

# Epidemiology of Tuberculosis Among Non-U.S.–Born Persons in the United States, 1993–2017

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### Epidemiology of Tuberculosis Among Non-U.S.–Born Persons, United States, 1993–2017\*

Surveillance, Epidemiology, and Outbreak Investigations Branch

\* As of June 1, 2018

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### Background: Non-U.S.–Born Persons with TB in the United States

- In 2017:
    - A total of 9,105 tuberculosis (TB) cases were reported in the United States
      - 6,384 (70.1%) were in non-U.S.–born persons
      - 2,705 (29.7%) were in U.S.-born persons
      - 16 (0.2%) were in persons whose country of birth was unknown
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### The National Tuberculosis Surveillance System

- Evolved from a program begun in 1953 that collected information on each newly reported case of TB disease in the United States
  - Currently includes 60 reporting areas (the 50 states, the District of Columbia, New York City, Puerto Rico, and 7 other U.S.-affiliated jurisdictions in the Pacific Ocean and the Caribbean Sea)
  - In 1986, all reporting areas began submitting information on TB patients' countries of birth
  - Since 1993, CDC has collected additional risk factor, clinical, and laboratory information on each reported case
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### Non-U.S.–Born Persons in the United States

- Non-U.S.–born persons are those who were born outside of the United States or a U.S. territory\* to parents who were not U.S. citizens
- May be naturalized U.S. citizens, legal permanent residents, visitors, workers, students, or persons with other visa statuses
- U.S. Census Bureau estimated the 2017 non-U.S.–born population in the United States at 43.5 million† (13.6% of the U.S. population)

\*U.S. territories include American Samoa, Guam, Puerto Rico, U.S. Virgin Islands, and Commonwealth of the Northern Mariana Islands

† U.S. Census Bureau. Current Population Survey via Data Ferrett (<http://dataferrett.census.gov/>), accessed September 14, 2018

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### Reported TB Cases Among Non-U.S.–Born Persons Compared with All TB Cases, United States, 1993–2017

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>TB cases among non-U.S.–born</b>	7,403	7,762	8,010	7,752	7,753	7,623	7,624	7,634	8,034	7,737	7,947	7,875
<b>Total TB cases</b>	25,102	24,206	22,726	21,210	19,751	18,286	17,499	16,308	15,945	15,055	14,835	14,499

  

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>TB cases among non-U.S.–born</b>	7,745	7,845	7,780	7,643	6,996	6,768	6,560	6,306	6,222	6,264	6,406	6,356	6,384
<b>Total TB cases</b>	14,065	13,727	13,280	12,889	11,514	11,100	10,504	9,935	9,561	9,398	9,547	9,253	9,105

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### Number and Percentage of TB Cases Among Non-U.S.–Born Persons, United States, 1993–2017

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>Number of cases</b>	7,403	7,762	8,010	7,752	7,753	7,623	7,624	7,634	8,034	7,737	7,947	7,875
<b>Percentage of total cases</b>	29.5	32.1	35.2	36.5	39.3	41.7	43.6	46.8	50.4	51.4	53.6	54.3

  

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Number of cases</b>	7,745	7,845	7,780	7,643	6,996	6,768	6,560	6,306	6,222	6,264	6,406	6,356	6,384
<b>Percentage of total cases</b>	55.1	57.2	58.6	59.3	60.8	61.0	62.5	63.5	65.1	66.7	67.1	68.7	70.1

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**TB Case Rates Among U.S.-Born and Non-U.S.-Born Persons, United States, 1993–2017**

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>U.S. overall</b>	9.7	9.2	8.5	7.9	7.2	6.6	6.3	5.8	5.6	5.2	5.1	5.0
<b>U.S.-born</b>	7.4	6.8	6.1	5.6	4.9	4.4	4.0	3.5	3.2	2.9	2.7	2.6
<b>Non-U.S.-born</b>	34.0	36.1	38.0	32.0	30.9	28.9	28.1	26.5	27.6	25.5	23.9	23.2

  

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>U.S. overall</b>	4.8	4.6	4.4	4.2	3.8	3.6	3.4	3.2	3.0	2.9	3.0	2.9	2.8
<b>U.S.-born</b>	2.5	2.3	2.1	2.0	1.7	1.6	1.5	1.3	1.2	1.1	1.1	1.0	1.0
<b>Non-U.S.-born</b>	22.3	21.7	20.9	20.2	18.8	17.6	17.0	16.0	15.7	15.5	15.2	14.7	14.7

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**TB Case Rates\* Among U.S.-Born and Non-U.S.-Born Persons, United States, 1993–2017**

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>U.S. overall</b>	0.98	0.96	0.93	0.90	0.86	0.82	0.80	0.76	0.75	0.72	0.71	0.69
<b>U.S.-born</b>	0.87	0.83	0.78	0.75	0.69	0.64	0.60	0.55	0.50	0.47	0.43	0.41
<b>Non-U.S.-born</b>	1.53	1.56	1.58	1.51	1.49	1.46	1.45	1.42	1.44	1.41	1.38	1.37

  

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>U.S. overall</b>	0.68	0.66	0.64	0.63	0.57	0.55	0.53	0.50	0.48	0.47	0.47	0.46	0.45
<b>U.S.-born</b>	0.39	0.36	0.32	0.30	0.23	0.21	0.17	0.13	0.09	0.06	0.06	0.02	-0.01
<b>Non-U.S.-born</b>	1.35	1.34	1.32	1.30	1.27	1.25	1.23	1.20	1.20	1.19	1.18	1.17	1.17

\* Rates presented on a logarithmic scale

\* Rates presented on a logarithmic scale

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**TB Case Rates\* Among Non-U.S.–Born Persons, by Reporting Area, 2017**

**States ≤ 14.7 (U.S. Average)**

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Alabama	New Jersey
Arizona	New Mexico
Colorado	North Carolina
Connecticut	Oklahoma
Delaware	Oregon
Florida	Pennsylvania
Georgia	Rhode Island
Idaho	South Carolina
Kansas	Utah
Michigan	Vermont
Mississippi	Virginia
Montana	Wisconsin
Nebraska	Wyoming
Nevada	

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**States > 14.7 (U.S. Average)**

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Alaska	Minnesota
Arkansas	Missouri
California	New Hampshire
District of Columbia	New York
Hawaii	New York City
Illinois	North Dakota
Indiana	Ohio
Iowa	South Dakota
Kentucky	Tennessee
Louisiana	Texas
Maine	Washington
Maryland	West Virginia
Massachusetts	

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\*Cases per 100,000 population

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Percentage of Non-U.S.–Born Persons Among All TB Cases, by Reporting Area, 1993 and 2017

1993				2017				
No cases	<25%	25%–49%	≥50%	No cases	<25%	25%–49%	≥50%	
South Dakota	Alabama	Arizona	California	Montana	Alabama	Alaska	Arizona	Nevada
Vermont	Alaska	Colorado	Hawaii		Mississippi	Arkansas	California	New Hampshire
	Arkansas	Connecticut	Oregon			Delaware	Colorado	New Jersey
	Delaware	Idaho	Rhode Island			Kentucky	Connecticut	New Mexico
	District of Columbia	Iowa	Washington			Louisiana	District of Columbia	New York
	Florida	Kansas				Oklahoma	Florida	New York City
	Georgia	Maine				South Carolina	Georgia	North Carolina
	Illinois	Maryland				South Dakota	Hawaii	North Dakota
	Indiana	Massachusetts				Tennessee	Idaho	Ohio
	Kentucky	Minnesota				West Virginia	Illinois	Oregon
	Louisiana	Nevada					Indiana	Pennsylvania
	Michigan	New Hampshire					Iowa	Rhode Island
	Mississippi	New Jersey					Kansas	Texas
	Missouri	New Mexico					Maine	Utah
	Montana	New York					Maryland	Vermont
	Nebraska	North Dakota					Massachusetts	Virginia
	New York City	Utah					Michigan	Washington
	North Carolina	Virginia					Minnesota	Wisconsin
	Ohio	Wisconsin					Missouri	Wyoming
	Oklahoma						Nebraska	
	Pennsylvania							
	South Carolina							
	Tennessee							
	Texas							
	West Virginia							
	Wyoming							

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**Estimates of Percentages of TB Cases Attributed to Recent Transmission Among U.S.-Born and Non-U.S.-Born Persons, 2011–2017**

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	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Non-U.S.-born</b>	7.8	7.7	7.4	8.3	8.3	8.0	7.6
<b>US-born</b>	25.5	27.0	27.1	28.0	26.6	25.4	25.9
<b>Overall</b>	14.2	14.6	14	14.6	14.1	13.4	12.8

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**Primary Multidrug-Resistant\* TB Among U.S.-Born and Non-U.S.-Born Persons, United States, 1993–2017**

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	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<b>Non-U.S.-born</b>	2.2	2.1	1.5	1.8	1.4	1.3	1.6	1.4	1.4	1.7	1.2	1.3
<b>US-born</b>	2.5	2.2	1.6	1.1	0.9	0.7	0.6	0.7	0.6	0.7	0.5	0.6

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\* Based on initial isolates from persons with no prior history of TB; multidrug-resistant TB is resistance to at least isoniazid and rifampin

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	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Non-U.S.-born</b>	1.4	1.5	1.4	1.2	1.7	1.5	1.7	1.4	1.7	1.3	1.3	1.5	1.8
<b>US-born</b>	0.5	0.5	0.5	0.6	0.4	0.5	0.6	0.5	0.3	0.5	0.5	0.4	0.9

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\* Based on initial isolates from persons with no prior history of TB; multidrug-resistant TB is resistance to at least isoniazid and rifampin

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**Reported TB Cases Among Non-U.S.–Born Persons by Age Group, United States, 1993–2017**

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
<b>0–4 years</b>	169	133	126	102	103	93	94	90	98	83	101	101	
<b>5–14 years</b>	244	256	228	212	184	161	176	168	175	168	168	182	
<b>15–24 years</b>	1,014	1,092	1,033	1,048	1,105	1,071	1,065	1,154	1,180	1,113	1,168	1,161	
<b>25–44 years</b>	3,027	3,103	3,196	3,151	3,077	3,145	3,094	3,081	3,402	3,281	3,290	3,294	
<b>45–64 years</b>	1,593	1,799	1,966	1,837	1,852	1,790	1,824	1,840	1,880	1,786	1,941	1,894	
<b>≥65 years</b>	1,354	1,378	1,460	1,400	1,431	1,363	1,371	1,301	1,298	1,305	1,279	1,242	
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>0–4 years</b>	73	73	72	65	52	42	34	43	33	38	34	33	22
<b>5–14 years</b>	171	130	138	141	95	114	88	94	67	72	65	68	72
<b>15–24 years</b>	1,105	1,107	1,166	1,037	901	827	716	674	661	670	649	662	589
<b>25–44 years</b>	3,200	3,266	3,015	3,076	2,864	2,668	2,523	2,369	2,282	2,162	2,217	2,206	2,136
<b>45–64 years</b>	1,853	1,968	2,042	1,995	1,793	1,881	1,827	1,776	1,733	1,826	1,895	1,838	1,905
<b>≥65 years</b>	1,343	1,300	1,347	1,329	1,291	1,236	1,372	1,349	1,446	1,496	1,546	1,548	1,655

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**TB Case Rates Among Non-U.S.–Born Persons by Age Group, 1994–2017**

	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<b>0–4 years</b>	57.3	58.4	38.4	40.7	34.2	36.2	30.4	27.5	22.9	33.9	29.6
<b>5–14 years</b>	18.4	18.9	14.1	11.7	9.7	10.9	9.6	11.1	9.5	9.5	10.9
<b>15–24 years</b>	33.2	35.2	30.9	32.7	30.9	29.3	29.3	29.5	27.6	27.5	26.5
<b>25–44 years</b>	33.4	35.8	30.2	28.1	27.0	25.7	24.6	27.4	25.0	21.7	21.7
<b>45–64 years</b>	36.7	37.9	32.1	31.0	28.6	28.3	25.8	24.9	23.3	23.5	21.6
<b>≥65 years</b>	57.5	56.3	48.4	47.7	44.0	44.5	40.9	41.0	39.4	35.9	34.3

  

	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>0–4 years</b>	23.5	24.6	25.8	22.2	17.2	13.7	16.2	18.3	18.6	16.0	12.9	11.6	5.9
<b>5–14 years</b>	10.0	7.2	8.0	8.2	6.0	7.0	5.8	6.5	4.9	5.2	4.8	5.1	5.0
<b>15–24 years</b>	24.6	24.0	26.5	25.2	24.6	21.6	18.3	18.2	17.3	18.1	17.2	17.6	15.6
<b>25–44 years</b>	20.8	20.4	18.2	18.5	17.7	16.3	15.5	14.1	14.1	13.3	13.1	12.8	12.5
<b>45–64 years</b>	20.2	20.8	20.3	18.5	16.1	16.5	15.7	14.4	13.4	13.8	13.9	12.9	13.0
<b>≥65 years</b>	36.7	32.0	32.0	30.8	29.1	25.8	28.0	26.9	28.1	27.0	25.8	24.5	27.0



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**Reported TB Cases Among Non-U.S.–Born Persons by Race/Ethnicity\*, United States, 1993–2017**

Race	1993	1994	1995	1996	1997	1998	1999	2000
American Indian/Alaska Native	8	5	6	6	4	5	5	6
Asian	3,299	3,443	3,665	3,480	3,494	3,329	3,337	3,218
Black/African American	630	738	797	793	875	845	924	1,038
Hispanic/Latino	2,849	2,967	2,912	2,859	2,727	2,785	2,717	2,770
Multiple race	1	.	1	.	.	.	2	2
Native Hawaiian/Pacific Islander	18	24	24	22	28	42	31	25
White	528	494	529	504	546	553	575	534

\* All races are non-Hispanic; multiple race indicates two or more races reported for a person, but does not include persons of Hispanic/Latino origin

Race	2001	2002	2003	2004	2005	2006	2007	2008
American Indian/Alaska Native	11	2	3	3	6	3	4	3
Asian	3,320	3,160	3,297	3,182	3,077	3,164	3,303	3,243
Black/African American	1,114	1,051	1,064	1,096	1,075	1,132	1,003	1,041
Hispanic/Latino	2,965	2,974	3,088	3,107	3,073	3,051	2,968	2,875
Multiple race	2	5	28	20	22	28	15	25
Native Hawaiian/Pacific Islander	36	28	33	36	34	36	70	56
White	547	490	418	418	434	426	413	387

\* All races are non-Hispanic; multiple race indicates two or more races reported for a person, but does not include persons of Hispanic/Latino origin

Race	2009	2010	2011	2012	2013	2014	2015	2016	2017
American Indian/Alaska Native	4	2	2	1	2	.	1	1	2
Asian	3,053	3,032	3,025	2,919	2,943	2,943	3,156	3,052	3,115
Black/African American	944	889	866	898	835	829	858	911	900
Hispanic/Latino	2,513	2,412	2,237	2,094	2,040	2,095	2,036	1,990	1,967
Multiple race	33	26	33	36	25	54	21	47	42
Native Hawaiian/Pacific Islander	48	57	53	42	42	51	60	47	65
White	377	335	327	298	323	278	258	286	270

\* All races are non-Hispanic; multiple race indicates two or more races reported for a person, but does not include persons of Hispanic/Latino origin

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**Countries of Birth Among Non-U.S.–Born Persons Reported with TB, United States, 2017**

<b>Country of Birth</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<b>Mexico</b>	1,874	1,907	1,804	1,782	1,704	1,764	1,764	1,802	1,873	1,906	2,030	2,003
<b>Philippines</b>	1,021	1,066	1,061	1,051	1,056	969	919	869	911	871	913	830
<b>Vietnam</b>	889	887	1,009	868	821	755	719	670	631	658	662	622
<b>India</b>	284	355	387	419	482	505	566	567	614	587	609	561
<b>China</b>	389	406	392	389	385	372	373	411	436	356	375	350
<b>Missing</b>	49	89	72	50	41	15	3	3	4	6	5	6
<b>All other</b>	2,897	3,052	3,285	3,193	3,264	3,243	3,280	3,312	3,565	3,353	3,353	3,503

  

<b>Country of Birth</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Mexico</b>	1,962	1,931	1,841	1,762	1,593	1,543	1,445	1,311	1,247	1,281	1,255	1,191	1,210
<b>Philippines</b>	828	861	951	860	806	756	759	771	781	756	818	792	795
<b>Vietnam</b>	573	629	570	583	526	535	545	453	457	500	524	493	538
<b>India</b>	561	549	625	598	540	575	508	531	495	479	582	593	600
<b>China</b>	397	373	386	405	344	358	377	354	376	420	425	383	402
<b>Missing</b>	11	9	4	9	47	18	12	7	9	17	8	12	7
<b>All other</b>	3,413	3,493	3,403	3,426	3,140	2,983	2,914	2,879	2,857	2,811	2,794	2,892	2,832

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**TB Cases Among Non-U.S.–Born Persons by Length of U.S. Residence Before Diagnosis, 1993–2017**

<b>Length of U.S. Residence</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<1 year	1,519	1,529	1,524	1,474	1,427	1,329	1,494	1,628	1,767	1,492	1,431	1,633
1–4 years	1,162	1,333	1,265	1,272	1,306	1,552	1,587	1,575	1,761	1,904	1,959	1,817
5–9 years	673	727	875	902	1,113	1,213	1,106	1,055	1,062	991	1,047	1,030
10–19 years	861	979	999	1,089	1,140	1,315	1,340	1,256	1,275	1,218	1,305	1,254
20–29 years	279	329	357	407	468	568	578	609	672	690	750	767
30–39 years	103	131	129	128	184	228	214	216	264	253	277	288
≥40 years	117	96	122	150	149	192	191	218	162	160	207	205
Missing	2,689	2,638	2,739	2,330	1,966	1,226	1,114	1,077	1,071	1,029	971	881

  

<b>Length of U.S. Residence</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<1 year	1,471	1,535	1,539	1,320	1,031	1,106	945	945	962	1,009	1,071	1,119	1,040
1–4 years	1,728	1,689	1,667	1,570	1,441	1,275	1,126	1,112	1,001	938	1,026	993	1,062
5–9 years	1,122	1,186	1,164	1,179	1,104	995	1,045	940	871	859	791	765	764
10–19 years	1,286	1,331	1,256	1,271	1,291	1,192	1,323	1,208	1,242	1,176	1,248	1,242	1,153
20–29 years	758	780	840	874	816	826	769	784	825	848	791	773	831
30–39 years	343	361	375	331	415	426	466	516	481	530	567	549	552
≥40 years	189	222	194	232	227	274	289	287	286	334	335	360	355
Missing	848	741	745	866	671	674	597	514	554	570	577	555	627

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**End of Presentation with disclaimer**

For more information, contact CDC  
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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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