

From Content to Clouds: The Bidirectional Associations between Tobacco-Related Content on Social Media and Youth Tobacco Use

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Acknowledgement of Country



Youth vaping in the U.S.

Youth E-Cigarette Use Drops to Lowest Level in a Decade

RELEASE

Youth Use of Nicotine Pouches Remains Low

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Half a million fewer U.S. youth reported current use of e-cigarettes in 2024 compared to 2023, according to [new data from the National Youth Tobacco Survey \(NYTS\) released today](#) by the U.S. Food and Drug Administration and the U.S. Centers for Disease Control and Prevention. The nationally representative data featured in *Morbidity and Mortality Weekly Report* (MMWR) includes findings on e-cigarette and nicotine pouch use among U.S. youth, two categories of tobacco products the FDA and CDC are monitoring closely, particularly regarding youth use and appeal.

[NYTS](#) is an annual school-based, self-administered survey of U.S. middle (grades 6–8) and high school (grades 9–12) students conducted Jan. 22 to May 22, 2024. Findings showed there was a significant drop in the number of U.S. middle and high school students who reported current (past 30 days) e-cigarette use – a decrease from 2.13 million (7.7%) youth in 2023 to 1.63 million (5.9%) youth in 2024. This decline was largely driven by

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1.63 million adolescents reported current (past 30 days) e-cigarette use (1)

- Equivalent to the population of Adelaide

Health & economic outcomes of youth vaping:

- Poisoning, seizure, addiction and e-cigarette / vaping product use-associated lung injury (EVALI) due to vaping infused with cannabis (2)
- In 2018, **US\$15.1 billion** of healthcare expenditure were attributable to e-cigarette use



Dangers of social media



Figure 1. Tik Tok post showing vaping tricks with 9.7million views & 1.3 million likes ¹¹

- **Non-age restricted pro-vaping content** are popular on social media (4)
 - Available despite restriction of tobacco contents in guidelines and government interventions (4-7)

This is could potentially cause:

- Re-normalization of tobacco use among adolescent (7)
- Increase adolescent willingness to vape (8-10,12)



Gaps in literature

Hypothesis

Adolescent who used e-cigarette are more likely to encounter e-cigarette content, based on interest-drive algorithm (13-14)

01

Recent bi-directional studies used non-representative & young adult sample (13,15-16)

02

Some are cross-sectional studies (16-18); non-longitudinal studies cannot infer causality



Aims & Methods

Aims

A.

W5 / W5.5
Exposure to e-cigarette
advertisement



W6
E-cigarette use

B.

W5 / W5.5
E-cigarette use



W6
Exposure to e-cigarette
advertisement

Study Population

- U.S. Population Assessment of Tobacco and Health (PATH) Study from Wave 5 (2018) to Wave 6 (2021)

Samples

- Sample A - Participants aged ≥ 12 who had completed 1 wave prior to Wave 6 & never used e-cigarettes at baseline (n=4,818)
- Sample B - Participants aged ≥ 12 who had completed 1 wave prior to Wave 6 & who used e-cigarettes at baseline (n=3,626)



Key findings

Direction: Exposure to pro-vaping content -> e-cigarette use

W6 vaping behaviours among youths who never vape in W5/W5.5 (n=4818)							
		Lifetime e-cigarette use		Past 12-month e-cigarette use		Past 30-day e-cigarette use	
		Ref: no lifetime use		Ref: no past 12-month use		Ref: no past 30 days use	
W5 / W5.5: Past 30 days exposure to e-cigarette being advertised on:		Crude OR (99.17% CI)	aOR (99.17%)	Crude OR (99.17% CI)	aOR(99.17% CI)	Crude OR (99.17% CI)	aOR(99.17% CI)
Website or social media	No exposure	1.00	1.00	1.00	1.00	1.00	1.00
	Exposed	1.97*** (1.33, 2.91)	1.79***(1.16, 2.76)	2.02*** (1.33, 3.07)	1.85***(1.17, 2.93)	2.14***(1.21, 3.78)	2.02** (1.13, 3.62)



Adolescents who are exposed to digital e-cigarette content are **more likely to report current (past 30-day) e-cigarette use**, compared to non-exposed peers.

- Positive association aligns with existing systematic review (12)

Direction: E-cigarette use -> exposure to e-cigarette content

W6: Exposure to e-cigarette content on social media (n=3626)

W5/W5.5: Vaping behaviours Exposure to e-cigarette advertisement

among youths who vape (n=3626)

Ref: Not exposed to e-cigarette content on social media at W6

	Crude OR (99.17% CI)	aOR (99.17% CI)
Lifetime e-cigarette use	1.37 (0.93, 2.01)	1.28 (0.81, 2.05)
Past 12 months e-cigarette use	1.31 (0.88, 1.94)	1.22 (0.76, 1.96)
Past 30 days e-cigarette use	1.41 (0.85, 2.34)	1.27 (0.71, 2.26)



Adolescents who have used e-cigarettes had **higher odds of subsequently encountering e-cigarette advertisement** on social media.



Suggest e-cigarette use and exposure to e-cigarette content have re-enforcing effect; Results are non-significant, interpret with caution

W5/W5.5: Vaping
behaviours
among youths
who vape
(n=3626)

Frequency of exposure to tobacco and e-cigarette products on social media in Wave 6 (n = 3626)

	Occasionally		Weekly		Daily / near daily	
	Ref: Never exposed to tobacco and e-cigarette on social media in the past 30d					
	Crude OR (99.17%)	aOR (99.17%)	Crude OR (99.17%)	aOR (99.17%)	Crude OR (99.17%)	aOR (99.17%)
Lifetime e-cigarette use	1.18 (0.83, 1.68)	1.13 (0.76, 1.67)	2.00***(1.23, 3.24)	1.97**(1.14, 3.43)	2.05**(1.15, 3.65)	1.96 (1.00, 3.81)
Past 12 months e-cigarette use	1.30 (0.89, 1.89)	1.24 (0.82, 1.86)	2.00**(1.17, 3.43)	1.89**(1.03, 3.45)	1.88**(1.00, 3.55)	1.74 (0.85, 3.56)
Past 30 days e-cigarette use	1.35 (0.80, 2.28)	1.37 (0.74, 2.55)	2.31**(1.05, 5.08)	2.16*(0.89, 5.25)	2.45**(1.12, 5.36)	2.37 (0.94, 5.98)



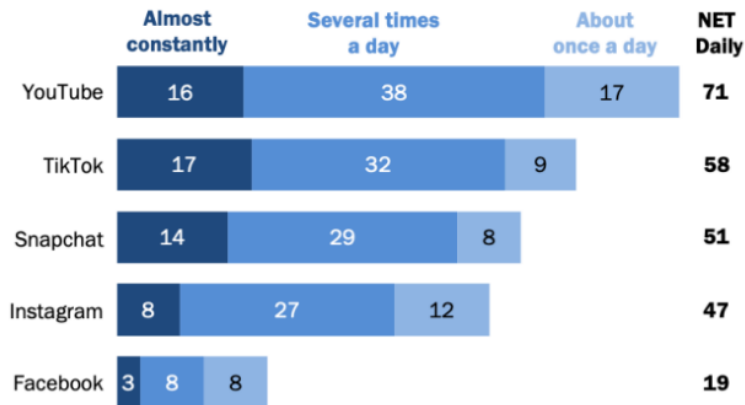
Adolescents who are currently using e-cigarettes have **higher odds of increased exposure to tobacco and e-cigarette products** via social media

- Only dose-response relationship observed in past 30-day e-cigarette use

Implication

A majority of teens visit YouTube, TikTok daily

% of U.S. teens ages 13 to 17 who say they visit or use the following apps or sites ...



Note: Those who did not give an answer or gave other responses are not shown.

Source: Survey conducted Sept. 26-Oct. 23, 2023.

"Teens, Social Media and Technology 2023"

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- Evidence to support **stricter regulations against tobacco promotions** on social media platforms – to break the cycle
 - Official ID check, using AI to detect & eliminate tobacco promotional content (22)

Source: Pew Research Centre ²¹