

### **Supplementary questions: A/Prof Becky Freeman**

1. In your view, are governments doing enough to monitor and counter dangerous public health misinformation on social media?

Unfortunately, in short, no. Most monitoring and countering of misinformation and disinformation on social media relies heavily on civil society, and the general public, to either report dangerous content to social media companies for action or to appropriate government authorities for action. Social media companies often have vague or voluntary policies that lack meaningful consequences for users who post mis/disinformation. There is very limited pro-active monitoring and enforcement even for areas where governments have very clear laws in place, such as tobacco and vape marketing. Current systems over rely on complaints from interested parties, such as tobacco control experts and nongovernmental organisations, who are not adequately funded to undertake this sort of systematic monitoring.

While I fully support all levels of government in creating and posting effective, evidence based health messages to these same platforms, including through paid campaigns, it is not enough to drown out the omnipresent misinformation and marketing. Sustained health communication campaigns must be paired with effective legislation, monitoring, and enforcement to protect people from dangerous public health misinformation.

2. How can governments measure the success and impact of online public health campaigns?

I have recently published a new paper on this very topic with other University of Sydney colleagues.

Kite J, Chan L, MacKay K, Corbett L, Reyes-Marcelino G, Nguyen B, Bellew W, Freeman B. A Model of Social Media Effects in Public Health Communication Campaigns: Systematic Review. J Med Internet Res. 2023 Jul 14;25:e46345.

It is an Open Access paper and can be freely accessed here:

<https://pubmed.ncbi.nlm.nih.gov/37450325/>

Essentially, online campaign evaluations need to move beyond impact metrics that only measure top-line data such as views, likes, comments, and shares and assess the health outcomes of campaigns in terms of attitude, knowledge, beliefs, and behaviour change. This requires additional data collection and investment.

3. Since the Generation Vape project commenced in 2021, have you observed any noticeable shift in young people's attitudes to vaping?

### **Awareness of harms of vaping**

For each of the statements in, table 41 below, respondents were asked “How strongly do you agree or disagree with each of the following statements about vapes?” with agreement measured on a 5-point scale ranging from 1=“strongly disagree” to 5=“strongly agree”, and a score of 3 being neutral.

Over the Generation Vape survey waves, there were significant increases in agreement that "vapes are unsafe to use" (from an average score of 3.96 in Wave 2 to 4.04 in Wave 4,  $p=0.019$ ), "vaping can harm the developing brain" (from 4.04 in Wave 2 to 4.13 in Wave 4,  $p=0.040$ ), "vaping can damage the lungs" (from 4.22 in Wave 2 to 4.27 in Wave 4,  $p=0.029$ ), "vaping during adolescence can cause addiction" (from 4.16 in Wave 2 to 4.24 in Wave 4,  $p=0.025$ ), and "it is unsafe to use vapes around others" (from 3.68 in Wave 2 to 3.78 in Wave 4,  $p=0.038$ ). There was no significant change in agreement with the statement "A prescription from a doctor is needed to buy a nicotine vape" ( $p=0.778$ ).

Conversely, there was a significant decrease in agreement with the statements that "vapes are healthier than smoking tobacco cigarettes" (from 3.01 in Wave 2 to 2.76 in Wave 4,  $p<0.001$ ), and "vapes help smokers to quit" (from 2.96 in Wave 2 to 2.79 in Wave 4,  $p<0.001$ ). Agreement with the statement "Nicotine is harmless" remained relatively stable across the waves ( $p=0.331$ ).

**In general, the results suggests that young people tend to agree (as indicated by mean scores greater than 3) with all statements that present vaping negatively. Conversely, they tend to disagree (as reflected by mean scores less than 3) with statements that portray vaping in a positive light. Importantly, this pattern appears to be intensifying over time.**

**Table 41: Please indicate how strongly you agree or disagree with each of the following statements about vapes: (Asked of all young people)^**

Statement/question	Mean agreement score^				p-value*
	Overall	Wave 2	Wave 3	Wave 4	
<b>Negative statements about vaping:</b>					
Vapes are unsafe to use	3.99	3.96	3.97	4.04	0.019
Vaping can harm the developing brain	4.07	4.04	4.06	4.13	0.040
Vaping can damage the lungs	4.23	4.22	4.20	4.27	0.029
Vaping during adolescence can cause addiction	4.18	4.16	4.16	4.24	0.025
It is unsafe to use vapes around others	3.73	3.68	3.73	3.78	0.038
A prescription from a doctor is needed to buy a nicotine vape	3.08	3.10	3.05	3.07	0.778
<b>Positive statements about vaping:</b>					
Vapes are healthier than smoking tobacco cigarettes	2.89	3.01	2.88	2.76	<0.001
Vapes help smokers to quit	2.87	2.96	2.86	2.79	<0.001
Nicotine is harmless	1.91	1.89	1.92	1.92	0.331

^ 1="Strongly disagree", 2="Disagree", 3="Neither agree nor disagree", 4="Agree", 5="Strongly agree"

^ Means are weighted for gender, state, remoteness and age of the 2016 Australian population

\*p-value obtained is for test of differences in means across wave after adjustment for sex, age, Aboriginal or Torres Strait Islander status, remoteness of residence area, SES of residence area and language spoken at home.

### Vaping and smoking norms

Concerning the question "Do your friends vape?" (Table 25), a significant difference was observed between the waves with **an increase in the proportion of respondents who reported that most of their friends vape in Wave 4 compared to Wave 2 (14.9% vs 11.0%, p<0.001)**. There was also a significant decrease in the proportion of respondents reporting that none of their friends vape in wave 4 as compared to wave 2 (18.7% vs 21.4%, p=0.004). However, no significant differences were observed in the proportions of respondents who stated that some of their friends vape or they know people who vape but they are not friends across the waves.

**Table 25: Do your friends vape? (Multiple response question asked of all young people)^**

Response	Total	Wave 2	Wave 3	Wave 4	p-value*
	n=6749	n=2961	n=2062	n=1726	
Most of my friends vape	12.7%	11.0%	12.4%	14.9%	<0.001
Some of my friends vape	38.7%	38.2%	39.3%	38.6%	0.499
I know people who vape but they are not my friends	35.2%	34.6%	36.9%	34.0%	0.426
None of my friends vape	19.2%	21.4%	17.3%	18.7%	0.004

^ Percentages are weighted for gender, state, remoteness and age of the 2016 Australian population

^ Multiple response question with column percentages representing % of respondents (not responses).

\*p-value obtained is for test of differences in proportions across wave after adjustment for sex, age, Aboriginal or Torres Strait Islander status, remoteness of residence area, SES of residence area and language spoken at home.

While the general sentiment of Australians and close individuals remained stable (p=0.287) or declined (p< 0.001), the perceived commonness of vaping among peers notably increased (p< 0.001). (Table 45)

**Table 45: Now we would like to ask you some questions about what you think other people think about vaping. (Asked of all young people)**

Statement/question	Mean agreement score^				p-value*
	Overall	Wave 2	Wave 3	Wave 4	
How do most Australians feel about vaping? (S1)	2.75	2.76	2.75	2.74	0.287
How do people who are important to you... feel about vaping? (S1)	1.93	2.00	1.89	1.89	<0.001
How common is it for people your age to vape? (S2)	3.78	3.57	3.78	4.00	<0.001

^S1: 1="Strongly disapprove" 2="Disapprove" 3="Neither approve nor disapprove" 4="Approve" 5="Strongly approve"

^S2: 1="Not at all common" to 5="Very common"

^ Means are weighted for gender, state, remoteness and age of the 2016 Australian population

\*p-value obtained is for test of differences in means across wave after adjustment for sex, age, Aboriginal or Torres Strait Islander status, remoteness of residence area, SES of residence area and language spoken at home.

In terms of the perception of friends' smoking habits, there was a significant decrease in the proportion of respondents who reported that "some of my friends smoke" across waves ( $p < 0.001$ ). Simultaneously, the percentage of young people who claimed that "none of my friends smoke" significantly increased over the same period (Table 29;  $p < 0.001$ ). These shifts suggest a potential decrease in smoking visibility or acceptability among youth social circles over the period of the study.

**Table 29: Do your friends smoke cigarettes? (Multiple response question asked of all young people)^**

Response	Total n=6749	Wave 2 n=2961	Wave 3 n=2062	Wave 4 n=1726	p-value*
Most of my friends smoke	2.4%	2.7%	2.5%	1.9%	0.122
Some of my friends smoke	21.8%	24.2%	22.7%	18.4%	<0.001
I know people who smoke but they are not my friends	32.5%	35.2%	32.0%	30.1%	0.028
None of my friends smoke	47.2%	42.3%	46.4%	53.3%	<0.001

^ Percentages are weighted for gender, state, remoteness and age of the 2016 Australian population

^ Multiple response question with column percentages representing % of respondents (not responses).

\*p-value obtained is for test of differences in proportions across wave after adjustment for sex, age, Aboriginal or Torres Strait Islander status, remoteness of residence area, SES of residence area and language spoken at home.

**Vaping was increasingly seen as a normal behaviour over the Generation Vape study period. But, with perceived greater disapproval amongst people important to young people.**

### **Interview data with young people**

Our qualitative research findings from interviews with young people in NSW have shown several changes in attitudes towards vaping overtime, particularly regarding addiction, social norms and awareness of health harms. Addiction and dependence to nicotine was a central theme of discussions with young people in more recent years of the research. Of high concern is the mis-held belief among young people that addiction is seen as largely avoidable, or can be controlled, particularly if users are mindful of how and where they vape (e.g. not purchasing a vape themselves). Addiction or dependence on vaping overall was viewed as problematic, however, social use among young people was acceptable. Our early research indicated that vaping was initially seen as being a possible “fad” or “phase”, however over time the behaviour has become embedded in social norms. Our study published in Health Promotion International in March 2024, found that young people consider vaping to be a common, acceptable and normal behaviour, with abstinence regarded as atypical.

This research paper is publicly available here:

<https://academic.oup.com/heapro/article/39/2/daae018/7617809>

Our research has also found that awareness of health harms has increased overtime – a

finding that is supported by both the qualitative and quantitative research. Compared to Wave 1 where we noticed some variation in the awareness of health harms among participants, the majority of participants in later waves of research were aware of and acknowledged the negative health effects of vaping – including among those who vaped. Some non-vapers held the belief that vapers thought it was safe, however, almost all young people who currently vaped acknowledged that it wasn't good for them. In future analyses of our data, we hope to understand further the disconnect between the knowledge of health harms, and behaviours, considering knowledge of health harms does not seem to be a deterrent for many young people. This knowledge of harms, coupled with the belief that it is possible to vape in a way that will “prevent addiction” – suggests there is much more scope to target messaging about vaping.

**Changes over time: Social vaping is seen as more acceptable than “addicted” vaping and a key marker of problematic vaping was owning/buying your own vape. Increasing sense that vaping is not overwhelmingly positive, that it has social consequences, including experiencing shame and regret. There is more appetite for quitting vaping and more detailed descriptions of addiction, and what it means to be addicted to vaping than in earlier waves of data collection.**

4. The Generation Vape research project is scheduled to conclude in July 2024 – what do you hope to achieve in the final stages of that study?

We are hopeful that we will be able to continue the Generation Vape study, especially given the legislative and program changes that are on the horizon. We are actively seeking funding support to ensure this valuable and unique study continues. There is an exciting opportunity to monitor what happens to youth vaping behaviour as the prescription-only access framework is implemented. Our study is very well positioned to provide evidence on the effects the importation restrictions on all vapes not destined for pharmacies, and should the law be passed, the proposed sales ban on non-nicotine vapes. This evidence will be of international interest and significance.

There are currently three higher-degree research students, two PhDs and an MPhil, undertaking their degrees using the rich Generation Vape data.

An example of just some of the analyses we currently have underway or planned for 2024 include:

a) Many cohort studies in other countries have shown increased risks of initiating cigarette smoking for adolescents and young adults who have previously used e-cigarettes,

compared to those who have not. However, no studies have estimated these relationships in Australian adolescents and young adults. We currently have a paper under review that estimates these relationships in adolescents using Generation Vape data.

b) Analysis of the age of vaping initiation and the implications in the Australia/NSW context – age of first trying vaping seems to be far younger than for smoking.

c) Exploration of the use, behaviours and experiences of young adults (aged 18-24 years) who are social/occasional users of e-cigarettes (vapers) and/or tobacco (smokers).

Develop a profile of each type of user (dual users of tobacco and e-cigarettes or only smokers or only vapers).

d) Factors and processes of the normalisation of e-cigarettes among Australia adolescents

e) Parent data analysis: i) attitudes regarding adolescent vaping; and ii) experiences of addressing vaping with their adolescent children in the home environment.

f) A research paper that assesses: What is the level of awareness and concern among teachers about vaping and the harms of vaping among Australian high school students? Has the level of awareness and concern among teachers changed over time? What are the perceptions and experiences of teachers with vaping among students at their schools.

g) The concept of “phantom smoking” describes individuals who do not self-identify as someone who smokes but nonetheless admit to smoking cigarettes. As this concept is yet to be examined with vaping, we are undertaking analysis of Gen Vape data to identify the existence of “phantom vaping” and explore this phenomenon in Australian young adults.

5. What are the remaining 'knowledge gaps' that still need to be addressed with respect to ecigarette use among young people?

a) Changes in types of nicotine products used (i.e. new products on market such as nicotine pouches, and other new industry “innovations” to vaping products).

b) Changes in access to vapes as new laws are implemented i.e. ease of access, place of access.

c) Understand the disconnect between knowledge of health harms (which is high) and actual behaviours. I.e. why do teens still vape when knowledge of health harms is high? Also in relation to teens feelings of ‘invincibility’ – the idea that addiction in particular “won’t happen to me.”

d) Addiction and quitting – understand if and how addicted teens are attempting to stop vaping after new laws, and support that may be needed. Another gap is in

understanding how teens view 'addiction' – some refer to addiction fairly flippantly, as they might to a friend who is 'addicted' to soft drink, rather than a true dependence with symptoms of nicotine withdrawal, etc.

e) Industry interference – as the world watches on as Australia implements it's groundbreaking vaping reforms, we need to be simultaneously prepared for industry interference as we have seen with tobacco control in the past. Gen Vape provides a unique opportunity to monitor the industry's attempts to market vaping products directly to young people.

f) Campaigns – need to understand the impact of anti-vaping campaigns and their ability to increase knowledge and awareness of vaping harms, intentions to quit and message recall.