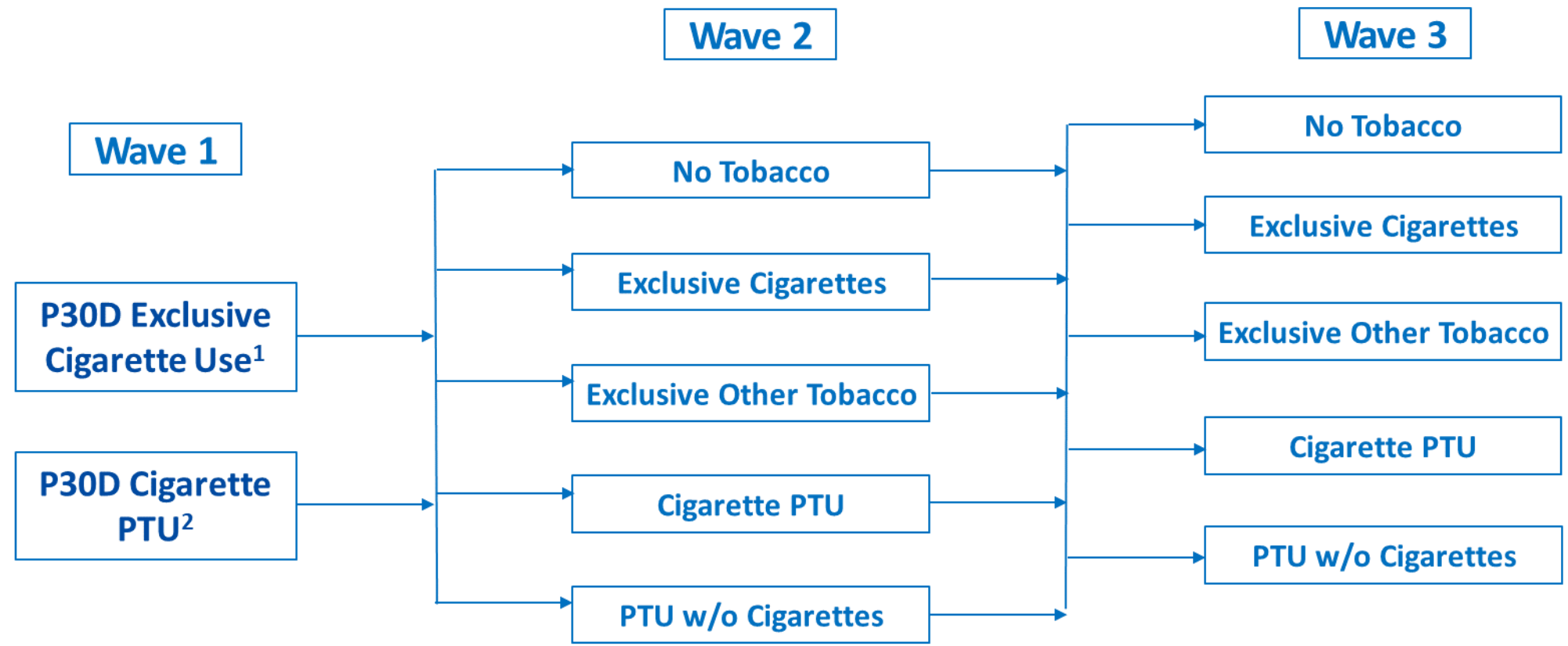


Notes: Supplemental Figure 1 shows the full Wave 1 sample respondents who have data at Waves 1, 2, and 3. There are 2,605 Wave 1 youth (ages 12-17) and 8,650 Wave 1 adult (ages 18 and older) respondents excluded at W2 and W3 because they do not have data at all three waves. The figure illustrates Wave 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.

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



Notes:

Abbreviations: W1 = Wave 1; W2 = Wave 2; W3 = Wave 3; P30D = past 30-day; PTU = polytobacco use; w/o = without

¹Weighted percentages (95% confidence interval) and unweighted sample sizes of W1 P30D exclusive cigarette users among any P30D cigarette users: youth (ages 12-17), 42.9% (38.1-47.9), N = 201/483; young Adults (ages 18-24), 34.8% (32.6-37.0), N = 869/2,474; adults 25+ (ages 25 and older), 62.6% (61.1-64.0), N = 4,790/7,722

²Weighted percentages (95% confidence interval) and unweighted sample sizes of W1 P30D cigarette PTU among any P30D cigarette users: youth, 57.1% (52.1-61.9), N = 282/483; young adults, 65.2% (63.0-67.4), N = 1,605/2,474; adults 25+, 37.4% (36.0-38.9), N = 2,932/7,722

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

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

3) Exclusive other tobacco: Defined as use of only one of the following within the past 30 days: cigars, hookah, pipe, electronic nicotine delivery system (ENDS*), or smokeless tobacco.

4) Cigarette PTU: Defined as use of cigarettes and one or more of the following within the past 30 days: cigars, hookah, pipe, ENDS, or smokeless tobacco.

5) PTU w/o cigarettes: Defined as use of two or more of the following within the past 30 days: cigars, hookah, pipe, ENDS, or smokeless tobacco but not cigarettes.

*Respondents were asked about P30D use of “e-cigarettes” at W1 and W2 and “e-products” (e-cigarettes, e-cigars, e-pipes, and e-hookah) at 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 Cigarette 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 cigarettes	No tobacco	No tobacco	20	41,754	10.0	(6.8-14.4)	73	305,263	11.0	(8.2-14.7)	259	1,767,189	7.5	(6.6-8.6)
2	Exclusive cigarettes	No tobacco	Exclusive cigarettes	7	17,873	4.3†	(2.0-9.0)	29	127,530	4.6	(3.1-6.8)	71	448,499	1.9	(1.5-2.4)
3	Exclusive cigarettes	No tobacco	Exclusive other tobacco	7	15,716	3.8†	(1.7-8.0)	10	33,163	1.2†	(0.6-2.3)	11	70,582	0.3†	(0.2-0.5)
4	Exclusive cigarettes	No tobacco	Cigarette PTU	6	13,874	3.3†	(1.4-7.6)	9	26,309	1.0†	(0.5-2.0)	21	121,345	0.5	(0.3-0.8)
5	Exclusive cigarettes	No tobacco	PTU w/o cigarettes	0	N/A	N/A	N/A	3	10,596	0.4†	(0.1-1.3)	1	7,581	0.0†	(0.0-0.2)
6	Exclusive cigarettes	Exclusive cigarettes	No tobacco	4	9,419	2.3†	(0.8-6.2)	29	109,265	3.9	(2.5-6.2)	159	858,188	3.7	(3.1-4.3)
7	Exclusive cigarettes	Exclusive cigarettes	Exclusive cigarettes	25	58,587	14.0	(9.5-20.1)	219	723,374	26.1	(22.9-29.6)	2,318	12,656,998	53.9	(52.1-55.7)
8	Exclusive cigarettes	Exclusive cigarettes	Exclusive other tobacco	0	N/A	N/A	N/A	11	48,526	1.8†	(0.9-3.3)	26	152,915	0.7	(0.4-1.1)
9	Exclusive cigarettes	Exclusive cigarettes	Cigarette PTU	16	34,163	8.2	(5.3-12.4)	87	292,578	10.6	(8.2-13.5)	359	2,053,319	8.7	(7.7-9.9)
10	Exclusive cigarettes	Exclusive cigarettes	PTU w/o cigarettes	0	N/A	N/A	N/A	0	N/A	N/A	N/A	0	N/A	N/A	N/A
11	Exclusive cigarettes	Exclusive other tobacco	No tobacco	4	6,536	1.6†	(0.6-4.3)	15	46,170	1.7	(1.1-2.6)	12	78,998	0.3†	(0.2-0.7)
12	Exclusive cigarettes	Exclusive other tobacco	Exclusive cigarettes	2	6,416	1.5†	(0.4-6.2)	6	26,514	1.0†	(0.3-2.7)	8	40,929	0.2†	(0.1-0.4)
13	Exclusive cigarettes	Exclusive other tobacco	Exclusive other tobacco	1	1,503	0.4†	(0.0-2.8)	5	16,981	0.6†	(0.3-1.4)	15	86,205	0.4	(0.2-0.7)
14	Exclusive cigarettes	Exclusive other tobacco	Cigarette PTU	1	2,218	0.5†	(0.1-3.3)	4	15,981	0.6†	(0.2-1.6)	21	135,437	0.6	(0.4-0.9)
15	Exclusive cigarettes	Exclusive other tobacco	PTU w/o cigarettes	0	N/A	N/A	N/A	2	6,878	0.2†	(0.1-1.1)	2	12,522	0.1†	(0.0-0.2)
16	Exclusive cigarettes	Cigarette PTU	No tobacco	7	19,996	4.8†	(2.2-10.2)	24	81,860	3.0	(1.9-4.6)	39	212,142	0.9	(0.6-1.3)
17	Exclusive cigarettes	Cigarette PTU	Exclusive cigarettes	18	40,051	9.6	(5.4-16.5)	119	385,988	13.9	(11.5-16.9)	450	2,396,278	10.2	(9.2-11.3)
18	Exclusive cigarettes	Cigarette PTU	Exclusive other tobacco	3	8,865	2.1†	(0.7-6.6)	11	46,419	1.7†	(0.8-3.4)	25	128,753	0.5	(0.4-0.8)
19	Exclusive cigarettes	Cigarette PTU	Cigarette PTU	52	123,542	29.5	(23.1-36.9)	141	425,286	15.4	(12.9-18.2)	386	2,189,303	9.3	(8.2-10.5)
20	Exclusive cigarettes	Cigarette PTU	PTU w/o cigarettes	2	5,599	1.3†	(0.3-5.2)	4	15,116	0.5†	(0.2-1.6)	2	15,734	0.1†	(0.0-0.3)
21	Exclusive cigarettes	PTU w/o cigarettes	No tobacco	1	2,796	0.7†	(0.1-4.8)	3	11,823	0.4†	(0.1-1.4)	4	21,461	0.1†	(0.0-0.2)
22	Exclusive cigarettes	PTU w/o cigarettes	Exclusive cigarettes	0	N/A	N/A	N/A	2	6,654	0.2†	(0.1-1.0)	0	N/A	N/A	N/A
23	Exclusive cigarettes	PTU w/o cigarettes	Exclusive other tobacco	1	3,342	0.8†	(0.1-6.0)	0	N/A	N/A	N/A	1	3,637	0.0†	(0.0-0.1)
24	Exclusive cigarettes	PTU w/o cigarettes	Cigarette PTU	1	5,927	1.4†	(0.2-10.1)	1	2,599	0.1†	(0.0-0.7)	2	9,653	0.0†	(0.0-0.3)
25	Exclusive cigarettes	PTU w/o cigarettes	PTU w/o cigarettes	0	N/A	N/A	N/A	1	3,302	0.1†	(0.0-0.9)	1	6,859	0.0†	(0.0-0.2)

1 Notes:

2 Abbreviations: P30D = past 30-day; W2 = Wave 2; W3 = Wave 3; W1 = Wave 1; CI = confidence interval; PTU = polytobacco use; w/o = without; N/A = not applicable

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4 The analysis included youth (ages 12-17), young adult (ages 18-24), and adult 25+ (ages 25 and older) W1 P30D exclusive cigarette users with data at all three waves. Age was calculated based on age at W1. W3
5 longitudinal (all-waves) weights were used to calculate estimates.
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8 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
9 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
10 at Wave 2.
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12 For transitions between waves:

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

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

15 3) Exclusive other Tobacco: Defined as use of only one of the following within the past 30 days: cigars, hookah, pipe, electronic nicotine delivery system (ENDS*), or smokeless tobacco.

16 4) Cigarette PTU: Defined as use of cigarettes and one or more of the following within the past 30 days: cigars, hookah, pipe, ENDS, or smokeless tobacco.

17 5) PTU w/o cigarettes: Defined as use of two or more of the following within the past 30 days: cigars, hookah, pipe, ENDS, or smokeless tobacco but not cigarettes.
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20 *Respondents were asked about P30D use of “e-cigarettes” at W1 and W2 and “e-products” (e-cigarettes, e-cigars, e-pipes, and e-hookah) at W3
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23 The logit-transformation method was used to calculate the 95% CIs.

24 † 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
25 than 30%.
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28 Analyses were run on the W1, W2, and W3 Public Use Files (<https://doi.org/10.3886/ICPSR36498.v8>).
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Supplemental Table 1b: Transitions in P30D Product Use at W2 and W3 Among W1 P30D Cigarette Polytabacco 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	Cigarette PTU	No tobacco	No tobacco	25	55,535	9.2	(6.2-13.5)	65	239,504	4.4	(3.2-6.0)	93	523,925	3.4	(2.7-4.3)
2	Cigarette PTU	No tobacco	Exclusive cigarettes	2	4,112	0.7†	(0.2-2.7)	25	97,117	1.8	(1.2-2.7)	17	105,185	0.7	(0.4-1.2)
3	Cigarette PTU	No tobacco	Exclusive other tobacco	5	16,238	2.7†	(1.4-5.3)	20	62,520	1.1	(0.7-1.8)	10	68,368	0.4†	(0.2-0.9)
4	Cigarette PTU	No tobacco	Cigarette PTU	9	21,208	3.5†	(1.7-7.1)	28	91,334	1.7	(1.1-2.5)	16	99,935	0.7	(0.4-1.1)
5	Cigarette PTU	No tobacco	PTU w/o cigarettes	3	6,797	1.1†	(0.3-3.7)	3	14,425	0.3†	(0.1-0.9)	1	6,867	0.0†	(0.0-0.3)
6	Cigarette PTU	Exclusive cigarettes	No tobacco	3	7,996	1.3†	(0.4-4.8)	27	98,726	1.8	(1.2-2.8)	55	294,609	1.9	(1.4-2.7)
7	Cigarette PTU	Exclusive cigarettes	Exclusive cigarettes	10	22,785	3.8†	(1.8-7.6)	149	516,076	9.4	(7.8-11.3)	585	3,228,605	21.1	(19.3-23.0)
8	Cigarette PTU	Exclusive cigarettes	Exclusive other tobacco	2	5,010	0.8†	(0.2-3.5)	8	26,839	0.5†	(0.2-1.1)	10	62,363	0.4†	(0.2-0.8)
9	Cigarette PTU	Exclusive cigarettes	Cigarette PTU	16	33,364	5.5	(3.3-9.1)	128	430,965	7.8	(6.6-9.3)	247	1,356,492	8.9	(7.5-10.4)
10	Cigarette PTU	Exclusive cigarettes	PTU w/o cigarettes	0	N/A	N/A	N/A	2	7,353	0.1†	(0.0-0.6)	0	N/A	N/A	N/A
11	Cigarette PTU	Exclusive other tobacco	No tobacco	5	13,126	2.2†	(0.9-5.4)	26	92,351	1.7	(1.1-2.7)	17	108,240	0.7	(0.4-1.2)
12	Cigarette PTU	Exclusive other tobacco	Exclusive cigarettes	0	N/A	N/A	N/A	8	27,130	0.5†	(0.2-1.0)	11	54,249	0.4†	(0.2-0.7)
13	Cigarette PTU	Exclusive other tobacco	Exclusive other tobacco	2	3,369	0.6†	(0.1-2.4)	30	106,613	1.9	(1.3-2.8)	69	386,166	2.5	(1.9-3.3)
14	Cigarette PTU	Exclusive other tobacco	Cigarette PTU	12	25,976	4.3†	(2.3-7.9)	19	65,778	1.2	(0.7-1.9)	34	176,137	1.2	(0.8-1.7)
15	Cigarette PTU	Exclusive other tobacco	PTU w/o cigarettes	2	4,393	0.7†	(0.2-2.9)	13	40,772	0.7†	(0.4-1.4)	9	35,284	0.2†	(0.1-0.5)
16	Cigarette PTU	Cigarette PTU	No tobacco	14	27,879	4.6	(2.7-7.7)	73	241,085	4.4	(3.5-5.5)	43	237,164	1.6	(1.2-2.1)
17	Cigarette PTU	Cigarette PTU	Exclusive cigarettes	22	45,537	7.6	(5.0-11.3)	225	796,404	14.5	(12.6-16.6)	453	2,449,593	16.0	(14.4-17.7)
18	Cigarette PTU	Cigarette PTU	Exclusive other tobacco	6	13,863	2.3†	(1.0-5.2)	48	207,423	3.8	(2.7-5.2)	74	448,554	2.9	(2.3-3.7)
19	Cigarette PTU	Cigarette PTU	Cigarette PTU	113	261,317	43.3	(35.9-51.0)	596	2,039,647	37.1	(34.5-39.9)	1,011	5,402,659	35.3	(33.4-37.3)
20	Cigarette PTU	Cigarette PTU	PTU w/o cigarettes	3	6,287	1.0†	(0.3-3.3)	25	91,285	1.7	(1.1-2.5)	16	92,073	0.6	(0.4-1.0)
21	Cigarette PTU	PTU w/o cigarettes	No tobacco	3	7,785	1.3†	(0.4-4.4)	12	43,154	0.8†	(0.4-1.8)	0	N/A	N/A	N/A
22	Cigarette PTU	PTU w/o cigarettes	Exclusive cigarettes	0	N/A	N/A	N/A	2	7,144	0.1†	(0.0-0.6)	2	8,780	0.1†	(0.0-0.2)
23	Cigarette PTU	PTU w/o cigarettes	Exclusive other tobacco	0	N/A	N/A	N/A	10	36,167	0.7†	(0.3-1.3)	10	61,627	0.4†	(0.2-0.8)
24	Cigarette PTU	PTU w/o cigarettes	Cigarette PTU	4	10,295	1.7†	(0.6-4.8)	16	53,671	1.0	(0.6-1.6)	9	49,337	0.3†	(0.1-0.9)
25	Cigarette PTU	PTU w/o cigarettes	PTU w/o cigarettes	4	10,246	1.7†	(0.6-4.5)	15	57,360	1.0	(0.6-1.8)	5	32,192	0.2†	(0.1-0.5)

1 Notes:

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4 The analysis included youth (ages 12-17), young adult (ages 18-24), and adult 25+ (ages 25 and older) W1 P30D cigarette polytobacco users with data at all three waves. Age was calculated based on age at W1. W3 longitudinal (all-
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9 missing values on tobacco use variables at any wave. Table 2 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.
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20

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

22 † 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%.
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