

Prevalence of Awareness and Use of JUUL E-Cigarettes, E-Cigarettes and Combustible Cigarettes in a National Probability Sample of U.S. Adolescents



SRNT 25th Annual Meeting
Feburary 20-23 2019
Hilton San Francisco Union Hotel
333 O'Farrell Street I San Francisco CA 94102 I US

Among adolescents aged 13-14 years:

• 0.8% had used a JUUL in the past 30 days.

• 0.8% had used a JUUL on 1-19 of the past 30 days.

• 0.0% had used a JUUL on 20-30 of the past 30 days.

• 0.8% were former users of a JUUL.

• 1.5% had ever used a JUUL.

Neil McKeganey Ph.D.¹ Christopher Russell Ph.D.¹, Christopher Fleury Ph.D.² and Linda McPetrie²

¹Centre for Substance Use Research Ltd., Block 4.04, Kelvin Campus, West of Scotland Science Park, 2317 Maryhill Road, Glasgow, G20 0SP, United Kingdom.

²GfK Custom Research LLC,1655 North Fort Myer Drive, Suite 630, Arlington VA 22209, United States.

Background

In September 2018, the U.S. Food and Drug Administration (FDA) announced that e-cigarette use among U.S. youth has become an 'epidemic', and that much of the youth use of e-cigarettes is being driven by one manufacturer – JUUL.

This assertion appears to be based on a markedly increased frequency of media and anecdotal report from parents, educators, school superintendents and public health experts of widespread use of JUUL e-cigarettes among middle and high school students, both on school grounds and in social settings outside of school.

However, few studies have reported quantitative estimates of the prevalence, frequency and patterns of use of JUUL vapor products among youth and young adults in the United States.

Estimating the prevalence and frequency of youth use of the JUUL e-cigarette, overall and by use of combustible cigarettes, is important to assessing the potential population health impact of JUUL products.

Methods

Data were collected through a cross-sectional, self-complete, online survey of a national random probability sample of U.S. adolescents aged 13-17 years who were children of adult panelists drawn from GfK's *KnowledgePanel*.

Adult panel members were randomly selected with probabilities proportional to size (PPS) using a base panel weight after post-stratification adjustment for sampling and non-sampling sources of error (e.g., panel nonresponse and panel attrition). Data collection occurred between 21 September and 3 October, 2018.

All questions, response options, product descriptions, preambles and instructions used in the survey instrument were extracted or closely adapted from the Centers for Disease Control and Prevention's (CDC) 2017 National Youth Tobacco Survey (NYTS) instrument, the FDA Population Assessment of Tobacco and Health (PATH) Study, Wave 1 Youth Interview Form, and from items recommended by the FDA Tobacco Centers for Regulatory Science (TCORS) for use in studies assessing youth use and perceptions of e-cigarettes.

Questions assessed awareness of e-cigarettes and JUUL e-cigarettes, and the prevalence of ever use, past 30-day use, former use and frequent use (≥20 of past 30 days) of JUUL e-cigarettes, e-cigarettes and combustible cigarettes.

Population-weighted prevalence estimates and 95% confidence intervals are reported for each tobacco product overall and by age, gender and race-ethnicity.

Estimates of the number of persons aware and users of each tobacco product were rounded down to the nearest 10,000 persons.

Email: russell@csures.org

Table 1. Estimates of the prevalence of use of JUUL e-cigarettes, e-cigarettes and cigarettes among U.S. adolescents aged 15-17 years, by sex and race/ethnicity – September-October 2018.

	<u>Sex</u>		Race/Ethnicity					
	Female	Male	White †	Black †	Hispanic	Other †	Total	
Aged 15-17 years	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	Estimated no. users
Ever User								
JUUL	4.3	10.8	9.6	5.5	5.4	5.8	7.6	960,000
	(2.0-6.5)	(7.4-14.2)	(6.4-12.9)	(0.8-10.2)	(1.7-9.0)	(0.3-11.3)	(5.5-9.7)	
E-cigarettes	12.8	23.8	22.2	8.8	17.4	15.9	18.4	2,320,000
	(9.0-16.5)	(19.1-28.5)	(17.6-26.8)	(3.0-14.6)	(11.4-23.5)	(7.3-24.6)	(15.3-21.4)	
Cigarettes	13.4	22.5	18.6	17.6	20.8	10.1	18.1	2,290,000
	(9.6-17.3)	(17.9-27.2)	(14.3-23.0)	(9.8-25.4)	(14.3-27.3)	(3.0-17.3)	(15.0-21.1)	
Jsed in Past 30 Days								
	1.6	6.3	5.5	2.2	2.7	2.9	4.0	500,000
JUUL	(0.2-3.1)	(3.7-9.0)	(2.9-8.0)	(0.0-5.2)	(0.1-5.3)	(0.0-6.9)	(2.5-5.6)	
E cigarottos	3.9	9.8	11.6	6.6	6.0	4.3	8.7	1,100,000
E-cigarettes	(1.8-6.1)	(6.6-13.1)	(8.0-15.1)	(1.5-11.7)	(2.2-9.9)	(0.0-9.2)	(6.5-10.9)	
Cigarattas	3.3	8.3	5.8	11.0	4.7	1.4	5.8	730,000
Cigarettes	(1.3-5.3)	(5.2-11.3)	(3.2-8.4)	(4.6-17.4)	(1.3-8.1)	(0.0-4.3)	(4.0-7.6)	
Former User								
JUUL	3.0	4.1	3.9	3.3	2.0	5.8	3.5	440,000
JUUL	(1.1-4.8)	(1.9-6.3)	(1.7-6.0)	(0.0-7.0)	(0.0-4.3)	(0.3-11.3)	(2.1-5.0)	
E-cigarettes	8.5	10.5	10.3	2.2	11.4	11.6	9.5	1,200,000
L-cigarettes	(5.4-11.7)	(7.1-13.9)	(6.9-13.7)	(0.0-5.2)	(6.3-16.5)	(4.0-19.1)	(7.2-11.8)	
Cigarettes	10.2	14.6	12.5	7.7	16.1	10.1	12.4	1,570,000
	(6.8-13.6)	(10.7-18.5)	(8.9-16.2)	(2.2-13.2)	(10.2-22.0)	(3.0-17.3)	(9.8-15.0)	
nfrequent User								
JUUL	1.0	6.0	4.8	2.2	2.7	1.4	3.5	443,205
JOOL	(0.0-2.1)	(3.4-8.7)	(2.4-7.2)	(0.0-5.2)	(0.1-5.3)	(0.0-4.3)	(2.1-5.0)	
E-cigarettes	3.9	12.1	10.6	6.6	5.4	4.3	8.1	1,020,000
E-Cigarettes	(1.8-6.1)	(8.5-15.7)	(7.2-14.0)	(1.5-11.7)	(1.7-9.0)	(0.0-9.2)	(5.9-10.2)	
Cigarottos	3.0	7.3	4.8	11.0	4.0	1.4	5.2	650,000
Cigarettes	(1.1-4.8)	(4.4-10.2)	(2.4-7.2)	(4.6-17.4)	(0.9-7.2)	(0.0-4.3)	(3.4-6.9)	
requent User								
JUUL	0.3	0.3	0.6	0.0	0.0	0.0	0.3	37,989
	(0.0-1.0)	(0.0-0.9)	(0.0-1.5)	(0.0-0.0)	(0.0-0.0)	(0.0-0.0)	(0.0-0.8)	
E-cigarettes	0.3	1.3	1.0	0.0	1.3	0.0	0.8	101,304
	(0.0-1.0)	(0.0-2.5)	(0.0-2.1)	(0.0-0.0)	(0.0-3.2)	(0.0-0.0)	(0.1-1.5)	
Cigarettes	0.7	1.3	1.3	0.0	1.3	0.0	1.0	126 620
Cigarettes	(0.0-1.6)	(0.0-2.5)	(0.0-2.5)	(0.0-0.0)	(0.0-3.2)	(0.0-0.0)	(0.2-1.7)	126,630

Table 2. Estimates of the prevalence of use of JUUL e-cigarettes, e-cigarettes and cigarettes among U.S. adolescents aged 13-14 years, by sex and race/ethnicity – September-October 2018.

	Se	ex	Race/Ethnicity					
Aged 13-14 years	Female % (95% CI)	Male % (95% CI)	White † % (95% CI)	Black † % (95% CI)	Hispanic % (95% CI)	Other †	Total	Estimated no. users §
						% (95% CI)	% (95% CI)	
ver User								
JUUL	3.1	0.0	1.3	\P	2.1	\P	1.5	120,000
	(0.7-5.5)	(0.0-0.0)	(0.0-2.9)		(0.0-5.0)		(0.3-2.7)	
E-cigarettes	10.8	6.0	6.3	\P	12.8	\P	8.4	690,000
	(6.5-15.2)	(2.7-9.2)	(3.1-9.5)		(6.0-19.5)		(5.6-11.1)	
	8.8	10.4	9.9	\P	12.8	\P	9.6	790,000
Cigarettes	(4.8-12.7)	(6.2-14.7)	(6.0-13.8)		(6.0-19.5)		(6.7-12.5)	
Jsed in Past 30 Days								
JUUL	1.5	0.0	0.0	\P	2.1	¶	0.8	60,000
	(0.0-3.3)	(0.0-0.0)	(0.0-0.0)		(0.0-5.0)		(0.0-1.6)	
	1.5	1.5	1.3	\P	2.1	\P	1.5	120,000
E-cigarettes	(0.0-3.3)	(0.0-3.2)	(0.0-2.9)		(0.0-5.0)		(0.3-2.7)	
	1.5	1.0	0.9	\P	2.1	\P	1.3	100,000
Cigarettes	(0.0-3.3)	(0.0-2.4)	(0.0-2.1)		(0.0-5.0)		(0.2-2.4)	
Former User								
	1.5	0.0	1.3	\P	0.0	¶	0.8	60,000
JUUL	(0.0-3.3)	(0.0-0.0)	(0.0-2.9)		(0.0-0.0)		(0.0-1.6)	
E-cigarettes	8.8	4.5	4.9	\P	9.6	\P	6.6	540,000
	(4.8-12.7)	(1.6-7.3)	(2.1-7.8)		(3.6-15.5)		(4.1-9.0)	
	7.7	9.5	9.0	\P	11.7	\P	8.6	710,000
Cigarettes	(4.0-11.5)	(5.4-13.5)	(5.2-12.7)		(5.2-18.2)		(5.8-11.4)	
nfrequent User								
JUUL	1.5	0.0	0.0	\P	2.1	\P	0.8	60,000
	(0.0-3.3)	(0.0-0.0)	(0.0-0.0)		(0.0-5.0)		(0.0-1.6)	
E-cigarettes	1.5	1.5	1.3	¶	0.0	\P	1.5	120,000
	(0.0-3.3)	(0.0-3.2)	(0.0-2.9)		(0.0-0.0)		(0.3-2.7)	
Cigarettes	1.5	0.5	0.4	¶	2.1	\P	1.0	80,000
	(0.0-3.3)	(0.0-1.5)	(0.0-1.3)		(0.0-5.0)		(0.0-2.0)	
Frequent User								
	0.0	0.0	0.0	¶	0.0	¶	0.0	
JUUL	(0.0-0.0)	(0.0-0.0)	(0.0-0.0)		(0.0-0.0)		(0.0-0.0)	0
E-cigarettes	0.0	0.0	0.0	¶	0.0	\P	0.0	0
	(0.0-0.0)	(0.0-0.0)	(0.0-0.0)		(0.0-0.0)		(0.0-0.0)	
Cigarettes	0.0	0.5	0.4	¶	0.0	\P	0.3	20,000
	(0.0-0.0)	(0.0-1.5)	(0.0-1.3)		(0.0-0.0)		(0.0-0.7)	

Note: Prevalence estimates used weighted data. § Estimated total number of users was rounded down to the nearest 10,000 persons. Based on 2016 U.S. census data on number of persons aged 13-14 years/15-17 years in the U.S. population.† Blacks, whites, and others are non-Hispanic; Hispanic persons could be of any race. ¶ The estimate was suppressed because the sample size was <50.

Results

Approximately 90.3% of adolescents aged 15-17 years (estimated 11,430,000 persons) and 88.6% of adolescents aged 13-14 years (estimated 7,330,000 persons) had ever seen or heard of e-cigarettes before this study (Table 1).

In contrast, 45.5% of adolescents aged 15-17 years (estimated 5,760,000 persons) and 29.1% of adolescents aged 13-14 years (estimated 2,400,000 persons) had ever seen or heard of a brand of e-cigarette called 'JUUL' before taking part in this study.

Among adolescents aged 15-17 years:

- 7.6% had ever used a JUUL.
- 4.0% had used a JUUL in the past 30 days.
- 3.5% were former users of a JUUL.
- 3.5% had used a JUUL on 1-19 of the past 30 days.
- 0.3% had used a JUUL on 20-30 of the past 30 days.
- 0.7% have used 20 or more JUULpods in their lifetime.
- 2.2% had ever used a JUUL and started with a Mango flavored JUULpod.
- 2.3% had used Mango flavored JUULpods in the past 30 days

Conclusions

Contrary to anecdotal and media reports that use of JUUL e-cigarettes is ubiquitous among U.S. youth, present estimates suggest that, in September-October 2018, the majority of adolescents aged 13-17 years had never seen or heard of JUUL e-cigarettes, the prevalence of past 30-day use was low (<5%), and frequent use of a JUUL was extremely rare (<0.3%).

Though even very low levels of youth use of JUUL e-cigarettes are unacceptable from a public health perspective, and should prompt both the FDA and the manufacturer to take measures to further and continually reduce youth access to JUUL products, these survey findings do not bear out an 'epidemic' of youth use of JUUL e-cigarettes.

Findings additionally illustrate the importance of public health officials and experts basing estimates of the national and local scale of youth use of specific brands of e-cigarette, and subsequent policy recommendations, on robust nationally representative survey data obtained through reliable survey measures.

Ethics Approval

This study was approved by Advarra Institutional Review Board (Approval no. 00029560, 14 September 2018).

Declaration of Funding

Funding for this study was provided by JUUL Labs Inc. JUUL Labs Inc. had no input to or control over the study design, contents of the survey instrument, sample recruitment, data analysis, interpretation, or reporting of findings. The authors alone are responsible for the contents, production and decision to report this study.