

APPENDIX MATERIAL NOT INTENDED FOR PUBLICATION

“Misinformation, Consumer Risk Perceptions, and Markets: The Impact of an Information Shock on Vaping and Smoking Cessation” by Jin, Kenkel, Lovenheim, Mathios, & Wang. July 2022.

APPENDIX A: Alternative Estimates of Vaping Days by Age and Smoking Status

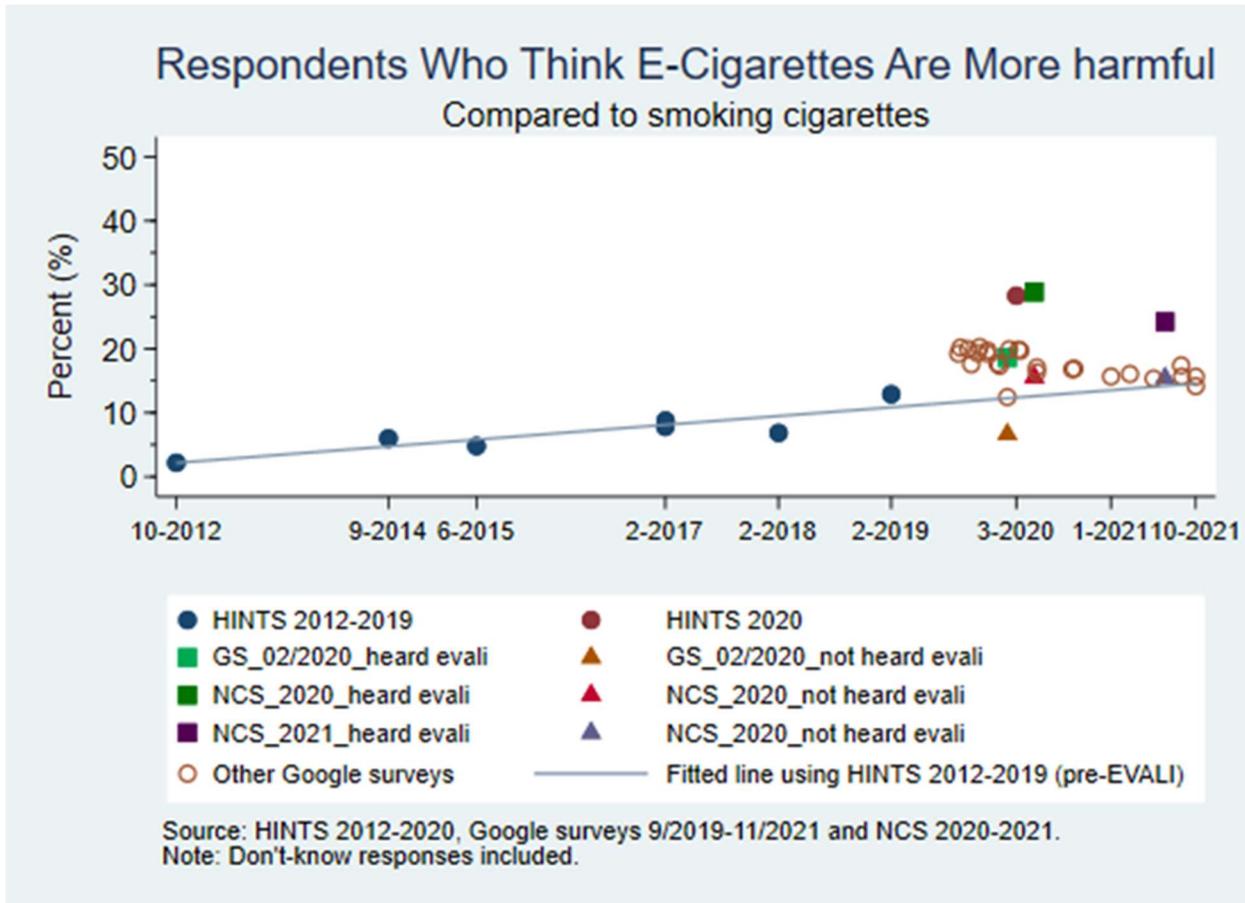
This Appendix presents alternative estimates of vaping days by age and smoking status (Table 1) based on different assumptions used when combining data sets. In Table 1, we combine data from the 2018 National Health Interview Survey (NHIS) on adult vaping and from the 2019 National Youth Tobacco Survey (NYTS) on teen vaping. The NHIS is a household survey that includes adults aged 18 and over. The NYTS is a school-based survey that includes adolescents in middle school and high school (grades 6 – 12). The 2019 NYTS was conducted from February 15 – May 24, 2019; most NYTS respondents are aged 11 through 18. Over multiple survey years, older teens in the NYTS report substantially higher rates of vaping than they do in the NHIS. For example, in 2018 9.8 percent of NHIS 18-year-olds reported vaping in the past 30-days, compared to 25 percent on NYTS 18-year-olds. We speculate that the difference might be due to the difference in sampling frame (the NYTS does not include high school dropouts), survey conditions, or some other unknown factor. We are skeptical that most or all of the difference reflects actual behavior; that is, we are skeptical that two-thirds of 18-year-olds who vaped while in high school stopped vaping after graduation.

We used four alternative approaches to combine the NHIS and NYTS data on vaping. In the first approach, we did not adjust the data. In method A, we use our estimate that in 2018, the average number of vaping days among 18-year-olds in the NYTS = 3.7 and in the NHIS = 1.2. In method A, we assumed that for all ages vaping was under-reported in the NHIS by the implied factor of 3.06. In method B, we adjusted vaping by NHIS 18-year-olds by a factor of 3.06; and we adjusted vaping by 19-year-olds by a similarly derived factor for that cohort; and so on. In method C, we assumed that the correction factor of 3.06 declined linearly with age and reached unity at age 25.

The fraction of total vaping days accounted for by youth under the age of 18 is about 23.5 percent if the data are not unadjusted, 9 percent if adjusted by method A, and about 20 percent if adjusted by method B or C. The results in Table 1 are based on method C.

APPENDIX B: Additional Results on the Trend in Perceptions of the Relative Harm of E-Cigarettes

Figure B1: Perceptions of the Relative Harm of E-Cigarettes Over Time, Including Respondents who Reported “Don’t Know”



APPENDIX C: Additional Results from Cross-Sectional Data on Demand for E-cigarettes and Smoking Cessation

Table C1: Comparison of the NCS Sample and Past-year Smokers and Vapers in the 2018-2019 TUS-CPS

Variables	NielsenIQ (sample weights not available)		TUS (with sample weights)	
	Count	Mean	Count	Mean
21-24 years old (18-24 years old in the TUS sample)	1835	0.0038	24487	0.096
25-34 years old	1835	0.053	24487	0.21
35-44 years old	1835	0.13	24487	0.18
45-54 years old	1835	0.24	24487	0.18
55-64 years old	1835	0.36	24487	0.20
65+ years old	1835	0.21	24487	0.13
Male	1835	0.26	24487	0.56
Every day smoker	1835	0.75	24477	0.65
Some days smoker	1835	0.11	24477	0.19
Former smoker	1835	0.12	24477	0.11
Ever smoked but never regularly	1835	0.013	24477	0.048
Age when FIRST started to smoke fairly regularly	1808	17.9	22183	18.0
On average, # cigarettes smoked daily	1587	13.8	15902	11.6
Smoking the first cigarette of the day: # Minutes after waking up	1587	42.2	14995	110.3
Attempt to quit smoking in the past 12 months	1587	0.31	14549	0.39
Quit smoking in the next 6 months: No	1587	0.46	15707	0.56
Yes, by switching to smokeless tobacco product such as chewing to	1587	0.0076		
Yes, by switching to electronic cigarettes	1587	0.061		
Yes, by using a smoking cessation product such as nicotine patch	1587	0.13		
Yes, by using a smoking cessation product prescribed by your phys	1587	0.079		
Yes, by quitting all at once ('cold turkey') or by some other met	1587	0.26		
Years since quitting smoking	224	3.12	2428	2.41
Ever used E- cigarettes /vape	1835	0.56	23765	0.38
Age when FIRST started to use e-cigarettes fairly regularly	712	47.8	7280	39.6
# days using an electronic vaping product in the past 30 days (some-days users)	211	7.88	1223	9.69
Attempt to quit smoking in the past 12 months	377	0.33	1223	0.22
Years since last vaping	333	3.42	3458	2.11
Observations	1,835		24,487	

Table C2: 2020 NCS Sample Means

	Full sample	Current vapers	Past year vapers	Past year smokers
<i>Vaping outcomes</i>				
Current vaper	0.14			
Number of puffs per day per vaper		56.3		
Quit vaping in the past year			0.22	
Vaping initiation by smokers in the past year				0.079
<i>Risk perceptions</i>				
Compared to smoking cigarettes, electronic cigarettes are				
Much less harmful	0.034	0.12	0.11	0.019
Less harmful	0.099	0.34	0.30	0.075
Just as harmful	0.35	0.29	0.30	0.35
More harmful	0.11	0.027	0.042	0.13
Much more harmful	0.16	0.045	0.066	0.19
I don't know	0.25	0.18	0.18	0.24
Compared to tobacco- or menthol-flavored nicotine vaping products, vaping products containing other flavors are				
More or much more harmful	0.28	0.17	0.18	0.29
Compared to vaping products that contain nicotine, vaping products that contain THC are				
More or much more harmful	0.23	0.18	0.18	0.24
<i>Demographics</i>				
Male	0.27	0.27	0.29	0.25
Female	0.73	0.73	0.71	0.75
21-34 years old				
35-44 years old	0.044	0.094	0.087	0.042
45-54 years old	0.12	0.18	0.17	0.12
55-64 years old	0.22	0.22	0.23	0.24
65+ years old	0.35	0.35	0.35	0.37
21-34 years old				
White	0.26	0.16	0.16	0.23
Black/African American	0.82	0.85	0.84	0.82
Asian	0.11	0.082	0.089	0.13
Other	0.016	0.012	0.014	0.011
Other	0.048	0.054	0.054	0.040
Less than High School				
Graduated High School	0.032	0.036	0.040	0.037
Some College	0.30	0.26	0.25	0.31
Graduated College	0.35	0.34	0.35	0.35
Post College Grad	0.23	0.28	0.26	0.23
No Female/male Head or Unknown	0.069	0.069	0.073	0.071
	0.012	0.024	0.026	0.011
Desktop is the platform used for survey				
	0.51	0.42	0.44	0.52

Mobile is the platform used for survey	0.49	0.58	0.56	0.48
Any children under 6 in the household	0.036	0.033	0.040	0.039
Any children ages 6-12 in the household	0.089	0.097	0.094	0.092
Any children ages 13-17 in the household	0.082	0.094	0.096	0.090
	0.29	0.31	0.30	0.32
Living alone (vs with other household members)				
<i>State policies</i>	1.67	1.71	1.65	1.64
Cigarette state tax (of 2018, 2018 dollar)	0.45	0.44	0.44	0.45
Exposed to state E-cigarette Tax	0.30	0.30	0.29	0.28
Exposed to state E-cigarette Restriction in Restaurant	0.94	0.94	0.94	0.95
Exposed to state E-cigarette Sales Minimum Age	0.052	0.048	0.047	0.046
Observations	2,421	331	425	1,168

Table C3: E-Cigarette Demand as a Function of Perceived Absolute Harm of Vaping and Smoking

Vaping outcomes

	E-cigarette Demand	Vaping Participation	Intensive E-cigarette Demand	Vaping Cessation	Vaping Initiation by Smokers
	b/se	b/se	b/se	b/se	b/se
10 quantiles of vaper_lifeloss_=1	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
10 quantiles of vaper_lifeloss_=2	-8.885	-0.082*	-27.437	0.102	-0.014
	(4.874)	(0.035)	(27.983)	(0.085)	(0.041)
10 quantiles of vaper_lifeloss_=3	-13.522**	-0.161***	-27.103	0.098	-0.048
	(4.369)	(0.032)	(25.534)	(0.080)	(0.036)
10 quantiles of vaper_lifeloss_=4	-24.214*	-0.340***		0.646	0.010
	(11.095)	(0.080)		(0.420)	(0.099)
10 quantiles of vaper_lifeloss_=5	-21.381***	-0.284***	-22.999	0.241**	-0.106**
	(4.338)	(0.031)	(27.672)	(0.087)	(0.035)
10 quantiles of vaper_lifeloss_=7	-22.841***	-0.287***	-39.000	0.252**	-0.110**
	(4.637)	(0.034)	(30.071)	(0.094)	(0.038)
10 quantiles of vaper_lifeloss_=8	-24.015***	-0.326***	-36.602	0.480***	-0.161***
	(4.833)	(0.035)	(38.498)	(0.106)	(0.039)
10 quantiles of vaper_lifeloss_=9	-24.010***	-0.322***	-50.334	0.380**	-0.107*
	(5.885)	(0.043)	(50.875)	(0.144)	(0.049)
10 quantiles of vaper_lifeloss_=10	-23.246***	-0.341***	-4.881	0.670***	-0.154***
	(4.879)	(0.035)	(63.115)	(0.177)	(0.037)
10 quantiles of smoker_lifeloss_=1	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
10 quantiles of smoker_lifeloss_=2	-1.370	-0.016	-0.658	-0.030	-0.013
	(4.443)	(0.032)	(32.461)	(0.097)	(0.034)
10 quantiles of smoker_lifeloss_=3	-0.175	0.025	-1.388	0.126	0.029
	(5.057)	(0.037)	(34.801)	(0.105)	(0.040)
10 quantiles of smoker_lifeloss_=4	4.381	0.046	15.698	-0.033	0.043
	(4.025)	(0.029)	(28.810)	(0.088)	(0.032)
10 quantiles of smoker_lifeloss_=5	6.522	0.060	29.972	-0.067	-0.065
	(6.709)	(0.049)	(50.130)	(0.155)	(0.064)
10 quantiles of smoker_lifeloss_=6	8.938*	0.112***	15.064	-0.105	0.048

	(3.958)	(0.029)	(27.352)	(0.085)	(0.032)
10 quantiles of smoker_lifeloss_=8	7.808	0.115***	11.465	-0.149	0.050
	(4.389)	(0.032)	(31.004)	(0.096)	(0.036)
10 quantiles of smoker_lifeloss_=9	6.726	0.118**	5.100	-0.363**	0.051
	(5.072)	(0.037)	(37.794)	(0.121)	(0.041)
10 quantiles of smoker_lifeloss_=10	4.460	0.099*	-13.068	-0.323*	0.099*
	(5.462)	(0.040)	(50.684)	(0.161)	(0.048)
Male	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
Female	0.781	0.004	7.993	-0.086	0.007
	(2.169)	(0.016)	(15.337)	(0.047)	(0.019)
21-34 years old	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
35-44 years old	8.818	-0.080*	37.683	0.122	0.003
	(5.263)	(0.038)	(26.962)	(0.086)	(0.045)
45-54 years old	0.888	-0.138***	20.334	0.156	-0.033
	(4.989)	(0.036)	(26.372)	(0.084)	(0.042)
55-64 years old	-2.647	-0.136***	-10.456	0.117	-0.008
	(4.930)	(0.036)	(26.141)	(0.083)	(0.042)
65+ years old	-6.465	-0.182***	-35.794	0.081	-0.042
	(5.105)	(0.037)	(30.051)	(0.096)	(0.044)
White	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
Black/African American	-3.081	-0.043*	5.349	0.062	0.012
	(3.018)	(0.022)	(24.068)	(0.073)	(0.024)
Asian	-9.283	-0.066	-96.722	0.233	-0.095
	(7.589)	(0.055)	(60.398)	(0.176)	(0.075)
Other	-5.583	0.005	-34.055	0.019	0.013
	(4.373)	(0.032)	(28.638)	(0.090)	(0.040)
Less than High School	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
No Female/male Head or Unknown	-11.744	0.072	-108.688	-0.077	0.122
	(9.994)	(0.072)	(57.397)	(0.164)	(0.085)
Graduated High School	-11.915*	-0.037	-62.419	-0.067	-0.102*
	(5.476)	(0.040)	(36.736)	(0.110)	(0.043)
Some College	-12.935*	-0.026	-74.162*	-0.001	-0.117**
	(5.438)	(0.039)	(35.878)	(0.108)	(0.043)
Graduated College	-5.238	-0.003	-30.018	-0.087	-0.074
	(5.553)	(0.040)	(36.142)	(0.110)	(0.044)
Post College Grad	-12.331	-0.024	-70.911	0.021	-0.106*
	(6.334)	(0.046)	(42.638)	(0.130)	(0.051)
Desktop	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
Mobile	-0.368	0.030*	-24.621	-0.049	0.044**
	(2.018)	(0.015)	(14.677)	(0.045)	(0.017)
Child under 6	-3.290	-0.042	-40.281	0.143	-0.065
	(5.266)	(0.038)	(37.986)	(0.107)	(0.044)

Child 6-12	-4.580 (3.575)	-0.014 (0.026)	-25.910 (23.098)	-0.056 (0.073)	0.009 (0.031)
Child 13-17	-5.625 (3.576)	0.005 (0.026)	-48.024* (23.535)	0.016 (0.073)	-0.001 (0.029)
Living alone	-2.043 (2.149)	0.015 (0.016)	-19.769 (15.230)	-0.012 (0.047)	0.032 (0.018)
cig_tax_st2018dol	-1.865 (1.182)	0.007 (0.009)	-12.359 (9.179)	-0.060* (0.028)	-0.001 (0.010)
Exposed to state E-cigarette Tax	1.343 (2.338)	-0.018 (0.017)	14.359 (17.150)	0.085 (0.053)	-0.027 (0.019)
Exposed to state E-cigarette Restriction in Restaurant	3.656 (2.507)	-0.003 (0.018)	33.778 (18.699)	-0.012 (0.059)	-0.051* (0.021)
Exposed to state E-cigarette Sales Minimum Age	-2.780 (4.402)	-0.028 (0.032)	-5.645 (29.434)	-0.003 (0.092)	-0.000 (0.040)
Exposed to state bans on flavored E-cigarettes	-3.914 (4.648)	-0.009 (0.034)	-11.362 (34.148)	-0.015 (0.107)	0.003 (0.041)
Constant	38.156*** (9.045)	0.462*** (0.066)	161.402** (53.408)	0.206 (0.169)	0.239** (0.077)
Observations	2,421	2,421	331	425	1,168
Adj R-squared	0.02	0.08	0.01	0.07	0.05
Dep Var Mean	7.70	0.14	56.32	0.22	0.08

Source: NielsenIQ Custom Survey on tobacco use collected 5/15 - 6/7, 2020. Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.

APPENDIX D: Additional Results from Interrupted Time-Series Analysis of E-Cigarette Sales

Table D1 presents descriptive statistics of the NRS sales data. Table C2 provides a list of the dates of the policy events and health outbreaks we study.

Table D1: Summary Statistics

	Mean	S.D.	Min	Max
Week (since 6/17/2018)			1	155
<i>E-cigarette sales (\$ millions)</i>				
Total	82.2	9.2	63.2	107.2
Flavored	15.5	10.1	2.7	39.5
Mint	17.4	17.7	0.7	49.5
Menthol	24.7	16.1	5.5	46.8
Tobacco	20.0	5.0	9.3	28.8
<i>Adjusted cigarette sales (\$ millions)</i>				
Total	1085.2	31.0	996.3	1152.3
Menthol	370.1	15.3	335.4	406.4
Tobacco	715.1	19.7	649.9	763.9
<i>Unadjusted cigarette sales (\$ millions)</i>				
Total	1153.9	54.9	1037.2	1286.0
Menthol	393.5	22.4	340.4	450.7
Tobacco	760.3	35.4	679.9	835.3
Observations	155			

Table D2. Dates of policies or events used

Policy or event	Date	Week
JUUL's withdrawal of most flavors	11/9/2018	21
EVALI	9/7/2019	64
JUUL's withdrawal of mint flavor	11/7/2019	73
Federal T21 law (purchase age 21)	12/20/2019	79
FDA compliance policy	2/6/2020	86
COVID-19	3/11/2020	91

Figure D1: Trends in Retail Prices of Vaping Products

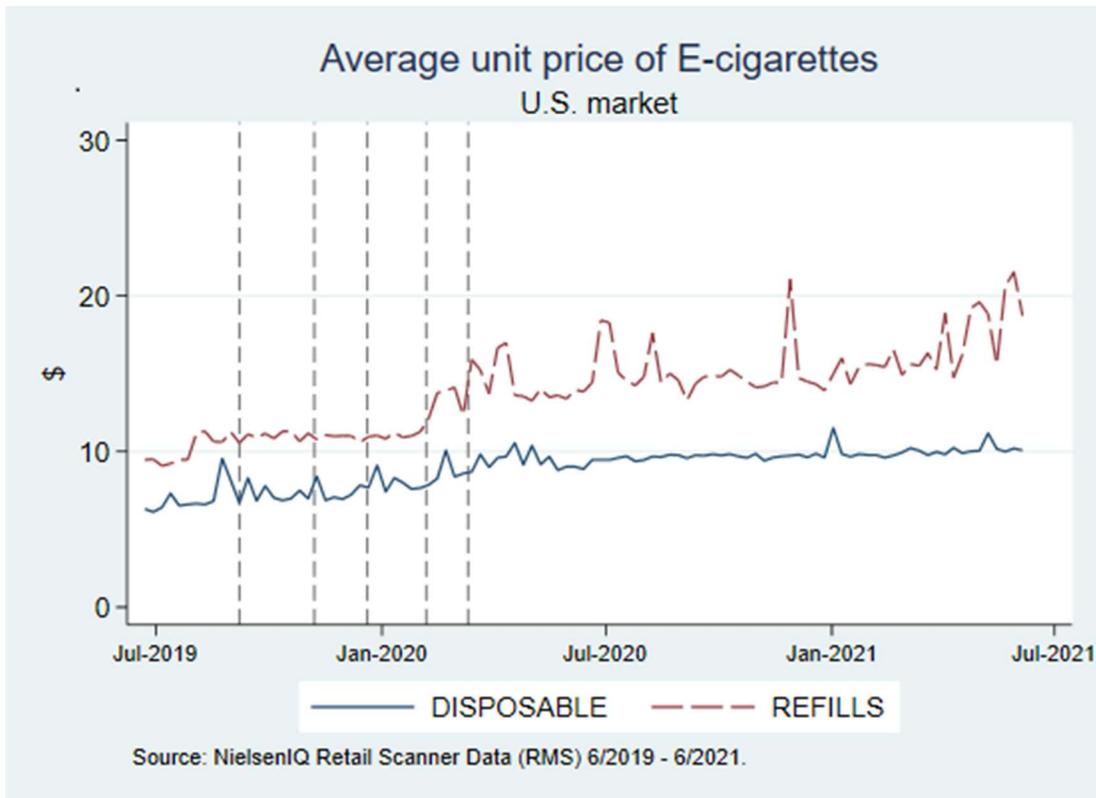
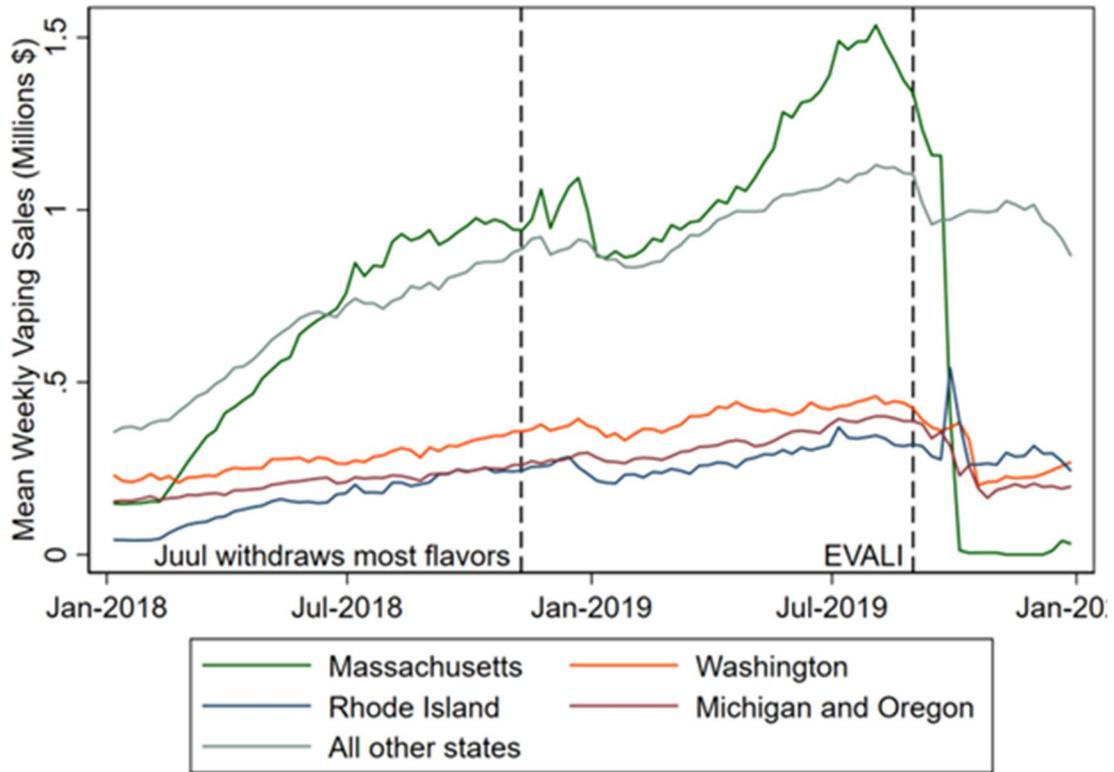


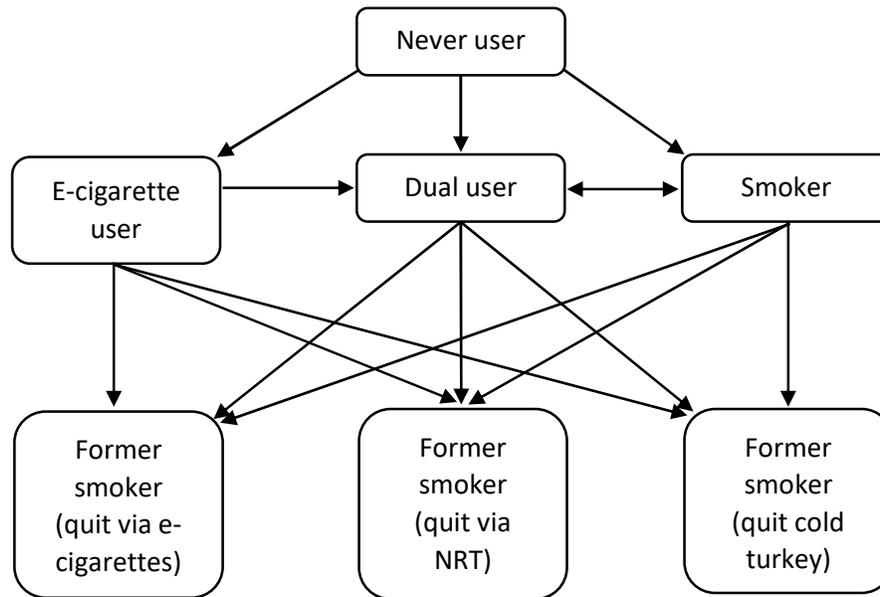
Figure D2: E-cigarette Sales in Massachussets, Neighboring States, and Other States



APPENDIX E: Description of the Dynamic Population Simulation Model of Tobacco Use and Health

This Appendix describes the dynamic population simulation model of smoking and health used in Section 7. The model simulates the year-to-year births and deaths of the U.S. population, from 2010-2070. Each year, a person can transition among seven possible smoking and vaping status: a never user, an e-cigarette user, a smoker, a dual user, a former smoker who quit cigarettes using e-cigarettes, a former smoker who quit cigarettes using nicotine replacement therapy (NRT), and a former smoker who quit cigarettes cold turkey. Figure A1 provides an overview of the simulation model.

Figure E1. Overview of dynamic population simulation model of smoking and health



The model begins with estimates of the adult population by smoking and vaping status in 2010. The population by age is obtained from the Census (Howden and Meyer, 2011). The number of smokers and non-smokers are obtained using age-specific smoking prevalence in 2010 (Schoenborn et al., 2013). The number of e-cigarette users and dual users are assumed to be zero in 2010.

The model introduces new cohorts each year using data on birth rates. We use actual birth rates between 2010-2016 (Martin et al., 2018) and projected birth rates from 2017-2060 (U.S. Census Bureau, 2018). Beyond 2060, we assume the annual birth rate to be same as in 2060.

We assume that smoking initiation occurs at 18 years old (e.g., see Jin et al., 2015; Mendez and Warner, 2021). We use the National Youth Tobacco Survey 2021 to estimate the percentage of 18-year-olds who have used cigarettes (but not e-cigarettes), e-cigarettes (but not cigarettes), and both at least one day in the past 30 days. Table A1 shows the estimates for years 2011-2019. These estimates are

used as the initiation rates of smoking, vaping, and dual use, respectively. The 2011 initiation rates are used for 2010, and the 2019 initiation rates are used for years 2020-2070.

Table E1. Estimated proportion of 18-year-olds who have used cigarettes (but not e-cigarettes), e-cigarettes (but not cigarettes), and both at least one day in the past 30 days, from National Youth Tobacco Survey 2021

	Cigarette use in past 30 days	E-cigarette use in past 30 days	Dual use in past 30 days
2011	0.200584039	0.001448922	0.007366681
2012	0.152347907	0.0054762	0.030210301
2013	0.144437671	0.011793441	0.04931432
2014	0.062608637	0.087400801	0.068852052
2015	0.063369788	0.131550893	0.068547897
2016	0.063785434	0.084241755	0.068902172
2017	0.068944536	0.078395382	0.060316559
2018	0.033771578	0.156020835	0.078407206
2019	0.014564699	0.268534482	0.083782949

Each year, people transition between being a smoker, e-cigarette user, and dual user. Specifically, we allow an e-cigarette user to become a smoker or dual user, a dual user to become a smoker, and a smoker to become a dual user. Note that we do not consider smokers or dual users to become e-cigarette users, as they are considered to have quit using e-cigarettes (see below for details). The age-specific transition probabilities are estimated from the Population Assessment of Tobacco and Health surveys, between Waves 4 and 5. The transition probabilities used in our model are shown in Table A2.

Table E2. Transition probabilities, between Waves 4 & 5 of Population Assessment of Tobacco and Health surveys

	Age 18-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+
E-cigarette user → dual user	0.088201	0.113476	0.069934	0.115256	0.025245	0
E-cigarette user → smoker	0.038271	0.060565	0.080952	0.071206	0.025239	0.099582
Dual user → Smoker	0.186118	0.274701	0.378768	0.346425	0.391621	0.638819
Smoker -> Dual user	0.145776	0.100531	0.072696	0.045879	0.020435	0.019114

Each year, some smokers and dual users quit smoking cigarettes through one of three possible methods: cold turkey, with nicotine products, or with e-cigarettes. Those who quit smoking with e-cigarettes are assumed to continue vaping. We assume identical quit rates between smokers and dual users.

From the recent Tobacco Use Supplement to the Current Population Survey, among former smokers, 25.9% reported having used nicotine products or prescriptions to quit smoking, 27.3% reported having used e-cigarettes to quit, and 7.5% reported having used both. For simplicity, we assume 29.65% have quit primarily through nicotine products or prescriptions (categorized as “NRT”) and 31.05% have quit primarily through e-cigarettes. We assume the remaining 39.3% have quit smoking through other methods (categorized as “cold turkey”).

We obtain age-specific smoking quit rates from Mendez et al. (1998). These are overall quit rates before e-cigarettes became available in the market. Let p_t denote the quit rate for a person aged t , from Mendez et al. (1998). The rate of cessation using cold turkey is given by $0.57 * p_t$ (i.e., $p_t * 0.393 / (0.393 + 0.2965)$) and using NRT is given by $0.43 * p_t$ (i.e., $p_t * 0.2965 / (0.393 + 0.2965)$). According to the Tobacco Use Supplement survey, there are 4.7% more former smokers who quit via e-cigarettes than via NRT (i.e., $31.05\% / 29.65\% = 1.047$). We thus assume that the rate of cessation using e-cigarettes is $1.047 * 0.43 * p_t$, i.e., 4.7% higher than the rate of cessation using NRT.

We use the annual death rates of never-smokers and smokers from Sloan et al. (2004). Former smokers’ death rates are obtained by multiplying the relative mortality risks of former smokers from Mendez and Warner (2004). We assume equal death rates for smokers and dual users. In robustness checks, we consider a lower death rate for dual users based on the findings that dual users smoke cigarettes less intensively, and less intensive use of cigarettes is associated with 18.8% lower mortality rates (Inoue-Choi et al., 2019). In our main specification, we assume the same death rates between e-cigarette users and never-users. We also conduct robustness checks in which e-cigarette use is 5% and 10% as harmful as cigarette use.

To estimate the impact of EVALI, we compare the populations between two scenarios: (A) a counterfactual scenario in which EVALI did not happen, and (B) the current scenario in which EVALI did happen. For scenario A, we simply simulate the model from 2010 to 2070 without any changes in the model parameters during 2019-2020 period. For scenario B, we introduce an EVALI-induced temporary shock to the rate of smoking cessation by e-cigarettes. Comparing harm perceptions pre- and post-EVALI, we find that the proportion of people who believe e-cigarettes to be much more harmful than cigarettes decreased by 2.5 percentage points, less harmful decreased by 2.7 percentage points, more harmful increased by 2.9 percentage points, and much more harmful increased by 11.0 percentage points. To estimate the EVALI-induced change in smoking cessation using e-cigarettes, we multiply these changes in perception by the estimated coefficients in column 1 of Table 8, where a belief that e-cigarettes are much less harmful than cigarettes increased smoking cessation by e-cigarettes by 8.2 percentage points, less harmful by 4.5 percentage points, more harmful by -0.6 percentage point, and much more harmful by -0.6 percentage point. As a result, we estimate that smoking cessation using e-cigarettes decreased by 0.4 percentage point, or by 32%. Given the evidence in section 4 that the information shock persisted from 2019 into 2020 and then faded, we assume that the rate of smoking cessation via e-cigarettes decreased by 32% in 2019 and by 16% in 2020.

Our model also assumes offsetting effects, in which 50% of the smokers and dual users who would have quit using e-cigarettes would instead try to quit using NRT, and the other 50% try to quit cold turkey. Based on previous findings, NRT is estimated to be half as effective as e-cigarettes, and cold turkey 25% as effective. In robustness checks, we consider a more conservative relative effectiveness where NRT and cold turkey methods are 67% and 33% as effective as e-cigarettes, respectively.

We do not assume any impact of EVALI on the e-cigarette initiation rates or the transition probabilities. We only build into the model the impact of EVALI on cessation rates.

Comparing the populations between two scenarios, we estimate 451,203 life-years lost due to EVALI by 2070. We conduct a series of robustness checks, which are shown in column 1 of Table A3. Assuming that e-cigarettes are 5% and 10% as harmful as cigarettes leads to slightly lower estimates. We also vary the mortality rate of dual users and the parameters of the offsetting effects (of higher NRT and cold turkey quit attempts as a consequence of reduced quit rates via e-cigarettes), and the results remain qualitatively intact, with life-years lost estimates ranging from 367,000 to 496,000.

In column 2, we consider 95% lower bound estimate of the impact of EVALI on smoking cessation rates. Specifically, we consider the 95% lower bound effects of harm perceptions on the use of e-cigarettes to quit smoking (column 1 of Table 8). The lower bounds of the estimated coefficients are 0.051 for much less harmful (i.e., $0.082 - 1.96 \times \text{Standard Error}$), 0.025 for less harmful, 0 for more harmful (i.e., $-0.006 + 1.96 \times \text{Standard Error} > 0$), and 0 for much more harmful. Multiplying out these lower bound estimates with the estimated changes in harm perception due to EVALI, we estimate the rate of cessation using e-cigarettes decreased by 0.195 percentage point, or by 15%. We therefore consider EVALI to have reduced the cessation rate by 15% in 2019 and 7.5% in 2020. We estimate 209,019 life-years lost due to EVALI. The estimates range between 169,000-230,000 life-years lost across various robustness checks.

Finally, column 3 considers estimates using the 95% upper bound estimate of the impact of EVALI on smoking cessation rates. The upper bounds of the estimated coefficients in column 1 of Table 8 are 0.113 for much less harmful (i.e., $0.082 + 1.96 \times \text{Standard Error}$), 0.065 for less harmful, -0.024 for more harmful, and -0.022 for much less harmful. Multiplying out these upper bound estimates with the estimated changes in harm perception, the rate of cessation using e-cigarettes decreased by 0.765 percentage point, or 60%. We thus consider EVALI to have reduced the cessation rate by 60% in 2019 and 30% in 2020. The estimated life-years lost due to EVALI ranges from 708,000 to 944,000.

Table E3. Estimates of Life-Years Lost due to EVALI

	(1) Main Estimate	(2) 95% Lower Bound Estimate	(3) 95% Upper Bound Estimate
Main model specification	451,203	209,019	862,360
<i>E-cigs harm (Default: 0% of cigs)</i>			
5% of cigs	423,445	196,018	810,246
10% of cigs	395,941	183,135	758,611
<i>Dual user mortality rate (Default: Same as smokers)</i>			
18.8% less than smokers	448,663	207,826	857,612
<i>Offsetting effect: % who try cold turkey vs. NRT (Default: 50% vs. 50%)</i>			
25% vs. 75%	406,851	187,768	782,244
75% vs. 25%	496,003	230,369	944,057
<i>Relative effectiveness of e-cigarettes compared to NRT and cold turkey (Default: 2 & 4 times)</i>			
1.5 & 3 times	366,811	168,805	708,429

Notes: Table reports the estimated cumulative life-years lost due to EVALI by year 2070, under various model assumptions. Each cell corresponds to an estimate. Column (1) uses our main estimate that EVALI had reduced the rate of cessation via e-cigarettes by 32% in 2019 and 16% in 2020. Column (2) uses a lower-bound estimate that EVALI had reduced the rate of cessation via e-cigarettes by 15% in 2019 and 7.5% in 2020. Column (3) uses an upper-bound estimate that EVALI had reduced the rate of cessation via e-cigarettes by 60% in 2019 and 30% in 2020. The models assume that EVALI had no impact on smoking or e-cigarette initiation rates. The models also assume offsetting effects, in which 50% of the smokers and dual users who would have quit using e-cigarettes would instead try to quit using NRT, and the other 50% try to quit cold turkey.