

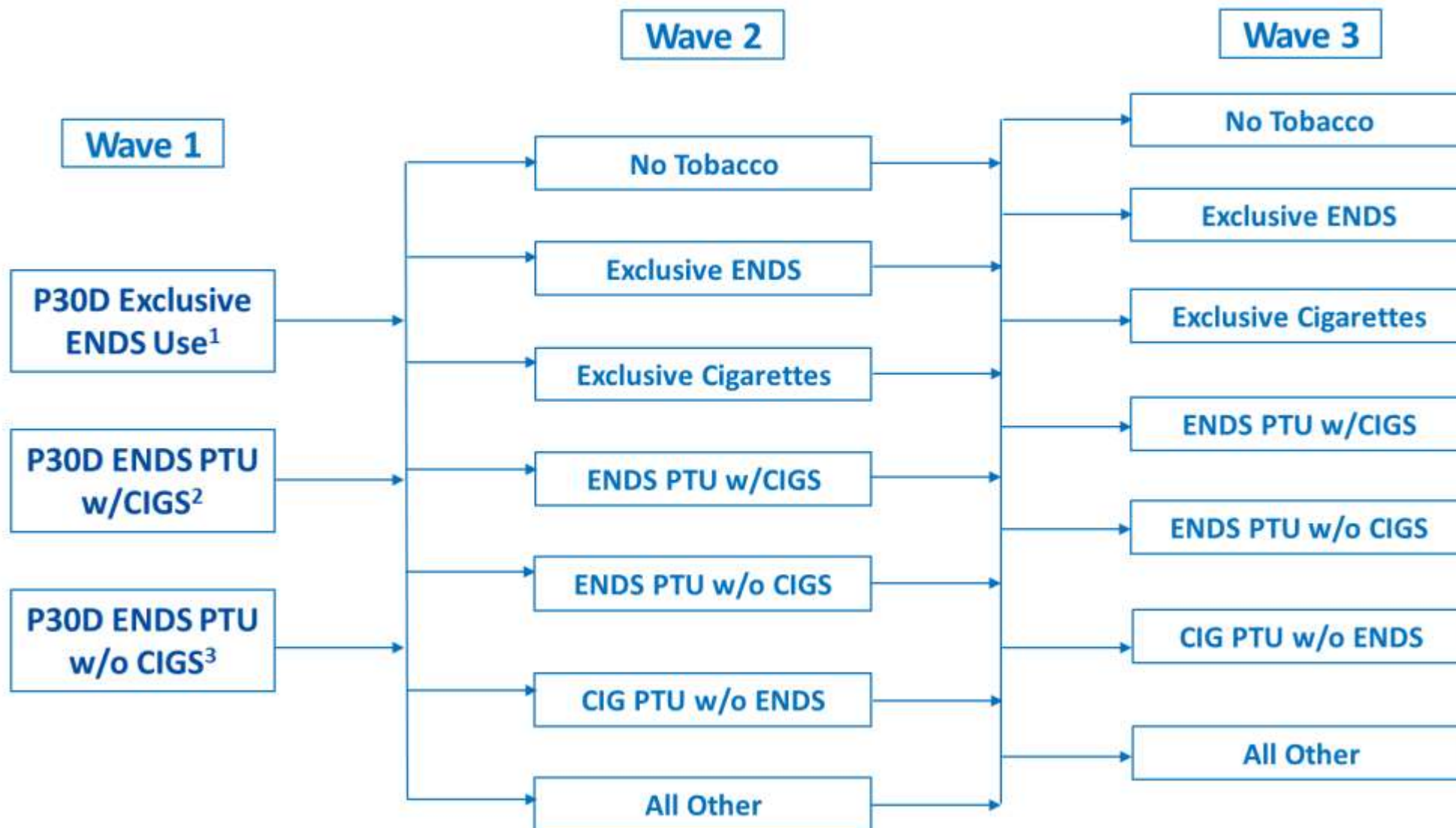
Supplemental Figure 1 – Tracking Wave 1 Respondents Through All 3 Waves of the PATH Study



Notes:

Supplemental Figure 1 shows the full Wave 1 sample respondents who have data at Waves 1, 2, and 3. There are 2,605 Wave 1 youth (ages 12-17) and 8,650 Wave 1 adult (ages 18 and older) respondents excluded at W2 and W3 because they do not have data at all three waves. The figure illustrates Wave 1 youth and young adults (ages 18-24) who aged-up at Wave 2 and Wave 2 youth and young adults who aged-up at Wave 3. The boxes at each wave show the total sample size for each age group at each Wave.

Supplemental Figure 2: Conceptual Model of Use Pathways Among W1 ENDS Use Groups Across W1-W2-W3



Notes:

Abbreviations: W1 = Wave 1; ENDS* = electronic nicotine delivery system; W2 = Wave 2; W3 = Wave 3; P30D = past 30-day; PTU = polytobacco use; w/ = with; CIG(S) = cigarette(s); w/o = without

¹Weighted percentages (95% confidence interval) and unweighted sample sizes of W1 P30D exclusive ENDS users among any P30D ENDS users: youth (ages 12-17), 36.2% (31.5-41.2), N=112/311; young adults (ages 18-24), 12.7% (10.7-15.0), N=138/1074; adults 25+ (ages 25 and older), 13.8% (12.3-15.5), N=289/2128

²Weighted percentages (95% confidence interval) and unweighted sample sizes of W1 P30D ENDS PTU w/CIGS among any P30D ENDS users: youth, 45.0% (39.4-50.8), N=146/311; young adults, 74.0% (71.2-76.6), N=803/1074; adults 25+, 81.7% (79.7-83.6), N=1750/2128

³Weighted percentages (95% confidence interval) and unweighted sample sizes of W1 P30D ENDS PTU w/o CIGS among any P30D ENDS users: youth, 18.8% (14.5-23.9), N=53/311; young adults, 13.4% (11.4-15.7), N=133/1074; adults 25+, 4.5% (3.5-5.7), N=89/2128

1) No tobacco: Defined as no use of any tobacco products within the past 30 days.

2) Exclusive ENDS: Defined as use of only ENDS within the past 30 days.

3) Exclusive cigarettes: Defined as use of only cigarettes within the past 30 days.

4) ENDS PTU w/CIGS: Defined as use of ENDS and cigarettes within the past 30 days and possibly one or more of the following: traditional cigars, cigarillo, filtered cigars, hookah, pipe, or any smokeless tobacco.

5) ENDS PTU w/o CIGS: Defined as use of ENDS and one or more of the following within the past 30 days: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco, but not cigarettes.

6) CIG PTU w/o ENDS: Defined as use of cigarettes and one or more of the following within the past 30 days: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco, but not ENDS.

7) All other: Defined as use of one or more of the following in the past 30 days: any cigars, hookah, pipe, or any smokeless tobacco, but without cigarettes or ENDS.

*Respondents were asked about “e-cigarettes” at W1 and “e-products” (i.e., e-cigarettes, e-cigars, e-pipes, and e-hookah) at W2 and W3.

These pathways have been enumerated in Supplemental Tables 1a-1c.

The logit-transformation method was used to calculate the 95% confidence intervals.

Analyses were run on the W1, W2, and W3 Public Use Files (<https://doi.org/10.3886/ICPSR36498.v8>).

Supplemental Table 1a: Transitions in P30D Product Use at W2 and W3 Among W1 P30D Exclusive ENDS Users.

Rows	W1	W2	W3	Youth				Young Adults				Adults 25+			
				Unweighted N	Weighted N	Weighted %	95% CI	Unweighted N	Weighted N	Weighted %	95% CI	Unweighted N	Weighted N	Weighted %	95% CI
1	Exclusive ENDS	No Tobacco	No Tobacco	37	86,330	34.6	(26.8-43.4)	45	153,065	33.9	(25.7-43.3)	71	359,381	23.0	(18.2-28.7)
2	Exclusive ENDS	No Tobacco	Exclusive ENDS	9	18,182	7.3†	(3.6-14.2)	2	5,510	1.2†	(0.3-4.9)	11	56,125	3.6	(2.0-6.4)
3	Exclusive ENDS	No Tobacco	Exclusive Cigarettes	1	1,653	0.7†	(0.1-5.0)	2	5,977	1.3	(0.9-2.0)	1	5,006	0.3†	(0.0-2.5)
4	Exclusive ENDS	No Tobacco	ENDS PTU w/CIGS	3	6,595	2.6†	(0.8-8.6)	4	14,131	3.1†	(1.2-8.1)	0	N/A	N/A	N/A
5	Exclusive ENDS	No Tobacco	ENDS PTU w/o CIGS	1	1,894	0.8†	(0.1-5.4)	3	10,531	2.3†	(0.7-7.7)	1	4,380	0.3†	(0.0-2.0)
6	Exclusive ENDS	No Tobacco	CIG PTU w/o ENDS	1	2,392	1.0†	(0.1-7.7)	0	N/A	N/A	N/A	1	5,597	0.4†	(0.0-2.6)
7	Exclusive ENDS	No Tobacco	All Other	0	N/A	N/A	N/A	5	16,251	3.6†	(1.3-9.3)	4	18,213	1.2†	(0.4-3.5)
8	Exclusive ENDS	Exclusive ENDS	No Tobacco	5	10,905	4.4†	(1.9-10.0)	2	4,605	1.0†	(0.2-4.5)	16	104,289	6.7	(4.2-10.5)
9	Exclusive ENDS	Exclusive ENDS	Exclusive ENDS	3	9,282	3.7†	(1.1-11.7)	5	20,514	4.5†	(1.6-12.1)	95	541,766	34.7	(29.6-40.2)
10	Exclusive ENDS	Exclusive ENDS	Exclusive Cigarettes	0	N/A	N/A	N/A	1	2,767	0.6†	(0.1-4.2)	2	14,004	0.9†	(0.2-4.2)
11	Exclusive ENDS	Exclusive ENDS	ENDS PTU w/CIGS	2	4,851	1.9†	(0.4-8.3)	3	11,508	2.5†	(0.7-8.4)	9	41,955	2.7†	(1.3-5.5)
12	Exclusive ENDS	Exclusive ENDS	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	4	17,371	1.1†	(0.4-3.1)
13	Exclusive ENDS	Exclusive ENDS	CIG PTU w/o ENDS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	0	N/A	N/A	N/A
14	Exclusive ENDS	Exclusive ENDS	All Other	0	N/A	N/A	N/A	1	3,016	0.7†	(0.1-4.8)	0	N/A	N/A	N/A
15	Exclusive ENDS	Exclusive Cigarettes	No Tobacco	3	10,130	4.1†	(1.3-11.6)	2	5,108	1.1†	(0.3-4.6)	3	22,811	1.5†	(0.4-4.7)
16	Exclusive ENDS	Exclusive Cigarettes	Exclusive ENDS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	1	15,739	1.0†	(0.1-6.9)
17	Exclusive ENDS	Exclusive Cigarettes	Exclusive Cigarettes	2	3,210	1.3†	(0.3-5.2)	11	42,708	9.5†	(4.9-17.6)	10	45,988	2.9†	(1.5-5.7)
18	Exclusive ENDS	Exclusive Cigarettes	ENDS PTU w/CIGS	2	3,824	1.5†	(0.4-6.4)	0	N/A	N/A	N/A	0	N/A	N/A	N/A
19	Exclusive ENDS	Exclusive Cigarettes	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	1	2,145	0.5†	(0.1-3.0)	0	N/A	N/A	N/A
20	Exclusive ENDS	Exclusive Cigarettes	CIG PTU w/o ENDS	1	3,231	1.3†	(0.2-8.9)	3	13,630	3.0†	(0.9-10.1)	0	N/A	N/A	N/A
21	Exclusive ENDS	Exclusive Cigarettes	All Other	0	N/A	N/A	N/A	0	N/A	N/A	N/A	0	N/A	N/A	N/A
22	Exclusive ENDS	ENDS PTU w/CIGS	No Tobacco	2	5,532	2.2†	(0.5-9.3)	2	7,224	1.6†	(0.4-6.3)	3	14,119	0.9†	(0.3-2.8)
23	Exclusive ENDS	ENDS PTU w/CIGS	Exclusive ENDS	4	11,716	4.7†	(1.7-12.2)	5	16,538	3.7†	(1.6-8.3)	11	69,803	4.5†	(2.4-8.1)
24	Exclusive ENDS	ENDS PTU w/CIGS	Exclusive Cigarettes	0	N/A	N/A	N/A	1	4,383	1.0†	(0.1-6.1)	5	29,147	1.9†	(0.7-4.8)
25	Exclusive ENDS	ENDS PTU w/CIGS	ENDS PTU w/CIGS	6	13,437	5.4†	(2.2-12.4)	7	19,090	4.2†	(1.9-9.1)	12	54,996	3.5	(2.0-6.1)
26	Exclusive ENDS	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	1	1,785	0.4†	(0.1-2.3)	1	4,573	0.3†	(0.0-2.1)
27	Exclusive ENDS	ENDS PTU w/CIGS	CIG PTU w/o ENDS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	1	5,109	0.3†	(0.0-2.7)
28	Exclusive ENDS	ENDS PTU w/CIGS	All Other	0	N/A	N/A	N/A	1	2,381	0.5†	(0.1-3.4)	1	6,287	0.4†	(0.0-3.7)
29	Exclusive ENDS	ENDS PTU w/o CIGS	No Tobacco	1	1,971	0.8†	(0.1-5.7)	1	3,877	0.9†	(0.1-5.4)	0	N/A	N/A	N/A
30	Exclusive ENDS	ENDS PTU w/o CIGS	Exclusive ENDS	0	N/A	N/A	N/A	1	2,542	0.6†	(0.1-4.4)	3	27,122	1.7†	(0.5-5.6)
31	Exclusive ENDS	ENDS PTU w/o CIGS	Exclusive Cigarettes	1	3,166	1.3†	(0.2-8.2)	1	10,049	2.2†	(0.3-15.5)	0	N/A	N/A	N/A
32	Exclusive ENDS	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	2	4,290	1.7†	(0.4-6.8)	0	N/A	N/A	N/A	0	N/A	N/A	N/A
33	Exclusive ENDS	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	3	8,367	3.4†	(1.0-10.7)	0	N/A	N/A	N/A	2	14,580	0.9†	(0.2-4.0)
34	Exclusive ENDS	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	0	N/A	N/A	N/A	1	4,321	1.0†	(0.1-6.6)	0	N/A	N/A	N/A
35	Exclusive ENDS	ENDS PTU w/o CIGS	All Other	0	N/A	N/A	N/A	1	3,577	0.8†	(0.1-5.3)	0	N/A	N/A	N/A
36	Exclusive ENDS	CIG PTU w/o ENDS	No Tobacco	1	2,123	0.9†	(0.1-5.6)	1	2,405	0.5†	(0.1-4.3)	0	N/A	N/A	N/A
37	Exclusive ENDS	CIG PTU w/o ENDS	Exclusive ENDS	0	N/A	N/A	N/A	1	1,991	0.4†	(0.1-3.0)	0	N/A	N/A	N/A
38	Exclusive ENDS	CIG PTU w/o ENDS	Exclusive Cigarettes	2	4,292	1.7†	(0.4-6.7)	0	N/A	N/A	N/A	0	N/A	N/A	N/A
39	Exclusive ENDS	CIG PTU w/o ENDS	ENDS PTU w/CIGS	2	3,745	1.5†	(0.4-6.0)	3	9,764	2.2†	(0.5-8.5)	1	8,109	0.5†	(0.1-3.7)
40	Exclusive ENDS	CIG PTU w/o ENDS	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	1	6,828	0.4†	(0.1-3.1)
41	Exclusive ENDS	CIG PTU w/o ENDS	CIG PTU w/o ENDS	0	N/A	N/A	N/A	2	6,312	1.4†	(0.3-5.6)	0	N/A	N/A	N/A
42	Exclusive ENDS	CIG PTU w/o ENDS	All Other	0	N/A	N/A	N/A	1	2,038	0.5†	(0.1-3.1)	0	N/A	N/A	N/A
43	Exclusive ENDS	All Other	No Tobacco	7	16,089	6.5†	(2.9-13.8)	5	17,807	3.9†	(1.5-9.8)	4	19,182	1.2†	(0.4-3.5)
44	Exclusive ENDS	All Other	Exclusive ENDS	0	N/A	N/A	N/A	2	6,942	1.5†	(0.4-6.0)	0	N/A	N/A	N/A
45	Exclusive ENDS	All Other	Exclusive Cigarettes	0	N/A	N/A	N/A	0	N/A	N/A	N/A	2	8,306	0.5†	(0.1-2.2)
46	Exclusive ENDS	All Other	ENDS PTU w/CIGS	2	5,914	2.4†	(0.6-9.0)	0	N/A	N/A	N/A	0	N/A	N/A	N/A
47	Exclusive ENDS	All Other	ENDS PTU w/o CIGS	1	2,688	1.1†	(0.1-7.7)	2	5,417	1.2†	(0.3-5.1)	1	1,934	0.1†	(0.0-0.9)
48	Exclusive ENDS	All Other	CIG PTU w/o ENDS	1	1,430	0.6†	(0.1-3.4)	1	2,314	0.5†	(0.1-4.0)	2	11,399	0.7†	(0.2-3.1)
49	Exclusive ENDS	All Other	All Other	1	1,987	0.8†	(0.1-6.0)	2	9,126	2.0†	(0.4-8.7)	4	27,042	1.7†	(0.6-4.9)

Notes:

Abbreviations: P30D = past 30-day; W2 = Wave 2; W3 = Wave 3; W1 = Wave 1; ENDS* = electronic nicotine delivery system; CI = confidence interval; PTU = polytobacco use; w/ = with; CIG(S) = cigarette(s); w/o = without; N/A = not applicable

The analysis included youth (ages 12-17), young adult (ages 18-24), and adult 25+ (ages 25 and older) W1 P30D exclusive ENDS users with data at all three waves. Age was calculated based on age at Wave 1. Wave 3 longitudinal (all-waves) weights were used to calculate estimates.

The weighted percentages for some constructs such as discontinued tobacco and persistent use in this table may not match exactly with those presented in Table 1. This is the result of different denominators. In this table there can be no missing values on tobacco use variables at any wave. Table 1 does not require this restriction since some outcomes reflect behaviors at W3 (e.g. discontinued use by W3), regardless of missing data at Wave 2.

For transitions between waves:

- 1) No tobacco: Defined as no use of any tobacco products within the past 30 days.
- 2) Exclusive ENDS: Defined as use of only ENDS within the past 30 days.
- 3) Exclusive cigarettes: Defined as use of only cigarettes within the past 30 days.
- 4) ENDS PTU w/CIGS: Defined as use of ENDS and cigarettes within the past 30 days and possibly one or more of the following: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco.
- 5) ENDS PTU w/o CIGS: Defined as use of ENDS and one or more of the following within the past 30 days: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco, but not cigarettes.
- 6) CIG PTU w/o ENDS: Defined as use of cigarettes and one or more of the following within the past 30 days: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco, but not ENDS.
- 7) All other: Defined as use of one or more of the following in the past 30 days: any cigars, hookah, pipe, or any smokeless tobacco, but without cigarettes or ENDS.

*Respondents were asked about "e-cigarettes" at W1 and "e-products" (i.e., e-cigarettes, e-cigars, e-pipes, and e-hookah) at W2 and W3.

The logit-transformation method was used to calculate the 95% CIs.

† Estimate should be interpreted with caution because it has low statistical precision. It is based on a denominator sample size of less than 50, or the coefficient of variation of the estimate or its complement is larger than 30%.

Analyses were run on the W1, W2, and W3 Public Use Files (<https://doi.org/10.3886/ICPSR36498.v8>).

Supplemental Table 1b: Transitions in P30D Product Use at W2 and W3 Among W1 P30D ENDS Polytobacco Users w/CIGS.

Rows	W1	W2	W3	Youth				Young Adults				Adults 25+			
				Unweighted N	Weighted N	Weighted %	95% CI	Unweighted N	Weighted N	Weighted %	95% CI	Unweighted N	Weighted N	Weighted %	95% CI
1	ENDS PTU w/CIGS	No Tobacco	No Tobacco	12	24,641	8.2	(4.6-14.1)	31	115,018	4.2	(2.7-6.7)	59	332,044	3.8	(2.8-5.0)
2	ENDS PTU w/CIGS	No Tobacco	Exclusive ENDS	0	N/A	N/A	N/A	5	12,439	0.5†	(0.2-1.3)	1	11,640	0.1†	(0.0-1.0)
3	ENDS PTU w/CIGS	No Tobacco	Exclusive Cigarettes	1	1,774	0.6†	(0.1-4.4)	14	62,993	2.3	(1.3-4.0)	14	91,790	1.0†	(0.6-1.9)
4	ENDS PTU w/CIGS	No Tobacco	ENDS PTU w/CIGS	3	5,933	2.0†	(0.6-6.5)	9	31,657	1.2†	(0.6-2.4)	4	22,603	0.3†	(0.1-0.7)
5	ENDS PTU w/CIGS	No Tobacco	ENDS PTU w/o CIGS	2	4,852	1.6†	(0.4-6.9)	2	9,539	0.4†	(0.1-1.6)	1	6,867	0.1†	(0.0-0.6)
6	ENDS PTU w/CIGS	No Tobacco	CIG PTU w/o ENDS	0	N/A	N/A	N/A	7	20,804	0.8†	(0.4-1.7)	2	11,678	0.1†	(0.0-0.6)
7	ENDS PTU w/CIGS	No Tobacco	All Other	1	2,520	0.8†	(0.1-5.8)	0	N/A	N/A	N/A	1	3,798	0.0†	(0.0-0.3)
8	ENDS PTU w/CIGS	Exclusive ENDS	No Tobacco	0	N/A	N/A	N/A	4	12,591	0.5†	(0.1-1.7)	4	16,168	0.2†	(0.1-0.5)
9	ENDS PTU w/CIGS	Exclusive ENDS	Exclusive ENDS	0	N/A	N/A	N/A	7	22,419	0.8†	(0.4-1.8)	42	234,957	2.7	(1.9-3.7)
10	ENDS PTU w/CIGS	Exclusive ENDS	Exclusive Cigarettes	0	N/A	N/A	N/A	1	5,221	0.2†	(0.0-1.4)	3	12,294	0.1†	(0.0-0.5)
11	ENDS PTU w/CIGS	Exclusive ENDS	ENDS PTU w/CIGS	2	5,024	1.7†	(0.4-6.7)	3	10,819	0.4†	(0.1-1.4)	18	87,695	1.0	(0.6-1.6)
12	ENDS PTU w/CIGS	Exclusive ENDS	ENDS PTU w/o CIGS	2	4,393	1.5†	(0.4-5.7)	3	11,112	0.4†	(0.1-1.3)	1	2,993	0.0†	(0.0-0.2)
13	ENDS PTU w/CIGS	Exclusive ENDS	CIG PTU w/o ENDS	1	3,178	1.1†	(0.1-7.8)	0	N/A	N/A	N/A	1	5,116	0.1†	(0.0-0.4)
14	ENDS PTU w/CIGS	Exclusive ENDS	All Other	1	1,992	0.7†	(0.1-5.1)	0	N/A	N/A	N/A	1	3,852	0.0†	(0.0-0.3)
15	ENDS PTU w/CIGS	Exclusive Cigarettes	No Tobacco	2	4,605	1.5†	(0.3-6.6)	11	44,835	1.7†	(0.9-3.0)	39	208,142	2.4	(1.6-3.5)
16	ENDS PTU w/CIGS	Exclusive Cigarettes	Exclusive ENDS	2	5,010	1.7†	(0.4-6.8)	2	11,177	0.4†	(0.1-1.9)	5	34,421	0.4†	(0.1-1.1)
17	ENDS PTU w/CIGS	Exclusive Cigarettes	Exclusive Cigarettes	5	10,937	3.6†	(1.2-10.3)	95	323,328	11.9	(9.4-15.1)	391	2,079,606	23.5	(21.1-26.0)
18	ENDS PTU w/CIGS	Exclusive Cigarettes	ENDS PTU w/CIGS	6	12,085	4.0†	(1.7-9.0)	44	141,990	5.2	(4.0-6.8)	103	572,154	6.5	(5.2-8.0)
19	ENDS PTU w/CIGS	Exclusive Cigarettes	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	1	2,715	0.1†	(0.0-0.7)	0	N/A	N/A	N/A
20	ENDS PTU w/CIGS	Exclusive Cigarettes	CIG PTU w/o ENDS	1	2,550	0.8†	(0.1-6.1)	24	87,547	3.2	(2.0-5.3)	47	248,454	2.8	(2.0-3.9)
21	ENDS PTU w/CIGS	Exclusive Cigarettes	All Other	0	N/A	N/A	N/A	1	4,217	0.2†	(0.0-1.1)	1	5,162	0.1†	(0.0-0.4)
22	ENDS PTU w/CIGS	ENDS PTU w/CIGS	No Tobacco	3	5,718	1.9†	(0.6-6.1)	17	49,332	1.8	(1.0-3.2)	17	100,769	1.1	(0.7-1.9)
23	ENDS PTU w/CIGS	ENDS PTU w/CIGS	Exclusive ENDS	1	2,428	0.8†	(0.1-5.8)	6	35,775	1.3†	(0.5-3.2)	24	151,801	1.7	(1.1-2.6)
24	ENDS PTU w/CIGS	ENDS PTU w/CIGS	Exclusive Cigarettes	7	14,465	4.8†	(2.2-10.0)	75	256,953	9.5	(7.2-12.4)	238	1,258,456	14.2	(12.3-16.4)
25	ENDS PTU w/CIGS	ENDS PTU w/CIGS	ENDS PTU w/CIGS	35	79,535	26.3	(18.9-35.4)	147	521,517	19.3	(16.5-22.4)	308	1,668,902	18.9	(16.9-21.0)
26	ENDS PTU w/CIGS	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	3	6,287	2.1†	(0.6-6.6)	6	25,565	0.9†	(0.4-2.3)	3	16,021	0.2†	(0.1-0.6)
27	ENDS PTU w/CIGS	ENDS PTU w/CIGS	CIG PTU w/o ENDS	10	20,256	6.7†	(3.6-12.2)	31	100,197	3.7	(2.5-5.4)	56	288,504	3.3	(2.4-4.3)
28	ENDS PTU w/CIGS	ENDS PTU w/CIGS	All Other	1	3,212	1.1†	(0.1-7.5)	5	15,847	0.6†	(0.2-1.6)	4	28,573	0.3†	(0.1-0.9)
29	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	No Tobacco	2	5,048	1.7†	(0.3-7.8)	4	10,911	0.4†	(0.1-1.3)	0	N/A	N/A	N/A
30	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	Exclusive ENDS	0	N/A	N/A	N/A	1	4,127	0.2†	(0.0-1.1)	4	29,975	0.3†	(0.1-1.0)
31	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	Exclusive Cigarettes	0	N/A	N/A	N/A	0	N/A	N/A	N/A	1	5,219	0.1†	(0.0-0.4)
32	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	0	N/A	N/A	N/A	6	19,395	0.7†	(0.3-1.6)	1	3,289	0.0†	(0.0-0.3)
33	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	2	5,758	1.9†	(0.5-7.1)	3	15,747	0.6†	(0.2-1.9)	1	9,729	0.1†	(0.0-0.8)
34	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	0	N/A	N/A	N/A	1	1,445	0.1†	(0.0-0.4)	1	7,014	0.1†	(0.0-0.6)
35	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	All Other	0	N/A	N/A	N/A	1	4,903	0.2†	(0.0-1.5)	1	4,606	0.1†	(0.0-0.4)
36	ENDS PTU w/CIGS	CIG PTU w/o ENDS	No Tobacco	2	5,061	1.7†	(0.4-6.8)	17	56,083	2.1	(1.2-3.4)	6	26,473	0.3†	(0.1-0.7)
37	ENDS PTU w/CIGS	CIG PTU w/o ENDS	Exclusive ENDS	0	N/A	N/A	N/A	4	15,731	0.6†	(0.2-1.6)	5	23,577	0.3†	(0.1-0.7)
38	ENDS PTU w/CIGS	CIG PTU w/o ENDS	Exclusive Cigarettes	3	6,861	2.3†	(0.7-6.9)	39	125,772	4.6	(3.2-6.8)	54	304,969	3.4	(2.5-4.7)
39	ENDS PTU w/CIGS	CIG PTU w/o ENDS	ENDS PTU w/CIGS	10	24,529	8.1†	(4.0-15.9)	51	162,828	6.0	(4.4-8.2)	59	328,372	3.7	(2.7-5.1)
40	ENDS PTU w/CIGS	CIG PTU w/o ENDS	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	2	4,919	0.2†	(0.0-0.8)	0	N/A	N/A	N/A
41	ENDS PTU w/CIGS	CIG PTU w/o ENDS	CIG PTU w/o ENDS	6	10,994	3.6†	(1.4-9.0)	63	223,025	8.2	(6.3-10.6)	84	428,252	4.8	(3.9-6.0)
42	ENDS PTU w/CIGS	CIG PTU w/o ENDS	All Other	0	N/A	N/A	N/A	4	23,031	0.9†	(0.3-2.8)	6	46,181	0.5†	(0.2-1.2)
43	ENDS PTU w/CIGS	All Other	No Tobacco	3	9,166	3.0†	(0.9-9.3)	8	30,937	1.1†	(0.5-2.6)	6	42,160	0.5†	(0.2-1.1)
44	ENDS PTU w/CIGS	All Other	Exclusive ENDS	0	N/A	N/A	N/A	1	2,401	0.1†	(0.0-0.7)	0	N/A	N/A	N/A
45	ENDS PTU w/CIGS	All Other	Exclusive Cigarettes	0	N/A	N/A	N/A	0	N/A	N/A	N/A	3	15,781	0.2†	(0.0-0.6)
46	ENDS PTU w/CIGS	All Other	ENDS PTU w/CIGS	3	7,687	2.5	(1.4-4.5)	3	11,347	0.4†	(0.1-1.3)	1	6,361	0.1†	(0.0-0.5)
47	ENDS PTU w/CIGS	All Other	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	5	16,925	0.6†	(0.2-1.7)	3	10,607	0.1†	(0.0-0.4)
48	ENDS PTU w/CIGS	All Other	CIG PTU w/o ENDS	2	4,352	1.4†	(0.3-5.7)	4	9,987	0.4†	(0.1-1.0)	5	25,554	0.3†	(0.1-0.8)
49	ENDS PTU w/CIGS	All Other	All Other	1	1,377	0.5†	(0.1-3.4)	8	31,781	1.2†	(0.6-2.5)	5	25,257	0.3†	(0.1-0.7)

Notes:

Abbreviations: P30D = past 30-day; W2 = Wave 2; W3 = Wave 3; W1 = Wave 1; ENDS* = electronic nicotine delivery system; w/ = with; CIG(S) = cigarette(s); CI = confidence interval; PTU = polytobacco use; w/o = without; N/A = not applicable

The analysis included youth (ages 12-17), young adult (ages 18-24), and adult 25+ (ages 25 and older) W1 P30D ENDS polytobacco users w/CIGS with data at all three waves. Age was calculated based on age at W1. W3 longitudinal (all-waves) weights were used to calculate estimates.

The weighted percentages for some constructs such as discontinued tobacco and persistent use in this table may not match exactly with those presented in Table 1. This is the result of different denominators. In this table there can be no missing values on tobacco use variables at any wave. Table 1 does not require this restriction since some outcomes reflect behaviors at W3 (e.g. discontinued use by W3), regardless of missing data at Wave 2.

For transitions between waves:

- 1) No tobacco: Defined as no use of any tobacco products within the past 30 days.
- 2) Exclusive ENDS: Defined as use of only ENDS within the past 30 days.
- 3) Exclusive cigarettes: Defined as use of only cigarettes within the past 30 days.
- 4) ENDS PTU w/CIGS: Defined as use of ENDS and cigarettes within the past 30 days and possibly one or more of the following: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco.
- 5) ENDS PTU w/o CIGS: Defined as use of ENDS and one or more of the following within the past 30 days: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco, but not cigarettes.
- 6) CIG PTU w/o ENDS: Defined as use of cigarettes and one or more of the following within the past 30 days: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco, but not ENDS.
- 7) All other: Defined as use of one or more of the following in the past 30 days: any cigars, hookah, pipe, or any smokeless tobacco, but without cigarettes or ENDS.

*Respondents were asked about “e-cigarettes” at W1 and “e-products” (i.e., e-cigarettes, e-cigars, e-pipes, and e-hookah) at W2 and W3.

The logit-transformation method was used to calculate the 95% CIs.

† Estimate should be interpreted with caution because it has low statistical precision. It is based on a denominator sample size of less than 50, or the coefficient of variation of the estimate or its complement is larger than 30%.

Analyses were run on the W1, W2, and W3 Public Use Files (<https://doi.org/10.3886/ICPSR36498.v8>).

Supplemental Table 1c: Transitions in P30D Product Use at W2 and W3 Among W1 P30D ENDS Polytobacco Users w/o CIGS.

Rows	W1	W2	W3	Youth				Young Adults				Adults 25+			
				Unweighted N	Weighted N	Weighted %	95% CI	Unweighted N	Weighted N	Weighted %	95% CI	Unweighted N	Weighted N	Weighted %	95% CI
1	ENDS PTU w/o CIGS	No Tobacco	No Tobacco	7	17,419	13.8 [†]	(6.0-28.6)	12	54,296	11.3	(6.5-19.0)	13	78,483	15.7	(8.9-26.2)
2	ENDS PTU w/o CIGS	No Tobacco	Exclusive ENDS	1	2,062	1.6 [†]	(0.2-10.4)	0	N/A	N/A	N/A	0	N/A	N/A	N/A
3	ENDS PTU w/o CIGS	No Tobacco	Exclusive Cigarettes	0	N/A	N/A	N/A	1	4,199	0.9 [†]	(0.1-5.6)	0	N/A	N/A	N/A
4	ENDS PTU w/o CIGS	No Tobacco	ENDS PTU w/CIGS	0	N/A	N/A	N/A	1	3,235	0.7 [†]	(0.1-5.0)	0	N/A	N/A	N/A
5	ENDS PTU w/o CIGS	No Tobacco	ENDS PTU w/o CIGS	2	5,545	4.4 [†]	(1.0-17.0)	0	N/A	N/A	N/A	0	N/A	N/A	N/A
6	ENDS PTU w/o CIGS	No Tobacco	CIG PTU w/o ENDS	0	N/A	N/A	N/A	1	2,911	0.6 [†]	(0.1-3.7)	0	N/A	N/A	N/A
7	ENDS PTU w/o CIGS	No Tobacco	All Other	2	4,023	3.2 [†]	(0.7-12.6)	2	6,921	1.4 [†]	(0.3-6.2)	1	3,830	0.8 [†]	(0.1-5.2)
8	ENDS PTU w/o CIGS	Exclusive ENDS	No Tobacco	3	5,982	4.7 [†]	(1.4-14.5)	2	9,088	1.9 [†]	(0.4-8.0)	3	14,772	3.0 [†]	(0.9-9.3)
9	ENDS PTU w/o CIGS	Exclusive ENDS	Exclusive ENDS	1	4,319	3.4 [†]	(0.5-20.2)	1	886	0.2 [†]	(0.0-1.4)	6	23,213	4.6 [†]	(2.1-9.8)
10	ENDS PTU w/o CIGS	Exclusive ENDS	Exclusive Cigarettes	0	N/A	N/A	N/A	0	N/A	N/A	N/A	0	N/A	N/A	N/A
11	ENDS PTU w/o CIGS	Exclusive ENDS	ENDS PTU w/CIGS	2	4,962	3.9 [†]	(0.9-15.9)	2	6,188	1.3 [†]	(0.3-5.5)	1	10,112	2.0 [†]	(0.3-13.7)
12	ENDS PTU w/o CIGS	Exclusive ENDS	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	2	17,917	3.6 [†]	(0.8-14.1)
13	ENDS PTU w/o CIGS	Exclusive ENDS	CIG PTU w/o ENDS	0	N/A	N/A	N/A	1	2,804	0.6 [†]	(0.1-4.4)	0	N/A	N/A	N/A
14	ENDS PTU w/o CIGS	Exclusive ENDS	All Other	0	N/A	N/A	N/A	2	6,783	1.4 [†]	(0.3-5.9)	0	N/A	N/A	N/A
15	ENDS PTU w/o CIGS	Exclusive Cigarettes	No Tobacco	0	N/A	N/A	N/A	2	9,773	2.0 [†]	(0.5-8.0)	1	5,473	1.1 [†]	(0.1-7.9)
16	ENDS PTU w/o CIGS	Exclusive Cigarettes	Exclusive ENDS	0	N/A	N/A	N/A	1	2,645	0.6 [†]	(0.1-4.0)	0	N/A	N/A	N/A
17	ENDS PTU w/o CIGS	Exclusive Cigarettes	Exclusive Cigarettes	0	N/A	N/A	N/A	1	2,700	0.6 [†]	(0.1-3.9)	1	6,971	1.4 [†]	(0.2-10.0)
18	ENDS PTU w/o CIGS	Exclusive Cigarettes	ENDS PTU w/CIGS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	2	11,968	2.4 [†]	(0.5-9.9)
19	ENDS PTU w/o CIGS	Exclusive Cigarettes	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	0	N/A	N/A	N/A
20	ENDS PTU w/o CIGS	Exclusive Cigarettes	CIG PTU w/o ENDS	1	1,798	1.4 [†]	(0.2-10.9)	1	5,084	1.1 [†]	(0.1-7.3)	1	5,600	1.1 [†]	(0.2-7.4)
21	ENDS PTU w/o CIGS	Exclusive Cigarettes	All Other	0	N/A	N/A	N/A	2	12,797	2.7 [†]	(0.7-9.3)	0	N/A	N/A	N/A
22	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	No Tobacco	0	N/A	N/A	N/A	0	N/A	N/A	N/A	1	5,738	1.1 [†]	(0.1-8.8)
23	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	Exclusive ENDS	0	N/A	N/A	N/A	1	2,773	0.6 [†]	(0.1-4.3)	0	N/A	N/A	N/A
24	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	Exclusive Cigarettes	1	2,235	1.8 [†]	(0.2-12.7)	3	13,193	2.7 [†]	(0.8-8.7)	1	9,631	1.9 [†]	(0.3-12.9)
25	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	ENDS PTU w/CIGS	9	20,533	16.2 [†]	(8.0-30.3)	11	36,157	7.5	(4.3-12.8)	3	13,126	2.6 [†]	(0.7-9.1)
26	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	ENDS PTU w/o CIGS	2	6,190	4.9 [†]	(1.1-19.0)	0	N/A	N/A	N/A	2	10,799	2.2 [†]	(0.5-8.5)
27	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	CIG PTU w/o ENDS	0	N/A	N/A	N/A	2	3,685	0.8 [†]	(0.2-3.2)	0	N/A	N/A	N/A
28	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	All Other	2	3,748	3.0 [†]	(0.7-11.2)	2	5,669	1.2 [†]	(0.3-4.7)	1	4,861	1.0 [†]	(0.1-7.5)
29	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	No Tobacco	0	N/A	N/A	N/A	4	14,804	3.1 [†]	(1.1-8.6)	1	6,425	1.3 [†]	(0.2-8.3)
30	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	Exclusive ENDS	0	N/A	N/A	N/A	3	9,146	1.9 [†]	(0.6-6.2)	0	N/A	N/A	N/A
31	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	Exclusive Cigarettes	0	N/A	N/A	N/A	0	N/A	N/A	N/A	0	N/A	N/A	N/A
32	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	ENDS PTU w/CIGS	1	5,816	4.6 [†]	(0.6-27.6)	4	18,734	3.9 [†]	(1.4-10.6)	1	6,621	1.3 [†]	(0.2-9.4)
33	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	0	N/A	N/A	N/A	11	46,292	9.6 [†]	(4.7-18.7)	6	29,677	5.9 [†]	(2.5-13.5)
34	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	0	N/A	N/A	N/A
35	ENDS PTU w/o CIGS	ENDS PTU w/o CIGS	All Other	1	2,826	2.2 [†]	(0.3-16.0)	2	8,235	1.7 [†]	(0.4-7.5)	3	23,246	4.7 [†]	(1.4-14.5)
36	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	No Tobacco	1	1,517	1.2 [†]	(0.2-8.8)	3	8,349	1.7 [†]	(0.5-5.5)	1	7,937	1.6 [†]	(0.2-10.6)
37	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	Exclusive ENDS	0	N/A	N/A	N/A	0	N/A	N/A	N/A	0	N/A	N/A	N/A
38	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	Exclusive Cigarettes	1	2,313	1.8 [†]	(0.2-13.7)	0	N/A	N/A	N/A	1	6,534	1.3 [†]	(0.2-9.4)
39	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	ENDS PTU w/CIGS	1	2,008	1.6 [†]	(0.2-11.5)	7	35,072	7.3 [†]	(3.3-15.2)	1	3,290	0.7 [†]	(0.1-4.7)
40	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	ENDS PTU w/o CIGS	1	3,003	2.4 [†]	(0.4-13.1)	1	3,659	0.8 [†]	(0.1-5.5)	1	5,203	1.0 [†]	(0.1-7.8)
41	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	CIG PTU w/o ENDS	2	7,098	5.6 [†]	(1.4-20.1)	3	8,915	1.9 [†]	(0.5-6.7)	2	12,202	2.4 [†]	(0.6-9.9)
42	ENDS PTU w/o CIGS	CIG PTU w/o ENDS	All Other	0	N/A	N/A	N/A	3	11,100	2.3 [†]	(0.6-8.6)	6	40,623	8.1 [†]	(3.0-20.4)
43	ENDS PTU w/o CIGS	All Other	No Tobacco	2	6,750	5.3 [†]	(1.3-20.0)	9	30,966	6.5 [†]	(3.2-12.6)	3	13,136	2.6 [†]	(0.8-8.2)
44	ENDS PTU w/o CIGS	All Other	Exclusive ENDS	1	3,182	2.5 [†]	(0.3-17.0)	1	4,371	0.9 [†]	(0.1-6.2)	1	5,003	1.0 [†]	(0.1-7.2)
45	ENDS PTU w/o CIGS	All Other	Exclusive Cigarettes	0	N/A	N/A	N/A	1	4,346	0.9 [†]	(0.1-5.6)	0	N/A	N/A	N/A
46	ENDS PTU w/o CIGS	All Other	ENDS PTU w/CIGS	2	6,220	4.9 [†]	(1.3-17.1)	5	17,752	3.7 [†]	(1.4-9.7)	2	6,270	1.3 [†]	(0.3-5.7)
47	ENDS PTU w/o CIGS	All Other	ENDS PTU w/o CIGS	1	2,892	2.3 [†]	(0.3-13.7)	4	16,129	3.4 [†]	(1.2-8.8)	2	13,648	2.7 [†]	(0.7-10.2)
48	ENDS PTU w/o CIGS	All Other	CIG PTU w/o ENDS	0	N/A	N/A	N/A	1	2,483	0.5 [†]	(0.1-3.7)	1	2,977	0.6 [†]	(0.1-4.5)
49	ENDS PTU w/o CIGS	All Other	All Other	2	4,117	3.3 [†]	(0.7-14.0)	15	47,918	10.0	(5.5-17.5)	16	94,441	18.9	(11.0-30.6)

Notes:

Abbreviations: P30D = past 30-day; W2 = Wave 2; W3 = Wave 3; W1 = Wave 1; ENDS* = electronic nicotine delivery system; w/o = without; CIG(S) = cigarette(s); CI = confidence interval; PTU = polytobacco use; w/ = with; N/A = not applicable

The analysis included youth (ages 12-17), young adult (ages 18-24), and adult 25+ (ages 25 and older) W1 P30D ENDS polytobacco users w/o CIGS with data at all three waves. Age was calculated based on age at W1. W3 longitudinal (all-waves) weights were used to calculate estimates.

The weighted percentages for some constructs such as discontinued tobacco and persistent use in this table may not match exactly with those presented in Table 1. This is the result of different denominators. In this table there can be no missing values on tobacco use variables at any wave. Table 1 does not require this restriction since some outcomes reflect behaviors at W3 (e.g. discontinued use by W3), regardless of missing data at Wave 2.

For transitions between waves:

- 1) No tobacco: Defined as no use of any tobacco products within the past 30 days.
- 2) Exclusive ENDS: Defined as use of only ENDS within the past 30 days.
- 3) Exclusive cigarettes: Defined as use of only cigarettes within the past 30 days.
- 4) ENDS PTU w/CIGS: Defined as use of ENDS and cigarettes within the past 30 days and possibly one or more of the following: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco.
- 5) ENDS PTU w/o CIGS: Defined as use of ENDS and one or more of the following within the past 30 days: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco, but not cigarettes.
- 6) CIG PTU w/o ENDS: Defined as use of cigarettes and one or more of the following within the past 30 days: traditional cigars, cigarillos, filtered cigars, hookah, pipe, or any smokeless tobacco, but not ENDS.
- 7) All other: Defined as use of one or more of the following in the past 30 days: any cigars, hookah, pipe, or any smokeless tobacco, but without cigarettes or ENDS.

*Respondents were asked about "e-cigarettes" at W1 and "e-products" (i.e., e-cigarettes, e-cigars, e-pipes, and e-hookah) at W2 and W3.

The logit-transformation method was used to calculate the 95% CIs.

† Estimate should be interpreted with caution because it has low statistical precision. It is based on a denominator sample size of less than 50, or the coefficient of variation of the estimate or its complement is larger than 30%.

Analyses were run on the W1, W2, and W3 Public Use Files (<https://doi.org/10.3886/ICPSR36498.v8>).