

E-cigarette use by people who smoke or have recently quit, New South Wales, 2016–2020

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The known: In 2015, e-cigarette use in NSW was relatively low among smokers and recent quitters. However, devices have since rapidly evolved, including the introduction of pod-style products containing high concentrations of nicotine salts.

The new: Despite measures for limiting e-cigarette use in NSW, our survey found that the proportions of smokers and recent quitters using e-cigarettes increased markedly between 2016 and 2020, particularly among 18–24-year-old respondents, for whom the proportion rose from 8% to 27%.

The implications: The increase in e-cigarette use by younger people who smoke or have recently quit reflects the presentation and marketing of these products. E-cigarette marketing, particularly in social media, should be more effectively regulated.

Australia is a global leader in tobacco control, having reduced the adult smoking rate from 26.7% in 1998 to 12.9% in 2019.¹ In 2017, 3% of 12–15-year-old and 9% of 16–17-year-old young people reported smoking during the past week, the lowest rates since the first national survey in 1984.² These encouraging figures indicate that effective policy (particularly with regard to tobacco pricing), evidence-based media campaigns, and smoke-free indoor environments can significantly reduce smoking among both teenagers and adults.^{3,4} Further reductions will require policy measures and funding for interventions that reach the entire population but also target specific communities.

Electronic cigarettes (e-cigarettes, vapes) may be a threat to public health and an impediment to further reducing smoking rates. A 2021 global umbrella review of systematic reviews found that non-smokers who used e-cigarettes were three times as likely to start smoking as people who did not, and the relapse rate among former smokers using them was twice that for those who did not use e-cigarettes.⁵ A 2021 systematic review (including only a small number of randomised controlled trials) found moderate certainty evidence that e-cigarettes providing nicotine were associated with higher quit rates than nicotine replacement therapy; evidence that their benefit was greater than usual or no care was less certain.⁶ Nevertheless, e-cigarettes are often promoted as effective smoking cessation aids,⁷ targeted only at adult smokers who have tried and failed to quit smoking by other means. However, the marketing tactics, ease of access, colourful product design, and a wide array of flavours make e-cigarettes attractive to both young non-smokers and smokers who use both e-cigarettes and tobacco.⁸

In addition to public health concerns that e-cigarettes might lead to increased smoking, e-cigarette liquids contain cancer-causing chemicals and toxic substances, including flavours,⁹ and are often labelled “nicotine-free” even when they contain nicotine.¹⁰ While the long term health effects of e-cigarette use are not yet clear, it may be associated with heart and respiratory disease.¹¹ Acute health effects include accidental and intentional poisoning

Abstract

Objective: To examine e-cigarette use by adults who smoke or have recently quit, and demographic characteristics associated with their use; to assess reasons for using e-cigarettes.

Design: The Cancer Institute NSW Tobacco Tracking Survey (CITTS) is an ongoing, serial, cross-sectional telephone survey study (40 interviews each week). This report is based on interviews during 4 January 2016 – 31 December 2020.

Setting, participants: Randomly selected New South Wales adults who are current smokers (smoked cigarettes, pipes, or other tobacco products daily, weekly, or less often) or recent quitters (smoked tobacco products in the past twelve months but who no longer smoked).

Main outcomes: E-cigarette use by age group; reasons for using e-cigarettes.

Results: CITTS callers rang 1 494 233 randomly selected numbers; in 203 203 answered calls (13.6%), 11 125 people were eligible for the survey (5.5% of answered calls), of whom 10 004 completed the survey interview, including the question about whether they used e-cigarettes (89.9%). Overall e-cigarette use increased from 6.6% of respondents in 2016 to 13.0% in 2020 (adjusted odds ratio, 1.86; 95% confidence interval [CI], 1.47–2.36). The proportion of respondents aged 18–24 years who reported e-cigarette use increased from 18.4% (95% CI, 12.9–23.9%) in 2018 to 27.2% (95% CI, 20.5–33.9%) in 2020, a larger proportion than for any other age group. The leading reasons offered for e-cigarette use were “to help me quit smoking” (33%; 95% CI, 30–37%) and “to cut down on the number of cigarettes I smoke” (25%; 95% CI, 22–28%).

Conclusion: The increase between 2016 and 2020 in the proportions of young adults who smoke or have recently quit who use e-cigarettes undermines claims that these products are designed for older smokers who have struggled to quit using other methods.

by nicotine-containing liquids and burns from overheating and exploding devices.⁹

E-cigarette devices have rapidly evolved since 2016, including the introduction of pod-style vaping products containing high concentrations of nicotine salts, and they are marketed to young people in social media.¹² On the other hand, e-cigarette use in smoke-free public spaces and sales to minors are now prohibited in New South Wales, and e-cigarette advertising and promotion regulated, including bans on displays at retail points of sale.

We examined changes over time in e-cigarette use by NSW adults who smoke or have recently quit smoking, assessed demographic characteristics associated with e-cigarette use, and investigated reasons for using e-cigarettes, building on and updating our 2016 report.¹³

Methods

The Cancer Institute NSW Tobacco Tracking Survey (CITTS) is an ongoing, serial, cross-sectional telephone survey study; 40

interviews are conducted in NSW each week.¹³ This report is based on interviews during 4 January 2016 – 31 December 2020. The CITTs monitors smoking-related perceptions and behaviours among adults (18 years or older) who are current tobacco smokers or have recently quit smoking. Computer-assisted telephone interviews were conducted using a dual-frame survey design: from January 2016 to September 2020 using random digit dialling to landline and mobile phone numbers (50%/50%), from October

2020 to December 2020 using random digit dialling to listed and unlisted mobile phone numbers (50%/50%). When calling a landline, participants were randomly selected from within households (selecting the *n*th oldest eligible adult); when calling a mobile phone, the person answering the call was screened for eligibility. Screening includes questions about current and past smoking behaviour. Current smokers are defined as people who currently smoke cigarettes, pipes, or other tobacco products

1 Characteristics of the 10 004 participants in the Cancer Institute NSW Tobacco Tracking Survey (CITTs), 2016–2020, with weighted proportions*

Characteristic	Interview year				
	2016	2017	2018	2019	2020
All respondents	2005	2004	2003	2000	2000
Sex					
Men	1156 (60.3%)	1144 (60.3%)	1110 (60.3%)	1108 (58.1%)	1135 (57.9%)
Women	849 (39.7%)	860 (39.7%)	893 (39.7%)	888 (41.6%)	852 (41.4%)
Refused/other/non-binary	0	0	0	4	13
Age (years)					
18–24	219 (10.1%)	196 (10.1%)	204 (10.1%)	202 (13.9%)	184 (13.5%)
25–39	455 (34.1%)	435 (34.0%)	395 (33.9%)	394 (32.6%)	418 (33.4%)
40–44	171 (9.7%)	176 (9.6%)	147 (8.8%)	115 (7.5%)	147 (9.1%)
45–54	406 (22.8%)	435 (22.8%)	412 (23.7%)	368 (22.2%)	361 (21.1%)
55–64	450 (14.7%)	411 (12.8%)	469 (13.8%)	456 (13.2%)	451 (12.9%)
65 or older	304 (8.6%)	350 (10.6%)	374 (9.5%)	462 (10.5%)	439 (10.0%)
Missing data	0	1	2	3	0
Education level [†]					
Low	468 (22.5%)	490 (22.6%)	501 (22.6%)	471 (19.5%)	461 (19.6%)
Moderate	991 (49.7%)	1036 (53.0%)	980 (50.7%)	1001 (52.3%)	973 (51.3%)
High	504 (25.8%)	454 (23.1%)	470 (24.3%)	486 (26.5%)	520 (27.3%)
Missing data	42	24	52	42	46
Residential region					
Metropolitan	1190 (54.0%)	1218 (54.0%)	1197 (54.0%)	1184 (58.4%)	1219 (58.5%)
Non-metropolitan	815 (46.0%)	786 (46.0%)	806 (46.0%)	816 (41.6%)	781 (41.5%)
Residential socio-economic status [‡]					
Moderate or high	1308 (63.2%)	1291 (63.7%)	1215 (63.1%)	1227 (63.8%)	1188 (61.1%)
Low	697 (36.8%)	713 (36.3%)	788 (36.9%)	722 (36.2%)	764 (38.9%)
Missing data	0	0	0	51	48
Smoking status					
Recent quitter	376 (18.9%)	338 (16.6%)	344 (17.6%)	376 (19.8%)	332 (18.5%)
Current smoker	1629 (81.1%)	1666 (83.4%)	1659 (82.4%)	1624 (80.2%)	1668 (81.5%)
Current smokers					
Smoking frequency					
Less than daily	168 (10.3%)	181 (10.9%)	198 (11.9%)	238 (14.7%)	268 (16.1%)
Daily	1461 (89.7%)	1485 (89.1%)	1461 (88.1%)	1386 (85.3%)	1400 (83.9%)
Heaviness of Smoking Index score					
Low	355 (26.3%)	336 (24.6%)	331 (24.2%)	343 (27.8%)	358 (27.8%)
Moderate	939 (63.7%)	968 (64.4%)	960 (65.6%)	891 (63.6%)	904 (64.5%)
High	142 (10.0%)	169 (11.0%)	141 (10.2%)	128 (8.7%)	121 (7.7%)
Missing data	25	12	29	24	17

* Weighted by age, sex, and region (metropolitan v non-metropolitan). † Low: did not complete high school; moderate: completed high school or vocational college; high: tertiary education. ‡ Socio-Economic Indices for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage.¹⁴ Low: quintiles 4–5; moderate to high: quintiles 1–3. ♦

daily, weekly, or less often than weekly, recent quitters as people who had smoked tobacco products in the past twelve months but who no longer smoked.

E-cigarette use

Eligible participants were asked “How often, if at all, do you currently use e-cigarettes?” Responses (options: daily, weekly, monthly, less than monthly, not at all) were analysed by use (never use *v* use e-cigarettes) and frequency (for users: infrequent use [monthly, less than monthly] *v* frequent use [weekly, daily]).

From 4 January 2016, e-cigarette users were asked the free-response question, “What are the main reasons you currently use e-cigarettes?” The interviewer classified responses under one or more categories: so I don’t have to quit smoking; to cut down on the number of cigarettes I smoke; to help me quit cigarettes; they’re not as bad for your health as cigarettes; cheaper than cigarettes; taste better than cigarettes; I use them exclusively instead of smoking cigarettes; so I can smoke in places where smoking cigarettes is not allowed; I just tried them because I was curious; no reason; habit; for social reasons; for enjoyment; other. If the response did not map to any category, the interviewer recorded the response verbatim under “other”; for the analysis, “other” responses were subsequently allocated to a specific category or tallied as a separate category.

Covariates

The covariates we examined were sex, age group (18–24 years, 25–39 years, 40–44 years, 45–54 years, 55–64 years, 65 or more years), education (low: did not complete high school; moderate: completed high school or vocational college; high: tertiary education), location type (metropolitan [Sydney postcodes], non-metropolitan [other NSW or Australian Capital Territory postcodes]), and socio-economic status by residential postcode according to the Socio-Economic Indices for Areas (SEIFA) Index of Relative Socio-economic Disadvantage¹⁴ (low: quintiles 4–5; moderate to high: quintiles 1–3). The tobacco use of current smokers was categorised with the Heaviness of Smoking Index (based on time to first cigarette of the day and number of cigarettes smoked each day)¹⁵ as low (0–1), medium (2–4), or high (5–6).

Data analysis

We summarise demographic characteristics data as counts and prevalence (weighted proportions) using Cancer Institute NSW weights to ensure that the sample was representative of the NSW smoker population by age, sex, and region.¹⁶ We estimated the prevalence of e-cigarette use by year and age category. We assessed differences in e-cigarette use (use e-cigarettes; frequent use of e-cigarettes) by demographic characteristic and survey year in weighted multiple binary logistic regression models, and report adjusted odds ratios (aORs) with bootstrapped (1000 iterations) 95% confidence intervals (CIs). In model 1, the entire survey sample was included, and the covariates were year, demographic characteristics, and smoking status. In model 2, only current smokers were included, and the covariates were year, demographic characteristics, smoking frequency, and Heaviness of Smoking Index scores. We estimated the prevalence of the most frequent reasons for using e-cigarettes. All analyses were undertaken in SAS Enterprise Guide 9.4.

Ethics approval

The NSW Population and Health Services Research Ethics Committee approved the CITTs research project (HREC/10/

CIPHS/13); the University of Sydney Human Research Ethics Committee approved the secondary data analysis (project number 2017/497).

Results

During 2016–2020, CITTs callers rang 1 494 233 randomly selected numbers. In 203 203 answered calls (13.6%), 11 125 people were eligible for the survey (5.5% of answered calls), of whom 10 012 completed the survey interview (90.0%), 774 terminated it before completion (7.0%), and 339 refused participation (3.0%). As two consenting participants responded “don’t know” to the question about e-cigarette use and six refused a response, 10 004 respondents were included in our analysis (89.9% of eligible phone call respondents) (Box 1).

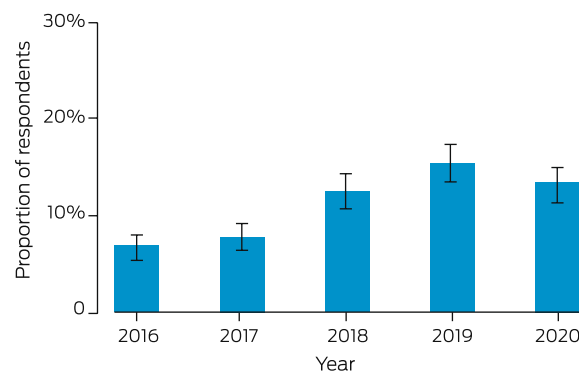
E-cigarette use by age group, sex, recent smoking history, and survey year

Overall e-cigarette use increased from 6.6% of respondents in 2016 to 13.0% in 2020 (aOR, 1.86; 95% CI, 1.47–2.36) (Box 2, Box 3). The proportion of respondents who reported e-cigarette use declined with age, from 20.8% for respondents aged 18–24 years to 5.2% for people aged 65 years or more (aOR, 0.22; 95% CI, 0.16–0.28). Similar proportions of recent quitters (11.4%) and current smokers (10.9%; aOR, 1.10; 95% CI, 0.91–1.33) and of women (10.0%) and men (11.7%; aOR 1.15; 95% CI, 0.99–1.33) had used e-cigarettes (Box 3).

The proportion of e-cigarette users who used them frequently was similar throughout 2016–2020; about half of all users used e-cigarettes frequently. The proportion of frequent e-cigarette users was larger for men (7.1%) than for women (4.3%; aOR, 2.49; 95% CI, 1.83–3.39), and smaller among smokers (5.2%) than recent quitters (9.4%; aOR, 0.20; 95% CI, 0.13–0.32) (Box 4).

The proportions of 18–24-year-old and 25–39-year-old respondents who used e-cigarettes increased between 2016 and 2020, but not those of respondents aged 40 years or more. The proportion of people aged 18–24 years who reported e-cigarette use increased from 18.4% (95% CI, 12.9–23.9%) in 2018 to 27.2% (95% CI, 20.5–33.9%) in 2020, a larger proportion than for any other age group (Box 5).

2 E-cigarette use by 10 004 participants in the Cancer Institute NSW Tobacco Tracking Survey (CITTs), 2016–2020: proportions, with 95% confidence intervals*



* Proportions weighted by age, sex, and region (metropolitan *v* non-metropolitan). ♦

3 E-cigarette use by 10 004 participants in the Cancer Institute NSW Tobacco Tracking Survey (CITTS), 2016–2020, by demographic characteristics*

Characteristic	Never use e-cigarettes	Use e-cigarettes	Use e-cigarettes: adjusted odds ratio (95% CI)
All respondents (model 1)	9058 (90.5%)	946 (9.5%)	
Year			
2016	1873 (93.4%)	126 (6.6%)	1
2017	1855 (92.3%)	147 (7.7%)	1.23 (0.96–1.57)
2018	1790 (87.6%)	213 (12.4%)	1.89 (1.50–2.38)
2019	1751 (84.7%)	249 (15.3%)	2.27 (1.80–2.86)
2020	1789 (87.0%)	211 (13.0%)	1.86 (1.47–2.36)
Sex			
Women	3985 (90.0%)	355 (10.0%)	1
Men	5059 (88.3%)	588 (11.7%)	1.15 (0.99–1.33)
Missing data	14	3	
Age (years)			
18–24	812 (79.2%)	193 (20.8%)	1
25–39	1826 (86.9%)	270 (13.1%)	0.60 (0.49–0.74)
40–44	680 (89.3%)	76 (10.7%)	0.48 (0.36–0.64)
45–54	1827 (92.0%)	155 (8.0%)	0.36 (0.29–0.46)
55–64	2077 (93.1%)	157 (6.9%)	0.32 (0.26–0.41)
65 or older	1831 (94.8%)	94 (5.2%)	0.22 (0.16–0.28)
Missing data	5	1	
Education level†			
Low	2233 (92.1%)	158 (7.9%)	1
Moderate	4482 (88.7%)	494 (11.3%)	1.23 (1.02–1.50)
High	2159 (87.0%)	274 (13.0%)	1.50 (1.21–1.85)
Missing data	184	20	
Residential region			
Metropolitan	3667 (90.7%)	331 (9.3%)	1
Non-metropolitan	5391 (87.7%)	615 (12.3%)	1.19 (1.02–1.39)
Residential socio-economic status‡			
Moderate or high	3310 (88.2%)	369 (11.8%)	1
Low	5664 (89.5%)	562 (10.5%)	0.96 (0.83–1.11)
Missing data	84	15	
Smoking status			
Recent quitter	1597 (88.6%)	169 (11.4%)	1
Current smoker	7461 (89.1%)	777 (10.9%)	1.11 (0.91–1.33)
Current smokers (model 2)			
Smoking frequency			
Less than daily	907 (84.9%)	145 (15.1%)	1
Daily	6554 (89.9%)	632 (10.1%)	1.73 (0.90–3.32)
Heaviness of Smoking Index score			
Low	1837 (90.2%)	174 (9.8%)	1
Moderate	4433 (89.2%)	455 (10.8%)	1.44 (1.17–1.78)
High	669 (91.4%)	56 (8.6%)	1.30 (0.91–1.84)
Missing data	522	92	

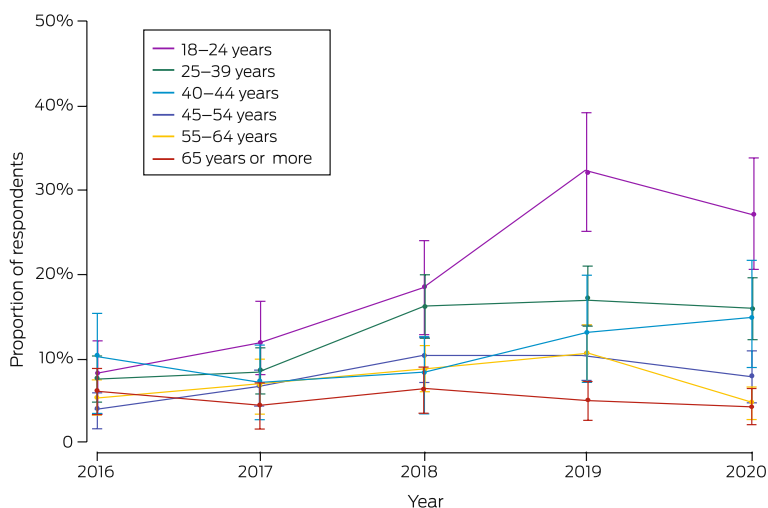
CI = confidence interval. * Weighted by age, sex, and region (metropolitan v non-metropolitan). † Low: did not complete high school; moderate: completed high school or vocational college; high: tertiary education. ‡ Socio-Economic Indices for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage.¹⁴ Low: quintiles 4–5; moderate to high: quintiles 1–3. ◆

4 Frequency of e-cigarette use by the 935 e-cigarette users in the Cancer Institute NSW Tobacco Tracking Survey (CITTS), 2016–2020, by demographic characteristics*

Characteristic	Infrequent use	Frequent use	Frequent use: adjusted odds ratio (95% CI)
All e-cigarette users (model 1)	416 (4.2%)	519 (5.2%)	
Year			
2016	65 (3.5%)	61 (3.1%)	1
2017	72 (3.4%)	75 (4.3%)	1.04 (0.63–1.71)
2018	85 (5.0%)	123 (7.3%)	1.49 (0.92–2.42)
2019	101 (7.0%)	146 (8.2%)	1.62 (1.00–2.62)
2020	93 (5.8%)	114 (7.0%)	1.27 (0.78–2.06)
Sex			
Women	194 (5.6%)	155 (4.3%)	1
Men	222 (4.5%)	361 (7.1%)	2.49 (1.83–3.39)
Age (years)			
18–24	102 (10.9%)	90 (9.9%)	1
25–39	122 (6.0%)	145 (7.0%)	1.38 (0.89–2.13)
40–44	31 (4.2%)	44 (6.4%)	2.04 (1.11–3.76)
45–54	59 (3.2%)	96 (4.8%)	1.75 (1.05–2.92)
55–64	58 (2.6%)	97 (4.2%)	2.56 (1.59–4.14)
65 or older	44 (2.4%)	46 (2.6%)	1.57 (0.89–2.77)
Education level†			
Low	71 (3.4%)	81 (4.2%)	1
Moderate	219 (5.1%)	273 (6.1%)	1.22 (0.80–1.85)
High	119 (5.9%)	152 (7.0%)	1.15 (0.73–1.83)
Residential region			
Metropolitan	138 (3.9%)	188 (5.3%)	1
Non-metropolitan	278 (5.8%)	331 (6.5%)	0.89 (0.64–1.24)
Residential socio-economic status‡			
Moderate or high	155 (5.1%)	211 (6.6%)	1
Low	256 (4.8%)	298 (5.6%)	0.92 (0.68–1.25)
Smoking status			
Recent quitter	30 (2.1%)	139 (9.4%)	1
Current smoker	386 (5.6%)	380 (5.2%)	0.20 (0.13–0.32)
Current smokers only (model 2)			
Smoking frequency			
Less than daily	80 (8.5%)	63 (6.5%)	1
Daily	306 (5.0%)	317 (5.0%)	2.39 (0.64–8.93)
Heaviness of Smoking Index score			
Low	84 (4.6%)	87 (5.0%)	1
Moderate	220 (5.4%)	229 (5.3%)	0.87 (0.57–1.33)
High	31 (5.0%)	24 (3.5%)	0.44 (0.21–0.90)

CI = confidence interval. * Weighted by age, sex, and region (metropolitan v non-metropolitan). Infrequent use: monthly, less than monthly; frequent use: weekly, daily. Frequency data missing for eleven respondents. † Low: did not complete high school; moderate: completed high school or vocational college; high: tertiary education. ‡ Socio-Economic Indices for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage.¹⁴ Low: quintiles 4–5; moderate to high: quintiles 1–3. ◆

5 E-cigarette use among 10 004 participants in the Cancer Institute NSW Tobacco Tracking Survey (CITTS), 2016–2020, by age group and survey year*



* Proportions weighted by age, sex, and region (metropolitan v non-metropolitan). The data for this graph are included in the [Supporting Information](#), table 1. ♦

Reasons for using e-cigarettes

Among the 939 users of e-cigarettes who provided reasons for using them, the most frequent reason was “to help me quit smoking” (33%; 95% CI, 30–37%); the proportion was slightly higher for recent quitters (41%; 95% CI, 32–49%) than for smokers (31%; 95% CI, 28–35%). The proportion of smokers who reported using e-cigarettes “to cut down on the number of cigarettes I smoke” (29%; 95% CI, 25–33%) was larger than that for recent quitters (6%; 95% CI, 2–11%) (Box 6).

Discussion

Despite measures for limiting e-cigarette use in NSW,¹⁷ including bans on retail displays of e-cigarette products in December 2015 and of e-cigarette use in smoke-free enclosed public places in July 2018,¹⁸ the proportions of surveyed smokers and recent quitters using e-cigarettes increased from 2016 to 2018, and had not markedly declined by 2020. The increase was most pronounced among younger people; the proportion of 18–24-year-old respondents using e-cigarettes tripled between 2016 and 2020 (to 27.2%) and that of people aged 25–39 years doubled (to 16.1%). Conversely, e-cigarette use among smokers and recent quitters aged 40 years or more did not substantially change during 2016–2020.

This large increase in e-cigarette use by young adults who smoke or have recently quit contrasts with tobacco and e-cigarette company claims that e-cigarettes are designed for older smokers who have struggled to quit smoking using other methods. The increase in use by younger people reflects the marketing tactics of these companies. E-cigarette marketing is widespread in social media, including the use of high profile “influencers” to advertise products.¹⁹ E-cigarette companies have also sponsored music festivals,²⁰ featured fashion and style as themes in promotions,²¹ and enabled the tobacco industry to maintain longstanding relationships with international motor sport, including Formula One.²² Further, the product design appeals to younger people, coming in a large range of flavours and attractive packaging, and the devices are inexpensive.²²

E-cigarette marketing, particularly in social media, should be more effectively regulated.

Only one-third of respondents who used e-cigarettes did so to help them quit smoking, and the proportion of recent quitters who offered this reason was not much larger than for smokers. Many reported dual use of tobacco and e-cigarettes; 25% of users said they used e-cigarettes to reduce (but not quit) smoking, and 8% that they used e-cigarettes where smoking was not allowed. Methodological weaknesses in studies of the health impacts of using both e-cigarettes and smoked tobacco make it difficult to draw conclusions about whether dual use is associated with health benefits or increased harm.²³ There is no evidence that dual use to reduce the amount of tobacco smoked is likely to lead to quitting.²⁴

In NSW, vaping is banned in public places where smoking is banned. Vaping may not be as well policed in these spaces, or it may be more acceptable where it is socially unacceptable to smoke, including private homes. We did not examine how informed e-cigarette users were about the harms of vaping, but 22% stated they used e-cigarettes because they were not as bad for their health as smoking. Lower price (19%) and better taste (15%) as motivations reflect the

high taxes on tobacco products and the wide array of e-cigarette flavours available, in contrast to the ban on overtly flavoured tobacco products (apart from with menthol) in Australia.

Since October 2021, a prescription from a local doctor is required to purchase nicotine-containing e-cigarette products in Australia.²⁵ However, no e-cigarette product has been approved for medical smoking cessation therapy. Further, freely available e-cigarette fluids labelled “nicotine-free” are often found to contain nicotine when tested, and openly nicotine-containing products are sold illegally.²⁶ E-cigarette fluids also contain flavours and other chemicals unsafe for inhalation. Removing e-cigarette products from general retail sale could assist with both limiting the supply of illegal e-cigarettes and strengthening the prescription model for smokers using e-cigarettes to quit smoking. Further, ensuring that people are better informed about the effects of e-cigarettes on health and the low certainty of evidence that they are effective when used for smoking cessation²⁷ would complement any legislative efforts to reduce and prevent their adoption by young people.

Limitations

Ongoing and continuous data collection is a key strength of CITTS. It does not seek to draw conclusions about people who have never smoked or about those who quit more than twelve months before being contacted for the survey. CITTS does not assess whether participants use e-cigarettes that provide nicotine, but future iterations of the survey could enquire about a nicotine-providing devices and whether uses have prescription for their e-cigarette products. Telephone surveys are biased toward people willing to answer their phones and participate. Finally, the survey does not ask questions about other substances that can be vaped, such as cannabis and vitamins.

Conclusion

The increase in e-cigarette use between 2016 and 2020 by young adults who smoke or have recently quit undermines assertions that these products are designed for older smokers who have

6 Reasons provided by 939 e-cigarette users for using e-cigarettes: the Cancer Institute NSW Tobacco Tracking Survey (CITTS), 2016–2020, by demographic characteristic*

Characteristic	To help me quit cigarettes	Cut down on the number of cigarettes I smoke	Not as bad for your health as cigarettes	Cheaper than cigarettes	Taste better than cigarettes	So I can smoke places where cigarettes are not allowed	I was curious
All respondents	315 (33%) [30–37%]	230 (25%) [22–28%]	208 (22%) [19–25%]	190 (19%) [17–22%]	129 (15%) [12–18%]	75 (8%) [6–10%]	70 (8%) [6–10%]
Year							
2016	33 (26%) [17–34%]	22 (20%) [11–28%]	20 (16%) [8–23%]	19 (15%) [8–22%]	16 (11%) [5–17%]	15 (11%) [5–18%]	4 (4%) [0–7%]
2017	59 (41%) [32–50%]	28 (18%) [11–25%]	31 (22%) [14–30%]	22 (15%) [9–22%]	13 (10%) [4–15%]	12 (7%) [2–11%]	16 (10%) [5–15%]
2018	57 (26%) [20–33%]	57 (28%) [21–35%]	51 (24%) [18–31%]	45 (20%) [14–26%]	21 (11%) [6–15%]	12 (5%) [2–9%]	11 (6%) [2–9%]
2019	83 (34%) [27–40%]	60 (25%) [19–32%]	57 (21%) [16–27%]	54 (20%) [15–26%]	37 (17%) [11–22%]	18 (7%) [3–11%]	14 (6%) [3–10%]
2020	80 (38%) [30–45%]	63 (27%) [20–34%]	49 (24%) [18–31%]	50 (22%) [16–29%]	42 (22%) [16–29%]	18 (10%) [5–15%]	25 (12%) [7–18%]
Sex							
Women	113 (32%) [26–37%]	81 (24%) [19–30%]	65 (20%) [15–24%]	66 (17%) [12–21%]	54 (17%) [12–22%]	30 (8%) [5–11%]	34 (11%) [7–14%]
Men	200 (34%) [29–38%]	147 (25%) [21–29%]	142 (23%) [20–27%]	123 (21%) [17–24%]	74 (14%) [11–17%]	45 (8%) [5–10%]	36 (6%) [4–8%]
Age group (years)							
18–24	39 (21%) [15–28%]	30 (16%) [11–22%]	34 (18%) [12–24%]	30 (16%) [10–22%]	53 (27%) [20–34%]	7 (4%) [1–7%]	22 (12%) [7–17%]
25–39	97 (37%) [31–43%]	60 (24%) [18–29%]	59 (22%) [17–27%]	52 (20%) [15–25%]	34 (13%) [9–18%]	21 (8%) [5–12%]	22 (8%) [5–12%]
40–44	31 (38%) [26–50%]	26 (38%) [25–50%]	21 (29%) [18–41%]	19 (26%) [15–37%]	12 (19%) [9–29%]	7 (9%) [2–16%]	7 (7%) [2–13%]
45–54	50 (30%) [22–38%]	47 (31%) [23–39%]	43 (24%) [17–31%]	33 (18%) [12–24%]	15 (8%) [4–12%]	15 (9%) [4–14%]	5 (3%) [0–6%]
55–64	67 (44%) [36–53%]	39 (25%) [18–33%]	36 (24%) [16–31%]	40 (26%) [18–34%]	8 (6%) [2–10%]	14 (8%) [3–12%]	8 (5%) [1–9%]
65 or older	31 (38%) [26–50%]	28 (29%) [19–40%]	15 (17%) [9–26%]	16 (15%) [7–22%]	7 (8%) [2–14%]	10 (11%) [4–17%]	6 (5%) [1–10%]
Smoking status							
Smoker	244 (31%) [28–35%]	218 (29%) [25–33%]	150 (19%) [16–23%]	154 (19%) [16–22%]	106 (15%) [12–18%]	70 (9%) [6–11%]	61 (8%) [6–11%]
Recent quitter	71 (41%) [32–49%]	12 (6%) [2–11%]	58 (33%) [25–41%]	36 (20%) [14–27%]	23 (14%) [8–19%]	5 (3%) [0–7%]	9 (5%) [1–9%]

* Proportions weighted by age, sex, and region (metropolitan v non-metropolitan), with 95% confidence intervals. Multiple responses possible. Missing data mean that not all categories add to 100%. Other responses are summarised in the [Supporting Information](#), table 2. ♦

struggled to quit using other methods. E-cigarette marketing, particularly in social media, should be more effectively regulated to reduce their uptake by young people and to thereby mitigate their public health impact.

Data sharing: The survey questions, technical reports, and data are available on request to the NSW Cancer Institute.²⁸

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Supporting Information

Additional Supporting Information is included with the online version of this article.