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Journal Tobacco Control, 26(3)

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Publication Date 2017-05-01

Peer reviewed

Support for electronic cigarette regulations among California voters

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ABSTRACT

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Received 5 January 2016 Accepted 28 April 2016 Published Online First 20 May 2016



After decades of decline in combustible tobacco use, electronic cigarettes (e-cigarettes) are becoming increasingly popular among adults and youth.¹ The long-term public health impact of e-cigarettes is still unknown; some experts predict that they will reduce tobacco-related disease among former cigarette smokers,² ³ and other experts predict that they will renormalise nicotine use and increase nicotine dependence among youth.⁴ ⁵

Until recently, e-cigarette use and sales were unregulated in the USA. Policies regarding e-cigarette use in public spaces, retailer locations and licensing, and flavours vary within and across states and municipalities. Several types of e-cigarette regulations have been proposed and/or implemented in various locations,⁶ including bans on vaping where cigarette smoking is banned, taxes on sales of e-cigarettes and/or e-liquids, requiring retailers to be licensed, and regulation of flavours.

As information becomes available, public support for policies to regulate e-cigarettes is evolving. In a sample of US adults in 2013,⁷ fewer than half of respondents believed that vaping should always be banned in restaurants (48%), bars (33%) or parks (26%). One year later⁸ most US adults supported bans on e-cigarettes where cigarette smoking is banned (57%), bans on sales to minors (71%), and marketing restrictions (71%), although support for bans on flavours remained low (34%).⁹ While these studies were conducted independently of each other, all were based the same panel of respondents, the KnowledgePanel. A recent national poll (October, 2015)¹⁰ found even stronger support for banning use in indoor public places (69%) and e-cigarette taxes (64%). However, only 48% supported bans on flavoured nicotine cartridges. Continued monitoring of policy support at the national, state, and local level is helpful to determine when specific populations will be receptive to new regulations, because tobacco-related social norms vary geographically.

California has been a leader in the US tobacco control movement since the 1990s,¹¹ and tobacco-related social norms in California typically foretell the social norms that will diffuse nationwide. Although California recently has lagged behind other states in raising tobacco taxes, it has been at the forefront of local efforts to restrict smoking in restaurants, bars, outdoor public areas, and multi-unit housing to protect non-smokers from secondhand smoke and establish antismoking social norms.¹² It is one of the first states where some counties and cities have passed vape-free laws and required licensing of vape shops. Similar restrictions on e-cigarettes could guide efforts in other states. However, it is unclear whether Californians will support statewide legislation to control e-cigarettes.

In September–October 2015, we conducted a representative survey of registered voters throughout California to assess support for these proposed policies. We examined support across demographic subgroups stratified by age, gender, race/ethnicity, education, income, political affiliation and smoking status.

METHOD

Data source

We added questions about support for potential e-cigarette policies on the 17 September–4 October 2015 Field Poll, an independent, non-partisan survey of California public opinion. Each poll contains a stratified random sample of approximately 1000 registered voters (registration-based sampling), weighted by demographic characteristics, party affiliation and geographic area to be representative of the population of California registered voters. The survey is administered through a computer-assisted telephone interviewing (CATI) system in English and Spanish, on landlines and cell phones. The study was approved by the USC Institutional Review Board.

Measures

Questions were developed by a committee of representatives from tobacco control organisations, universities, health-related voluntary agencies and other individuals with expertise in tobacco control.



To cite: Unger JB, Barker D, Baezconde-Garbanati L, et al. Tob Control 2017;**26**:334–337.



The questions (shown in table 1) were based on proposed state and local regulations⁶ and were presented in random order.

Demographic, personal and geographic variables included age, gender, race/ethnicity (recoded to Asian/Pacific Islander, African American, Hispanic, White), education (recoded to less than high school, high school, some college, college graduate), annual household income (in \$20 000 increments), current smoking status (every day or some days vs not at all), political orientation (liberal, conservative or middle of the road), and region of California (Northern vs Southern; Coastal vs Inland).

Statistical analysis

Weighted multivariate logistic regression was used to identify the demographic, personal and geographic variables associated with support for each e-cigarette policy. Next, we identified latent classes of voters based on their support for various combinations of the four policies, using the LCA (latent class analysis) procedure in SAS. The LCA model included the four policy questions. We examined 1, 2, 3 and 4-class solutions. The Akaike information criterion (AIC) and Bayesian information criterion (BIC) values were compared across models to select the best-fitting model, where lower values reflect more optimal balance between model fit and parsimony.¹³ Respondents were placed into their most likely class. χ^2 Analyses were used to compare the classes on demographic, personal and geographic variables. All statistics and estimates were weighted to the California population.

RESULTS

The sample represented the voting population of California (mean age=48.4 years, SD=17.7 years, range=19–97 years, 53% female). The majority of respondents were White (56.6%), followed by Hispanic (27.2%), Asian/Pacific Islander (8.2%) and African American (8.0%). Most respondents (76.9%) had education beyond high school. The median income range was \$40 000–\$80 000 per year. The prevalence of everyday or some-day smoking was 12.4%.

Correlates of support for specific e-cigarette policies

Table 1 shows the percentage of respondents who supported each policy and associations between each predictor and support for each policy. Overall policy support was high, ranging from 57% to 74%. Non-smokers supported all policies more strongly than smokers did. Compared with people who were 'middle of the road' politically, liberals were more likely to support e-cigarette taxes and retailer licensing, and conservatives were less likely to support e-cigarette taxes, retailer licensing, and restrictions on flavours. Northern Californians showed higher support for e-cigarette taxes, retailer licensing, and restrictions on flavours, relative to Southern Californians. Respondents ages 35 and older were more likely to support restrictions on flavouring relative to young adults. After controlling for the other personal, demographic, and geographic variables, there were no significant differences in policy support among racial/ethnic or educational groups.

	Pass a state law prohibiting the use of e-cigarettes and other vaping products in places where smoking is not allowed, such as in restaurants, bars and workplaces* 70%		Tax e-cigarettes and other vaping products in California, and devote the money for public education programmes, research and the enforcement of laws relating to their use* 74%		Regulate and license shops that sell e-cigarettes and other vaping products in California in the same way as stores that sell regular tobacco cigarettes* 74%		Pass a state law that restricts adding flavours to e-cigarettes and other vaping products to reduce their appeal to young people* 57%	
Per cent agree strongly or somewhat	OR†	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age (years)	1.00	(0.99 to 1.01)	1.00	(0.99 to 1.01)	1.00	(0.99 to 1.01)	1.02	(1.01 to 1.03)
Female (vs male)	0.80	(0.57 to 1.10)	0.89	(0.62 to 1.27)	0.90	(0.63 to 1.30)	0.69	(0.51 to 0.95)
Asian	0.69	(0.37 to 1.29)	0.61	(0.32 to 1.17)	0.70	(0.35 to 1.41)	0.77	(0.42 to 1.40)
African American	0.63	(0.35 to 1.13)	0.91	(0.45 to 1.81)	0.85	(0.43 to 1.68)	0.98	(0.55 to 1.76)
Hispanic	0.74	(0.49 to 1.12)	0.89	(0.56 to 1.40)	0.70	(0.44 to 1.10)	1.38	(0.93 to 2.06)
White	1.00		1.00		1.00		1.00	
Less than high school	0.54	(0.26 to 1.11)	1.12	(0.46 to 2.71)	0.94	(0.39 to 2.24)	0.77	(0.35 to 1.70)
High school	1.00		1.00		1.00		1.00	
Some college	1.27	(0.80 to 2.01)	1.34	(0.82 to 2.20)	1.13	(0.68 to 1.86)	1.25	(0.79 to 1.97)
College	1.27	(0.79 to 2.03)	1.31	(0.79 to 2.17)	1.23	(0.73 to 2.08)	1.57	(0.99 to 2.50)
Income	1.10	(0.99 to 1.22)	1.07	(0.96 to 1.20)	1.13	(1.01 to 1.27)	1.02	(0.93 to 1.13)
Smoker	0.35	(0.22 to 0.54)	0.35	(0.21 to 0.59)	0.37	(0.22 to 0.63)	0.44	(0.27 to 0.72)
Conservative	0.78	(0.52 to 1.16)	0.55	(0.37 to 0.82)	0.57	(0.37 to 0.86)	0.67	(0.46 to 0.99)
Liberal	1.11	(0.74 to 1.65)	1.88	(1.16 to 3.04)	1.64	(1.01 to 2.66)	1.07	(0.74 to 1.55)
Middle of the road	1.00		1.00		1.00		1.00	
Region (North/South)	1.29	(0.92 to 1.83)	1.74	(1.19 to 2.54)	1.84	(1.25 to 2.72)	1.57	(1.14 to 2.16)
Region (Coastal/Inland)	1.09	(0.75 to 1.58)	0.93	(0.63 to 1.39)	1.17	(0.77 to 1.76)	1.42	(0.99 to 2.02)

ORs are adjusted for all other variables in the logistic regression model.

ORs shown in bold (with CIs that do not include 1) are significant at p<0.05.

*Policy questions were preceded by, "I am going to read some proposals that have been made about the use of electronic cigarettes, also referred to as vaping or e-cigarettes. E-cigarettes are small, battery-powered devices that enable users to smoke by inhaling a vapor of a liquid nicotine mixture, instead of burning a cigarette. For each proposal, please tell me whether you favor or oppose it."

†Response options were favor strongly, favor somewhat, oppose somewhat, or oppose strongly.

Brief report

Latent class analysis

The AIC and BIC criteria supported a three-class solution $(G^2=1.79, AIC=29.79, BIC=98.30, entropy=0.83, df=1)$. The largest class (61% of the sample) was comprised of respondents who strongly supported e-cigarette regulations. Among this group, 100% supported bans on e-cigarettes where smoking is not allowed, 94% supported taxing e-cigarettes, 100% supported licensing stores, and 79% supported restricting flavours. The next-largest class (29% of the sample) was comprised of respondents who opposed e-cigarette regulations. Among this group, 0% of respondents supported any of the proposed regulations. The smallest class (10% of the sample), the 'Swing Voters', had intermediate or mixed opinions about e-cigarette regulations. Among this group, 100% supported banning e-cigarettes where smoking is not allowed, 40% supported taxing e-cigarettes, 22% supported licensing stores, and 25% supported restricting flavours.

There were significant differences across the three latent classes on education, income, cigarette smoking status and political orientation (table 2). Supporters were more likely to be college graduates (52%, vs 39% of Opposers and 38% of Swing Voters). Supporters had higher income (37% over \$80 000/year, vs 30% of Opposers and 27% of Swing Voters). The Opposers had especially low incomes (23% under \$20 000/year, vs 12% of supporters and 19% of Swing Voters). Opposers were most likely to be current smokers (22%, vs 8% of Supporters and 16% of Swing Voters). Swing Voters were most likely to be politically conservative (32%, vs 28% of Opposers and 20% of Supporters). Supporters were most likely to be politically liberal (29%, vs 22% of Opposers and 22% of Swing Voters). The classes did not differ significantly on age, gender or race/ ethnicity.

DISCUSSION

This statewide sample of California voters reported widespread support for policies to regulate e-cigarettes. Nearly ³/₄ of Californians supported policies to restrict e-cigarette use in places where smoking is not allowed, tax e-cigarettes, and require retailers to be licensed, and over ¹/₂ supported banning flavours.

We identified groups of people who are broadly supportive of e-cigarette regulations (highly educated, high-income, liberal non-smokers), as well as groups who are broadly opposed to e-cigarette regulations (less educated, lower-income, conservative smokers). The Opposers and Swing Voters are important groups to target with e-cigarette regulatory messages. Given the importance of protecting children and non-nicotine-users from becoming nicotine dependent, the tobacco control community could highlight the potential effects of e-cigarettes on those groups. Another tactic is to consider incremental change¹⁴ by first seeking support for a statewide vape-free law prior to legislation that encompasses other statewide e-cigarette regulations.

Limitations

Findings are based on the opinions of Californians who registered to vote and agreed to participate in a survey. Results may not generalise to non-voters, undocumented residents or people who are highly mobile or wary of surveys. Future studies could simplify the wording of the policy questions and avoid doublebarreled questions.

Implications

Most voting Californians support policies to preserve vape-free air, regulate e-cigarette retailers to prevent sales to minors, and

Table 2 Latent classes of California voters

	Supporters	Opposers	Swing Voters	
Per cent of sample	61%	29%	10%	
Support ban on e-cigarettes where smoking is not allowed	100%	0%	100%	
Support taxing e-cigarettes	94%	0%	40%	
Support licensing stores	100%	0%	22%	
Support restrictions on flavours	79%	0%	25%	
Age group				ns
18–24	10	10	14	
25–34	15	20	21	
35–44	17	14	12	
45–54	18	18	18	
55–64	18	16	18	
65+	21	23	19	
Female (%)	55	48	51	ns
Race/ethnicity				ns
White	58	50	59	
African American	8	10	6	
Hispanic	26	32	26	
Asian	8	8	9	
Education				χ ² =28.9*
Less than high school	4	9	2	
High school	16	22	18	
Some college	28	31	42	
College graduate	52	39	38	
Income				χ ² =27.3*
<20K	12	23	19	
20–40	18	17	17	
40–60	12	12	16	
60–80	11	10	11	
80–100	27	18	19	
100+	10	12	8	
% smoke every day or some days	8	22	16	χ ² =33.1*
% conservative	20	28	32	$\chi^2 = 10.0^*$
% liberal	29	22	22	$\chi^2 = 6.2^*$
*p<0.05.				

ns, nonsignificant.

generate tax revenue to fund education, research, and enforcement. Continued efforts are needed to enact and enforce legislation to protect children and non-smokers from the potential risks associated with e-cigarettes.^{4 5} If policymakers desire to pass such regulations, messaging to educate voters about these potential risks is imperative.

What this paper adds

- The majority of California voters support e-cigarette regulations.
- Support for vape-free policies, taxation, and retailer licensing is higher than support for banning flavours.
- Health communications are needed to educate Policy Opposers and Swing Voters about the benefits of regulating e-cigarettes.

Contributors JBU conceptualised the study, conducted the analyses, and wrote the first draft. DB conceptualised the study, developed measures, and interpreted results. LB-G conceptualised the study, developed measures, and interpreted results. DWS developed measures, obtained IRB approval, and interpreted results. SS conceptualised the study, developed measures and interpreted results. All authors read and approved the final draft.

Funding This work was supported by the California Tobacco-Related Disease Research Program, grant 24ST-0045.

Competing interests None declared.

Ethics approval University of Southern California Keck School of Medicine IRB.

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement The data are owned by the Field Corporation. Field will make the data available on its website.

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Tob Control 2017 26: 334-337 originally published online May 20, 2016 doi: 10.1136/tobaccocontrol-2016-052918

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