.0	80.7				IL	60.0	91.4
MI	50.0	86.1				MA	60.0	83.8
OH	50.0	86.0				NY	50.0	93.5
WA	50.0	81.2				VA	50.0	84.8

<sup>a</sup>Categorized 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.

<sup>b</sup>Among those ≥15 who were eligible to complete therapy within 12 months.

<sup>c</sup>Among all patients of any age who were eligible to complete treatment within 12 months.

Note: AR, CT, DE, HI, IA, MD, ME, MN, MT, NH, NM, OR, RI, SD, UT, VT, WI, WY did not report TB cases among persons age ≥15 experiencing incarceration who were eligible to complete treatment.