



Hookah Use among U.S. Young Adults: Findings from the 2012-2013 vs. 2013-2014 National Adult Tobacco Surveys

STACY L. THORNE, PHD, MPH, MCHES¹

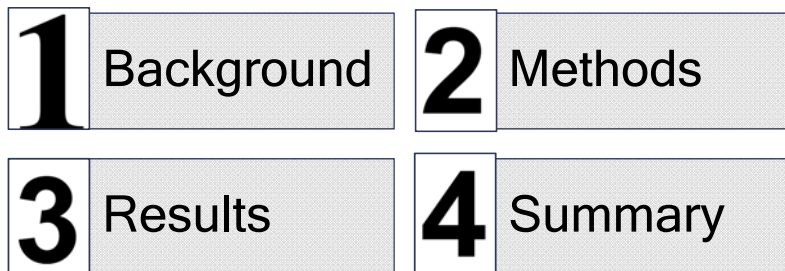
ERIN O'CONNOR²

JENNIFER KAHENDE, PHD¹

¹ Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health

² DB Consulting, Inc., Atlanta GA

Overview





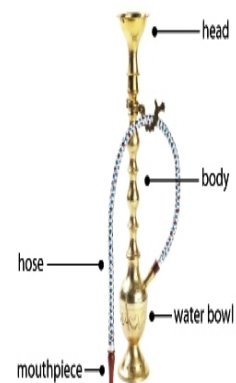
Background

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What is Hookah?

- Hookah (also known as a water pipe) is a device used for tobacco smoking¹
- Originated in Asia and North Africa, has existed for centuries²
- Charcoal heated tobacco; smoke passes through water before it is inhaled¹



¹ Ward, KD, Eissenberg, T, Gray, JN, et al, (2007). Characteristics of U.S. waterpipe users: a preliminary report. *Nicotine Tob Res*, 9(12) 1339-1346

² KandellP.. (2000). Narghile Smoking keeps Arabs in Wonderland. *Lancet* 356(9236), 1175.

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Hookah Exposure and Risks

- Generated smoke contains nicotine and other toxicants (e.g. carbon monoxide (CO) and tar)¹
- Higher levels of smoke, nicotine, tar and CO exposure for users compared cigarette smokers ¹
- Higher risk of lung and oral cancer compared to non-cigarette users ²
- Sharing of device may lead to increased risk of respiratory infections between smokers ³

¹Akl EA, Gaddam S, Gunukula SK, Honeine R, Jaoude PA, Irani J. The Effects of Waterpipe Tobacco Smoking on Health Outcomes: A Systematic Review. *International Journal of Epidemiology* 2010;39:834–57.

²Cobb CO, Ward KD, Maziak W, Shihadeh AL, Eissenberg T. Waterpipe Tobacco Smoking: An Emerging Health Crisis in the United States. *American Journal of Health Behavior* 2010;34(3):275–85.g

³Maziak, W., Ward, K, Afifi S. & Eissenberg, T (2004). Tobacco smoking using a waterpipe: are-emerging stain in a global epidemic. *Tob Control* 13(4), 327-333

Hookah – Recent Trends in Use

- Popularity of hookah tobacco smoking increased in mid 2000's
- More pleasant smell and taste and less irritating than cigarettes ¹
- Perceived as less harmful and safer alternative to cigarettes ¹
- More socially accepted than cigarettes ¹
- Increase in hookah bars, cafes and restaurants near college campuses ²



¹ Gathuru, IM, Tarter, R., Klein-Fedyshin, M. (2015). *American Journal of Drug and Alcohol Abuse*. 41(4), 272-280

²American Lung Association. *An Emerging Deadly Trend: Waterpipe Tobacco Use*. Washington: American Lung Association, 2007

Hookah Use

- Prevalence of hookah use among young adults use in past year has ranged from 22% to 40%¹
- Other studies have shown a range in the prevalence of hookah use for young adults²:
 - Lifetime use: 15% to 48%
 - Current use: 5% to 22% (past month)
- Highest among freshman students, males, whites of non-Hispanic ethnicity^{1, 3}
- Usually occurs on non-daily basis and in social settings^{1, 2, 3}
- Hookah users also use other tobacco products³
 - 33.3% current cigarette smokers; 57.1% cigars, little cigars or clove cigarettes³

¹Cobb CO, Ward KD, Maziak W, Shihadeh AL, Eissenberg T. Waterpipe Tobacco Smoking: An Emerging Health Crisis in the United States. *American Journal of Health Behavior* 2010;34(3):275-85

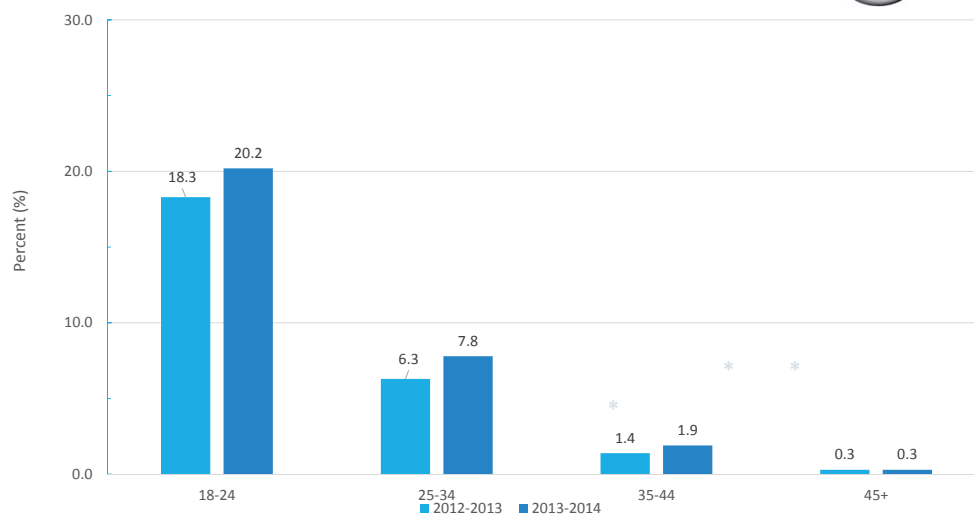
²Doran N, Godfrey KM, Meyers MG. (2015). Hookah Use predicts Cigarette Smoking Progression among college smokers. *Nicotine & Tobacco Research*, 1347-1353.

³Shepardson, RL, Hustard, JTP Hookah Tobacco Smoking During the transition to college: Prevalence of Other Substance Use and Predictors of Initiation. *Nicotine & Tobacco Research*, 18(5) 763-769

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Current Waterpipe/Hookah Use among Adults Aged ≥18, [†] by AGE – U.S., 2012–2013



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Source: National Adult Tobacco Survey, 2012-2013 & 2013-2014

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Current Information Gaps

- Continue surveillance on hookah use among U.S. young adults aged 18-24 years from national surveys.
- Identification of disparities in hookah use across population subgroups for young adults.
- Further surveillance of hookah use with multiple tobacco products.



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Methods

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National Adult Tobacco Survey (NATS)

Who	Non-Institutionalized U.S. adults aged ≥ 18 years
What	Telephone survey (landline and cellular telephone)
Where	50 U.S. States and D.C.
When	2012-2013 and 2013-2014
Purpose	Determine the prevalence of tobacco use as well as the factors promoting & impeding tobacco use among a nationally representative sample of adults.

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National Adult Tobacco Survey (NATS) Response Rates

	2012-2013	2013-2014
Completed surveys	60,192	75,233
Landline	45,024	52,594
Cell phone	15,197	22,639
CASRO* Response Rate	44.9%	36.1%
Landline	47.2%	47.6%
Cell phone	36.2%	17.1%

*National Council of American Survey and Research Organizations

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Study Population



➤ Young adults, aged 18-24 years old

➤ n=3577, 2012-2013

➤ n=4796, 2013-2014



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Study Analysis

- Weighted prevalence estimates for 18-24 year olds by demographic characteristics;
- Logistic regression analysis
 - Combined 2012-2013 and 2013-2014 data
 - Controlled for sex, race/ethnicity, marital status, educational attainment, sexual orientation, region and other tobacco product use
 - Statistical significance threshold $p < 0.05$

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Study Definitions

➤ Ever hookah use

- Have you ever smoked tobacco in a hookah in your entire life?

➤ Current Hookah use

- Have you ever smoked tobacco in a hookah in your entire life?
- Do you now smoke tobacco in a hookah every day, some days, rarely or not at all?



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Study definitions

➤ Other tobacco product use

➤ Combustible:

- Cigarette
- Cigars
- Pipes

➤ Non-combustible

- Smokeless tobacco
- Snus
- Dissolvables
- E-cigarettes



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Results

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Sociodemographic Characteristics among adults, aged 18-24 years---National Adult Tobacco Survey, 2012-2013 vs. 2013-2014

Socio-demographic Characteristic	2012-2013 (n=3577)		2012-2013 (n=4797)	
	n	% (95%CI)	n	% (95%CI)
Sex				
Male	1781	51.6% (49.5--53.7)	2576	52.5% (50.7--54.3)
Female	1539	48.4% (46.3--50.5)	2159	47.5% (45.7--49.3)
Race/Ethnicity				
White-Non Hispanic	1928	55.0% (52.9--57.1)	2812	52.6% (50.8--54.5)
Black-Non Hispanic	271	10.4% (9.1--11.8)	497	12.6% (11.3--13.8)
Hispanic	617	21.5% (19.8--23.3)	875	23.7% (22.1--25.4)
Asian-Non Hispanic	157	4.7% (3.7--5.7)	245	5.4% (4.5--6.2)
Other-Non Hispanic	349	8.4% (7.3--9.5)	302	5.7% (4.8--6.5)
Marital Status				
Single	2491	78.7% (77.1--80.4)	3645	76.0% (74.5--77.6)
Married	344	7.5% (6.5--8.4)	440	10.4% (9.2--11.5)
Living with a Partner	436	11.9% (10.6--13.2)	598	11.1% (10.0--12.2)
Divorced, Widowed, Separated	58	1.9% (1.3--2.5)	75	2.5% (1.8--3.1)

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Sociodemographic Characteristics among adults, aged 18-24 years---National Adult Tobacco Survey, 2012-2013 vs. 2013-2014

Socio-demographic Characteristic	2012-2013		2012-2013	
	n	% (95%CI)	n	% (95%CI)
Education Attainment				
Less than High School diploma	291	13.4% (11.6--15.1)	412	14.6% (13.0--16.2)
High school diploma/GED	1214	41.1% (39.0--43.2)	1806	41.7% (39.9--43.5)
Some College	1180	34.7% (32.8--36.7)	1647	32.2% (30.6--33.8)
Bachelors Degree or Beyond	609	10.8% (9.8--11.8)	848	11.5% (10.6--12.5)
Sexual Orientation				
Heterosexual/ Straight	2919	82.8% (81.4--84.3)	3886	79.3% (77.7--80.8)
LGBT	203	5.6% (4.7--6.5)	280	6.0% (5.1--7.0)
Unspecified	455	11.6% (10.3--12.8)	630	14.7% (13.3--16.1)
Region				
Northeast	580	17.6% (15.9--19.3)	824	16.7% (15.3--18.1)
Midwest	685	21.4% (19.8--23.1)	954	20.6% (19.1--22.0)
South	1068	36.7% (34.7--38.7)	1610	37.9% (36.2--39.7)
West	943	24.2% (22.5--25.9)	1291	24.8% (23.3--26.4)

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Hookah Use among adults, aged 18-24 years---National Adult Tobacco Survey, 2012-2013 vs. 2013-2014

Socio-demographic Characteristic	2012-2013		2013-2014	
	n	% (95%CI)	n	% (95%CI)
Hookah Use				
Ever Use	1351	36.4% (34.5--38.3)	2001	40.4% (38.6--42.1)
Never Used	2222	63.6% (61.7--65.5)	2790	59.6% (57.9--61.4)
Current Use	676	18.3% (16.7--19.8)	1010	20.2% (18.7--21.6)
Types of Other Products				
Exclusive combustible	500	13.4% (12.0--14.7)	495	10.7% (9.6--11.8)
Exclusive non-combustible	96	2.2% (1.7--2.7)	113	2.0% (1.6--2.5)
Exclusive e-cigarette	61	1.7% (1.2--2.2)	225	4.9% (4.2--5.7)
Two or more product types	351	9.3% (8.1--10.4)	563	10.8% (9.7--11.9)
No tobacco use	2554	73.5% (71.7--75.2)	3341	71.6% (70.0--73.2)

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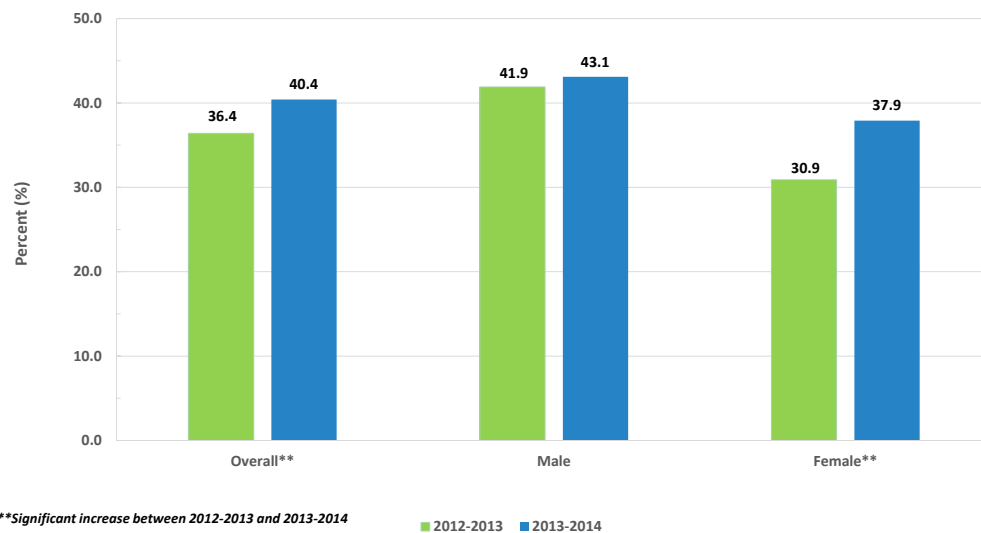
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Ever Hookah Use

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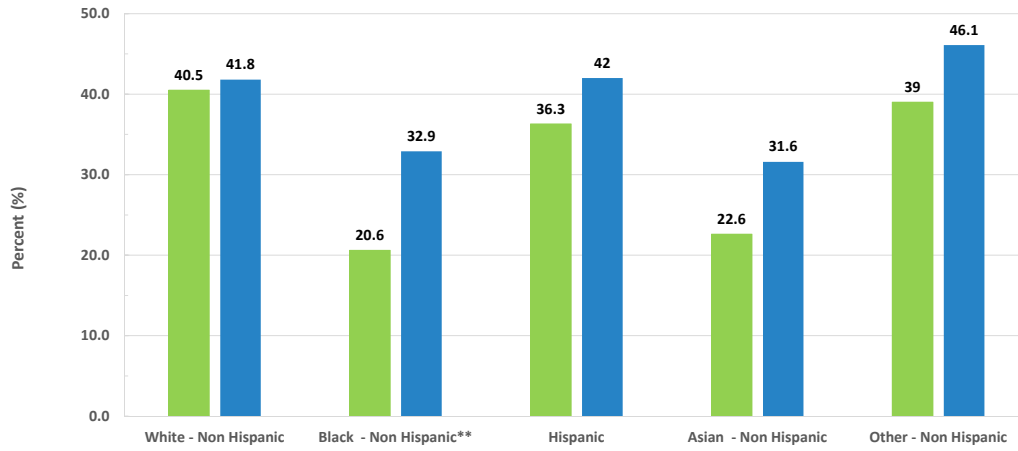
Ever Hookah Use among Young Adults Aged 18-24 years, Overall, and by Sex – U.S., 2012–2013 vs 2013-2014



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Ever Hookah Use among Young Adults Aged 18-24 years by Race/Ethnicity – U.S., 2012–2013 vs 2013-2014



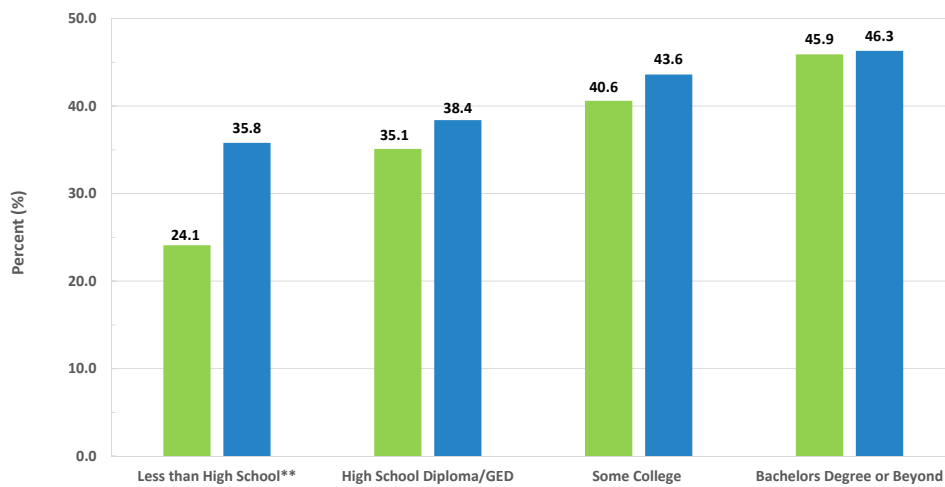
**Significant increase between 2012-2013 and 2013-2014

■ 2012-2013 ■ 2013-2014

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Ever Hookah Use among Young Adults aged 18-24 years by Education – U.S., 2012–2013 vs 2013-2014



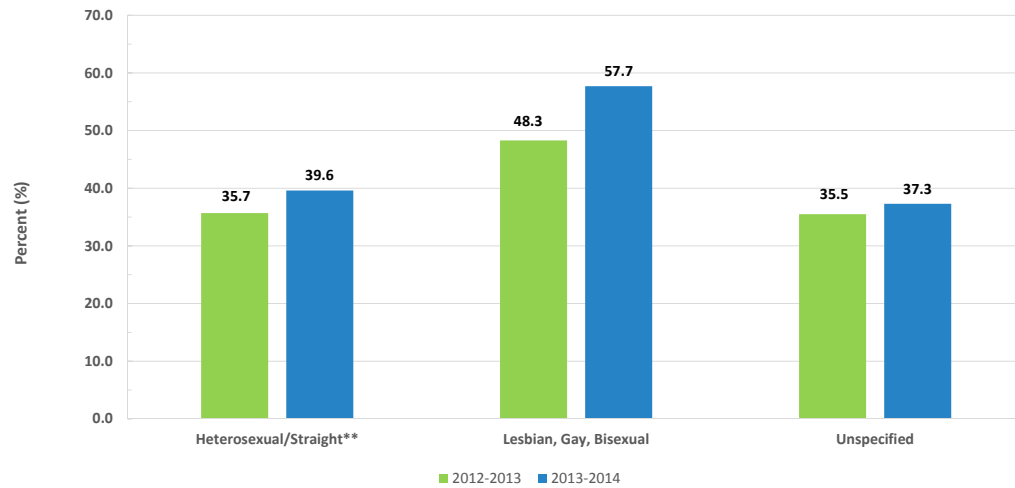
**Significant increase between 2012-2013 and 2013-2014

■ 2012-2013 ■ 2013-2014

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Ever Hookah Use among Young Adults aged 18-24 years by Sexual Orientation – U.S., 2012–2013 vs 2013-2014

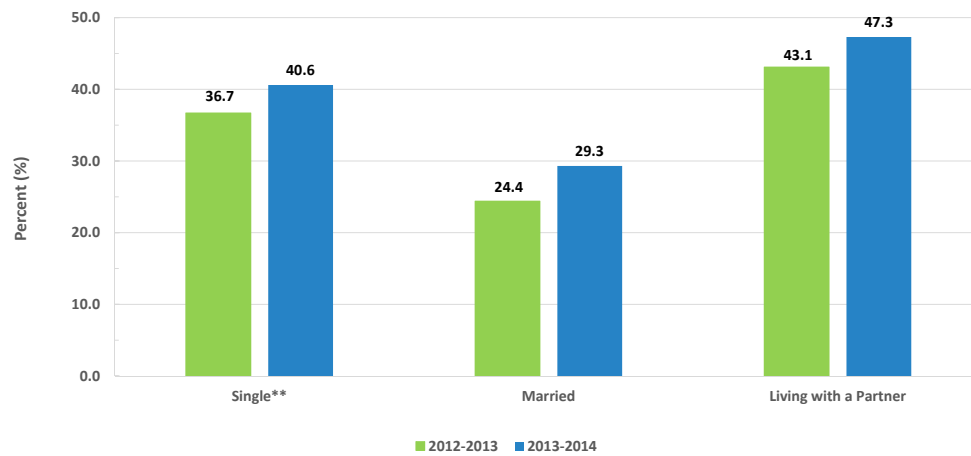


**Significant increase between 2012-2013 and 2013-2014

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Ever Hookah Use among Young Adults aged 18-24 years by Marital Status – U.S., 2012–2013 vs 2013-2014

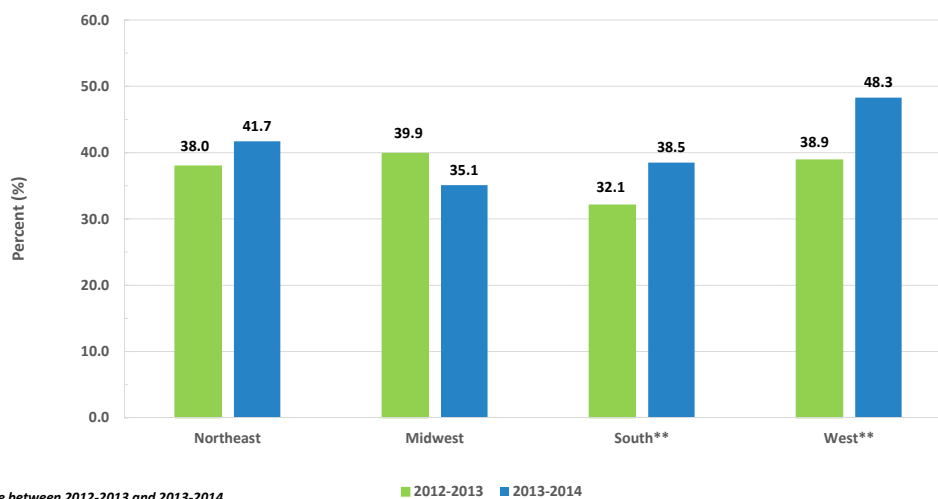


**Significant increase between 2012-2013 and 2013-2014

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Ever Hookah Use among Young Adults aged 18-24 years by U.S. Census Region – U.S., 2012–2013 vs 2013-2014

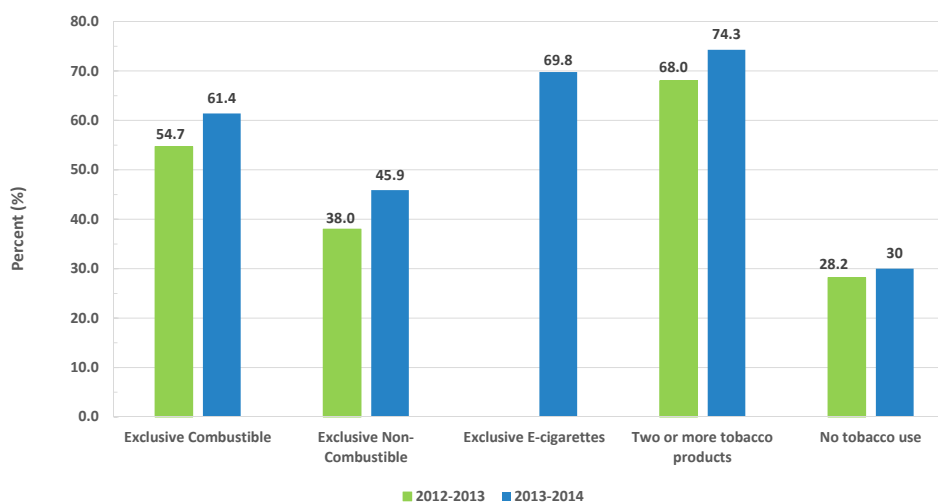


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Source: Centers for Disease Control and Prevention, Food and Drug Administration, 2012-2013 National Adult Tobacco Survey

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Ever Hookah Use among Young Adults aged 18-24 years by Other Product Use– U.S., 2012–2013



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Source: Centers for Disease Control and Prevention, Food and Drug Administration, 2012-2013 National Adult Tobacco Survey

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Logistic Regression of Ever Hookah Use among adults, aged 18-24 years—National Adult Tobacco Survey, 2012-2013 and 2013-2014, combined

Socio-demographic Characteristic	Adjusted OR	95% CI	p value
Sex			
Female	<i>Ref</i>	(1.00-- 1.00)	
Male	1.20	(1.05-- 1.37)	0.01
Race/Ethnicity			
Black non-Hispanics	<i>Ref</i>	(1.00-- 1.00)	
White non-Hispanics	1.55	(1.22-- 1.96)	<0.01
Hispanic	1.71	(1.31-- 2.23)	<0.01
Asian Only	0.87	(0.60-- 1.27)	0.47
Other non-Hispanics	1.48	(1.06-- 2.04)	0.02
Sexual Orientation			
Heterosexual/Straight	<i>Ref</i>	(1.00-- 1.00)	
Lesbian, Gay, bisexual	1.78	(1.37-- 2.31)	<0.01
Unspecified	1.05	(0.83-- 1.34)	0.69

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Logistic Regression of Ever Hookah Use among adults, aged 18-24 years—National Adult Tobacco Survey, 2012-2013 and 2013-2014, combined

Socio-demographic Characteristic	Adjusted OR	95% CI	p-value
Educational Attainment			
High school diploma/GED	<i>Ref</i>	(1.00-- 1.00)	
Less than High School	0.61	(0.48-- 0.79)	<0.01
Some College	1.43	(1.24-- 1.66)	<0.01
Bachelors Degree or Beyond	2.29	(1.92-- 2.74)	<0.01
Marital Status			
Married	<i>Ref</i>	(1.00-- 1.00)	
Single	1.94	(1.54-- 2.45)	<0.01
Living with Partner	1.96	(1.48-- 2.60)	<0.01
Widowed, Divorced, Separated	1.61	(0.97-- 2.66)	0.06
US Census Region			
South	<i>Ref</i>	(1.00-- 1.00)	
Northeast	1.19	(0.97-- 1.45)	0.09
Midwest	1.04	(0.87-- 1.23)	0.69
West	1.47	(1.25-- 1.73)	<0.01
Other Product Use			
No tobacco use	<i>Ref</i>	(1.00-- 1.00)	
Exclusive combustible	0.61	(0.47-- 0.79)	<0.01
Exclusive non-combustible	0.24	(0.16-- 0.36)	<0.01
Exclusive e-cigarette	0.74	(0.50-- 1.09)	0.13
Two or more product types	0.15	(0.12-- 0.19)	<0.01

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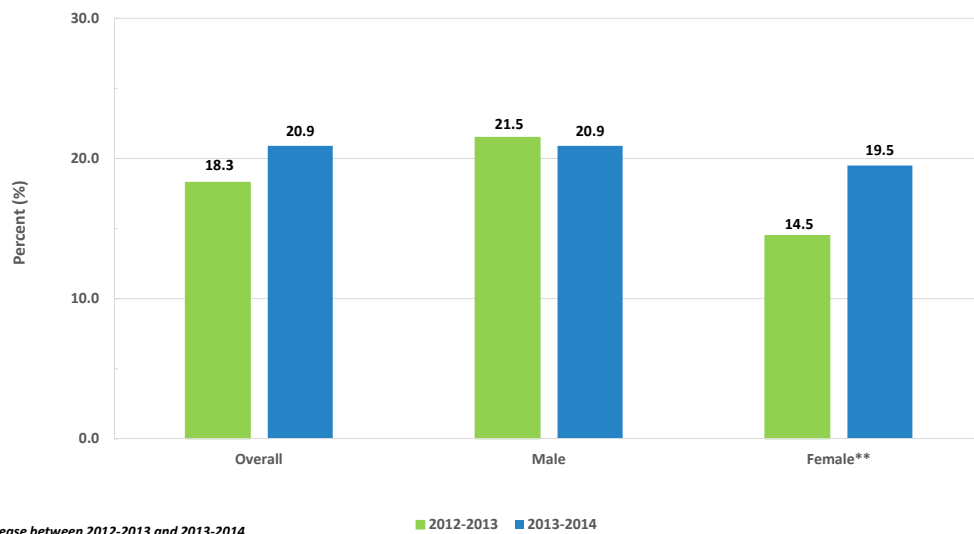
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Current Hookah Use

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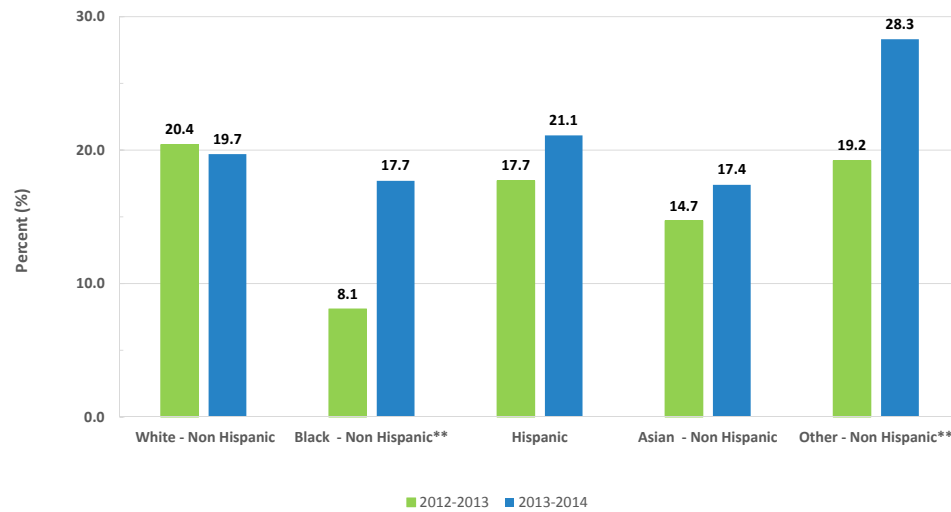
Current Hookah Use among Young Adults aged 18-24 years, **Overall, and by Sex** – U.S., 2012–2013 vs 2013–2014



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Current Hookah Use among Young Adults Aged 18-24 years by Race/Ethnicity – U.S., 2012–2013 vs 2013-2014

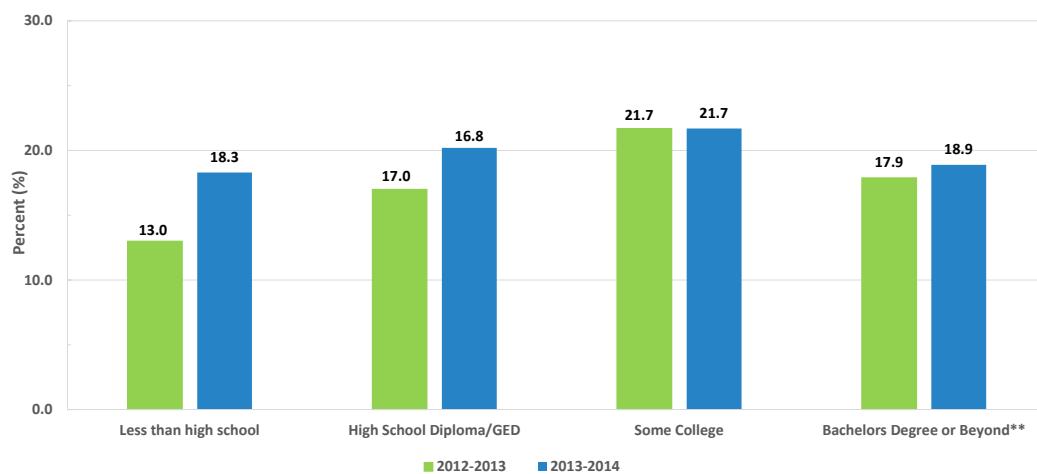


****Significant increase between 2012-2013 and 2013-2014**

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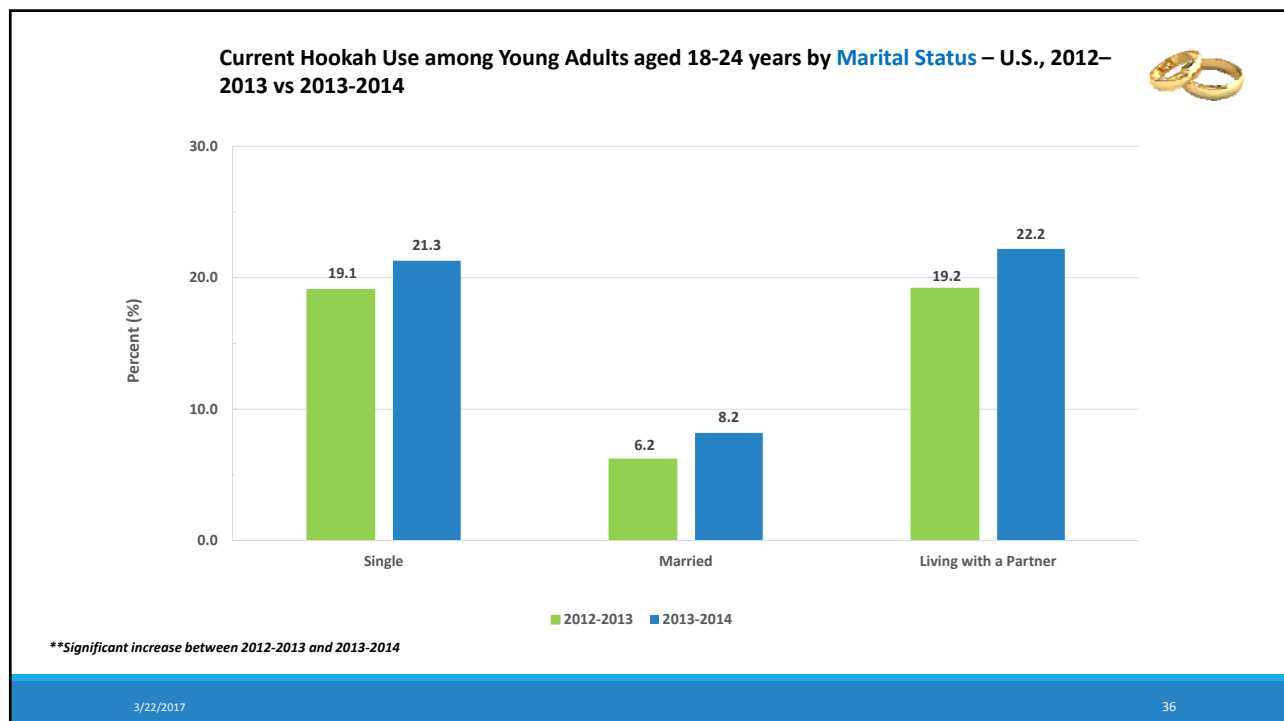
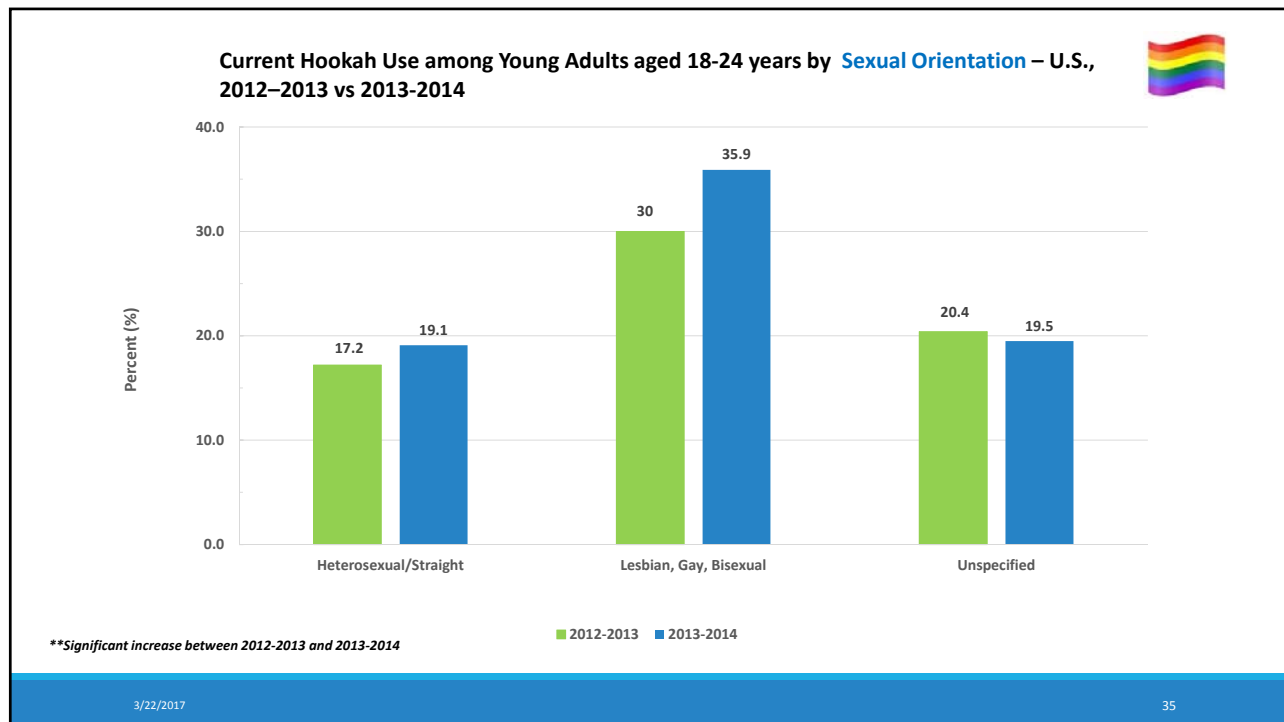
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Current Hookah Use among Young Adults aged 18-24 years by Education – U.S., 2012–2013 vs 2013-2014

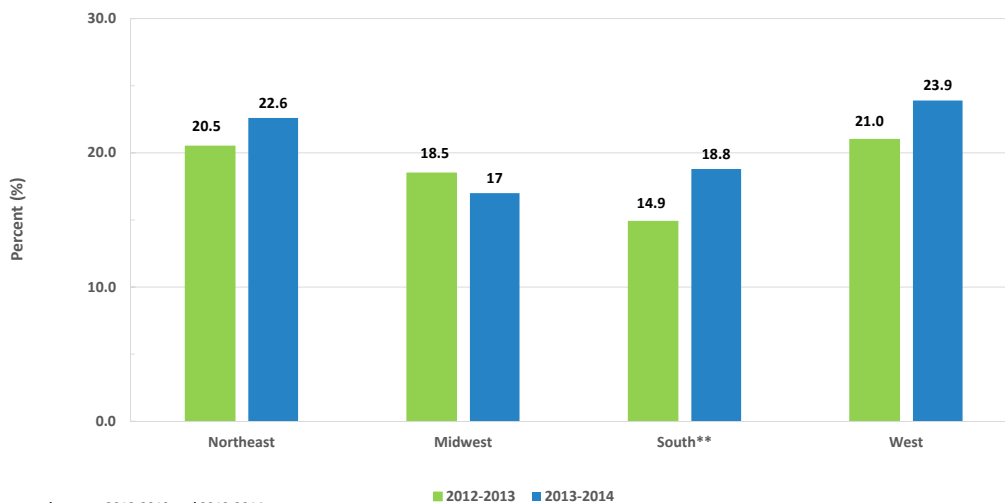


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Current Hookah Use among Young Adults aged 18-24 years by U.S. Census Region – U.S., 2012–2013 vs 2013-2014

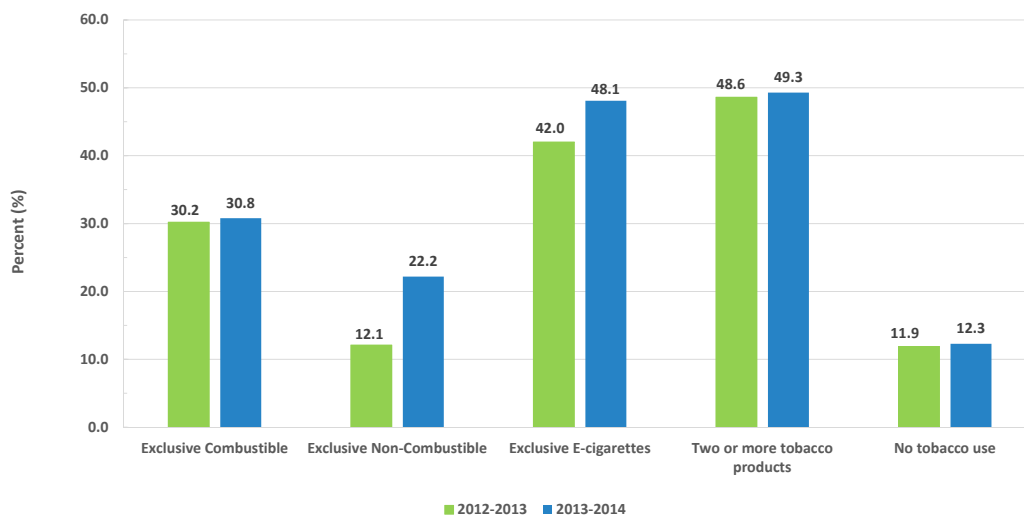


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Source: Centers for Disease Control and Prevention, Food and Drug Administration, 2012-2013 National Adult Tobacco Survey

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Current Hookah Use among Young Adults aged 18-24 years by Other Product Use– U.S., 2012–2013



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Logistic Regression of Current Hookah Use among adults, aged 18-24 years---National Adult Tobacco Survey, 2012-2013 and 2013-2014, combined

Socio-demographic Characteristic	Adjusted OR	95% CI	p value
Sex			
Female	<i>Ref</i>	(1.00-- 1.00)	
Male	1.01	(0.86-- 1.19)	0.86
Race/Ethnicity			
Black non-Hispanics	<i>Ref</i>	(1.00-- 1.00)	
White non-Hispanics	1.32	(0.99-- 1.75)	0.06
Hispanic	1.50	(1.09-- 2.07)	0.01
Asian Only	1.22	(0.78-- 1.92)	0.38
Other non-Hispanics	1.40	(0.96-- 2.05)	0.08
Sexual Orientation			
Heterosexual/Straight	<i>Ref</i>	(1.00-- 1.00)	
Lesbian, Gay, bisexual	2.05	(1.56-- 2.70)	<0.01
Unspecified	1.13	(0.86-- 1.49)	0.36

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Logistic Regression of Current Hookah Use among adults, aged 18-24 years---National Adult Tobacco Survey, 2012-2013 and 2013-2014, combined

Socio-demographic Characteristic	Adjusted OR	95% CI	p value
Educational Attainment			
High school diploma/GED	<i>Ref</i>	(1.00-- 1.00)	
Less than High School	0.73	(0.54-- 0.99)	0.04
Some College	1.41	(1.19-- 1.68)	<0.01
Bachelors Degree or Beyond	1.50	(1.20-- 1.88)	<0.01
Marital Status			
Married	<i>Ref</i>	(1.00-- 1.00)	
Single	3.76	(2.71-- 5.23)	<0.01
Living with Partner	2.74	(1.87-- 3.99)	<0.01
Widowed, Divorced, Separated	2.91	(1.58-- 5.36)	<0.01
US Census Region			
South	<i>Ref</i>	(1.00-- 1.00)	
Northeast	1.32	(1.04-- 1.67)	0.02
Midwest	1.01	(0.82-- 1.25)	0.93
West	1.46	(1.20-- 1.77)	<0.01
Other Product Use			
No tobacco use	<i>Ref</i>	(1.00-- 1.00)	
Exclusive combustible	0.48	(0.37-- 0.62)	<0.01
Exclusive non-combustible	0.19	(0.11-- 0.32)	<0.01
Exclusive e-cigarette	0.74	(0.52-- 1.05)	0.09
Two or more product types	0.13	(0.10-- 0.16)	<0.01

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Summary

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Summary



- Hookah use is common among young adults, with ever use increasing from 2012-2013 to 2013-2014.
- Among young adults, variations in ever and current hookah use exist by sex, race/ethnicity, education, regions, marital status, sexual orientation and other tobacco product use.
- Highest odds for both ever and current hookah users:
 - Hispanics; single; living with a partner; LGB; some college; bachelors degree or beyond; and those living in west

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Limitations

- Self-report survey: Use status not validated by biochemical measures
- Cross-sectional study: can't infer causality
- Small sample sizes for certain socio-demographic groups, estimates less precise or unstable
- Non-response bias may exist due to low response rate

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Future Directions

- Continue surveillance of hookah use among young adults
monitor trends.
- Females
- Other tobacco product use



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Stacy L. Thorne, PhD, MPH, MCHES
Office on Smoking Health
Epidemiology Branch
Phone: 770-488-5366
Email: Sthorne@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)
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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

