

## Consumption of Combustible and Smokeless Tobacco — United States, 2000–2015

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Combustible and smokeless tobacco use causes adverse health outcomes, including cardiovascular disease and multiple types of cancer (1,2). Standard approaches for measuring tobacco use include self-reported surveys of use and consumption estimates based on tobacco excise tax data (3,4). To provide the most recently available tobacco consumption estimates in the United States, CDC used federal excise tax data to estimate total and per capita consumption during 2000–2015 for combustible tobacco (cigarettes, roll-your-own tobacco, pipe tobacco, small cigars, and large cigars) and smokeless tobacco (chewing tobacco and dry snuff). During this period, total combustible tobacco consumption decreased 33.5%, or 43.7% per capita. Although total cigarette consumption decreased 38.7%, cigarettes remained the most commonly used combustible tobacco product. Total noncigarette combustible tobacco (i.e., cigars, roll-your-own, and pipe tobacco) consumption increased 117.1%, or 83.8% per capita during 2000–2015. Total consumption of smokeless tobacco increased 23.1%, or 4.2% per capita. Notably, total cigarette consumption was 267.0 billion cigarettes in 2015 compared with 262.7 billion in 2014. These findings indicate that although cigarette smoking declined overall during 2000–2015, and each year from 2000 to 2014, the number of cigarettes consumed in 2015 was higher than in 2014, and the first time annual cigarette consumption was higher than the previous year since 1973. Moreover, the consumption of other combustible and smokeless tobacco products remains substantial. Implementation of proven tobacco prevention interventions (5) is warranted to further reduce tobacco use in the United States.

Publicly available federal excise tax data from the U.S. Department of Treasury's Alcohol and Tobacco Tax and Trade Bureau were analyzed for 2000–2015; these data included information on products taxed domestically and imported into the United States (6). Using monthly tax data, per unit

(e.g., per cigarette or per cigar) consumption for each combustible product was assessed. To enable comparisons between cigarettes, cigars (small and large), and loose tobacco (roll-your-own and pipe tobacco), data were converted from pounds of tobacco to a per cigarette equivalent using established methods (4).<sup>\*</sup> Smokeless tobacco (i.e., chew and dry snuff) data were reported in pounds. Adult per capita tobacco consumption was estimated by dividing total consumption by the number of U.S. persons aged ≥18 years using Census Bureau data.<sup>†</sup>

<sup>\*</sup> 0.0325 oz (0.9 g) = one cigarette. The conversion of 0.0325 oz (0.9 g) = one cigarette was cited in the 1998 Tobacco Master Settlement Agreement (<http://ag.ca.gov/tobacco/pdf/1msa.pdf>).

<sup>†</sup> <https://www.census.gov/popest/data/national/asrh/2015/index.html>.

### INSIDE

- 1364 State Medicaid Expansion Tobacco Cessation Coverage and Number of Adult Smokers Enrolled in Expansion Coverage — United States, 2016
- 1370 Influenza Vaccination Coverage During Pregnancy — United States, 2005–06 Through 2013–14 Influenza Vaccine Seasons
- 1374 CDC Grand Rounds: Modeling and Public Health Decision-Making
- 1378 Notes from the Field: Plague in Domestic Cats — Idaho, 2016
- 1380 Notes from the Field: Investigation of *Elizabethkingia anophelis* Cluster — Illinois, 2014–2016
- 1383 QuickStats

Continuing Education examination available at [http://www.cdc.gov/mmwr/cme/conted\\_info.html#weekly](http://www.cdc.gov/mmwr/cme/conted_info.html#weekly).



Relative percent change was calculated across years. Joinpoint regression was performed to determine statistically significant trends during 2000–2015.

During 2000–2015, total consumption of all combustible tobacco products decreased 33.5% from 450.7 to 299.9 billion cigarette equivalents ( $p<0.05$ ), a per capita decrease of 43.7% from 2,148 to 1,211 cigarette equivalents ( $p<0.05$ ) (Table). The proportion of total combustible tobacco consumption composed of loose tobacco and cigars increased from 3.4% to 11.0% ( $p<0.05$ ).

During 2000–2015, total cigarette consumption decreased 38.7% from 435.6 billion to 267.0 billion cigarettes ( $p<0.05$ ) (Table), a per capita decrease of 48.1% from 2,076 to 1,078 cigarettes ( $p<0.05$ ) (Figure 1). Total cigarette consumption was 267.0 billion cigarettes in 2015 compared with 262.7 billion in 2014, or seven more cigarettes per capita. In 2015, cigarettes accounted for 89% of total combustible tobacco consumption.

During 2000–2015, total roll-your-own tobacco consumption decreased 70.0% ( $p<0.05$ ), whereas total pipe tobacco consumption increased 556.4% ( $p<0.05$ ) (Table). The largest changes occurred during 2008–2011, when roll-your-own consumption decreased from 10.7 billion to 2.6 billion cigarette equivalents (75.7% decrease,  $p<0.05$ ), while pipe tobacco consumption increased from 2.6 billion to 17.5 billion cigarette equivalents (573.1% increase;  $p<0.05$ ).

During 2000–2015, total small cigar<sup>§</sup> consumption decreased 75.6% ( $p<0.05$ ), or 79.3% per capita ( $p<0.05$ ). However, large cigar consumption increased 179.6% ( $p<0.05$ ), or 136.8% per capita ( $p<0.05$ ) (Table) (Figure 2). Large and small cigar consumption diverged in 2008; large cigar consumption increased during 2008–2011 ( $p<0.05$ ), whereas small cigar consumption decreased during 2008–2015 ( $p<0.05$ ).

During 2000–2015, total smokeless tobacco consumption increased 23.1% ( $p<0.05$ ), or 4.2% per capita (Table) (Figure 1). However, chewing tobacco and snuff consumption patterns diverged; total chewing tobacco consumption decreased 55.8% from 45.6 to 20.2 billion pounds (from 20.7 to 9.2 billion kilograms) ( $p<0.05$ ), whereas total snuff consumption increased 77.5% from 66.2 to 117.4 billion pounds (from 30.0 to 53.3 billion kilograms) ( $p<0.05$ ).

## Discussion

During 2000–2015, combustible tobacco consumption declined overall, and total and per capita cigarette consumption declined each year during 2000–2014. However, during 2015, the number of cigarettes consumed was higher than during 2014, the first time annual cigarette consumption was higher than the previous year since 1973. Because cigarettes remained

<sup>§</sup> In 26 USC 5701, small cigars are defined as cigars that weigh  $\geq 3$  pounds (1.36 kg) per 1,000 cigars, and large cigars are defined as cigars that weigh  $>3$  pounds per 1,000.

The *MMWR* series of publications is published by the Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30329-4027.

**Suggested citation:** [Author names; first three, then et al., if more than six.] [Report title]. *MMWR Morb Mortal Wkly Rep* 2016;65:[inclusive page numbers].

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**TABLE. Total and per capita\* consumption of cigarettes, all combustible tobacco, noncigarette combustible tobacco, and smokeless tobacco products — United States, 2000–2015**

Year	Cigarettes				All combustible tobacco (cigarettes, cigars, and loose tobacco [cigarette equivalents])				Noncigarette combustible tobacco (cigars and loose tobacco [cigarette equivalents])			
	Total (millions)	% change	Per capita	% change	Total (millions)	% change	Per capita	% change	Total (millions)	% change	Per capita	% change
2000	435,570	—	2,076	—	450,725	—	2,148	—	15,155	—	72	—
2001	426,720	-2.0	2,010	-3.2	440,693	-2.2	2,075	-3.4	13,973	-7.8	66	-8.9
2002	415,724	-2.6	1,936	-3.7	430,763	-2.3	2,006	-3.4	15,040	7.6	70	6.4
2003	400,327	-3.7	1,844	-4.7	415,930	-3.4	1,916	-4.5	15,603	3.8	72	2.6
2004	397,655	-0.7	1,811	-1.8	414,421	-0.4	1,888	-1.5	16,766	7.5	76	6.2
2005	381,098	-4.2	1,717	-5.2	401,187	-3.2	1,807	-4.3	20,089	19.8	90	18.5
2006	380,594	-0.1	1,695	-1.3	401,241	0.01	1,787	-1.1	20,648	2.8	92	1.6
2007	361,590	-5.0	1,591	-6.1	384,087	-4.3	1,690	-5.4	22,497	9.0	99	7.7
2008	346,419	-4.2	1,507	-5.3	371,264	-3.3	1,615	-4.5	24,845	10.4	108	9.1
2009	317,736	-8.3	1,367	-9.3	342,124	-7.9	1,472	-8.9	24,388	-1.8	105	-2.9
2010	300,451	-5.4	1,278	-6.5	329,239	-3.8	1,400	-4.9	28,788	18.0	122	16.7
2011	292,769	-2.6	1,232	-3.6	326,577	-0.8	1,374	-1.9	33,808	17.4	142	16.2
2012	287,187	-1.9	1,196	-2.9	322,396	-1.3	1,342	-2.3	35,209	4.1	147	3.0
2013	273,785	-4.7	1,129	-5.6	309,641	-4	1,277	-4.9	35,856	1.8	148	0.8
2014	262,681	-4.1	1,071	-5.1	298,196	-3.7	1,216	-4.8	35,515	-1.0	145	-2.1
2015	267,043	1.7	1,078	0.6	299,938	0.6	1,211	-0.4	32,894	-7.4	133	-8.3
% change, 2000–2015	—	-38.7 <sup>†</sup>	—	-48.1 <sup>†</sup>	—	-33.5 <sup>†</sup>	—	-43.7 <sup>†</sup>	—	117.1 <sup>†</sup>	—	83.8 <sup>†</sup>

Year	Total cigars (small cigars and large cigars [cigarette equivalents])				Small cigars (cigarette equivalents)				Large cigars (cigarette equivalents)			
	Total (millions)	% change	Per capita	% change	Total (millions)	% change	Per capita	% change	Total (millions)	% change	Per capita	% change
2000	6,161	—	29	—	2,279	—	11	—	3,882	—	19	—
2001	6,344	3.0	30	1.7	2,239	-1.8	11	-2.9	4,105	5.7	19	4.5
2002	6,546	3.2	31	3.8	2,343	4.6	11	3.5	4,203	2.4	20	1.3
2003	7,007	7.0	32	4.1	2,474	5.6	11	4.50	4,533	7.9	21	6.7
2004	7,852	12.1	36	10.8	2,917	17.9	13	16.6	4,935	8.9	22	7.6
2005	9,052	15.3	41	14.0	3,968	36.0	18	34.5	5,084	3.0	23	1.9
2006	9,733	7.5	43	6.3	4,434	11.7	20	10.4	5,299	4.2	24	3.0
2007	10,708	10.0	47	8.7	5,161	16.4	23	15.0	5,548	4.7	24	3.5
2008	11,538	7.7	50	6.5	5,881	14.0	26	12.6	5,657	2.0	25	0.8
2009	12,127	5.1	52	4.0	2,343	-60.2	10	-60.6	9,784	73.0	42	71.1
2010	13,269	9.4	56	8.2	983	-58.1	4	-58.5	12,287	25.6	52	24.1
2011	13,727	3.5	58	2.4	798	-18.8	3	-19.6	12,929	5.2	54	4.1
2012	13,787	0.4	57	-0.6	762	-4.5	3	-5.5	13,025	0.7	54	-0.3
2013	13,159	-4.6	54	-5.5	659	-13.5	3	-14.3	12,499	-4.0	52	-5.0
2014	13,695	4.1	56	2.9	564	-14.4	2	-15.4	13,131	5.1	54	3.9
2015	11,411	-16.7	46	-17.5	556	-1.3	2	-2.3	10,855	-17.3	44	-18.2
% change, 2000–2015	—	85.2 <sup>†</sup>	—	56.8 <sup>†</sup>	—	-75.6 <sup>†</sup>	—	-79.3 <sup>†</sup>	—	179.6 <sup>†</sup>	—	136.8 <sup>†</sup>

See table footnotes on next page.

the most commonly used combustible tobacco product, this offset decreases in pipe tobacco and cigar consumption, slightly increasing total combustible tobacco consumption in 2015 relative to 2014. Furthermore, total smokeless tobacco consumption increased during 2000–2015, in part because of the steady increase in snuff consumption. Sustained implementation of proven tobacco prevention and control strategies is critical to reduce the use of tobacco product consumption in the United States.

The reason for higher cigarette consumption in 2015 compared with 2014 is uncertain. It might be attributable, in part,

to changing U.S. economic conditions; increased electronic cigarette (e-cigarette) use; or dual use of conventional cigarettes and e-cigarettes, which could contribute to continued consumption among smokers who do not quit smoking completely (1,7). Continued monitoring is needed to evaluate the presence of a long-term trend. Research is warranted to assess how gross domestic product, unemployment, and other economic indicators might affect cigarette consumption, cessation, and initiation. Further research on the affect of e-cigarette use on patterns of conventional cigarette smoking,

TABLE. (Continued) Total and per capita\* consumption of cigarettes, all combustible tobacco, noncigarette combustible tobacco, and smokeless tobacco products — United States, 2000–2015

Year	Total loose tobacco (roll-your-own, and pipe [cigarette equivalents])				Roll-your-own loose tobacco (cigarette equivalents)				Pipe tobacco (cigarette equivalents)			
	Total (millions)	% change	Per capita	% change	Total (millions)	% change	Per capita	% change	Total (millions)	% change	Per capita	% change
2000	8,994	—	43	—	5,995	—	29	—	2,999	—	14	—
2001	7,629	-15.2	36	-16.2	4,714	-21.4	22	-22.3	2,915	-2.8	14	-4.0
2002	8,494	11.3	40	10.1	5,737	21.7	27	20.3	2,757	-5.4	13	-6.5
2003	8,596	1.2	40	0.1	6,207	8.2	29	7.0	2,389	-13.3	11	-14.3
2004	8,914	3.7	41	2.5	6,600	6.40	30	5.1	2,314	-3.2	11	-4.3
2005	11,037	23.8	50	22.4	8,614	30.5	39	29.1	2,423	4.7	11	3.6
2006	10,915	-1.1	49	-2.2	8,594	-0.2	38	-1.4	2,322	-4.2	10	-5.3
2007	11,788	8.0	52	6.7	9,326	8.5	41	7.3	2,463	6.1	11	4.8
2008	13,307	12.9	58	11.6	10,721	15.0	47	13.6	2,586	5.0	11	3.8
2009	12,261	-7.9	53	-8.9	6,006	-44.0	26	-44.6	6,256	142.0	27	139.3
2010	15,519	26.6	66	25.1	3,168	-47.3	13	-47.9	12,351	97.4	53	95.2
2011	20,081	29.4	85	28.8	2,622	-17.2	11	-18.1	17,459	41.4	73	39.9
2012	21,422	6.7	89	4.9	2,240	-14.6	9	-15.5	19,183	9.9	80	8.7
2013	22,697	5.9	94	4.9	1,898	-15.3	8	-16.1	20,799	8.4	86	7.4
2014	21,820	-3.9	89	-4.9	1,594	-16.0	6	-16.9	20,226	-2.8	82	-3.8
2015	21,483	-1.5	87	-2.5	1,797	12.7	7	11.6	19,687	-2.7	79	-3.6
% change, 2000–2015	—	138.9 <sup>†</sup>	—	102.2 <sup>†</sup>	—	-70.0 <sup>†</sup>	—	-74.6 <sup>†</sup>	—	556.4 <sup>†</sup>	—	455.7 <sup>†</sup>

Year	Total smokeless (chewing tobacco and snuff [lbs])				Chewing tobacco (lbs)				Snuff (lbs)			
	Total (millions)	% change	Per capita	% change	Total (millions)	% change	Per capita	% change	Total (millions)	% change	Per capita	% change
2000	111,746	—	0.533	—	45,594	—	0.217	—	66,152	—	0.315	—
2001	119,316	6.8	0.562	5.5	49,500	8.6	0.233	7.3	69,816	5.5	0.329	4.3
2002	118,564	-0.6	0.552	-1.7	47,311	-4.4	0.220	-5.5	71,253	2.1	0.332	0.9
2003	120,790	1.9	0.556	0.8	46,080	-2.6	0.212	-3.6	74,709	4.9	0.344	3.7
2004	121,149	0.3	0.552	-0.8	43,149	-6.4	0.197	-7.4	78,000	4.4	0.355	3.2
2005	119,452	-1.4	0.538	-2.5	39,199	-9.2	0.177	-10.2	80,253	2.9	0.361	1.8
2006	125,738	5.3	0.560	4.1	39,098	-0.3	0.174	-1.4	86,640	8.0	0.386	6.7
2007	123,672	-1.6	0.544	-2.8	35,304	-9.7	0.155	-10.8	88,368	2.0	0.389	0.8
2008	128,265	3.7	0.558	2.5	33,446	-5.3	0.145	-6.4	94,819	7.3	0.412	6.0
2009	125,479	-2.2	0.540	-3.2	30,425	-9.0	0.131	-10.0	95,054	0.2	0.409	-0.8
2010	127,527	1.6	0.542	0.5	27,615	-9.2	0.117	-10.3	99,912	5.1	0.425	3.9
2011	128,363	0.7	0.540	-0.4	24,801	-10.2	0.104	-11.1	103,562	3.7	0.436	2.6
2012	132,351	3.1	0.551	2.0	24,146	-2.6	0.101	-3.7	108,205	4.5	0.451	3.4
2013	135,440	2.3	0.558	1.3	22,434	-7.1	0.092	-8.0	113,007	4.4	0.466	3.4
2014	136,333	0.7	0.556	-0.5	21,965	-2.1	0.090	-3.2	114,368	1.2	0.466	0.1
2015	137,581	0.9	0.555	-0.1	20,156	-8.2	0.081	-9.2	117,425	2.7	0.473	1.6
% change, 2000–2015	—	23.1 <sup>†</sup>	—	4.2	—	-55.8 <sup>†</sup>	—	-62.6 <sup>†</sup>	—	77.5 <sup>†</sup>	—	50.3 <sup>†</sup>

\* Adults aged ≥18 years as reported annually by the U.S. Census Bureau.

† Statistically significant (p&lt;0.05) based on Joinpoint analysis.

including consumption and dual use, could also help inform public health policy, planning, and practice.

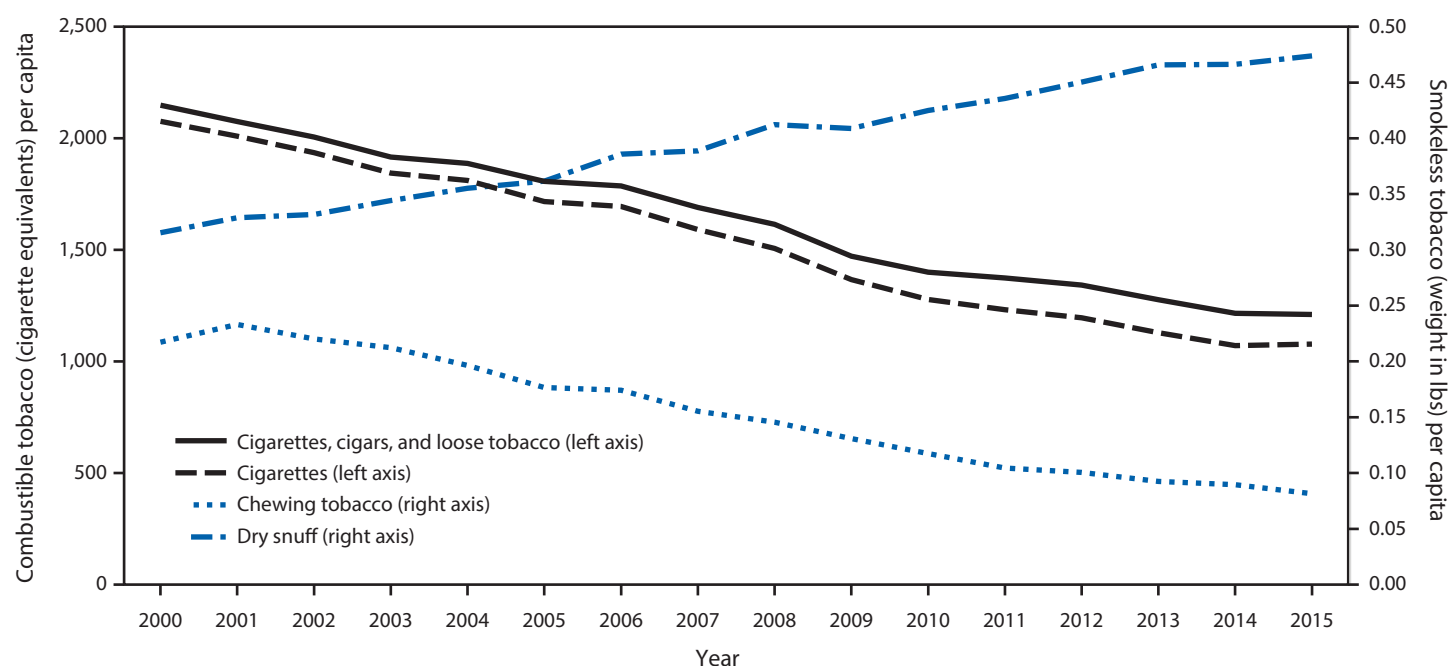
Smokeless tobacco consumption has modestly increased during 2000–2015. These data provide insight into the diverging pattern of smokeless tobacco product consumption; during 2000–2015, the decline in chewing tobacco consumption was offset by a steady increase in snuff consumption. This increase might be attributable to advertising and promotion of these products. In 2013, tobacco companies spent \$410.9 million promoting moist snuff, compared with \$11.8 million for loose leaf chewing tobacco, \$234,000 for plug/twist chewing

tobacco, \$485,000 for scotch/dry snuff, and \$51.2 million for snus.<sup>‡</sup> These findings underscore the importance of sustained efforts to monitor and reduce all forms of smokeless tobacco product use in the United States.

Recent changes in consumption patterns, particularly in large cigar and pipe tobacco use, have continued through 2015. Previous studies show that the tobacco industry adapted

<sup>‡</sup> Federal Trade Commission Smokeless Tobacco Report for 2013. <https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-smokeless-tobacco-report-2013/2013tobaccort.pdf>.

FIGURE 1. Consumption of combustible\* and smokeless tobacco† — United States, 2000–2015



\* Combustible tobacco includes cigarettes, cigars, and loose roll-your-own and pipe tobacco, and is measured as cigarette equivalents per capita.

† Smokeless tobacco includes chewing tobacco and dry snuff, and is measured as weight (lbs) per capita.

the marketing of roll-your-own products and designed cigars to minimize the burden of the federal excise tax, and thus, reduced these tobacco products' cost to the consumer (8–10). Because of these changes, roll-your-own tobacco was labeled and sold as lower-taxed pipe tobacco, and cigarette-like cigars were classified as lower-taxed large cigars (8,10). However, although consumption of pipe tobacco and cigars increased dramatically during 2009–2011, those product categories declined in recent years. There have been federal and state efforts to address product-switching tax avoidance activities (9,10). For example, a federal law\*\* requires retailers to register as cigarette manufacturers if they offer consumers use of cigarette rolling machines (10). States have also taken steps to classify such retailers as manufacturers (9). Further evaluation and monitoring of these and other tax avoidance strategies could be beneficial at the state and national level, including monitoring any changes in consumption patterns that might emerge as tobacco product regulatory actions are implemented at the federal level.††

\*\* Congress. Pub. L. No. 112-141, 2012. Moving Ahead for Progress in the 21st Century Act of 2012 (MAP-21). <http://www.gpo.gov/fdsys/pkg/BILLS-112hr4348enr/pdf/BILLS-112hr4348enr.pdf>.

†† On May 5, 2016, the Food and Drug Administration finalized a rule extending its authority to all tobacco products, including cigars and pipe tobacco. <https://www.federalregister.gov/documents/2016/05/10/2016-10685/deeming-tobacco-products-to-be-subject-to-the-federal-food-drug-and-cosmetic-act-as-amended-by-the>.

## Summary

### What is already known about this topic?

Combustible and smokeless tobacco use causes adverse health outcomes, including cardiovascular disease and multiple types of cancer. Cigarette consumption in the United States has declined overall since the 1960s, but consumption of other tobacco products has not.

### What is added by this report?

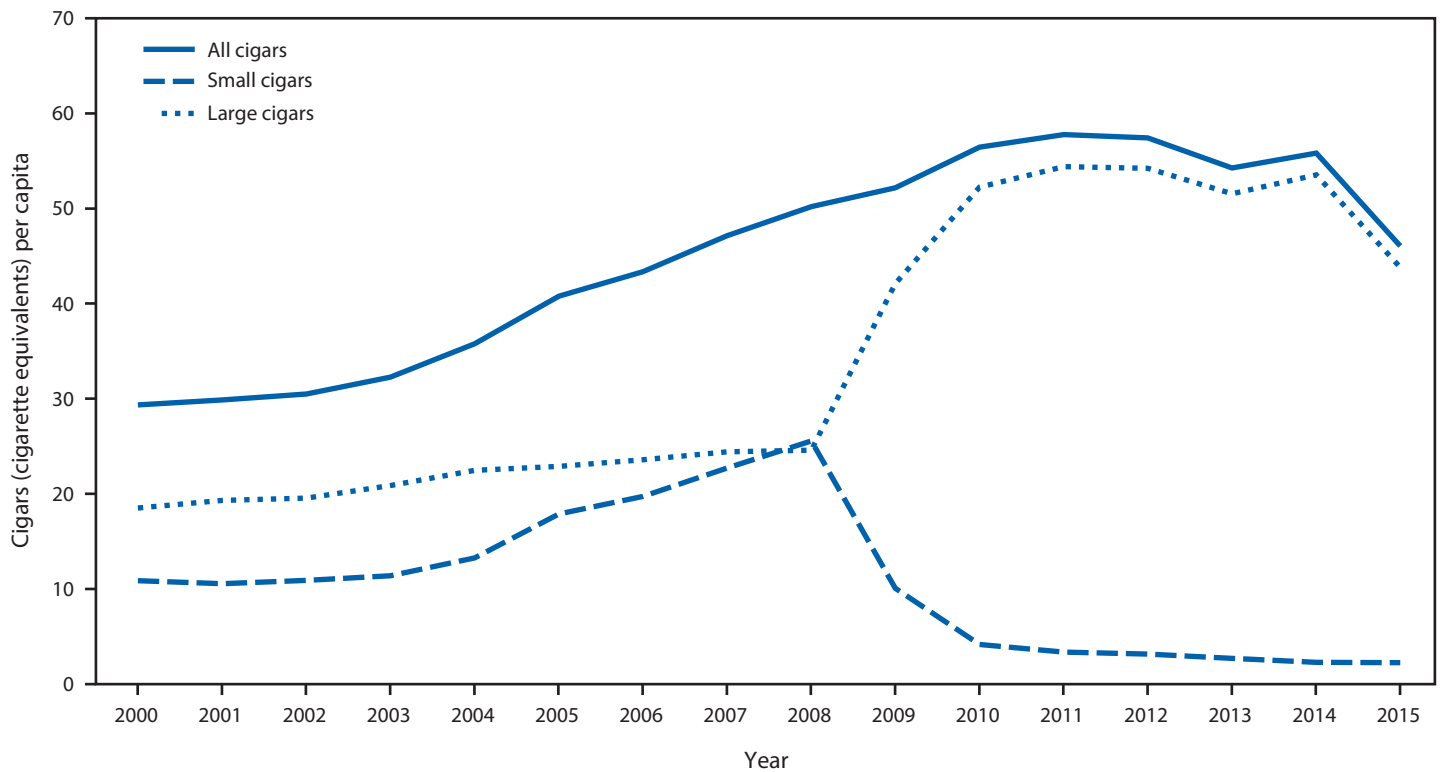
During 2000–2015, total combustible tobacco consumption decreased 33.5%. Although total cigarette consumption decreased 38.7%, cigarettes remained the most commonly used combustible tobacco product. Notably, total cigarette consumption was 267.0 billion cigarettes in 2015 compared with 262.7 billion in 2014, or seven more cigarettes per capita. Consumption of noncigarette combustible tobacco (cigars, roll-your-own, pipe tobacco) increased 117.1%, or 83.8% per capita, during 2000–2015. For smokeless tobacco, total consumption increased 23.1%, or 4.2% per capita.

### What are the implications for public health practice?

These changes in tobacco consumption demonstrate the importance of sustained tobacco prevention and control interventions, including price increases, comprehensive smoke-free policies, aggressive media campaigns, and increased access to cessation services. The implementation of evidence-based strategies addressing the diversity of tobacco products consumed in the United States can reduce tobacco-related disease and death.



FIGURE 2. Consumption of cigars\* — United States, 2000–2015



\*Cigars are measured as cigarette equivalents per capita. Small cigars are defined as cigars that weigh  $\leq 3$  lbs (1.36 kg) per 1,000 cigars, and large cigars are defined as cigars that weigh  $> 3$  lbs per 1,000 cigars.

The findings in this report are subject to at least four limitations. First, the measure for cigarette and combustible tobacco consumption does not account for illicit cigarette sales, such as those smuggled into or out of the country, or for untaxed cigarettes that are produced or sold on American Indian sovereign lands. Currently, no method exists for measuring or estimating illicit or untaxed tobacco trade in the United States. Second, it was not possible to assess consumption of other tobacco products, including e-cigarettes, hookah, or dissolvable tobacco, because federal taxes are not reported for those products. Third, sales data do not provide information on consumer demographics (e.g., age). Finally, sales data might not reflect actual consumption, because all purchased products might not be used by the consumer because of loss, damage, or tobacco cessation.

The overall decline in cigarette consumption is a pattern that has persisted in the United States since the 1960s (1). However, notable shifts have occurred in the tobacco product landscape in recent years, including an upward trend in consumption during 2014–2015. Smokeless tobacco consumption also increased steadily during 2000–2015. These changes in overall

tobacco consumption demonstrate the importance of sustained tobacco prevention and control interventions, including price increases, comprehensive smoke-free policies, aggressive media campaigns, and increased access to cessation services (5). To further reduce tobacco product appeal and access, emerging strategies, such as prohibiting the sale of flavored tobacco products or increasing the legal age of tobacco purchase to 21 years, might also be beneficial.<sup>§§</sup> The implementation of evidence-based strategies addressing the diversity of tobacco products consumed in the United States can reduce tobacco-related disease and death.

<sup>§§</sup> Some communities, including New York City, New York, Chicago, Illinois, and Providence, Rhode Island, have prohibited the sale of flavored tobacco products. Furthermore, California, Hawaii and at least 200 communities have raised the legal age for purchasing tobacco to 21 years. More information can be found at Campaign for Tobacco Free Kids. [http://www.tobaccofreekids.org/content/what\\_we\\_do/state\\_local\\_issues/sales\\_21/states\\_localities\\_MLSA\\_21.pdf](http://www.tobaccofreekids.org/content/what_we_do/state_local_issues/sales_21/states_localities_MLSA_21.pdf).

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