Nicotine and Tobacco Use Trends in US Youth and Young Adults in the Monitoring the Future Study, 2017–2024

Report by the University of Southern California Tobacco Center of Regulatory Science

Background

Monitoring the Future (MTF) is a long-running, nationally representative surveillance study conducted by the University of Michigan and sponsored by the National Institute on Drug Abuse. The ongoing annual cross-sectional MTF youth study recruits and surveys probability samples of 8th, 10th, and 12th grade students annually, while the linked panel longitudinal study follows selected 12th grade youth MTF school respondents into young adulthood and beyond.

The University of Southern California Tobacco Center of Regulatory Science (USC TCORS) partnered with the MTF Study to present evidence on the prevalence, patterns, and correlates of nicotine and tobacco product use to inform regulation of these products designed to protect young people. To this end, USC TCORS generated this report synthesizing data from the MTF youth and panel studies, which presents prevalence of outcomes related to the use of various nicotine and tobacco products, including cigarettes, nicotine vaping, smokeless tobacco, cigars and cigarillos, hookah, nicotine pouches, and snus. Additional outcomes of regulatory significance collected in 2024 youth are also presented. Estimates are weighted percentages presented separately by year for 8th, 10th, and 12th grade student groups and 19-30-year-old (y/o) groups in the subsequent tables and text. Use estimates reflect any use of the product at least once in the particular period unless otherwise specified. Annual estimates begin in 2017 when MTF began assessing nicotine vaping outcomes. The total number of respondents below represents the maximum sample size used in presenting the following estimates.

Total Number of Respondents, by Group and Year

	2017	2018	2019	2020	2021	2022	2023	2024
8th grade	16,010	14,836	14,223	3,161	11,446	9,889	6,240	7,460
10th grade	14,171	15,144	14,595	4,890	11,792	11,950	8,494	9,891
12th grade	13,522	14,502	13,713	3,770	9,022	9,599	7,584	6,906
19-30 y/o	~4,400	~4,400	~4,200	~4,700	4,909	4,628	4,810	4,493

Note. ~ Approximate numbers for 19-30 y/o for 2017-2020. Some tobacco products were assessed in a randomly assigned subset of the total number of respondents; therefore, analytic sample sizes for specific estimates in subsequent tables may be smaller than the totals shown here.

Key Findings at a Glance

- Cigarette use declined steadily across all youth and young adult groups from 2017 to 2024.
- Nicotine vaping prevalence rose rapidly from 2017 to 2020 in all age groups and then declined from 2020 to 2024 for adolescents; young adult vaping steadily rose from 2017 to 2024.
- Nicotine vaping was the most widely used nicotine product across most years for each age group.
- Smokeless tobacco, hookah, cigar/cigarillo, and snus use remained comparatively lower than use of cigarettes or e-cigarettes and generally trended downward or stabilized for most age groups.
- Nicotine pouch use, which MTF first started assessing in 2023, rose in prevalence from 2023 to 2024 in each youth and young adult group.
- After peaking in 2019, use of ≥1 nicotine products has been on the decline for each age group.
- Many school-age youths reported using e-cigarettes with non-tobacco flavors and 5% nicotine concentration at either low (1-2 times/day) or high (>20 times/day) intensity patterns in 2024.

Cigarettes

Cigarette use continued its historical decline among adolescents from 2017 to 2024, with the steepest reductions in 12th grade current and daily use. In young adulthood, past-30-day, daily, and half-pack-or-more smoking all trended downward through 2024 and were higher than the youth groups in each year.

Cigarette Use, by Group and Year								
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Lifetime use								
8th grade	9.4	9.1	10.0	11.5	7.0	6.1	5.8	5.4
10th grade	15.9	16.0	14.2	13.9	10.0	10.2	9.4	8.4
12th grade	26.6	23.8	22.3	24.0	17.8	16.8	15.0	14.5
Past 12-month use								
8th grade	-	-	-	-	-	-	-	1.9
10th grade	-	-	-	-	-	-	-	3.8
12th grade	-	-	-	-	-	-	-	7.1
19-30 y/o	23.4	23.6	23.0	21.7	20.3	17.7	18.8	17.7
Past 30-day use								
8th grade	1.9	2.2	2.3	2.2	1.1	0.8	1.1	0.6
10th grade	5.0	4.2	3.4	3.2	1.8	1.7	2.3	1.5
12th grade	9.7	7.6	5.7	7.5	4.1	4.0	2.9	2.5
19-30 y/o	15.2	13.8	13.0	10.3	11.1	8.4	8.8	7.5
Daily use								
8th grade	0.6	0.8	0.8	0.8	0.4	0.3	0.4	0.2
10th grade	2.2	1.8	1.3	1.2	0.8	0.7	1.0	0.5
12th grade	4.2	3.6	2.4	3.1	2.0	1.6	0.7	0.4
19-30 y/o	8.7	8.2	7.3	6.0	5.7	4.1	3.6	3.0
Half pack or more per day								
8th grade	0.2	0.3	0.2	0.1	0.2	0.1	0.3	0.1
10th grade	0.7	0.7	0.5	0.6	0.3	0.3	0.6	0.3
12th grade	1.7	1.5	0.9	1.4	0.8	0.9	0.5	0.2
19-30 y/o	4.8	4.6	4.1	3.4	3.5	2.1	2.0	1.3

Note. Values are weighted percentages. Dashes indicate that estimates were not available for the indicated years. Daily and half a pack or more per day use patterns refer to use during the past 30 days.

Nicotine Vaping

Nicotine vaping rose rapidly from 2017 to 2020 across all school grades and then declined through 2024. In young adults, past-12-month and past-30-day vaping followed an increasing trend throughout the 2017-2024 period. For all adolescent groups, nicotine vaping was more common than use of each other nicotine/tobacco product each year; the same was true for young adults after 2020.

Nicotine Vaping, by Group and Year								
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Lifetime use								
8th grade	10.6	13.5	20.3	22.7	16.6	17.0	16.5	15.6
10th grade	21.4	28.6	36.3	38.7	28.4	28.2	25.1	22.6
12th grade	25.0	34.0	40.8	44.3	38.7	38.8	33.5	31.3
Past 12-month use								
8th grade	7.5	10.9	16.5	16.6	12.1	12.0	11.4	9.6
10th grade	15.8	24.7	30.7	30.7	19.5	20.5	17.6	15.4
12th grade	18.8	29.7	35.3	34.5	26.6	27.3	23.2	21.0
19-30 y/o	13.7	16.5	19.1	20.8	22.3	23.7	25.3	25.8
Past 30-day use								
8th grade	3.5	6.1	9.6	10.5	7.6	7.1	7.0	5.7
10th grade	8.2	16.1	19.9	19.3	13.1	14.2	11.9	9.8
12th grade	11.0	20.9	25.5	24.7	19.6	20.7	16.9	15.0
19-30 y/o	6.1	10.2	10.7	13.2	16.9	17.1	18.7	19.4
Daily use								
8th grade	-	-	-	0.8	1.1	1.2	1.4	0.8
10th grade	-	-	-	3.0	2.5	3.3	2.4	2.7
12th grade	-	-	-	5.2	5.4	6.2	5.8	5.3

Note. Values are weighted percentages. Dashes indicate that estimates were not available for the indicated years. Daily use during the past 30 days.

Smokeless tobacco

Smokeless tobacco use prevalence generally declined or remained stable across the school grades. Among the 19-30 y/o group, there was a comparatively lower prevalence of past-12-month smokeless tobacco use than cigarette smoking and vaping during 2023 and 2024 and negligible change in prevalence across the two years.

Smokeless Tobacco Use, by Group and Year								
	2017	2018	2019	2020	2021	2022	2023	2024
Lifetime use								
8th grade	6.2	6.4	7.1	-	4.6	3.9	4.5	3.7
10th grade	9.1	10.0	9.2	-	4.9	5.8	5.5	4.6
12th grade	11.0	10.1	9.8	-	8.6	10.3	7.8	7.7
Past 12-month use								
19-30 y/o	-	-	-	-	-	-	3.3	3.2
Past 30-day use								
8th grade	1.7	2.1	2.5	-	1.6	1.2	1.6	1.5
10th grade	3.8	3.9	3.2	-	1.7	2.5	2.3	2.1
12th grade	4.9	4.2	3.5	-	2.2	3.2	2.5	3.3
Daily use								
8th grade	0.4	0.3	0.5	-	0.4	0.3	0.5	0.2
10th grade	0.6	1.0	0.9	-	0.4	0.7	0.5	0.5
12th grade	2.0	1.6	1.1	-	0.7	1.1	0.4	0.9

Note. Values are weighted percentages. Dashes indicate that estimates were not available for the indicated years. Daily use during the past 30 days.

Hookah

Hookah use declined over time, especially in 12th grade. Among young adults, data are only available for 2023 and 2024 and show low prevalence relative to cigarettes and vaping but higher prevalence relative to smokeless tobacco use in this group.

Hookah Use, by Group and Year								
	2017	2018	2019	2020	2021	2022	2023	2024
Past 12-month use								
12th grade	10.1	7.8	5.6	-	2.1	3.3	2.7	2.0
19-30 y/o	-	-	-	-	-	-	7.9	5.3
Past 30-day use								
8th grade	2.5	1.6	1.3	-	1.1	1.0	0.7	0.3
10th grade	3.0	2.4	2.4	-	0.7	1.0	0.5	0.7
12th grade	5.0	4.4	4.0	-	1.7	2.1	1.3	1.5

Note. Values are weighted percentages. Dashes indicate that estimates were not available for the indicated years.

Cigars

Flavored and unflavored little cigars/cigarillos both declined over time in the school grades, with the steepest declines after 2019. The young-adult panel only reports later-year estimates for the y/o 19-30 age group, which shows sizeable prevalence of use of little cigars/cigarillos in 2023 and 2024. Large cigar use in the past 30 days generally declined or stayed flat for all age groups. The 19-30 y/o group had sizeable prevalence of past-12-month large cigar use in 2023 and 2024.

Cigar Use, by Group and Year								
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Past 30-day use: flavored little cigars/cigarillos								
8th grade	2.6	2.6	2.2	-	1.0	0.7	0.6	0.3
10th grade	4.0	5.3	3.7	-	1.5	1.4	1.2	0.5
12th grade	10.1	8.9	7.7	-	2.4	2.7	2.0	1.9
Past 30-day use: unflavored little cigars/cigarillos								
8th grade	1.6	1.6	1.6	-	0.8	0.8	0.8	0.3
10th grade	3.0	3.1	2.6	-	1.2	1.1	0.5	0.6
12th grade	6.6	5.8	4.9	-	1.8	2.2	1.9	1.7
Past 12-month use: little cigars/cigarillos								
19-30 y/o	-	-	-	-	-	-	10.8	8.3
Past 12-month use: large cigars								
19-30 y/o	-	-	-	-	-	-	10.2	9.0
Past 30-day use: large cigars								
8th grade	1.5	1.7	1.3	-	1.1	0.5	1.0	0.2
10th grade	2.6	2.8	2.1	-	1.3	0.8	0.3	0.7
12th grade	5.6	5.2	5.3	-	2.3	2.3	1.8	1.6

Note. Values are weighted percentages. In 19-30 year olds, the measure of little cigars/cigarillos did not differentiate flavor. Dashes indicate that estimates were not available for the indicated years.

Nicotine pouches

Nicotine pouch use first appeared in the MTF study surveys in 2023. The 2023-to-2024 changes indicate increases across each age group, especially in 12th grade and young adulthood. Compared to use of other products, use of nicotine pouches was less common than vaping but more common than use of several other products for each age group in 2023 and 2024.

Nicotine Pouch Use, by Group and Year		
	2023	**2024**
Lifetime use		
8th grade	1.2	0.8
10th grade	2.6	4.1
12th grade	3.6	6.8
Past 12-month use		
8th grade	0.6	0.6
10th grade	1.9	3.4
12th grade	2.9	5.9
19-30 y/o	4.8	9.5
Past 30-day use		
8th grade	0.4	0.2
10th grade	1.1	1.8
12th grade	1.4	3.5

Note. Values are weighted percentages.

Snus

Snus use prevalence declined overall between 2017 and 2024 in 10th and 12th grades and was comparatively low relative to use of other products for all age groups. Among 8th graders, past-12-month snus use hovered between 1.0% and 1.5% during 2017-2022, declined from 2022 to 2023 and then rebounded back to 1.2% by 2024. Among young adults ages 19–30, annual snus prevalence declined overall from 2017 through 2023.

Snus Use, by Group and Year								
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Past 12-month use								
8th grade	1.1	1.3	1.5	-	1.2	1.0	0.3	1.2
10th grade	2.6	3.1	2.3	-	1.0	1.5	1.3	2.1
12th grade	4.2	4.7	2.7	-	2.6	2.4	1.8	1.9
19-30 y/o	4.2	3.6	3.6	4.7	3.0	2.8	1.8	-

Note. Values are weighted percentages. Dashes indicate that estimates were not available for the indicated years.

Any nicotine product

Daily use of any nicotine product increased among 12th graders from 2017-2019, then generally shifted downward by 2024 for 8th, 10th , and 12th grades. Among 19–30 y/o young adults, past-12-month any nicotine use remained high in 2023 and 2024, with more than one-third reporting any use in 2024.

Any Nicotine Use, by Group and Year								
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Past 12-month use								
19-30 y/o	-	-	-	-	-	-	40.6	36.5
Past 30-day use								
8th grade	-	-	12.3	-	9.4	8.7	9.1	5.5
10th grade	-	-	24.0	-	15.7	15.1	12.9	12.0
12th grade	25.6	32.5	33.6	-	24.6	24.8	19.5	17.0

Note. Values are weighted percentages. Dashes indicate that estimates were not available for the indicated years. Any nicotine use was defined as use of ≥1 of the following products where available: vaping nicotine, cigarettes, large cigars, flavored little cigars, regular small cigars, hookah, or smokeless tobacco. Because respondents were randomly assigned to questionnaire forms that assessed only a subset of these products, the reported prevalence likely underestimates the true prevalence of any nicotine use.

Additional nicotine use characteristics, 2024

Among school-age youth in 2024, nearly all youth who vaped nicotine used a non-tobacco flavor, with the majority using nicotine products with fruit or ice-fruit combination flavors and 5% nicotine concentration. The prevalence of nicotine vaping intensity patterns among school-age youth in 2024 followed a U-shaped distribution across the continuum of intensity levels, such that vaping 1-2 times per day was the most common pattern in all grades and vaping more than 20 times per day was the second most common intensity pattern for 10th and 12th graders. In 2024, similar proportions of 8th, 10th, and 12th graders who vaped nicotine reported trying to quit vaping nicotine but being unsuccessful in their quit attempts—a symptom of nicotine use disorder. The proportion of youth who smoked cigarettes and reported unsuccessful quit attempts was higher in younger grades in 2024.

	8th grade	10th grade	12th grade
Nicotine vaping flavor typically used, among respondents with past 30-day use			
Sweet (e.g., Chocolate, Crème)	2.9	2.1	2.0
Fruit (e.g., Mango, Strawberry)	48.4	44.9	47.1
Tobacco	0.5	1.0	0.9
Mint	6.2	8.7	10.9
Menthol	1.7	3.4	7.5
Unflavored	8.6	10.6	7.7
Ice-fruit combination	31.2	29.1	23.5
Non-sweet (e.g., Clove, Coffee)	0.6	0.3	0.4
Nicotine concentration typically vaped, among respondents with past 30-day use			
1-2%	31.0	26.5	14.8
3-4%	19.7	12.4	12.3
5%	31.2	48.6	61.2
6% or higher	18.1	12.5	11.7
Number of nicotine vaping episodes per day, among respondents with past 30-day use			
1-2 times per day	47.4	43.0	34.5
3-9 times per day	22.5	19.4	18.0
10-14 times per day	11.0	8.2	10.6
15-20 times per day	5.3	9.4	10.1
More than 20 times per day	13.7	20.0	26.7
Ever tried to quit but could not, among respondents with past 30-day use			
Tried to quit vaping nicotine	16.0	16.1	18.4
Tried to quit smoking cigarettes	16.8	10.4	7.5

Note. Values are weighted percentages. Sample is restricted to respondents with available data for each measure.

Summary and Implications

This report illustrates that the products and patterns of nicotine use markedly shifted among US youth and young adults during the 2017 to 2024 period. Trends in use of many combustible tobacco products steadily declined or were stable throughout this interval for all age groups. Nicotine pouch use rose from 2023 to 2024 in all age groups and was the second most commonly used nicotine product within the past 12 months during 2023. Nicotine vaping was consistently the most common nicotine product used amongst US young people throughout the 2017 to 2024 period, with diverging trends across age groups. Rising nicotine vaping prevalence occurring from 2017 to 2020 leveled off and reversed after 2020 in school-age youth, whereas nicotine vaping steadily rose throughout the 2017-2024 period in young adults. Nicotine vaping was substantially more common than use of any other nicotine product among youth and young adults in 2024, with many youth using nicotine vaping products with non-tobacco flavors and high nicotine concentrations.

On the whole, the population of young people who use at least one form of nicotine has declined since 2020. Based on the findings in this report, the following implications merit consideration in tobacco regulatory science and policy:

- Continuation and enhancement of regulatory policies associated with recent reductions in the appeal, addictiveness, access, and use of combustible tobacco products among young people that could prolong these trends and prevent future rebounds in use of these harmful products.
- Prioritization of youth-focused regulation and surveillance of nicotine vaping products, especially products with non-tobacco flavors, high nicotine concentrations, and high addiction potential.
- Heightening of surveillance of nicotine pouch use patterns and the types of nicotine pouch products used among youth and young adults for early identification of emerging use trends and targeting regulatory activities that can protect young people.