

# Reasons Driving Teen And Young Adult E-cigarette Vapers To Switch To Or Add In Combustible Tobacco Cigarettes

Enny Banjo, Zoya Ahadian, Nikita Kasaraneni, Howard Chang, Sarala Perera, and Laura E. Crotty Alexander, MD  
*CSUDH Dominguez Hills & UC San Diego Health*

## Introduction

The introduction of e-cigarettes to the United States in 2007 marked a pivotal moment, igniting a rapid surge in their utilization. Of particular concern is the prevalence of e-cigarette usage among adolescents, spanning both middle school (ages 10-14) and high school (ages 14-18) students, a rate surpassing that among adults. This phenomenon prompts critical inquiry into whether e-cigarette use among adolescents serves as a precursor to traditional cigarette smoking—a phenomenon often referred to as the "gateway effect".

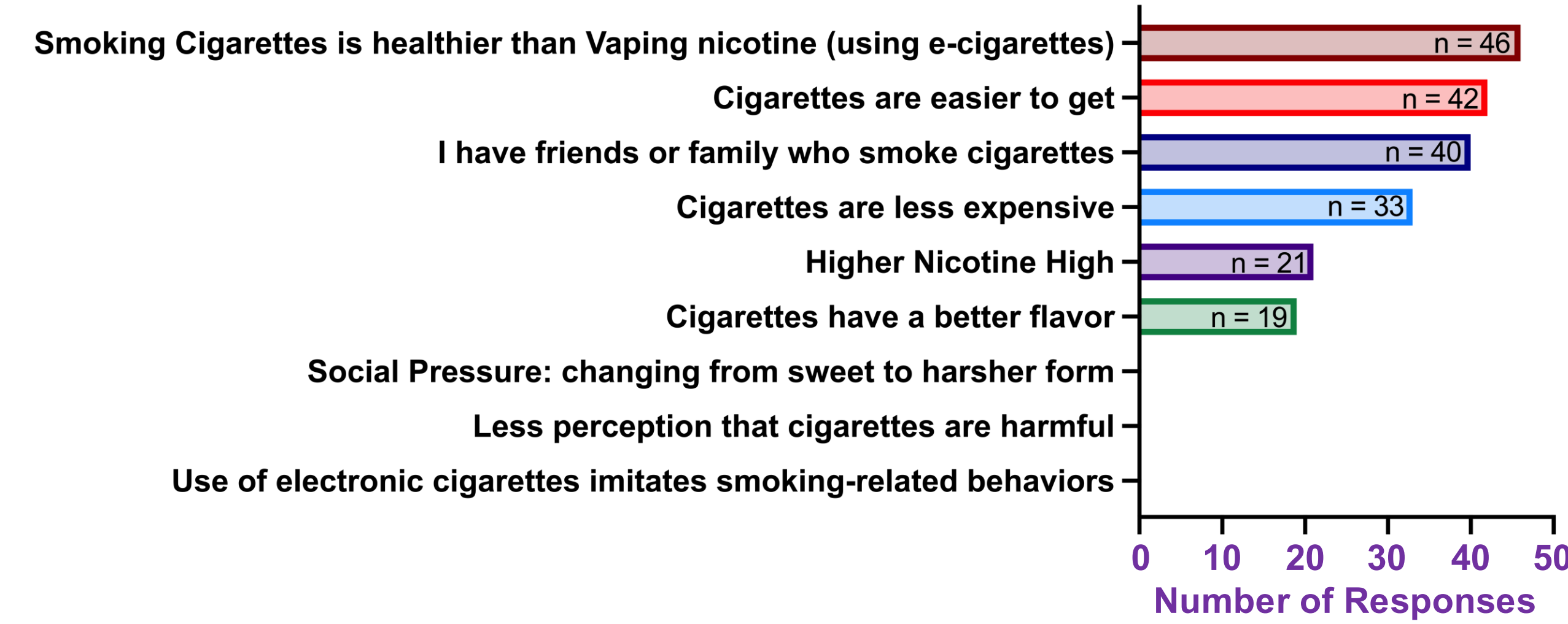
### Research Objectives:

- ❖ To unravel the underlying mechanisms propelling the gateway effect from vaping nicotine to smoking combustible cigarettes.
- ❖ To explore other inhalant usage patterns, including transitions from cigarette smoking to vaping nicotine, concurrent use of both nicotine vapes and cigarettes, and cessation of both.
- ❖ To understand the motivations behind these usage patterns and their implications for public health interventions.

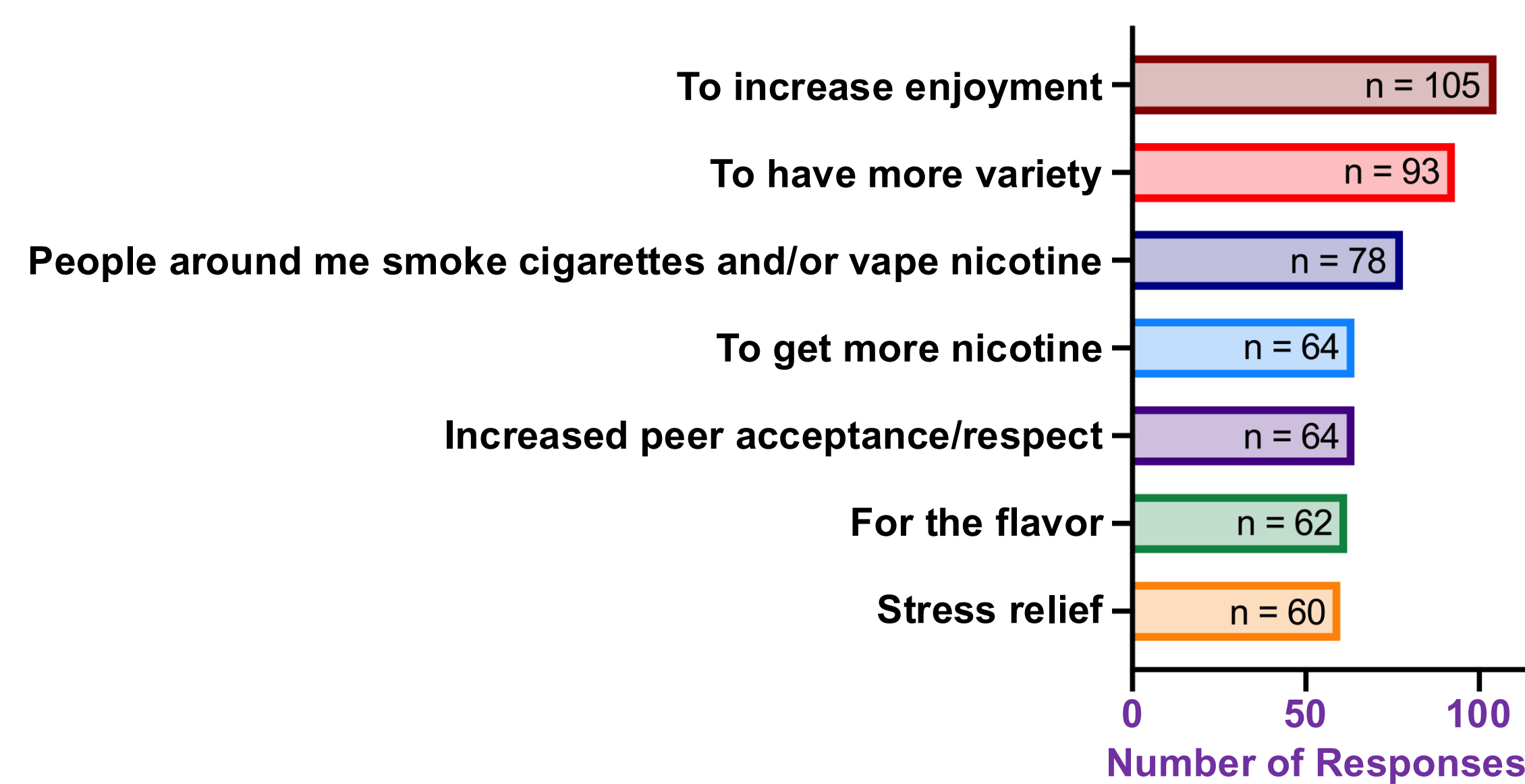
## Methods

- ❖ Developed a 33-item questionnaire using Survey Monkey, incorporating established inhalant questions from UC San Diego and the University of Colorado Anschutz 2021 Healthy Kids Survey.
- ❖ Designed and included novel questions exploring reasons behind switching and the addition of combustible tobacco in nicotine vapers.
- ❖ Obtained approval from the UCSD institutional review board (IRB) for the survey.
- ❖ Distributed the survey on social media platforms, including Facebook, Craigslist, and Instagram, while excluding Twitter and Reddit to reduce bot responses.
- ❖ Implemented two bot-detection methods: 1. text-on-image input, and 2. age inquiries in written and visual formats, resulting in a total of 864 complete, non-bot survey responses for analysis.

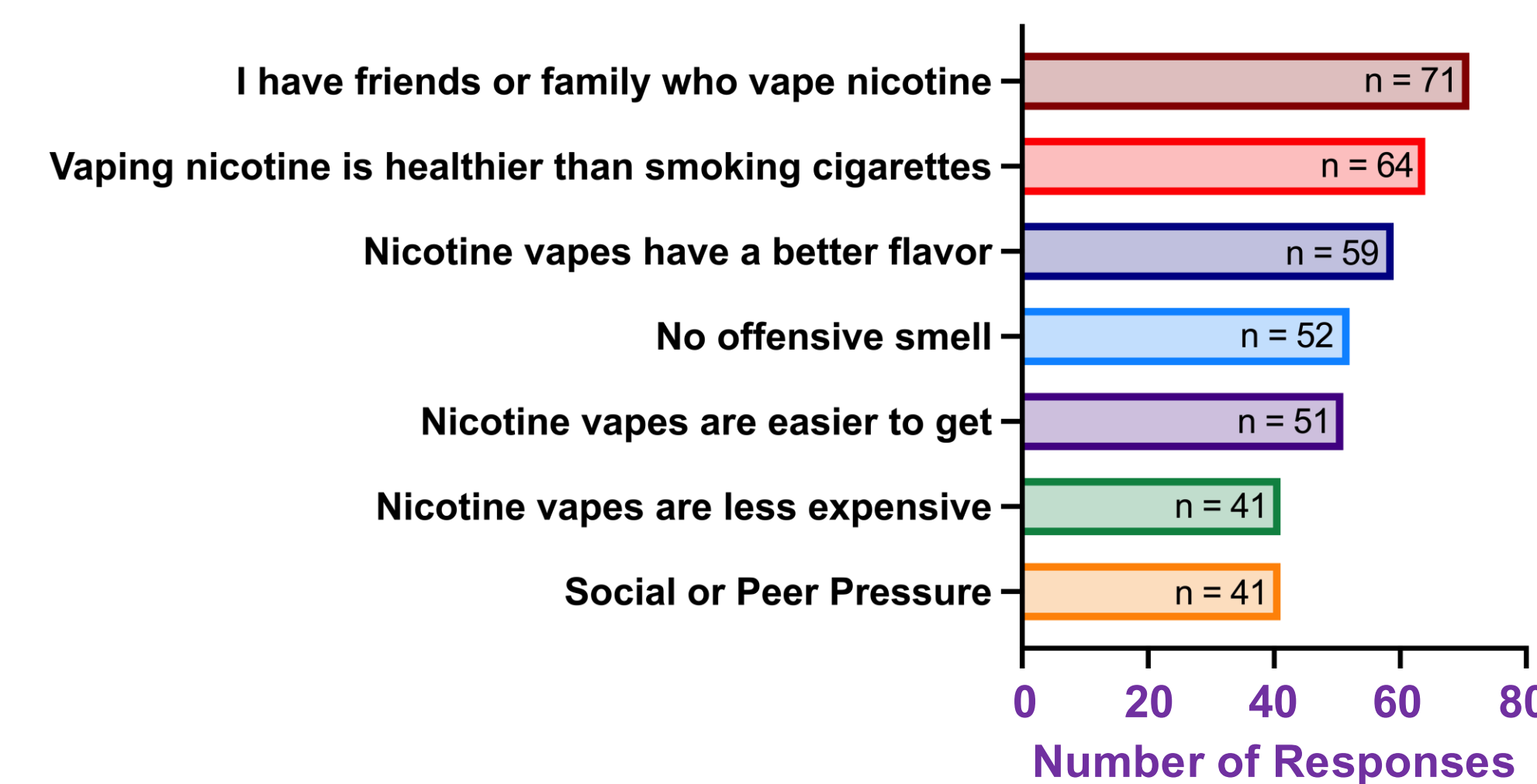
## Results



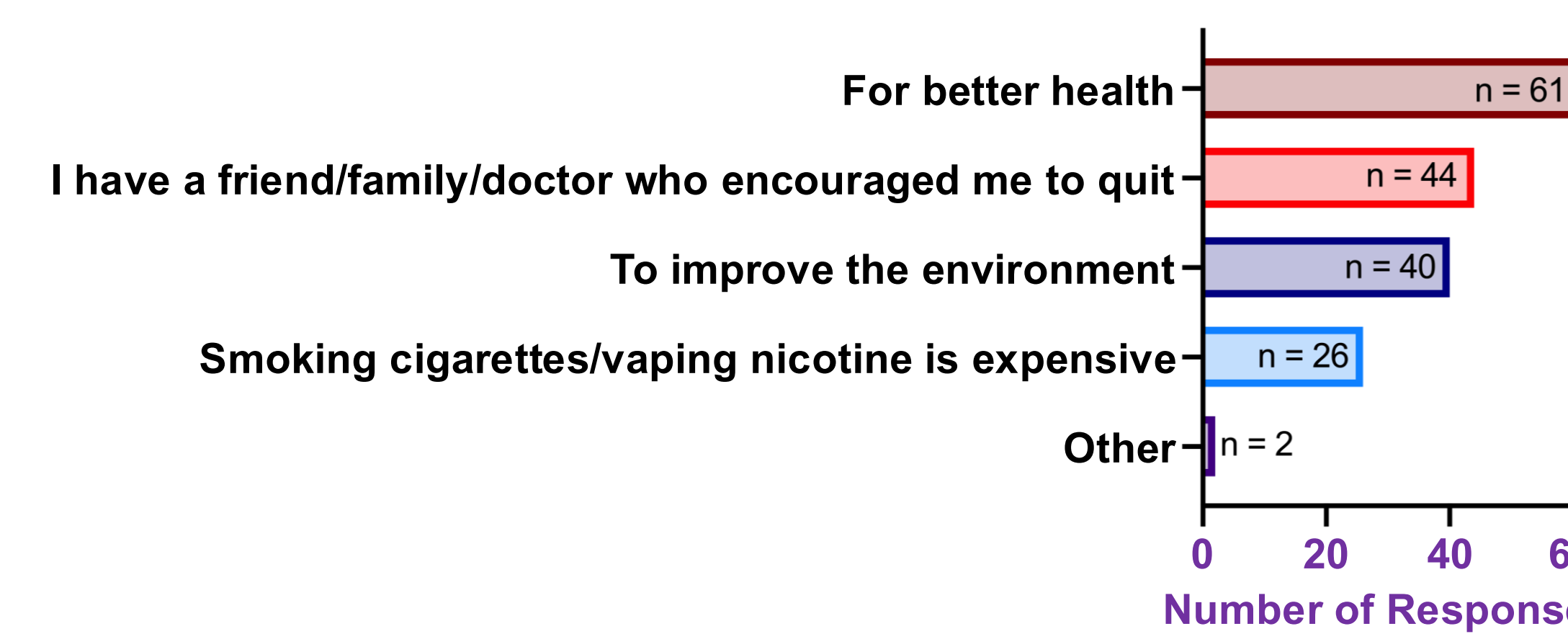
**Figure 1. Switching From Vaping Nicotine to Smoking Cigarettes.** The driving factors behind switching from vaping to smoking include the belief that smoking is healthier, ease of obtaining cigarettes, and influence from friends or family who smoke. Additional factors include the lower cost of cigarettes, higher nicotine content, and the perception that cigarettes have better flavor. Notably, no respondents cited social pressure, the transition from sweet to harsh forms, reduced perception of harm, or the imitation of smoking-related behaviors by e-cigarettes as reasons for switching from vaping to smoking.



**Figure 3. Dual Use of Nicotine Vapes (e-cigarettes) and Cigarettes.** The primary drivers for dual use of nicotine vapes and cigarettes include increasing enjoyment, having more variety, and being influenced by people around them who smoke and/or vape. Additional factors include the desire to get more nicotine, enhance peer acceptance or respect, enjoy different flavors, and seek stress relief.



**Figure 2. Switched from Smoking cigarettes to Vaping.** The primary reasons for transitioning from smoking to vaping include influence from friends or family who vape, the belief that vaping is healthier than smoking, and the perception that vapes have better flavor. Additional factors include the absence of offensive smells, the ease of obtaining vaping products, the lower cost of vapes, and social or peer pressure.



**Figure 4. Quitting Smoking Cigarettes or Quitting Vaping.** The primary motivating factors behind people quitting smoking and/or vaping include health benefits, encouragement from friends, family, or doctors, and to improve the environment. Other factors included the high cost of smoking or vaping.

Table 1	All (609) N (%)	Switched from Vaping to Smoking (104) N (%)	Switched from Smoking to Vaping (178) N (%)	Dual Users (223) N (%)	Quit Vaping and/or Smoking (93) N (%)	Other (11) N (%)
<b>Ages</b>						
16 – 21 years	11.8 (72)	14.4 (15)	9.6 (17)	11.2 (25)	15.1(14)	9.1 (1)
>21 years	88.2 (537)	85.6 (89)	90.4 (161)	88.8 (198)	84.9 (79)	90.9 (10)
<b>Gender</b>						
Female	30.0 (183)	35.6 (37)	28.1 (50)	29.1 (65)	30.1 (28)	27.3 (3)
Male	58.8 (358)	51 (53)	60.7 (108)	58.3 (130)	64.5 (60)	63.6 (7)
Transgender Female	3.8 (23)	4.8 (5)	3.9 (7)	4.0 (9)	2.2 (2)	0 (0)
Transgender Male	6.7 (41)	8.7 (9)	5.6 (10)	8.5 (19)	3.2 (3)	0 (0)
Gender queer/non-binary	0.7 (4)	0 (0)	1.7 (3)	0 (0)	0 (0)	9.1 (1)
<b>Race/Ethnicity*</b>						
Hispanic or Latino	8.0 (49)	2.9 (3)	11.2 (20)	7.2 (16)	9.7 (9)	9.1 (1)
Black or African American	5.7 (35)	2.9 (3)	5.6 (10)	6.7 (15)	7.5 (7)	0 (0)
White	78.7 (479)	89.4 (93)	78.1 (139)	79.4 (177)	66.7 (62)	72.7 (8)
Asian or Asian American	9.2 (56)	8.7 (9)	8.4 (15)	9.4 (21)	9.7 (9)	18.2 (2)
American Indian or Alaska Native	6.4 (39)	2.9 (3)	6.2 (11)	6.3 (14)	11.8 (11)	0 (0)
Native Hawaiian or other Pacific Islander	2.1 (13)	2.9 (3)	1.7 (3)	1.8 (4)	3.2 (3)	0 (0)

## Discussion

- ❖ Our study explored reasons behind transitions from vaping nicotine to smoking cigarettes, initially hypothesizing nicotine addiction as the primary driver, along with factors such as cost, accessibility, and perceptions of harm.
- ❖ Our findings revealed a nuanced picture, with participants citing a variety of motivations for switching, including beliefs that smoking is healthier than vaping, social influences, cost, and taste preferences.
- ❖ An unexpected finding was the perception among some participants that smoking is healthier than vaping, contradicting prevailing literature.
- ❖ Regarding the transition from smoking cigarettes to vaping nicotine, participants cited diverse motivations, including social influences, harm perception, flavor preferences, and smell avoidance, challenging the notion of vaping as a healthier alternative.
- ❖ Our findings support vaping as a potential harm reduction strategy for smokers but highlight the need for interventions to address misconceptions.
- ❖ Dual use of nicotine vapes and cigarettes was driven by factors beyond nicotine intake, such as enjoyment, social influences, and stress relief.
- ❖ While health concerns were a primary motivator for quitting smoking or vaping, other factors like cost and social influences also played significant roles.

## Conclusion

These findings emphasize the necessity for tailored interventions that consider individual preferences, social influences, and perceptions of harm to enhance smoking cessation and harm reduction initiatives effectively. Further investigation is required to delve deeper into these dynamics and develop evidence-based strategies to tackle the public health issues associated with smoking and vaping. Additionally, exploring the reasons behind inhalant usage among adolescents and potential disparities compared to older users warrants further research to address age-specific concerns comprehensively.

## Acknowledgements

This project was supported by a California State Tobacco Related Disease Research Program (TRDRP) Smoke and Vape Free Scholar Initiative (SVFSI; T32SR5359, PI LCA), Research Award (T30IP0965, PI LCA), NIH NHLBI (K24HL155884 and R01HL137052, PI LCA), and VA Merit (1I01BX004767, PI LCA).