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Public support for policies to regulate flavoured tobacco and e-cigarette products in rural California

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ABSTRACT

Introduction Flavoured tobacco control policy exemptions and electronic cigarette products may contribute to increased youth access and tobacco use disparities.

Methods We assessed public support among California Central Valley residents for four policies to regulate flavoured tobacco products and e-cigarettes. The probability-based, multimode survey was conducted with English-speaking and Spanish-speaking registered voters (n=845) across 11 counties between 13 and 18 August 2020. Weighted logistic regression analyses measured odds of policy support, adjusting for predictor variables (attitudes and beliefs) and covariates.

Results The weighted sample was 50% female and predominantly Latino (30%) or non-Hispanic white (46%); 26% had a high school education or less, and 22% an annual household income <US\$30 000. Overall, 58% support a comprehensive flavoured tobacco product sales ban, and 59% support a flavoured e-cigarette product sales ban. In addition, 81% support limiting the amount of nicotine in e-cigarette pods, and 91% support mandating vaping health warning signs at local retailers. Flavour bans were more likely to be backed by women, seniors, Latinos, non-smokers and non-vapers. Participants who believe minors have more access to flavoured products had greater odds of supporting all policies. Those aware of the association between e-cigarettes and lung injury were more likely to support non-ban policies. Participants who believe e-cigarettes help to reduce tobacco use or e-cigarettes are relatively less addictive were less likely to support bans.

Discussion Findings add to mounting evidence of support for policies to regulate flavoured tobacco and e-cigarette products. Results on attitudes and beliefs elucidate how these factors influence support.

e-cigarette use was a notable public health concern,⁷ with popular flavours like fruit, mint, menthol and candy/desserts.⁸ While pandemic shelter-in-place orders disrupted youth access and reduced utilisation,⁹ 11% of high school students reported current e-cigarette use in 2021 and 85.8% of those current users said they used flavoured e-cigarettes.¹⁰ Vaping uptake (with or without characterising flavours) is also associated with smoking initiation among youth and emerging adults.¹¹

Flavour exemptions, lack of e-cigarette product regulation and industry marketing may contribute to increased access and disparities in tobacco and e-cigarette product use in the USA. Policy interventions to curb access and use include flavoured tobacco product sales bans, which are growing in popularity with promising results in terms of their effectiveness at reducing product availability.^{12–16} Comprehensive action by policymakers and public health practitioners can help address youth e-cigarette use and existing disparities in tobacco use.¹⁷ While the overall population has experienced decreases in flavoured tobacco product use, a menthol ban is estimated to have large reductions in smoking prevalence¹⁸ with considerable benefits for populations who disproportionately smoke menthol cigarettes like African-Americans.¹⁹

Limited research exists assessing public support for policies to regulate flavoured tobacco or e-cigarette products, particularly in rural regions. This study assesses support for policies to regulate tobacco and e-cigarette products (particularly flavoured products) using a public opinion survey conducted in August 2020 with registered voters in California's Central Valley. Prior work suggests attitudes and beliefs about government regulation (ie, safety concerns) may influence policy support.²⁰

INTRODUCTION

In 2020, the US Food and Drug Administration (FDA) issued an enforcement policy against unauthorised flavoured cartridge-based electronic cigarettes (e-cigarettes) with tobacco and menthol flavour exemptions.¹ In April 2021, the FDA proposed banning menthol, the last allowable combustible cigarette flavour.² Five states and hundreds of local jurisdictions have also banned characterising flavours for tobacco and/or e-cigarette products³ to curb minors' access and use.

Flavoured tobacco and e-cigarette products are particularly enticing to youth⁴ who report using them.^{5,6} Prepandemic, 64% of minors who were current users reported using at least one flavoured tobacco product in the past 30 days⁵ and youth

METHODS

Data were obtained from a probability-based, multimode (telephone-landline, cellular phone; online) survey conducted with a representative sample of registered voters in California's Central Valley. Eligibility criteria included: adults (18 years or older) who spoke either English or Spanish and were registered to vote in one of 11 counties in the region.

The authors designed the instrument drawing on their survey expertise and using guidance and items from existing resources.^{21–24} The instrument was reviewed and revised by coauthors and pilot tested with five Central Valley residents who provided feedback. The instrument is available in online supplemental material.



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Data collection was completed between 13 and 18 August 2020 by an opinion research company with 40 years of experience conducting policy-oriented surveys. If questions were not available in Spanish, they were translated by a native Spanish-speaking employee; the final version was reviewed and edited by another Spanish-speaking employee for accuracy. The margin of sampling error was estimated at ± 3.5 percentage points for a sample of 800 adults.

The company collected survey data in collaboration with two other companies to obtain voter registration data and complete interviews within the time frame. Quality assurance procedures included on-site supervisors to monitor and audit interviews as well as trained interviewers who collect data on a full-time basis. Telephone interviews were administered on landlines or cell-phones in the participant's preferred language.

In addition to survey data, the opinion research company included age and political party affiliation from the voter registration file.

Outcome variables: policy support

Respondents were asked whether they strongly supported, somewhat supported, somewhat opposed or strongly opposed a policy to: (1) ban the sale of all flavoured tobacco products (including mint, menthol and fruit flavours); (2) ban the sale of all flavoured e-cigarette products; (3) mandate warning signs about the health risks of vaping be posted at all retailers where e-cigarettes are sold or (4) limit the maximum amount of nicotine in an e-cigarette pod. Responses consisted of Likert scales with four options, which were dichotomised to support or oppose categories.

Predictor variables and covariates

Respondents were asked whether they strongly agreed, somewhat agreed, somewhat disagreed or strongly disagreed with six attitude and belief statements about: (1) youth access to flavoured tobacco products, (2) culpability of tobacco companies for smokers' health issues, (3) youth access to flavoured e-cigarette products, (4) e-cigarette use to reduce tobacco consumption, (5) relative addictiveness of e-cigarettes and (6) e-cigarette or vaping use-associated lung injury (EVALI). Responses were dichotomised to agree or disagree.

Statement 1 was included as a predictor variable to assess support for a flavoured tobacco ban and was not included in models to assess support for e-cigarette policies since it focuses on the availability of flavoured tobacco products. Statements 3–6 on e-cigarette products were not included as predictor variables to assess support for a flavoured tobacco ban.

Covariates were sociodemographic characteristics (age, sex, race/ethnicity, education, employment status, household size, income), smoking status, vaping status and political party affiliation. Smoking and vaping status were categorised as current (including trying to quit or smoked occasionally), former or never.

Statistical analysis

We calculated descriptive statistics (unadjusted and weighted). Weighted logistic regression models were conducted to estimate adjusted ORs for public support for each policy. P values ≤ 0.05 were considered statistically significant. We completed data analyses in June and July 2021 using Stata.²⁵

RESULTS

The sample included 845 adults (400 phone, 445 online). Survey completion rate was 30.3% (1940 refused to participate).

Additionally, 614 respondents contacted by phone were ineligible because they spoke a language other than English or Spanish.

Weighted descriptive results indicate 50% were female and 34% were 30–49 years of age. Nearly a third identified as Hispanic/Latino and 46% white. Twenty-six per cent completed high school or less. The mean household size for participants was six, and 22% had an annual household income below US\$30 000. In terms of political party affiliation, 38% registered Democrat, 35% Republican and 22% Independent.

A majority never smoked or vaped—17% were smokers and 10% vaped. Nearly half believed minors had access to flavoured products. Thirty-six per cent did not believe tobacco companies were culpable for health issues, and 71% were aware of EVALI. Only 13% believed e-cigarettes were relatively less addictive.

Table 1 provides sample characteristics and outcomes. A majority supported each policy with comparable support to ban all flavoured tobacco product sales (58%) or all flavoured e-cigarette product sales (59%). Eighty-one per cent supported limiting e-cigarette pod nicotine amounts. Ninety-one per cent supported mandating vaping health warning signs at local retailers.

Regression outcomes

Adjusted logistic regression models reveal women had significantly greater odds of supporting either flavour ban or a warning sign mandate. Participants aged 65+ years had significantly higher odds of supporting either flavour ban while those aged 30–49 or 65+ years were less likely to support a warning sign mandate compared with young adults. Hispanic/Latinos were more likely to support a flavoured e-cigarette sales ban compared with whites.

Respondents with a bachelor's degree+ were less likely to support a flavoured tobacco ban and those at the highest income level were less likely to support a flavoured e-cigarette ban compared with counterparts in the lowest category. The presence of additional household members increased flavour ban support.

Independents had increased odds of supporting e-cigarette nicotine limits compared with Republicans. Current smokers were less likely to support either ban and current vapers less likely to support a flavoured tobacco ban compared with never smokers/vapers.

Participants who believed minors had greater access had significantly higher odds of supporting all policies. Those who believed tobacco companies were culpable for health issues had greater odds of supporting most policies (except the warning sign mandate). Those aware of EVALI were more likely to support non-ban policies.

Those who believed e-cigarettes reduced tobacco consumption were less likely to support a flavoured e-cigarette sales ban or warning sign mandate. Those who believed e-cigarettes were less addictive were less likely to support a flavoured e-cigarette sales ban.

DISCUSSION

This study assessing public support for tobacco and e-cigarette policies among adults in rural California found a majority support a comprehensive flavoured tobacco or e-cigarette product sales ban (including menthol) with higher levels of support for other policies to regulate e-cigarette products. Support for a flavoured tobacco ban (58%) in our study was higher than a 56% rate from a nationally representative online panel.²⁶ Support for a flavoured e-cigarette sales ban (59%) was lower compared with a 63% rate from an online panel,²⁷ but similar to a 57%

Table 1 Respondent characteristics (n=845) and multivariable logistic regression model results for policy support

Variable	Total n=845 n (weighted %)	Ban sale of all flavoured tobacco products n=457 support, 58% OR (95% CI)	Ban sale of all flavoured e-cigarettes n=456 support, 59% OR (95% CI)	Mandate e-cigarette warning signs about health risks at retailers n=702 support, 91% OR (95% CI)	Limit maximum nicotine amount in e-cigarette pod n=571 support, 81% OR (95% CI)
Female	404 (50.1%)	2.28*** (1.44 to 3.61)	2.05** (1.29 to 3.25)	2.30** (1.20 to 4.39)	1.42 (0.80 to 2.54)
Age (years)					
18–29	118 (20.1%)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
30–49	232 (33.9%)	0.67 (0.32 to 1.40)	0.56 (0.27 to 1.18)	0.26* (0.08 to 0.86)	0.54 (0.23 to 1.17)
50–64	213 (23.0%)	1.65 (0.81 to 3.36)	1.98 (0.91 to 4.27)	0.46 (0.13 to 1.64)	1.20 (0.46 to 3.14)
65+	277 (22.4%)	3.96*** (1.84 to 8.54)	4.04*** (1.79 to 9.12)	0.19** (0.05 to 0.72)	0.93 (0.34 to 2.57)
Race/Ethnicity					
Asian or Pacific Islander	30 (5%)	1.12 (0.35 to 3.54)	1.20 (0.26 to 5.51)	1.55 (0.16 to 14.68)	1.43 (0.42 to 4.82)
Hispanic/Latino	192 (29.9%)	1.74 (0.96 to 3.15)	1.96* (1.07 to 3.56)	0.98 (0.43 to 2.23)	0.62 (0.30 to 1.29)
Non-Hispanic black/African-American	37 (3.1%)	1.49 (0.50 to 4.41)	0.64 (0.21 to 1.96)	0.63 (0.11 to 3.73)	0.42 (0.09 to 2.00)
Non-Hispanic white	455 (46.1%)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Other	78 (10.2%)	1.49 (0.73 to 3.04)	1.68 (0.79 to 3.58)	1.01 (0.34 to 2.95)	0.52 (0.22 to 1.22)
Education					
High school or less	194 (25.8%)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Some college	314 (37.9%)	0.67 (0.35 to 1.31)	1.12 (0.58 to 2.15)	1.89 (0.85 to 4.17)	1.56 (0.74 to 3.28)
Bachelor's degree+	320 (36.2%)	0.48* (0.24 to 0.94)	0.75 (0.38 to 1.49)	1.46 (0.62 to 3.46)	1.84 (0.82 to 4.12)
Employed	400 (51.5%)	0.95 (0.73 to 1.25)	1.00 (0.80 to 1.26)	1.23 (0.99 to 1.52)	0.87 (0.66 to 1.15)
Household size, mean (SD)	6.2 (1.89)	0.81** (0.71 to 0.93)	0.77*** (0.66 to 0.88)	0.82 (0.66 to 1.02)	0.92 (0.78 to 1.09)
Annual household income (US\$)					
≤30 000	127 (21.5%)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
30 001–50 000	128 (22.1%)	0.71 (0.33 to 1.50)	0.61 (0.27 to 1.36)	1.66 (0.65 to 4.24)	1.24 (0.49 to 3.13)
50 001–100 000	188 (29%)	0.77 (0.37 to 1.62)	0.49 (0.22 to 1.11)	2.54* (1.03 to 6.25)	1.18 (0.48 to 2.89)
≥100 001	180 (27.5%)	0.53 (0.25 to 1.09)	0.37* (0.17 to 0.83)	2.11 (0.84 to 5.27)	1.11 (0.43 to 2.90)
Political party					
Democrat	325 (38%)	1.37 (0.81 to 2.31)	1.09 (0.63 to 1.89)	1.60 (0.70 to 3.60)	1.56 (0.86 to 2.85)
Republican	338 (34%)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Independent	137 (21.5%)	1.20 (0.62 to 2.31)	0.84 (0.42 to 1.71)	1.32 (0.48 to 3.60)	3.37** (1.34 to 8.44)
Smoking status					
Current smoker	139 (16.8%)	0.42** (0.22 to 0.81)	0.30*** (0.16 to 0.58)	1.10 (0.46 to 2.52)	0.55 (0.27 to 1.13)
Former smoker	201 (21.5%)	1.15 (0.65 to 2.04)	1.29 (0.72 to 2.31)	1.39 (0.58 to 3.32)	0.84 (0.40 to 1.75)
Never smoker	497 (61.7%)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Vaping status					
Current vaper	73 (9.6%)	0.26** (0.9 to 0.74)	0.74 (0.34 to 1.60)	1.15 (0.34 to 3.88)	0.85 (0.45 to 1.62)
Former vaper	27 (3.2%)	1.00 (0.31 to 3.21)	1.36 (0.63 to 2.96)	3.39 (0.28 to 41.28)	1.18 (0.62 to 2.24)
Never vaper	736 (86.8%)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Attitudes or beliefs about tobacco and e-cigarette products (agree)					
It is easy for minors <21 years to buy flavoured tobacco products at local retailers	393 (46.3%)	2.94*** (1.88 to 4.60)	--	--	--
It is easy for minors <21 years to buy e-cigarettes at local retailers	415 (49.7%)	--	2.31*** (1.44 to 3.70)	2.00* (1.03 to 3.89)	3.05*** (1.66 to 5.63)
Tobacco companies should not be blamed for smoker's health problems	303 (35.7%)	0.33*** (0.20 to 0.54)	0.40*** (0.24 to 0.66)	0.50 (0.24 to 1.05)	0.31*** (0.18 to 0.55)
Using e-cigarettes can cause a vaping-related lung injury	586 (71%)	--	1.49 (0.88 to 2.53)	2.10* (1.07 to 4.11)	2.38** (1.31 to 4.30)
E-cigarettes help smokers reduce or quit using other tobacco products	234 (29.7%)	--	0.38*** (0.22 to 0.64)	0.42** (0.22 to 0.82)	0.52 (0.25 to 1.08)
E-cigarettes are not as addictive as cigarettes	104 (12.7%)	--	0.46* (0.23 to 0.92)	0.71 (0.31 to 1.61)	0.56 (0.25 to 1.09)

Counts may not add up to 100% due to refused or missing responses.

Any significant values are in bold.

*P≤0.05; **p≤0.01; ***p≤0.001.

ref, reference.

rate reported from a 2015 representative sample of California voters.²⁸

Similar to comparable studies, we found smokers were less likely to support a flavour ban.²⁶ Unlike existing work,²⁸ we

found participants from high-income households were less likely to support a flavoured e-cigarette sales ban.

Our findings on the role of beliefs about minors' access to flavoured products and policy support adds to evidence that the

public favours restrictive e-cigarette policies to protect minors.²⁰ Future research should analyse differences in support between parents and adults without dependents since parents may have particularly high levels of support for tobacco and e-cigarette control.²⁹

Our study is the first to report on support for policies to regulate e-cigarettes after the 2019 EVALI outbreak. We found EVALI awareness was associated with support for non-ban policies. While EVALI cases were believed to be due to additives like tetrahydrocannabinol (THC) or vitamin E acetate oil, studies with animal models suggest acute EVALI may occur without the use of THC, vitamin E acetate or nicotine.³⁰ Policymakers may also consider pursuing nicotine concentration limits, a policy supported by 81% of adults in our study, to reduce the addictiveness and harmful effects associated with nicotine exposure and e-cigarette use.³¹

Research is needed on the impacts of policies that exempt flavours or product types. Total e-cigarette sales declined following the FDA's 2020 policy, yet, menthol-flavoured e-cigarette sales increased,³² signalling the importance of comprehensive policies. Further research is warranted on e-cigarette policies and smoking initiation and cessation, since there is some evidence that e-cigarettes with nicotine may increase cessation,³³ particularly among adults,¹¹ and on unintended policy consequences.¹⁷ While San Francisco's flavoured tobacco product sales ban was associated with significant decreases in flavoured tobacco products and tobacco sales overall,³⁴ smoking appeared to increase among high school students compared with areas without a flavour ban.³⁵

Study strengths include multimode sampling and administration, use of voter registration rolls and inclusion of Spanish-speaking participants. Probability sampling with hard-to-reach populations that may be more reluctant to participate due to social or economic conditions and who reside in a predominantly rural and agricultural region with higher levels of tobacco use disparities is another strength. The completion rate (30.3%) is on par with response rates of phone-based surveys in rural regions. A study comparing telephone and in-person survey administration with three tribes in rural American Indian communities found in-person administration yielded a higher response rate (68.8%) compared with the telephone survey (35.7%).³⁶ While we considered in-person sampling, it was not permitted due to COVID-19 restrictions. Future research is needed to improve survey data collection with rural populations with a focus on obtaining racially and ethnically balanced samples.³⁷

Limitations include a focus on registered voters from California's San Joaquin Valley region who agreed to participate. Findings may not be generalisable to adults not registered to vote or those without listed contact information. Item phrasing may have influenced outcomes.^{26 27}

Our results add to mounting evidence of public support for a comprehensive flavoured tobacco policy and policies to regulate e-cigarette products, particularly when concerned about minors' safety. While pandemic shelter-in-place orders disrupted youth access and reduced utilisation,³⁸ a return to in-person gatherings may lead to increases. Information about public support for policies to regulate tobacco and e-cigarette products can inform local, state and federal policymakers' efforts to reduce and prevent youth smoking and vaping and address tobacco use disparities.

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Contributors DDP, NJB, JP, JM and LJB conceptualised the study. DDP, NJB, JP, JM, LJB and AVS designed the data collection instrument. DDP and AVS led analysis and interpretation. AVS completed data analysis. DDP prepared the first draft of the manuscript. NJB, JP, JM, LJB and AVS contributed to revisions of the manuscript.

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Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants but UC Merced Institutional Review Board exempted this study. A third party collected the data and we analysed the de-identified dataset.

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REFERENCES

- 1 US Food & Drug Administration. *FDA finalizes enforcement policy on unauthorized flavored cartridge-based e-cigarettes that appeal to children, including fruit and mint*, 2020.
- 2 US Food and Drug Administration. *FDA commits to evidence-based actions aimed at saving lives and preventing future generations of smokers*, 2021.
- 3 Campaign for Tobacco-Free Kids. *States and localities that have restricted the sale of flavored tobacco products*. Washington DC: Campaign for Tobacco-Free Kids, 2021.
- 4 Meernik C, Baker HM, Kowitz SD, et al. Impact of non-menthol flavours in e-cigarettes on perceptions and use: an updated systematic review. *BMJ Open* 2019;9:e031598.
- 5 Cullen KA, Liu ST, Bernat JK, et al. Flavored Tobacco Product Use Among Middle and High School Students - United States, 2014-2018. *MMWR Morb Mortal Wkly Rep* 2019;68:839-44.
- 6 Leventhal AM, Goldenson NI, Cho J, et al. Flavored e-cigarette use and progression of Vaping in adolescents. *Pediatrics* 2019;144.

What this paper adds

- ⇒ Flavoured tobacco and e-cigarette products are attractive to youth and can promote disparities in tobacco use.
- ⇒ Limited research exists examining public support for a comprehensive flavoured tobacco product sales ban and policies to regulate electronic cigarette products, particularly in rural areas.
- ⇒ This study found that 58% of registered voters in California's Central Valley support a comprehensive flavoured tobacco product sales ban (including menthol), and 59% support a flavoured e-cigarette product sales ban.
- ⇒ High levels of support exist for policies to limit the quantity of nicotine in e-cigarettes (81%) or mandate posting vaping health warning signs at retailers (91%).
- ⇒ Participants who believe minors have more access to flavoured products had greater odds of supporting all four policies.

- 7 Cullen KA, Gentzke AS, Sawdey MD, *et al.* E-Cigarette use among youth in the United States, 2019. *JAMA* 2019;322:2095–103.
- 8 Wang TW, Neff LJ, Park-Lee E, *et al.* E-cigarette Use Among Middle and High School Students - United States, 2020. *MMWR Morb Mortal Wkly Rep* 2020;69:1310–2.
- 9 Kreslake JM, Simard BJ, O'Connor KM, *et al.* E-Cigarette use among Youths and young adults during the COVID-19 pandemic: United States, 2020. *Am J Public Health* 2021;111:1132–40.
- 10 Park-Lee E, Ren C, Sawdey MD, *et al.* Notes from the Field: E-Cigarette Use Among Middle and High School Students - National Youth Tobacco Survey, United States, 2021. *MMWR Morb Mortal Wkly Rep* 2021;70:1387–9.
- 11 Friedman AS, Xu S. Associations of flavored e-cigarette uptake with subsequent smoking initiation and cessation. *JAMA Netw Open* 2020;3:e203826.
- 12 Kephart L, Setodji C, Pane J, *et al.* Evaluating tobacco retailer experience and compliance with a flavoured tobacco product restriction in Boston, Massachusetts: impact on product availability, advertisement and consumer demand. *Tob Control* 2020;29:e71–7.
- 13 Brown EM, Rogers T, Eggers ME, *et al.* Implementation of the new York City policy restricting sales of flavored Non-Cigarette tobacco products. *Health Educ Behav* 2019;46:782–9.
- 14 Brock B, Carlson SC, Leizinger A, *et al.* A tale of two cities: exploring the retail impact of flavoured tobacco restrictions in the twin cities of Minneapolis and Saint Paul, Minnesota. *Tob Control* 2019;28:176–80.
- 15 Farley SM, Johns M. New York City flavoured tobacco product sales ban evaluation. *Tob Control* 2017;26:78–84.
- 16 Kingsley M, Song G, Robertson J, *et al.* Impact of flavoured tobacco restriction policies on flavoured product availability in Massachusetts. *Tob Control* 2020;29:175–82.
- 17 Chu K-H, Hershey TB, Sidani JE. Collaborative public health strategies to combat e-cigarette regulation Loopholes. *JAMA Pediatr* 2021;175:1102–4.
- 18 Levy DT, Meza R, Yuan Z, *et al.* Public health impact of a US ban on menthol in cigarettes and cigars: a simulation study. *Tob Control* 2023;32:e37–44.
- 19 Levy DT, Pearson JL, Villanti AC, *et al.* Modeling the future effects of a menthol ban on smoking prevalence and smoking-attributable deaths in the United States. *Am J Public Health* 2011;101:1236–40.
- 20 Sanders-Jackson A, Tan ASL, Bigman CA, *et al.* To regulate or not to regulate? views on electronic cigarette regulations and beliefs about the reasons for and against regulation. *PLoS One* 2016;11:e0161124.
- 21 Counter Tools. *Public opinion surveys*. Chapel Hill, NC: Counter Tools, 2021.
- 22 Lopes L, Hamel L, Kearney A. *Data note: public views on Vaping and e-cigarettes*. Kaiser Family Foundation, 2019.
- 23 Thompson ME, Fong GT, Boudreau C, *et al.* Methods of the ITC four country smoking and Vaping survey, wave 1 (2016). *Addiction* 2019;114 Suppl 1:6–14.
- 24 Project I. *Itc four country smoking and Vaping survey, wave 1 (4CV1) technical report*. University of Waterloo, Waterloo, Ontario, Canada; Medical University of South Carolina, Charleston, South Carolina, United States; Cancer Council Victoria, Melbourne, Australia; King's College London, 2018.
- 25 StataCorp. *Stata/IC 14.2*. StataCorp LLC, 2018.
- 26 Czaplicki L, Schillo B, Rose SW, *et al.* National support for a menthol cigarette sales ban. *Public Health Rep* 2021;136:183–91.
- 27 Czaplicki L, Simpson R, Zhou Y, *et al.* Public support for E-Cigarette-related policies among a nationally representative sample of US adults. *Tob Use Insights* 2020;13:1179173X20959700:1179173X2095970.
- 28 Unger JB, Barker D, Baezconde-Garbanati L, *et al.* Support for electronic cigarette regulations among California voters. *Tob Control* 2017;26:334–7.
- 29 Czaplicki L, Perks SN, Liu M, *et al.* Support for e-cigarette and tobacco control policies among parents of adolescents. *Nicotine Tob Res* 2020;22:1139–47.
- 30 Kleinman MT, Arechavala RJ, Herman D, *et al.* E-Cigarette or Vaping product Use-Associated lung injury produced in an animal model from electronic cigarette vapor exposure without tetrahydrocannabinol or vitamin E oil. *J Am Heart Assoc* 2020;9:e017368.
- 31 Marques P, Piqueras L, Sanz M-J. An updated overview of e-cigarette impact on human health. *Respir Res* 2021;22:151.
- 32 Diaz MC, Donovan EM, Schillo BA, *et al.* Menthol e-cigarette sales rise following 2020 FDA guidance. *Tob Control* 2021;30:700–3.
- 33 Hartmann-Boyce J, McRobbie H, Butler AR. Electronic cigarettes for smoking cessation. *Cochrane Database Syst Rev* 2021:CD010216.
- 34 Gammon DG, Rogers T, Gaber J, *et al.* Implementation of a comprehensive flavoured tobacco product sales restriction and retail tobacco sales. *Tob Control* 2022;31:e104–10.
- 35 Friedman AS. A Difference-in-Differences analysis of youth smoking and a ban on sales of flavored tobacco products in San Francisco, California. *JAMA Pediatr* 2021;175:863–5.
- 36 English KC, Espinoza J, Pete D, *et al.* A comparative analysis of telephone and In-Person survey administration for public health surveillance in rural American Indian communities. *J Public Health Manag Pract* 2019;25 Suppl 5, Tribal Epidemiology Centers: Advancing Public Health in Indian Country for Over 20 Years:570–6.
- 37 Howell CR, Su W, Nassel AF, *et al.* Area based stratified random sampling using geospatial technology in a community-based survey. *BMC Public Health* 2020;20:1678.
- 38 Gaiha SM, Lempert LK, Halpern-Felsher B. Underage youth and young adult e-cigarette use and access before and during the coronavirus disease 2019 pandemic. *JAMA Netw Open* 2020;3:e2027572.

Flavored Tobacco and E-cigarette Survey Instrument

1. Next, which of the following best describes you: are you currently a cigarette smoker, a cigarette smoker who is trying to quit, a cigarette smoker who has quit, or have you never been a smoker?
- | | |
|--|----------|
| Current smoker ----- | 1 |
| Trying to quit ----- | 2 |
| Past smoker----- | 3 |
| Never a smoker ----- | 4 |
| (DON'T READ) DK/NA/REFUSED----- | 5 |

(ASK Q2 ONLY IF CODES 3-5 IN Q1)

2. And do you never smoke, or do you smoke on occasion?
- | | |
|--|----------|
| Never----- | 1 |
| On occasion ----- | 2 |
| (DON'T READ) DK/NA/REFUSED----- | 3 |

(RESUME ASKING ALL RESPONDENTS)

3. Next, do you currently use e-cigarettes or other electronic vaping products, are you trying to quit using e-cigarettes, have you quit using them or have you never used them? These products include pod-based products like Juul, Blu, or Suorin.
- | | |
|--|----------|
| Current e-cigarette user----- | 1 |
| Trying to quit ----- | 2 |
| Past e-cigarette user----- | 3 |
| Never used an e-cigarette ----- | 4 |
| (DON'T READ) DK/NA/REFUSED----- | 5 |

(ASK Q4 ONLY IF CODES 3-5 IN Q3)

4. And do you never use e-cigarettes or vaping products, or do you use them on occasion?
- | | |
|--|----------|
| Never----- | 1 |
| On occasion ----- | 2 |
| (DON'T READ) DK/NA/REFUSED----- | 3 |

(RESUME ASKING ALL RESPONDENTS)

5. Do you currently use a hookah waterpipe? Hookah is type of waterpipe used to smoke shisha or other tobacco products.
- | | |
|--------------------------------------|----------|
| Yes----- | 1 |
| No----- | 2 |
| (DON'T READ) DK/Refused ----- | 3 |
6. Do you currently use chewing tobacco?
- | | |
|--------------------------------------|----------|
| Yes----- | 1 |
| No----- | 2 |
| (DON'T READ) DK/Refused ----- | 3 |
7. Do you currently use marijuana or hashish in any form? Marijuana is also known as weed or cannabis.
- | | |
|----------|---|
| Yes----- | 1 |
|----------|---|

No-----2
(DON'T READ) DK/Refused ----- 3

(ASK Q8 IF CODES 1-2 IN Q1 OR CODE 2 IN Q2)

8. How worried are you that smoking will make you more susceptible to COVID-19? **(READ LIST, ROTATE TOP TO BOTTOM AND BOTTOM TO TOP)**

Not at all worried-----1
 A little worried-----2
 Moderately worried -----3
 Very worried -----4
 Extremely worried -----5
(DON'T READ) DK/NA-----6

(RESUME ASKING ALL RESPONDENTS)

MY FIRST QUESTIONS ARE ABOUT FLAVORED TOBACCO PRODUCTS. FLAVORED TOBACCO MEANS ANY TOBACCO PRODUCT WITH A DISTINGUISHABLE TASTE OR AROMA OTHER THAN TOBACCO, LIKE FRUIT, CANDY, MINT, MENTHOL, SPICE, CHOCOLATE, OR OTHER SWEET.

9. I'm going to read you a few statements about flavored tobacco products. As you hear each one, please tell me if you agree or disagree with the statement. **(IF AGREE/DISAGREE, ASK: Is that strongly AGREE/DISAGREE, or just somewhat?)**

		<u>STR</u> <u>AGREE</u>	<u>SW</u> <u>AGREE</u>	<u>SW</u> <u>DISAG</u>	<u>STR</u> <u>DISAG</u>	<u>DON'T</u> <u>KNOW/NA</u>			
[]a. It's easy for minors under 21 years of age to buy flavored tobacco products at local retail stores -----	1	-----	2	-----	3	-----	4	-----	5
[]b. Flavored tobacco products are more addictive than non-flavored tobacco products -----	1	-----	2	-----	3	-----	4	-----	5
[]c. State government is doing enough to address the flavored tobacco issue in California-----	1	-----	2	-----	3	-----	4	-----	5
[]d. Local government is doing enough to address the flavored tobacco issue -----	1	-----	2	-----	3	-----	4	-----	5
[]e. Tobacco companies should <u>not</u> be blamed for the health problems faced by smokers -----	1	-----	2	-----	3	-----	4	-----	5

10. My next question is about hookahs. Hookahs are water pipes with a long, flexible tube used to smoke specially made tobacco. Please tell me if you agree or disagree with the following statement: **(IF AGREE/DISAGREE, ASK: Is that strongly AGREE/DISAGREE, or just somewhat?)** "Smoking hookah is less harmful than smoking cigarettes."

Strongly agree -----1
 Somewhat agree -----2

Somewhat disagree-----3
 Strongly disagree -----4
 (DON'T READ) DK/NA-----5

NEXT, I'M GOING TO ASK YOU SOME QUESTIONS ABOUT ELECTRONIC CIGARETTES OR E-CIGARETTES. E-CIGARETTES ARE BATTERY-POWERED DEVICES THAT USUALLY CONTAIN A NICOTINE-BASED LIQUID THAT IS VAPORIZED AND INHALED. YOU MAY ALSO KNOW THEM AS E-CIGS, VAPE-PENS, HOOKAH-PENS, E-HOOKAHS, E-CIGARS, E-PIPES, PERSONAL VAPORIZERS, OR MODS.

11. I'm going to read you a few statements about electronic cigarettes. Using e-cigarettes is also called vaping. As you hear each one, please tell me if you agree or disagree with the statement. (IF AGREE/DISAGREE, ASK: Is that strongly AGREE/DISAGREE, or just somewhat?)

	<u>STR</u> <u>AGREE</u>	<u>SW</u> <u>AGREE</u>	<u>SW</u> <u>DISAG</u>	<u>STR</u> <u>DISAG</u>	<u>(DON'T READ)</u> <u>DON'T</u> <u>KNOW/NA</u>
[]a. Electronic cigarettes (or e-cigarettes) are expensive -----	1	2	3	4	5
[]b. It is easy for minors under 21 years of age to buy e-cigarettes at local retail stores-----	1	2	3	4	5
[]c. E-cigarettes help smokers cut down, reduce, or quit using other tobacco products, such as tobacco cigarettes -----	1	2	3	4	5
[]d. E-cigarettes are <u>not</u> as addictive as cigarettes -----	1	2	3	4	5
[]e. Using e-cigarettes can cause a vaping-related lung injury-----	1	2	3	4	5

12. These next questions are about policies and laws to regulate tobacco products. Please tell me if you would support or oppose each of the following policies: (IF SUPPORT/OPPOSE, ASK: Is that strongly SUPPORT/OPPOSE, or just somewhat?)

	<u>STR</u> <u>SUPP.</u>	<u>SW</u> <u>SUPP.</u>	<u>SW</u> <u>OPP.</u>	<u>STR</u> <u>OPP.</u>	<u>(DON'T READ)</u> <u>DON'T</u> <u>KNOW/NA</u>
[]a. Banning the sale of all flavored tobacco products, including mint, menthol, and fruit flavors-----	1	2	3	4	5
[]b. Banning the sale of all flavored e-cigarettes, including mint, menthol, and fruit flavors-----	1	2	3	4	5
[]c. Taxing e-cigarette products based on the amount of nicotine the product contains-----	1	2	3	4	5

- []d. Mandating warning signs about the health risks of vaping at all retailers where vaping products are sold and on vaping advertisements ----- 1 ----- 2 ----- 3 ----- 4 ----- 5
- []e. Limiting the maximum amount of nicotine that can be included in one e-cigarette pod ----- 1 ----- 2 ----- 3 ----- 4 ----- 5

(RESUME ASKING ALL RESPONDENTS)

13. Which one or more of the following would you use to describe yourself? **(READ LIST; ACCEPT MULTIPLE RESPONSES)**
- | | |
|--|----|
| Black or African American ----- | 1 |
| White ----- | 2 |
| Hispanic or Latino ----- | 3 |
| American Indian or Alaska Native ----- | 4 |
| Middle-Eastern (for example: Afghani, Syrian, Persian, Yemeni) ----- | 5 |
| East Asian (Chinese, Japanese, or Korean) ----- | 6 |
| Southeast Asian (Filipino, Vietnamese, Hmong, Mien) ----- | 7 |
| South Asian (Indian, Pakistani, Sri Lankan) ----- | 8 |
| Pacific Islander or Hawaiian ----- | 9 |
| Other (SPECIFY _) ----- | 10 |
| (DON'T READ) | |
| DK/Refused ----- | 11 |
14. How many members of your household, including yourself, are 18 years of age or older? **(RECORD VEBATIM RESPONSE)** _____
15. How many children less than 18 years of age live in your household? **(RECORD VERBATIM RESPONSE)** _____
16. What is the highest grade or year of school you completed? **(RECORD AND CODE RESPONSE)**
- Never attended school/

- attended kindergarten----- 1
 Grades 1-8-----2
 Grades 9-11 -----3
 High school or GED -----4
 Some college or Associate's Degree -----5
 Bachelor's Degree-----6
 Graduate or Professional Degree
 (MA/JD/MD/PhD) -----7
(DON'T READ) DK/Refused -----8
17. What best describes your employment situation today?
 Employed full-time ----- 1
 Employed part-time or
 seasonally employed-----2
 Unemployed and currently seeking
 employment-----3
 Unemployed and not seeking
 employment-----4
 Homemaker or stay at home parent----- 5
 Student-----6
 Retired ----- 7
 On disability----- 8
(DON'T READ) DK/Refused -----9
18. What is your yearly household income, not including federal or state assistance?
 Less than \$20,000 ----- 1
 \$20,001 - \$30,000-----2
 \$30,001 - \$40,000-----3
 \$40,001 - \$50,000-----4
 \$50,001 - \$75,000----- 5
 \$75,001 - \$100,000-----6
 \$100,001-\$150,000----- 7
 Over \$150,000 ----- 8
(DON'T READ) DK/Refused -----9
19. How do you describe yourself? **(READ LIST)**
 Male ----- 1
 Female -----2
 Non-binary -----3
 Other **(PLEASE SPECIFY)** -----4
(DON'T READ) DK/Refused -----5
20. Are you transgender?
 Yes----- 1
 No-----2
(DON'T READ) DK/Refused ----- 3

THANK AND TERMINATE

LANGUAGE OF INTERVIEW (BY OBSERVATION):	English -----	1
	Spanish-----	1
REGISTRATION:	Democrat -----	1
	Republican -----	2
	No party preference -----	3
	Other -----	4