Supplemental Table 1: PATH Study Waves 1-3: Numbers of Individuals and Numbers of Observations that Could Contribute to GEE Analyses Using the 'All-Waves' Weights.

Age group‡ in W1, W2, W3	Description	Contributes to adult vs. youth tables for each wave pair in GEE analyses using Waves 1-3		N individuals[1]	N observations[1]
		W1-W2	W2-W3		
AAA	Adults at all three waves	adult	adult	23,670	47,340
YYY	Youth at all three waves	youth	youth	7,595	15,190
YYA	Youth who aged into adults at W3	youth	youth	1,737	3,474
YAA	Youth who aged into adults at W2	youth	adult	1,714	1,714
SYY	Shadow youth who aged into youth at W2	does not contribute	youth	1,947	1,947
SSY	Shadow youth who aged into youth at W3	does not contribute	does not contribute	0	0

Notes:
Abbreviations: W1= Wave 1; W2= Wave 2; W3= Wave 3; GEE = generalized estimating equation
‡Age group key: A = adult; Y = youth; S = shadow youth (i.e. youth ages 9-11)
[1]Unweighted numbers of individuals and number of observations used will vary by outcome and covariates included in a model.
Maximum number of individuals for adult analyses (A + A) = 25,384
Maximum number of observations for adult analyses ((A X 2) + A) = 49,054
Maximum number of individuals for youth analyses (Y + Y + Y+ Y) = 12,993
Maximum number of observations for youth analyses ((Y X 2) + (Y X 2) + Y + Y) = 22,325

Supplemental Table 2: Correlates of Initiating Ever Use Among Never Users (Youth 12-17) at Baseline.

	Ever use at follow-up																								
	Any tobacco				Cigarettes				ENDS				Cigars				Hookah				Smokeless				
Correlates at baseline	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI	
Overall	12.0	(11.4-12.5)	N/A	N/A	4.4	(4.1-4.7)	N/A	N/A	11.4	(10.9-12.0)	N/A	N/A	4.0	(3.7-4.3)	N/A	N/A	3.9	(3.6-4.2)	N/A	N/A	1.9	(1.7-2.1)	N/A	N/A	
DEMOGRAPHIC CHARACTERISTICS																									
Age group																									
12-14	8.3	(7.7-8.9)	--	--	2.8	(2.4-3.1)	--	--	7.2	(6.7-7.8)	--	--	1.4	(1.2-1.7)	--	--	1.5	(1.3-1.8)	--	--	1.3	(1.1-1.5)	--	--	
15-17	16.9	(16.0-17.8)	2.2	(2.0-2.5)***	6.4	(5.9-7.0)	1.8	(1.5-2.1)***	16.6	(15.5-17.6)	1.9	(1.7-2.1)***	6.9	(6.3-7.5)	3.8	(3.0-4.9)***	6.5	(6.0-7.1)	3.5	(2.9-4.2)***	2.5	(2.2-2.9)	1.4	(1.1-1.8)**	
Sex																									
Female	11.9	(11.1-12.7)	--	--	4.3	(3.9-4.7)	--	--	11.5	(10.7-12.4)	--	--	3.2	(2.9-3.6)	--	--	4.1	(3.7-4.7)	--	--	0.9	(0.7-1.2)	--	--	
Male	12.0	(11.3-12.7)	1.0	(0.9-1.1)	4.5	(4.0-5.0)	0.9	(0.8-1.1)	11.3	(10.7-12.1)	1.0	(0.9-1.1)	4.7	(4.3-5.2)	1.6	(1.4-1.9)***	3.6	(3.3-4.0)	0.8	(0.7-0.9)*	2.9	(2.5-3.3)	3.5	(2.6-4.8)***	
Race/ethnicity																									
Non-Hispanic White	12.5	(11.7-13.3)	--	--	5.2	(4.8-5.7)	--	--	11.9	(11.0-12.9)	--	--	4.6	(4.1-5.1)	--	--	3.8	(3.4-4.3)	--	--	2.7	(2.3-3.1)	--	--	
Non-Hispanic Black	10.6	(9.0-12.3)	0.8	(0.7-1.0)*	3.0	(2.3-3.8)	0.5	(0.4-0.7)***	9.6	(8.5-10.9)	0.7	(0.6-0.8)***	4.3	(3.4-5.6)	1.2	(0.8-1.6)	3.6	(2.9-4.3)	1.0	(0.8-1.2)	0.6	(0.4-1.0)	0.2	(0.1-0.3)***	
Non-Hispanic Other (includes two or more races)	9.9	(8.2-11.9)	0.8	(0.6-1.0)*	3.4	(2.6-4.5)	0.6	(0.5-0.9)**	10.3	(8.7-12.2)	0.8	(0.7-1.0)	3.0	(2.1-4.1)	0.8	(0.5-1.1)	3.7	(2.8-4.8)	1.0	(0.7-1.5)	1.0	(0.6-1.6)	0.4	(0.2-0.7)**	
Hispanic	13.0	(12.0-14.2)	1.1	(0.9-1.2)	4.2	(3.7-4.8)	0.8	(0.7-1.0)*	12.6	(11.5-13.7)	1.1	(0.9-1.2)	3.1	(2.6-3.6)	0.7	(0.6-0.9)**	4.3	(3.7-5.0)	1.2	(1.0-1.5)	1.2	(0.8-1.6)	0.4	(0.3-0.6)***	
Sexual orientation (ages 14+)																									
Straight/Heterosexual	15.2	(14.4-16.0)	--	--	5.4	(5.0-5.9)	--	--	14.4	(13.5-15.3)	--	--	5.5	(5.0-6.0)	--	--	5.3	(4.9-5.8)	--	--	2.3	(2.0-2.6)	--	--	
Other (includes gay, lesbian, bisexual, other)	17.7	(14.8-21.1)	1.2	(0.9-1.6)	10.2	(7.7-13.4)	1.9	(1.3-2.6)***	19.9	(17.0-23.2)	1.3	(1.0-1.6)	8.4	(6.7-10.5)	1.6	(1.2-2.1)**	7.1	(5.3-9.4)	1.0	(0.7-1.5)	2.1	(1.3-3.3)	0.8	(0.5-1.4)	
TOBACCO USE CORRELATES																									
Use of cigarettes																									
Never use	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	(9.1-10.0)	--	--	3.0	(2.7-3.3)	--	--	3.0	(2.7-3.3)	--	--	1.3	(1.2-1.6)	--	--	
Ever use	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	43.1	(38.9-47.4)	3.4	(2.8-4.1)***	15.7	(13.9-17.7)	2.3	(1.8-3.0)***	12.7	(11.1-14.5)	1.7	(1.2-2.4)**	6.9	(5.8-8.3)	3.2	(2.0-5.1)***	
Use of ENDS																									
Never use	N/A	N/A	N/A	N/A	3.4	(3.1-3.7)	--	--	N/A	N/A	N/A	N/A	2.9	(2.6-3.2)	--	--	3.0	(2.7-3.2)	--	--	1.4	(1.2-1.6)	--	--	
Ever use	N/A	N/A	N/A	N/A	17.2	(15.1-19.6)	3.9	(3.0-4.9)***	N/A	N/A	N/A	N/A	13.9	(12.2-15.9)	2.4	(1.9-3.1)***	11.8	(10.3-13.4)	2.5	(2.0-3.3)***	5.8	(4.8-6.9)	2.0	(1.4-3.1)***	
Use of cigars																									
Never use	N/A	N/A	N/A	N/A	4.1	(3.8-4.4)	--	--	10.6	(10.0-11.1)	--	--	N/A	N/A	N/A	N/A	3.3	(3.0-3.6)	--	--	1.6	(1.4-1.9)	--	--	
Ever use	N/A	N/A	N/A	N/A	21.9	(16.9-27.9)	2.3	(1.6-3.5)***	50.6	(44.7-56.4)	2.7	(2.1-3.5)***	N/A	N/A	N/A	N/A	17.3	(14.7-20.3)	2.1	(1.6-2.9)***	7.2	(5.5-9.4)	1.3	(0.8-2.1)	
Use of hookah																									
Never use	N/A	N/A	N/A	N/A	4.0	(3.7-4.3)	--	--	10.2	(9.7-10.8)	--	--	3.4	(3.1-3.8)	--	--	N/A	N/A	N/A	N/A	1.7	(1.5-1.9)	--	--	
Ever use	N/A	N/A	N/A	N/A	16.9	(13.9-20.4)	1.7	(1.3-2.3)***	54.2	(49.6-58.8)	4.7	(3.7-6.0)***	15.7	(12.9-19.0)	1.8	(1.4-2.5)***	N/A	N/A	N/A	N/A	5.1	(3.9-6.6)	1.1	(0.7-1.7)	
Use of smokeless																									
Never use	N/A	N/A	N/A	N/A	4.1	(3.8-4.5)	--	--	10.9	(10.4-11.5)	--	--	3.6	(3.3-3.9)	--	--	3.7	(3.4-4.0)	--	--	N/A	N/A	N/A	N/A	
Ever use	N/A	N/A	N/A	N/A	19.9	(15.4-25.4)	2.3	(1.5-3.7)***	36.6	(31.2-42.4)	1.8	(1.3-2.3)***	18.9	(15.6-22.6)	2.1	(1.6-2.7)***	10.2	(7.8-13.3)	0.9	(0.6-1.3)	N/A	N/A	N/A	N/A	

Notes:
Abbreviations: P12M = past 12-month; ENDS = electronic nicotine delivery system; aOR = adjusted odds ratio; CI = confidence interval; N/A = not applicable

The percentages and odds ratios in the table are based on weighted data.
Denominator N (unweighted number of observations) for aOR in "Any tobacco" = 16,009 (without sexual orientation), 9,548 (with sexual orientation)
Denominator N (unweighted number of observations) for aOR in "Cigarettes" = 18,188 (without sexual orientation), 11,340 (with sexual orientation)
Denominator N (unweighted number of observations) for aOR in "ENDS" = 17,835 (without sexual orientation), 11,033 (with sexual orientation)
Denominator N (unweighted number of observations) for aOR in "Cigars" = 19,297 (without sexual orientation), 12,250 (with sexual orientation)
Denominator N (unweighted number of observations) for aOR in "Hookah" = 19,344 (without sexual orientation), 12,277 (with sexual orientation)
Denominator N (unweighted number of observations) for aOR in "Smokeless" = 19,666 (without sexual orientation), 12,713 (with sexual orientation)

Tobacco product types were categorized into five groups: cigarettes, ENDS (e-cigarettes at Wave 1, and e-cigarettes, e-cigars, e-pipes, and e-hookah at Waves 2 & 3), cigars (i.e., traditional cigars, cigarillos, filtered cigars), hookah, and smokeless tobacco (i.e., loose snus, moist snuff, dip, spit, chewing tobacco, and snus pouches).

For each of the five tobacco products, and for any tobacco product, use is defined with respect to the given tobacco product/any tobacco product:
Never use is defined as never having used the product, even 1 or 2 times.
Ever use is defined as using the product, even 1 or 2 times (in Wave 2 and beyond it is asked in reference to the past 12 months).

The outcome 'initiating ever use' is defined as ever use at follow-up (vs. never use at follow-up) among never users at baseline.
Since never use at baseline is defined with respect to each tobacco product, never/ever use of 'other' tobacco products at baseline are considered as correlates of initiating P12M use of the given tobacco product at follow-up.

GEE logistic regression analyses were used to assess correlates of initiating P12M use at follow-up among never users at baseline over a one-year period of time (i.e., Wave 1-Wave 2 and Wave 2-Wave 3), including up to two change data points per individual and statistically controlling for the correlation among observations from the same individuals.
All correlates reflect baseline measurement for each wave pair (e.g., when evaluating change between Wave 1 and Wave 2, the age correlate reflects a person's age at Wave 1, and when evaluating change between Wave 2 and Wave 3, the age correlate reflects a person's age at Wave 2).
Data consist of those who are youth at all three waves, youth who age into the adult cohort at Wave 3, shadow youth who age into the youth cohort at Wave 2, and Wave 1-Wave 2 data only from youth who age into the adult cohort at Wave 2 (their Wave 2-Wave 3 data is included in adult tables).

[1]Analyses adjusted for age group, sex, race/ethnicity, each tobacco use correlate, and wave. Sexual orientation (asked only of those 14 and older) was run separately and not included as a covariate in the other aORs.
* p <0.05
** p <0.01
*** p <0.001

Supplemental Table 3: Correlates of Initiating Ever Use Among Never Users (Adults 18+) at Baseline.

Correlates at baseline	Any tobacco				Cigarettes				ENDS				Cigars				Hookah				Smokeless			
	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI	%	95% CI	aOR[1]	95% CI
Overall	3.8	(3.3-4.3)	N/A	N/A	2.1	(1.8-2.4)	N/A	N/A	4.8	(4.5-5.0)	N/A	N/A	2.3	(2.0-2.6)	N/A	N/A	1.3	(1.2-1.5)	N/A	N/A	0.5	(0.4-0.6)	N/A	N/A
DEMOGRAPHIC CHARACTERISTICS																								
Age group																								
18-24	13.2	(11.6-15.1)	--	--	6.0	(5.3-6.9)	--	--	16.7	(15.6-17.9)	--	--	6.6	(6.0-7.4)	--	--	8.0	(7.1-8.9)	--	--	1.4	(1.2-1.6)	--	--
25-39	4.4	(3.4-5.7)	0.3	(0.2-0.4)***	2.2	(1.6-2.9)	0.5	(0.3-0.7)***	6.8	(6.2-7.5)	0.3	(0.3-0.4)***	3.1	(2.5-3.9)	0.5	(0.3-0.6)***	1.9	(1.6-2.4)	0.2	(0.2-0.3)***	0.6	(0.5-0.8)	0.5	(0.4-0.7)***
40-54	#	#	#	#	0.7	(0.4-1.2)	0.1	(0.1-0.2)***	3.4	(3.0-3.9)	0.2	(0.1-0.2)***	1.7	(1.3-2.2)	0.2	(0.2-0.3)***	0.5	(0.4-0.7)	0.1	(0.0-0.1)***	#	#	#	#
55+	#	#	#	#	#	#	#	#	1.6	(1.3-1.8)	0.1	(0.1-0.1)***	0.8	(0.5-1.1)	0.1	(0.1-0.1)***	0.2	(0.1-0.3)	0.0	(0.0-0.0)***	0.2	(0.1-0.3)	0.2	(0.1-0.4)***
Sex																								
Female	2.9	(2.4-3.6)	--	--	1.6	(1.3-2.0)	--	--	4.2	(3.9-4.5)	--	--	1.6	(1.4-1.8)	--	--	1.1	(0.9-1.2)	--	--	0.3	(0.2-0.3)	--	--
Male	5.3	(4.5-6.2)	1.5	(1.2-2.0)**	2.8	(2.3-3.3)	1.4	(1.0-1.9)*	5.4	(5.0-5.8)	0.9	(0.8-1.1)	3.6	(3.1-4.3)	2.2	(1.8-2.8)***	1.6	(1.4-1.9)	1.3	(1.0-1.6)*	0.8	(0.7-1.0)	2.8	(2.0-3.9)***
Race/ethnicity																								
Non-Hispanic White	3.0	(2.4-3.6)	--	--	1.6	(1.3-1.9)	--	--	4.1	(3.8-4.4)	--	--	1.9	(1.6-2.2)	--	--	0.9	(0.8-1.1)	--	--	0.4	(0.3-0.5)	--	--
Non-Hispanic Black	5.7	(4.6-7.1)	1.8	(1.3-2.5)***	2.4	(1.8-3.1)	1.2	(0.8-1.7)	7.0	(6.3-7.9)	1.3	(1.1-1.5)**	3.9	(3.2-4.7)	2.0	(1.5-2.5)***	2.9	(2.4-3.3)	2.7	(2.1-3.5)***	0.5	(0.3-0.8)	0.6	(0.3-1.2)
Non-Hispanic Other (includes two or more races)	2.9	(1.8-4.5)	0.9	(0.5-1.5)	1.5	(0.9-2.5)	1.1	(0.5-2.1)	4.6	(3.7-5.6)	1.2	(0.9-1.5)	2.1	(1.4-3.1)	0.8	(0.5-1.4)	1.6	(1.1-2.2)	1.4	(1.0-2.1)	#	#	#	#
Hispanic	4.8	(3.6-6.3)	1.4	(1.0-2.1)	3.4	(2.6-4.5)	1.8	(1.2-2.7)**	6.0	(5.4-6.7)	1.0	(0.9-1.2)	2.5	(2.0-3.1)	0.9	(0.6-1.2)	2.0	(1.6-2.4)	1.8	(1.3-2.4)***	0.5	(0.4-0.7)	0.7	(0.4-1.0)*
Sexual orientation																								
Straight/Heterosexual	3.7	(3.2-4.3)	--	--	2.0	(1.7-2.3)	--	--	4.6	(4.4-4.9)	--	--	2.2	(2.0-2.5)	--	--	1.2	(1.1-1.4)	--	--	0.5	(0.4-0.5)	--	--
Gay or Lesbian	#	#	#	#	#	#	#	#	7.8	(5.6-10.6)	1.1	(0.8-1.6)	2.9	(1.6-5.2)	0.5	(0.3-1.1)	2.9	(1.7-4.7)	1.4	(0.8-2.5)	#	#	#	#
Bisexual	#	#	#	#	5.8	(3.6-9.4)	2.0	(1.2-3.6)*	11.7	(9.4-14.6)	1.5	(1.2-1.9)**	3.2	(2.0-5.0)	0.7	(0.5-1.1)	4.5	(2.8-7.4)	1.9	(1.0-3.6)	#	#	#	#
Something else	#	#	#	#	#	#	#	#	6.2	(4.3-8.8)	1.1	(0.7-1.9)	#	#	#	#	#	#	#	#	#	#	#	#
Educational attainment																								
Less than high school or some high school (no diploma) or GED	4.1	(3.0-5.6)	--	--	3.4	(2.4-4.8)	--	--	5.6	(5.0-6.2)	--	--	2.6	(2.2-3.1)	--	--	1.5	(1.2-1.8)	--	--	0.8	(0.6-1.0)	--	--
High school graduate—diploma	5.3	(4.3-6.6)	1.2	(0.8-1.8)	2.7	(2.1-3.4)	0.7	(0.5-1.1)	5.5	(4.9-6.0)	0.9	(0.8-1.1)	2.7	(2.2-3.3)	1.1	(0.8-1.4)	1.7	(1.4-2.0)	1.2	(0.9-1.5)	0.5	(0.4-0.7)	0.8	(0.5-1.2)
Some college (no degree) or associate degree	4.0	(3.2-5.0)	0.8	(0.5-1.3)	2.1	(1.7-2.7)	0.5	(0.3-0.8)**	6.2	(5.7-6.7)	0.8	(0.7-1.0)*	2.4	(2.1-2.8)	1.0	(0.7-1.3)	1.5	(1.3-1.8)	1.1	(0.8-1.5)	0.5	(0.4-0.6)	0.6	(0.4-1.1)
Bachelor's degree or more	2.0	(1.3-3.1)	0.7	(0.4-1.3)	0.9	(0.6-1.4)	0.4	(0.2-0.7)**	2.5	(2.2-2.9)	0.4	(0.3-0.5)***	1.4	(1.1-1.9)	0.8	(0.6-1.3)	0.7	(0.5-1.0)	1.0	(0.7-1.5)	0.2	(0.1-0.4)	0.4	(0.2-0.9)*
Annual household income																								
< $25,000	4.9	(4.0-6.0)	--	--	3.3	(2.6-4.1)	--	--	6.9	(6.4-7.4)	--	--	3.3	(2.9-3.7)	--	--	2.1	(1.8-2.4)	--	--	0.7	(0.6-0.9)	--	--
$25,000-$74,999	3.8	(2.9-4.8)	1.2	(0.8-1.6)	1.7	(1.3-2.2)	0.7	(0.5-1.0)	4.6	(4.2-5.0)	0.9	(0.7-1.0)*	1.9	(1.5-2.3)	0.8	(0.6-1.0)*	1.1	(0.9-1.3)	0.8	(0.6-1.1)	0.4	(0.3-0.6)	0.8	(0.5-1.2)
≥ $75,000	2.2	(1.6-3.1)	0.8	(0.5-1.2)	1.3	(1.0-1.9)	0.7	(0.4-1.1)	3.3	(2.8-3.7)	0.7	(0.6-0.8)***	1.6	(1.2-2.0)	0.7	(0.5-1.0)	0.9	(0.7-1.2)	1.0	(0.7-1.4)	0.3	(0.2-0.4)	0.6	(0.4-0.9)*
Not reported	4.2	(3.0-5.8)	1.1	(0.7-1.6)	1.8	(1.1-3.0)	0.6	(0.4-0.9)*	3.8	(3.1-4.6)	0.8	(0.6-1.0)*	2.2	(1.5-3.2)	0.8	(0.5-1.3)	1.2	(0.8-1.7)	0.9	(0.6-1.2)	0.4	(0.2-0.8)	0.5	(0.3-1.0)
TOBACCO USE CORRELATES																								
Use of cigarettes																								
Never use	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5	(2.2-2.9)	--	--	1.5	(1.2-1.8)	--	--	1.4	(1.2-1.7)	--	--	0.3	(0.2-0.5)	--	--
Ever use	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.2	(5.9-6.6)	2.9	(2.5-3.4)***	3.1	(2.7-3.5)	2.9	(2.3-3.7)***	1.3	(1.1-1.4)	1.0	(0.7-1.4)	0.6	(0.5-0.7)	1.5	(0.9-2.4)
Use of ENDS																								
Never use	N/A	N/A	N/A	N/A	1.7	(1.4-2.1)	--	--	N/A	N/A	N/A	N/A	1.8	(1.6-2.1)	--	--	1.0	(0.9-1.1)	--	--	0.3	(0.2-0.4)	--	--
Ever use	N/A	N/A	N/A	N/A	13.3	(11.0-15.9)	2.9	(2.0-4.0)***	N/A	N/A	N/A	N/A	6.7	(5.9-7.5)	1.7	(1.4-2.1)***	3.4	(3.0-3.9)	2.1	(1.6-2.7)***	1.4	(1.2-1.6)	2.5	(1.8-3.4)***
Use of cigars																								
Never use	N/A	N/A	N/A	N/A	1.8	(1.5-2.1)	--	--	2.9	(2.6-3.1)			N/A	N/A	N/A	N/A	1.0	(0.9-1.2)	--	--	0.3	(0.2-0.4)	--	--
Ever use	N/A	N/A	N/A	N/A	5.4	(4.3-6.7)	2.1	(1.4-3.0)***	8.8	(8.3-9.4)	2.2	(1.9-2.5)***	N/A	N/A	N/A	N/A	2.1	(1.8-2.3)	2.2	(1.6-3.0)***	0.9	(0.7-1.0)	1.2	(0.8-1.7)
Use of hookah																								
Never use	N/A	N/A	N/A	N/A	1.7	(1.4-2.1)	--	--	3.3	(3.1-3.5)	--	--	1.9	(1.6-2.1)	--	--	N/A	N/A	N/A	N/A	0.3	(0.3-0.4)	--	--
Ever use	N/A	N/A	N/A	N/A	6.9	(5.6-8.4)	1.2	(0.8-1.7)	18.3	(17.2-19.5)	2.8	(2.4-3.1)***	7.8	(6.9-8.8)	1.8	(1.5-2.2)***	N/A	N/A	N/A	N/A	1.3	(1.1-1.6)	1.5	(1.0-2.2)
Use of smokeless																								
Never use	N/A	N/A	N/A	N/A	2.0	(1.7-2.4)	--	--	4.4	(4.1-4.6)	--	--	2.1	(1.9-2.4)	--	--	1.3	(1.2-1.5)	--	--	N/A	N/A	N/A	N/A
Ever use	N/A	N/A	N/A	N/A	4.0	(2.6-6.0)	1.8	(1.1-2.9)*	7.6	(6.8-8.5)	1.2	(1.0-1.4)	5.2	(4.0-6.8)	1.2	(0.9-1.7)	1.5	(1.2-1.9)	0.9	(0.7-1.2)	N/A	N/A	N/A	N/A

Notes:
Abbreviations: P30D = past 30-day; P12M = past 12-month; ENDS = electronic nicotine delivery system; aOR = adjusted odds ratio; CI = confidence interval; N/A = not applicable

The percentages and odds ratios in the table are based on weighted data.
Overall unweighted number of individuals contributing to the table = 25,384
Denominator N (unweighted number of observations) for aOR in "Any tobacco" = 6,901
Denominator N (unweighted number of observations) for aOR in "Cigarettes" = 10,589
Denominator N (unweighted number of observations) for aOR in "ENDS" = 27,243
Denominator N (unweighted number of observations) for aOR in "Cigars" = 20,445
Denominator N (unweighted number of observations) for aOR in "Hookah" = 30,429
Denominator N (unweighted number of observations) for aOR in "Smokeless" = 35,667

Tobacco product types were categorized into five groups: cigarettes, ENDS (e-cigarettes at Wave 1, and e-cigarettes, e-cigars, e-pipes, and e-hookah at Waves 2 & 3), cigars (i.e., traditional cigars, cigarillos, filtered cigars), hookah, and smokeless tobacco (i.e., loose snus, moist snuff, dip, spit, chewing tobacco, and snus pouches).

For each of the five tobacco products, and for any tobacco product, use is defined with respect to the given tobacco product/any tobacco product:
Never use is defined as never having used the product, even 1 or 2 times.
Ever use is defined as using the product, even 1 or 2 times (in Wave 2 and beyond it is asked in reference to the past 12 months).

The outcome 'initiating ever use' is defined as ever use at follow-up (vs. never use at follow-up) among never users at baseline.
Since never use at baseline is defined with respect to each tobacco product, never/ever use of 'other' tobacco products at baseline are considered as correlates of initiating P12M use of the given tobacco product at follow-up.

GEE logistic regression analyses were used to assess correlates of initiating P12M use at follow-up among never users at baseline over a one-year period of time (i.e., Wave 1-Wave 2 and Wave 2-Wave 3), including up to two change data points per individual and statistically controlling for the correlation among observations from the same individuals.

All correlates reflect baseline measurement for each wave pair (e.g., when evaluating change between Wave 1 & Wave 2, the age correlate reflects a person's age at Wave 1, and when evaluating change between Wave 2 & Wave 3, the age correlate reflects a person's age at Wave 2).

[1]Analyses adjusted for age group, sex, sexual orientation, race/ethnicity, each tobacco use correlate, educational attainment, income, and wave.

\# Estimates with RSE >30 or denominator < 50 are suppressed.

* p <0.05

** p <0.01

*** p <0.001

```
/*******************************************************************************
* PATH_GEE_MACRO_CORRELATESPAPERS_12072018.SAS                               *
*                                                                            *
* THIS SAS MACRO WAS CREATED FOR PATH CORRELATES PAPERS, TO                  *
*  1. RUN GENERALIZED ESTIMATING EQUATIONS (GEE) MODELS WITH BINARY RESPONSE/OUTCOME VARIABLES AND    *
*    PREDICTORS, USING FULL-SAMPLE AND REPLICATE WEIGHTS (100 HERE).         *
*    (AUTHOR NOTES: THIS IS A QCED TEMPLATE; THIS MACRO CAN BE MODIFIED TO RUN FOR OTHER TYPES OF     *
*    RESPONSE VARIABLES BY SPECIFYING APPROPRIATE DISTRIBUTION AND LINK FUNCTION)                     *
*  2.  COMPUTE VARIANCES USING THE BALANCED REPEATED REPLICATION (BRR) METHOD WITH FAY'S ADJUSTMENT (0.3).*
*  3.  COMPUTE TEST STATISTICS, P VALUES, AND 95% CONFIDENCE LIMITS.         *
*  4.  OUTPUT GEE ODDS RATIO POINT ESTIMATES, 95% CONFIDENCE LIMITS, AND P VALUES, LABELLED WITH RESPONSE *
*    AND PREDICTOR VARIABLE NAMES AND EFFECT LEVELS (IF CATEGORICAL PREDICTORS).                      *
*                                                                            *
* WHO: CO-AUTHOR OF PATH CORRELATES PAPERS                                   *
* WHEN: 1/23/2018                                                            *
* 12/7/2018: CO-AUTHOR MODIFIED COMMENTS AND FORMATS FOR JOURNAL SUBMISSION  *
*******************************************************************************/

*LIBNAME IN '~\PATH\CORRELATES_PAPERS\ANALYSIS\DATA';


TITLE 'PROJECT PATH: MULTI-WAVE DERIVED DATASETS (FINAL DRAFT)';


OPTIONS NOCENTER NOFMTERR LS=155 PS=87;

%MACRO MAC_GEE0(VAR=, COV=);
%LET WHERE= EVR_&VAR = 0 AND EVR_&VAR._FUP IN (0,1) AND WAVE IN (1,2) AND
      COVVAR >= 0
      ;

*NON-MISSING OUTCOME AND THE COVARIATES;
DATA D2; SET D0; WHERE &WHERE; RUN;


TITLE2 "GENMOD (GEE) MACRO: MODELING NEW EVER USE OF &VAR AMONG NEVER USERS";
TITLE3 "GENMOD (GEE) MODELING: MAIN-EFFECT OF WAVE AND &COV (FULL-SAMPLE WEIGHTED)";
PROC GENMOD DATA=D2;
CLASS PID WAVE (REF='1')
 /PARAM=REF;
 MODEL EVR_&VAR._FUP (EVENT='1') = WAVE &COV/DIST = BIN LINK = LOGIT;
 REPEATED SUBJECT = PID/ TYPE = UN COVB CORRW;
 ODS OUTPUT GEEEMPPEST=_EST ;
 WEIGHT WGT;
RUN;
DATA EST0; SET _EST;
```

```sas
 LENGTH OUTCOME $20;
 OUTCOME="&VAR";
 WHERE PARM^="INTERCEPT";
 OBS=_N_;
RUN;
PROC SORT DATA=EST0;
 BY OBS;
RUN;
DATA EST; SET EST0;
 VAR=0;
RUN;
%MEND;


%MACRO MAC_GEE1(VAR=, COV=, N=);
%DO I=1 %TO &N;
TITLE3 "GENMOD (GEE) MODELING: MAIN-EFFECT OF WAVE AND &COV (REPLICATE WEIGHT # &I )";
PROC GENMOD DATA=D2;
CLASS PID WAVE (REF='1')
 /PARAM=REF;
 MODEL EVR_&VAR._FUP (EVENT='1') = WAVE &COV/DIST = BIN LINK = LOGIT;
 REPEATED SUBJECT = PID/ TYPE = UN COVB CORRW;
 ODS OUTPUT GEEEMPPEST=_EST_&I;
 WEIGHT WGT&I;
RUN;
DATA EST_&I; SET _EST_&I;
 LENGTH OUTCOME $20;
 OUTCOME="&VAR";
 WHERE PARM^="INTERCEPT";
 OBS=_N_;
 RENAME ESTIMATE=EST_&I;
RUN;
PROC SORT DATA=EST_&I;
 BY OBS;
RUN;
DATA EST;  MERGE EST EST_&I(KEEP=OBS EST_&I); BY OBS;
 VAR_&I=(EST_&I-ESTIMATE)**2;
 VAR=VAR+VAR_&I;
RUN;
%END;
%MEND;


%MAC_GEE0(VAR=OUTCOMEVAR, COV=COVVAR);
%MAC_GEE1(VAR=OUTCOMEVAR, COV=COVVAR, N=100);
```

```sas
DATA EST1; SET EST;
 SE_BRR=SQRT(VAR*0.01); *1/100;
 SE_BRRFAY=SQRT(VAR*0.020408); *1/(100*(1-0.3)^2);
 TVALUE_BRR=ESTIMATE/SE_BRR;
 TVALUE_BRRFAY=ESTIMATE/SE_BRRFAY;
 PVALUE_BRR=(1-PROBT(ABS(TVALUE_BRR),100))*2;
 PVALUE_BRRFAY=(1-PROBT(ABS(TVALUE_BRRFAY),100))*2;
 PVALUE_QC1984=(1-PROBT(ABS(1.984),100))*2;
 RENAME
  Z=WGT0_ZVALUE
  PROBZ=WGT0_PVALUE
  PARM=VARIABLE
  LEVEL1=EFFECT;
RUN;

DATA EST2; SET EST1;
 ODDSRATIOEST=EXP(ESTIMATE);
 LOWERCL=EXP(ESTIMATE-1.984*SE_BRRFAY);
 UPPERCL=EXP(ESTIMATE+1.984*SE_BRRFAY);
  RENAME PVALUE_BRRFAY=PVALUE;
RUN;


TITLE2 'GEE (ADJUSTED): MODELING INITIATION- NEW NEW EVER USE AMONG NEVER USERS';
TITLE3 "GENMOD (GEE) MACRO PRODUCED BRR SES AND TEST STATS (WITH FAY ADJUSTMENT), OUTPUT GENERATED ON &JOBDATE";

PROC PRINT DATA=EST2;
 VAR OUTCOME VARIABLE EFFECT OD: LOWER: UPPER: PVALUE;
RUN;
```