

Appendix
E-Cigarette Use Patterns and High-Risk Behaviors in Pregnancy:
Behavioral Risk Factor Surveillance System 2016–2018
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Appendix Table 1. Demography by Pregnancy Status Showing Age-Standardized Proportions

Characteristics	Currently pregnant (n=7,434)		Not pregnant (n=212,491)	
	Crude (95% CI)	Age-adjusted (95% CI)	Crude (95% CI)	Age-adjusted (95% CI)
Age, years				
18–24	28.2 (26.3, 30.1)		24.2 (23.8, 24.6)	
25–29	26.0 (24.3, 27.8)		15.3 (15.0, 15.6)	
30–34	27.8 (26.0, 29.6)		18.2 (17.9, 18.5)	
35–49	18.0 (16.5, 19.6)		42.4 (42.0, 42.7)	
Race				
White	49.3 (47.3, 51.4)	49.3 (47.3, 51.4)	54.3 (53.9, 54.7)	54.3 (53.9, 54.7)
Black or African American	12.7 (11.5, 14.1)	12.7 (11.5, 14.1)	13.9 (13.6, 14.2)	13.9 (13.6, 14.2)
Hispanic	27.0 (25.0, 29.0)	27.0 (25.0, 29.0)	21.7 (21.4, 22.1)	21.7 (21.4, 22.1)
Other	11.0 (9.6, 12.6)	11.0 (9.6, 12.6)	10.1 (9.8, 10.4)	10.1 (9.8, 10.4)
Marital status				
Married	56.5 (54.5, 58.5)	56.5 (54.5, 58.5)	43.4 (43.0, 43.8)	43.4 (43.0, 43.8)
Divorced	5.8 (4.9, 6.7)	5.8 (4.9, 6.7)	10.6 (10.4, 10.8)	10.6 (10.4, 10.8)
Widowed	0.9 (0.5, 1.9)	0.9 (0.5, 1.9)	0.8 (0.7, 0.8)	0.8 (0.7, 0.8)
Single	36.8 (34.8, 38.8)	36.8 (34.8, 38.8)	45.3 (44.9, 45.7)	45.3 (44.9, 45.7)
Education				
Less than high school	15.6 (13.9, 17.5)	15.6 (13.9, 17.5)	11.8 (11.5, 12.1)	11.8 (11.5, 12.1)
High school/Some college	53.7 (51.7, 55.8)	53.7 (51.7, 55.8)	57.9 (57.5, 58.3)	57.9 (57.5, 58.3)
College graduate	30.6 (28.9, 32.4)	30.6 (28.9, 32.4)	30.4 (30.0, 30.7)	30.4 (30.0, 30.7)
Employment status				
Employed	57.6 (55.5, 59.6)	57.6 (55.5, 59.6)	62.6 (62.1, 63.0)	62.6 (62.1, 63.0)
Unemployed	36.1 (34.1, 38.2)	36.1 (34.1, 38.2)	24.9 (24.5, 25.2)	24.9 (24.5, 25.2)
Student	6.3 (5.4, 7.4)	6.3 (5.4, 7.4)	12.3 (12.0, 12.6)	12.3 (12.0, 12.6)
Retired	0.0 (0.0, 0.1)	0.0 (0.0, 0.1)	0.3 (0.2, 0.3)	0.3 (0.2, 0.3)
Income				
Below poverty line	22.9 (21.1, 24.8)	22.9 (21.1, 24.8)	21.0 (20.6, 21.4)	21.0 (20.6, 21.4)
Within 100%–200% above poverty line	21.3 (19.5, 23.2)	21.3 (19.5, 23.2)	19.5 (19.2, 19.9)	19.5 (19.2, 19.9)
>200% above poverty line	55.8 (53.6, 57.9)	55.8 (53.6, 57.9)	59.5 (59.1, 59.9)	59.5 (59.1, 59.9)
Metropolitan area				

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Center city	30.6 (26.0, 35.6)	30.6 (26.0, 35.6)	36.1 (35.2, 37.0)	36.1 (35.2, 37.0)
Same county as center city	25.2 (19.5, 31.8)	25.2 (19.5, 31.8)	25.1 (24.3, 26.0)	25.1 (24.3, 26.0)
Suburban county	22.5 (18.0, 27.6)	22.5 (18.0, 27.6)	19.4 (18.8, 20.1)	19.4 (18.8, 20.1)
Outside metropolitan area	21.8 (18.3, 25.7)	21.8 (18.3, 25.7)	19.4 (18.7, 20.0)	19.4 (18.7, 20.0)
Smoking status				
Current	7.0 (6.1, 8.0)	7.0 (6.1, 8.0)	15.5 (15.2, 15.7)	15.5 (15.2, 15.7)
Former	18.6 (17.1, 20.3)	18.6 (17.1, 20.3)	12.8 (12.6, 13.1)	12.8 (12.6, 13.1)
Never	74.4 (72.6, 76.1)	74.4 (72.6, 76.1)	71.7 (71.3, 72.0)	71.7 (71.3, 72.0)
Other tobacco use ^a	0.7 (0.5, 1.0)	0.7 (0.5, 1.0)	1.1 (1.0, 1.2)	1.1 (1.0, 1.2)
Heavy alcohol use	1.7 (1.3, 2.4)	1.7 (1.3, 2.4)	6.7 (6.5, 6.9)	6.7 (6.5, 6.9)
Marijuana use	5.9 (3.7, 9.2)	5.9 (3.7, 9.2)	11.2 (10.6, 11.9)	11.2 (10.6, 11.9)
Binge drinking	3.8 (3.1, 4.7)	3.8 (3.1, 4.7)	18.1 (17.8, 18.4)	18.1 (17.8, 18.4)
Other high risk behaviors ^b	9.2 (8.0, 10.6)	9.2 (8.0, 10.6)	8.6 (8.4, 8.8)	8.6 (8.4, 8.8)
E-cigarette use, %				
Current	2.2 (1.7, 2.8)	2.2 (1.7, 2.8)	5.1 (4.9, 5.3)	5.1 (4.9, 5.3)
Daily	0.6 (0.4, 0.9)	0.6 (0.4, 0.9)	1.5 (1.4, 1.6)	1.5 (1.4, 1.6)
Occasional	1.5 (1.1, 2.1)	1.5 (1.1, 2.1)	3.6 (3.4, 3.7)	3.6 (3.4, 3.7)
Former	21.0 (19.3, 22.9)	21.0 (19.3, 22.9)	20.8 (20.4, 21.1)	20.8 (20.4, 21.1)
Never	76.8 (74.9, 78.6)	76.8 (74.9, 78.6)	74.2 (73.8, 74.6)	74.2 (73.8, 74.6)

Notes: Results presented as % (95% CI). Weighted percentages are reported. n is the unweighted sample size in the dataset.

^aDefined as current use of chewing tobacco, snuff, or snus every day or some days.

^bIndividuals who injected any drugs other than those prescribed in the last year, been treated for any sexually transmitted disease in the past year, or given or received money or drugs in exchange for sex in the past year.

BRFSS, Behavioral Risk Factor Surveillance System.

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Appendix Table 2. Trends in E-cigarette Use Among Adult Pregnant Women, 2016 to 2018

Variable	2016	2017	2018	2016 vs 2017	2017 vs 2018
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Pregnant	1.9 (1.2, 2.9)	1.6 (1.1, 2.5)	3.8 (2.6, 5.7)	−0.2 (−1.2, 0.8)	2.2 (0.5, 3.9)
Not pregnant	4.8 (4.6, 5.1)	4.6 (4.3, 4.9)	6.5 (6.0, 6.9)	−0.2 (−0.6, 0.2)	1.9 (1.3, 2.4)

Appendix Table 3. Prevalence of E-cigarette Use Among Pregnant Women by Age

E-cigarette use	18–24 years (n=1,650)	25–29 years (n=2,054)	30–34 years (n=2,099)	35–49 years (n=1,631)
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Current	3.2 (2.1, 4.7)	2.3 (1.4, 3.7)	1.3 (0.8, 2.0)	1.7 (0.9, 3.4)
Former	31.1 (26.9, 35.5)	20.7 (17.9, 23.9)	16.8 (13.7, 20.4)	12.6 (10.0, 15.7)
Never	65.8 (61.2, 70.0)	77.0 (73.7, 80.0)	1.3 (0.8, 2.0)	1.7 (0.9, 3.4)

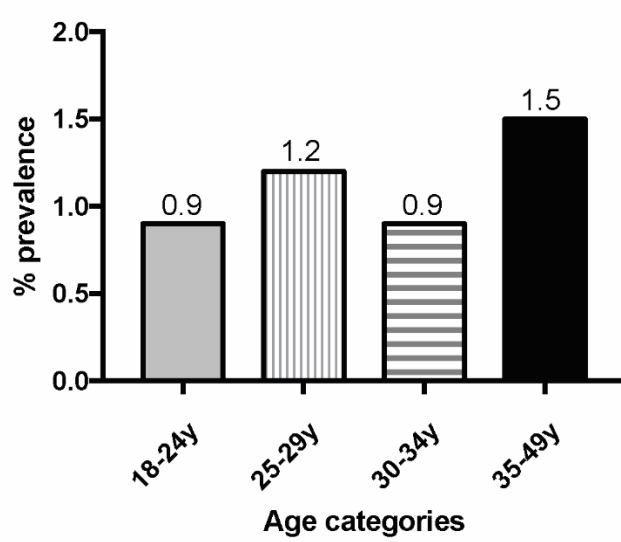
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Appendix Table 4. Demographic Characteristics of E-cigarette Using Pregnant Women

Variable	Currently pregnant (n=142) Weighted proportion (95% CI)
Age, years	
18–24	41.7 (30.3, 54.1)
25–29	27.5 (18.0, 39.5)
30–34	16.0 (10.1, 24.5)
35–49	14.7 (7.6, 26.7)
Race	
White	63.3 (51.1, 74.0)
Black or African American	8.0 (3.8, 16.1)
Hispanic	17.6 (9.8, 29.7)
Other	11.0 (5.7, 20.1)
Marital status	
Married	24.0 (15.4, 35.3)
Divorced	12.8 (7.8, 20.5)
Widowed	5.6 (2.1, 13.8)
Single	57.6 (45.8, 68.7)
Education	
Less than high school	27.8 (17.5, 41.0)
High school/Some college	66.6 (53.8, 77.3)
College graduate	5.6 (3.0, 10.5)
Employment status	
Employed	61.7 (49.7, 72.4)
Unemployed	31.5 (22.0, 42.9)
Student	6.8 (2.4, 17.9)
Retired	0.0
Income	
Below poverty line	30.1 (20.4, 41.9)
Within 100%–200% above poverty line	35.1 (23.5, 48.7)
>200% above poverty line	34.9 (23.9, 47.8)
Metropolitan area	
Center city	30.2 (10.7, 61.2)
Same county as center city	6.7 (1.4, 26.0)
Suburban county	8.2 (1.5, 34.0)
Outside metropolitan area	54.9 (23.4, 82.9)

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Appendix Figure 1. Overall prevalence of dual use among pregnant women by age categories.



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Appendix Table 5. Dual Use Patterns: Smoking by E-cigarette Use Status Among Pregnant Women

Smoking status	E-cigarette use status		
	Current use (n=142) % (95% CI)	Former use (n=1,305) % (95% CI)	Never use (n=4,898) % (95% CI)
Current	46.3 (34.6, 58.4)	22.5 (18.8, 26.6)	1.9 (1.5, 2.6)
Former	23.5 (15.1, 34.5)	44.7 (39.8, 49.8)	11.1 (9.7, 12.6)
Never	30.3 (20.2, 42.8)	32.8 (28.5, 37.3)	87.0 (85.4, 88.5)

Appendix Table 6. Dual Use Patterns: E-cigarette Use by Smoking Status Among Pregnant Women

E-cigarette use	Cigarette smoking status		
	Current smoker (n=510) % (95% CI)	Former smoker (n=1,228) % (95% CI)	Never smoker (n=4,588) % (95% CI)
Current	13.9 (9.8, 19.3)	2.8 (1.7, 4.4)	0.9 (0.6, 1.4)
Former	65.5 (58.6, 71.8)	51.1 (45.8, 56.3)	9.3 (8.0, 10.8)
Never	20.6 (15.7, 26.5)	46.2 (41.0, 51.4)	89.9 (88.3, 91.2)

Appendix Table 7. Prevalence of High-risk Behaviors Among Pregnant Women by E-Cigarette Use Status

Variable	Current use (n=142) % (95% CI)	Former use (n=1,305) % (95% CI)	Never use (n=4,898) % (95% CI)
Other tobacco use	3.6 (1.3, 9.5)	1.0 (0.5, 1.7)	0.5 (0.3, 0.8)
Marijuana use	46.8 (19.9, 75.7)	10.8 (5.8, 19.3)	3.1 (1.1, 8.2)
Heavy alcohol use	12.0 (6.2, 22.1)	2.3 (1.4, 3.7)	1.3 (0.7, 2.2)
Binge drinking	24.1 (14.1, 38.0)	7.1 (5.3, 9.6)	2.6 (1.9, 3.6)
Other high risk behaviors	22.6 (14.1, 34.3)	18.3 (14.2, 23.4)	6.0 (5.0, 7.3)