

# Use of e-cigarettes (vapes) among adults in Great Britain

August 2022

## Summary of key findings

This factsheet analyses how behaviour and attitudes to e-cigarettes among adults aged 18 and over have changed over time. The data are taken from an annual survey, Smokefree GB, carried out for ASH by YouGov in Spring each year. The survey first started asking about e-cigarette use in 2010 and this update includes the results of the 2022 survey carried out in February and March 2022. The COVID-19 pandemic is likely to have affected e-cigarette use in 2021, but it is not yet clear whether any changes in attitudes or behaviour are permanent or substantial.

### Note

Appendix 1 sets out the methodology in detail. Percentages in this report are given to the nearest whole number, or to one decimal place if under 10%. As a result, some sums may appear out by  $\pm 0.1$  percentage points due to rounding error.

Set out below is a summary of the key findings.

### USE AND AWARENESS OF E-CIGARETTES

- The proportion of the adult population using e-cigarettes has increased this year to 8.3%, the highest rate ever, amounting to 4.3 million people in Great Britain. (Table 1)
- Most current vapers are ex-smokers (57%). The proportion peaked in 2021 at 64%. (Figure 1)
- Only 1.3% of never smokers are current vapers, amounting to 8.1% of vapers. (Figure 1)
- The proportion of adult smokers who have never tried e-cigarettes is continuing to decline slowly, down to 28% in 2022. The proportion of smokers who are current vapers has increased from 2021 (17%) to 2022 (22%). (Figure 2).

### ATTITUDES TOWARDS E-CIGARETTES

- As in previous years, the main reason given by ex-smokers for vaping is to help them quit (29%). The next most common reasons are to prevent relapse (19%), because they enjoy the experience (14%), and to save money (11%). (Figure 5)
- The main reason given by current smokers for vaping are to cut down on smoking (17%), to save money (16%), to try to help them quit (14%) and to prevent relapse (13%). (Figure 5)
- A third of smokers (32%) incorrectly believe vaping is more or equally as harmful as smoking. (Figure 9)

### DEVICES AND PRODUCTS USED

- The most frequent type of e-cigarette device remains a refillable tank system, with 65% of current vapers reporting this type as their main device. (Figure 12). Vapes with replaceable cartridges and disposable vapes were the main type of device for 17% and 15% of vapers, respectively.
- However, use of disposable vapes has risen, particularly among younger adults. (Figure 13). Among 18-24

year olds, almost half of current e-cigarettes users (48%) use disposables as their main type in 2022, an increase from only 2.8% in 2021.

- For those who have tried vaping and used cartridges, JUUL has risen since 2021 to the most popular brand (19%), followed by Logic (17%), Vuse (16%), Vype (16%) and blu (14%).
- Only 0.9% of adults who vape nicotine use e-liquids over the legal limit of 20mg/ml. (Table 4)
- Among current vapers, 50% say that they use the same strength e-liquid as when they first started vaping, while 38% have decreased the strength and only 4.2% have increased the strength over time. (Figure 14). Ex-smokers are the most likely group of vapers to report currently using a lower strength of e-liquid than when they began (50%).

## Use and awareness of e-cigarettes

In 2022, 94% of smokers and 92% of the general population had heard of e-cigarettes or vapes. This contrasts with 2012, when 49% of adults responding to the same question were aware of them. The number of e-cigarette users grew from around 700,000 in 2012 to 4.3 million in 2022. (Table 1).

There are differences in vaping behaviour by social class, with 9.5% of those classified as C2DE being current vapers compared to 7.3% of those classified as ABC1. This reflects the socio-economic distribution of smokers; in this survey 17% of C2DE are smokers compared to 10% of ABC1. The rate of growth of vaping has been similar across the social classes; in 2015 6.3% of C2DEs vaped and 4.6% of ABC1s.

The peak age group for current e-cigarette use in 2022 is 18-24 year olds (11%) followed by 25-34 year olds (11%), 35-44 year olds (11%) and 45-54 year olds (10%). People aged 55 and over had the lowest rate at 4.9%. The age distribution in 2022 has changed since 2021, where the 18-24 year old age group had the lowest vaping rate at 5.0%. A higher proportion of those identifying as male (9.3%) say that they currently use e-cigarettes than those identifying as female (7.4%).

**Table 1: Number of e-cigarette users in Great Britain**

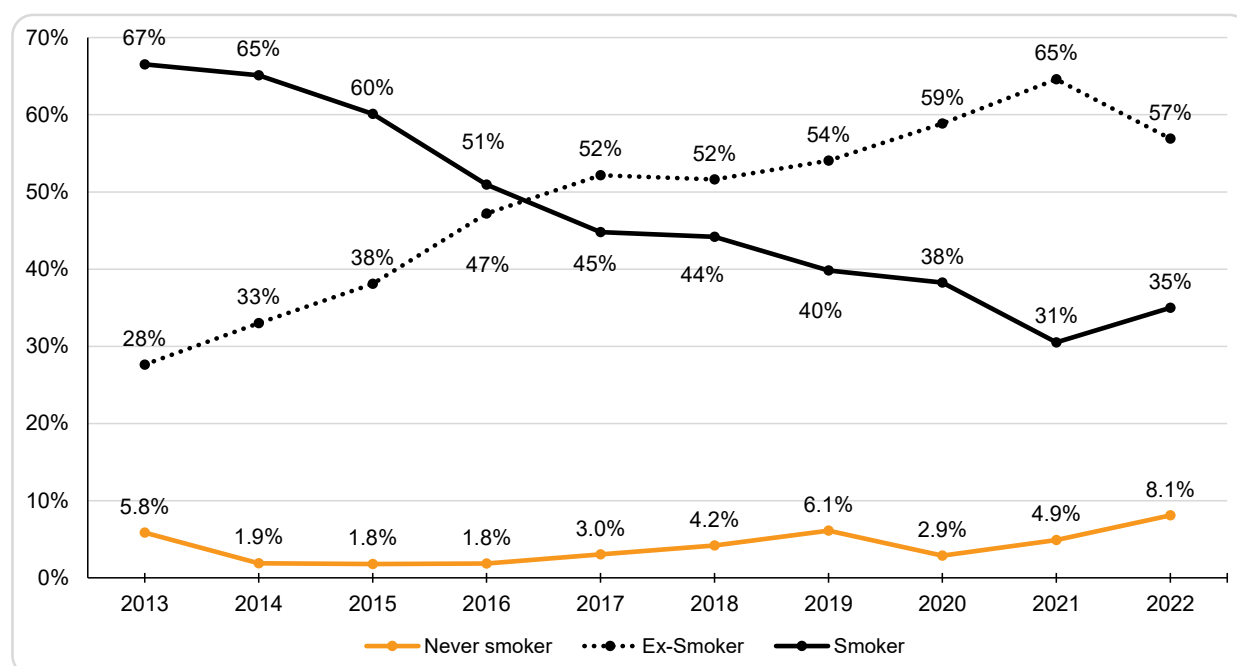
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>% population current users</b>	1.7%	2.7%	4.2%	5.4%	5.7%	5.8%	6.2%	7.1%	6.3%	7.1%	8.3%
<b>Percentage point change (YoY)</b>		+1.0pp	+1.6pp	+1.2pp	+0.3pp	+0.1pp	+0.4pp	+0.9pp	-0.8pp	+0.8pp	+1.2pp
<b>Number of users (millions)</b>	0.8	1.3	2.1	2.7	2.9	2.9	3.2	3.6	3.3	3.7	4.3
<b>Rate of growth (YoY)</b>		+62%	+60%	+29%	+7%	+3%	+7%	+16%	-11%	+12%	+17%

## PROPORTION OF VAPERS BY SMOKING STATUS

Use of e-cigarettes is largely confined to current and ex-smokers. Use among never smokers remains low. Of the 4.3 million current vapers, around 2.4 million are ex-smokers, 1.5 million are current smokers and 350,000 are never smokers. Since 2013, the proportion of current electronic cigarette users who smoke tobacco has generally fallen, while the proportion who are ex-smokers has risen (Figure 1). However, this trend has slightly reversed in 2022. There is a significant decrease in the proportion of current e-cigarette users who are ex-smokers, from 65% in 2021 to 57% in 2022. The proportion of current e-cigarette users who are never smokers has increased, from 2021 (4.9%) to 2022 (8.1%). In 2022, 35% of current vapers also smoked (dual users). The proportion of NRT users who also smoke is 41%.

In every year since 2017, most e-cigarette users have been ex-smokers. However, there are more ex-smokers (33%) than current smokers (13%) in the whole adult population. As a result, only 14% of the whole group of ex-smokers vape compared to 22% of all current smokers.

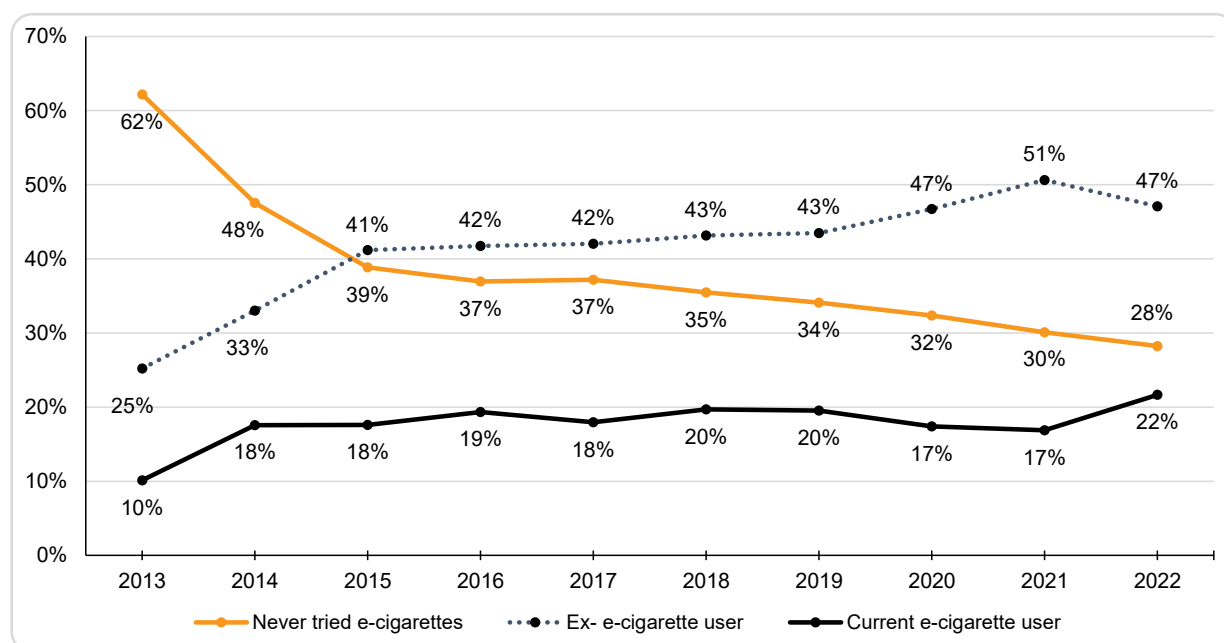
**Figure 1 - Smoking status among current adult e-cigarette users, Great Britain (2013–2022)**



*Unweighted base: GB adult current vapers (2013=325, 2014=498, 2015=614, 2016=667, 2017=669, 2018=738, 2019=854, 2020=787, 2021=826, 2022=1089)*

The proportion of adult smokers who have tried e-cigarettes has continued to grow. However, in 2022 28% of current smokers had never used e-cigarettes. (Figure 2).

**Figure 2 - E-cigarette use among current adult cigarette smokers, Great Britain (2013-2022)**



*Unweighted base: GB adult current smokers (2013=1895, 2014=1776, 2015=2037, 2016=1704, 2017=1632, 2018=1633, 2019=1777, 2020=1694, 2021=1512, 2022=1751)*

## VAPING BEHAVIOUR

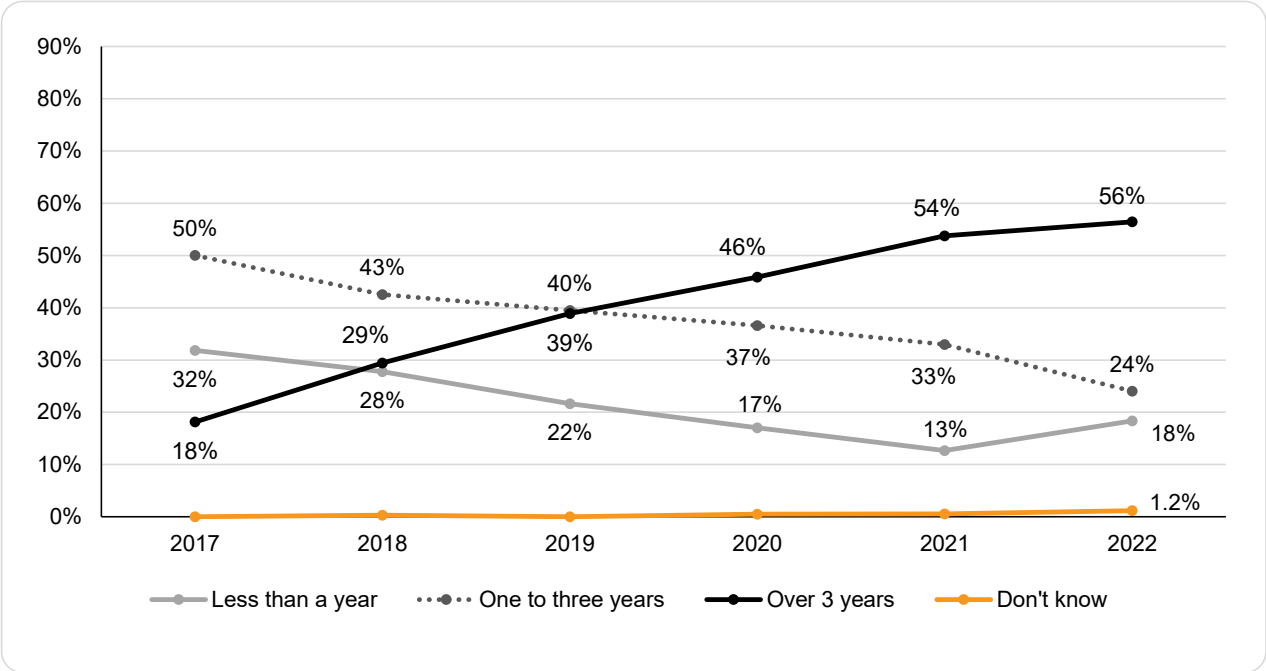
### Vaping behaviour in ex-smokers

Among ex-smokers, 20% had used a vape in their most recent smoking quit attempt. Current use of e-cigarettes among ex-smokers is 14%, and a further 17% have tried vaping but no longer vape. This means there are 2.4 million ex-smokers who are current vapers compared to 2.9 million ex-smokers who have tried vaping but no longer do it.

More than half of current vapers who are ex-smokers in 2022 said they had been vaping for over 3 years (56%), compared with 18% in 2017 when we started asking this question. (Figure 3).

- 18% have vaped for under 1 year
- 24% have vaped for 1-3 years
- 56% have vaped for >3 years

**Figure 3 - Length of e-cigarette use by adults who are ex-smokers and who currently vape, Great Britain (2017-2022)**

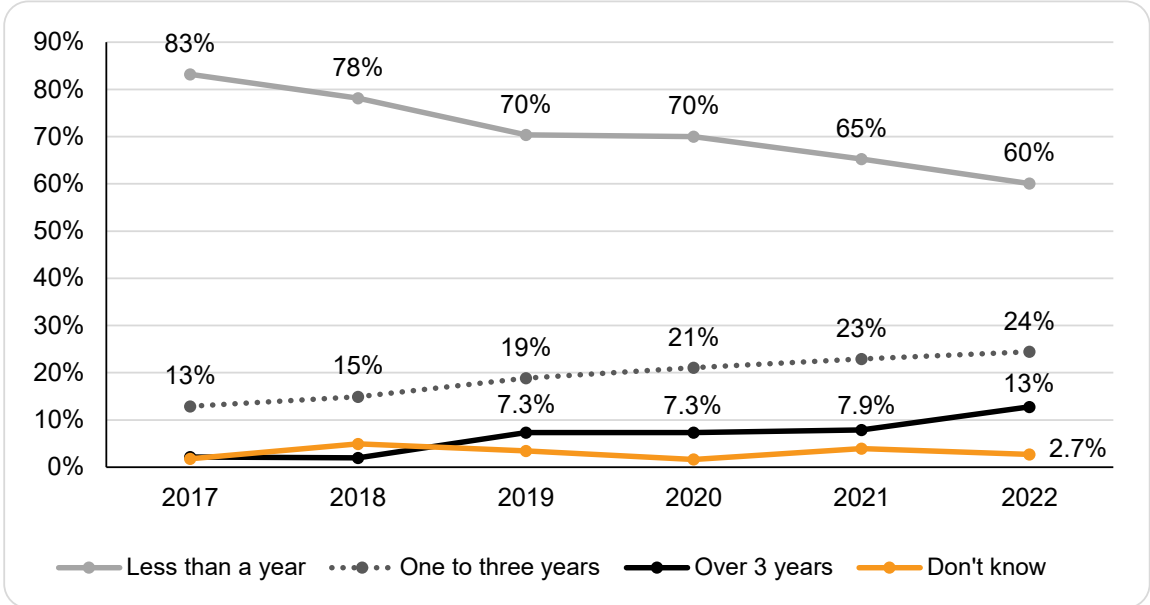


Unweighted base: GB adult ex-smokers who currently vape (2017=357, 2018=399, 2019=456, 2020=473, 2021=533 2022=586)

Most ex-smokers who currently use e-cigarettes vape daily (86%), with 96% vaping at least weekly. Many ex-smokers who used to vape did so regularly, with almost a third saying they vaped daily (33%) and 46% at least weekly. The remainder reported vaping less frequently, with slightly more than a third (36%) reporting they only tried vaping once or twice while 6.2% could not remember or didn't know.

The proportion of ex-smoker, ex-vapers who used e-cigarettes for less than a year has fallen over time from more than four in five in 2017 to three in five in 2022. (Figure 4) The proportion using for more than a year has more than doubled from 14% in 2017 to 37% in 2022, with 13% saying they vaped for more than three years.

**Figure 4 - Length of e-cigarette use by adult ex-e-cigarette users who are also ex-smokers, Great Britain (2017-2022)**



Unweighted base: GB Adult ex-smokers who have ever used e-cigarettes more than 'once or twice', who no longer use e-cigarettes (2017=233, 2018=242, 2019=272, 2020=321, 2021=402, 2022=418)

## Vaping behaviour in smokers (dual use)

People who vape and smoke are known as dual users. Of smokers who vape, 45% do so daily and 51% less than daily, with the remaining 3.6% being unsure or having only tried e-cigarettes once or twice. Those who vape everyday smoke on average less than those who vape less frequently than daily. Table 2 gives a breakdown for the number of cigarettes smoked a day, by daily, non-daily and never vaping. Fewer than six cigarettes per day is considered low daily smoking, while 21 or more is considered heavy smoking. Just over half of all daily vapers can be defined as “light” smokers, smoking fewer than six a day compared to under a third of non-daily vapers (Table 2).

Table 2

Cigarettes smoked per day (ready-made or handrolled)	Never vaper	Non-daily vaper	Daily vaper
6 or fewer a day	34%	32%	38%
7-20 a day	55%	55%	52%
More than 20 a day	11%	13%	10%

Unweighted base: GB adult vapers; 2022, all current smokers except those who report not knowing how many cigarettes they smoke or who chose N/A. Daily vapers n=318; Non-daily vapers n=373; never vapers n=440.

## Vaping behaviour in never-smokers

The proportion of current vapers who say they have never smoked has fluctuated over the years of the survey but is currently at an all-time high of 8.1% of current e-cigarette users. (Figure 1). However, never smokers make up most of the population so the proportion of never smokers who are current vapers is only 1.3%, with 5.2% having ever tried vaping.

## ARE E-CIGARETTES CONTRIBUTING TO DECLINES IN SMOKING?

The Annual Population Survey found that smoking prevalence among adults aged 18 and over in England declined by 5.9 percentage points from 2011 to 2019. In 2011 20% of adults smoked, falling to 14% in 2019; equivalent to a drop from 7.7 million smokers in 2011 to 5.7 million in 2019.<sup>1</sup> Due to changes in survey methodology in 2020 (see COVID-19 section in the Methods section), we use 2019 as the comparison point, as 2021 is not yet available at the time of writing.

A comprehensive approach to tobacco control was implemented during this period, which has been associated with reductions in smoking prevalence.<sup>234</sup> This included a tobacco display ban, large graphic health warnings on the front of packs, plain packaging, increased tobacco taxes and minimum pack sizes. A number of factors are likely to have contributed to this decline in prevalence.

However, the Smoking Toolkit Study (an ongoing series of monthly surveys of the adult population of England) has shown a clear association between changes in population rates of quitting smoking and prevalence of e-cigarette use after adjusting statistically for a range of potential confounding factors.<sup>5</sup> If the association is causal, e-cigarettes were responsible for an estimated 69,930 additional ex-smokers in England in 2017.<sup>6</sup> Furthermore, evidence from a randomised controlled trial found that vaping was nearly twice as effective as NRT in helping smokers quit in a Stop Smoking Service setting in England,<sup>7</sup> and a Cochrane systematic review of the evidence has concluded that there is moderate-certainty evidence that ECs with nicotine increase quit rates compared to ECs without nicotine and compared to NRT.<sup>8</sup> This is now a living review which will be updated as further evidence is published.

# Attitudes to vaping

## REASONS FOR E-CIGARETTE USE

Among all e-cigarette users who vaped more than once or twice, the four main reasons for vaping are as an aid to quitting (22%) followed by preventing relapse (16%), because they enjoy the experience (13%) and to save money compared with smoking tobacco (13%). The majority of those who had only vaped once or twice (71%) said that their main reason was something other than the options provided in the survey.

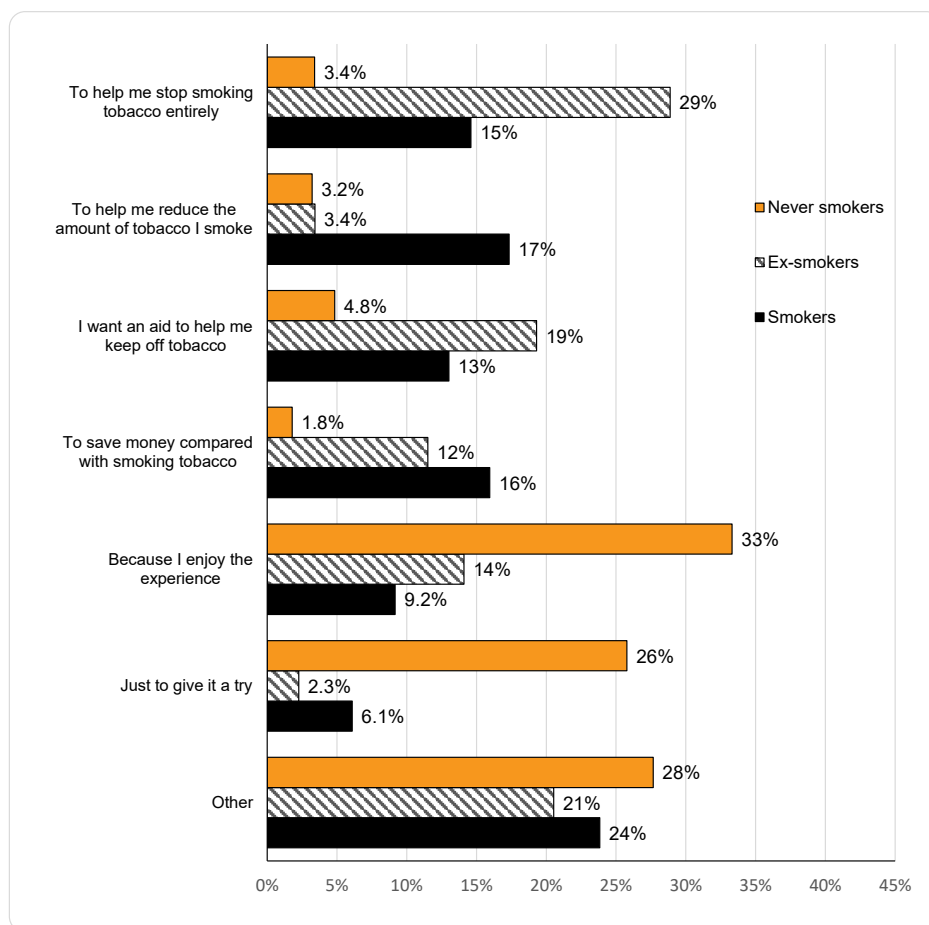
## REASONS FOR E-CIGARETTE USE BY SMOKING STATUS

When current e-cigarette users who are ex-smokers are asked for their main reason for vaping, the most frequently cited reasons are: to help them quit (29%); as an aid to keep them off tobacco (19%); because they enjoy it (14%); and to save money (12%). (Figure 5)

The main reasons current e-cigarette users who also smoke (dual users) give for using e-cigarettes are to help them to help cut down the amount smoked (17%), to save money (16%), to try to help them quit (15%) and as an aid to keep them off tobacco (13%).

The main two reasons for vaping among never smokers are enjoying the experience (33%) and just to give it a try (26%).

**Figure 5 - Main reason for vaping among adult smokers, ex-smokers and never smokers who vape, Great Britain (2022)**



*Unweighted base: GB adult current c-cigarette users excluding those who only vaped once or twice 2022; current vaper and current smoker n = 390, current vaper and ex-smoker n = 590, current vaper and never smoker n = 73. Other options to choose are grouped under 'Other'; 'To help deal with situations where I cannot smoke', 'To avoid putting those around me at risk', 'Because I feel I am addicted to smoking tobacco', 'It was advised by a health professional', 'It was suggested or recommended by a friend' and 'Other'. 'Other' was directly chosen by 20% of never smokers, apart from which each of the options were chosen by under 10% of each group.*

In 2019 to explore vapers' views about their e-cigarette use, current vapers were asked whether they agreed or disagreed with a series of statements. For most e-cigarette users, improving their health is their number one reason for vaping. Among all vapers, 60% agree that "health is my number one reason for taking up e-cigarettes". (Table 3).

**Table 3**

<b>How e-cigarette users view vaping</b>	<b>Strongly Agree or Agree</b>	<b>Strongly Disagree or Disagree</b>
Health is my number one reason for taking up e-cigarettes	60%	14%
I get a great deal of pleasure out of vaping	51%	12%
E-cigarettes have improved my quality of life	51%	12%
Vaping is not a magic solution for stopping smoking	50%	26%
Vaping is a medicine that I use in order to address my smoking addiction	50%	20%
Lowering the levels of nicotine I consume through vaping is a priority for me	44%	22%
I am worried that I'm getting more nicotine now that I use an e-cigarette	13%	61%
I like to spend time discussing vaping online	7.8%	73%

*Unweighted base: GB adult vapers; 2019, n=854. Options were on a five point 'Strongly agree/Agree/Neither agree nor disagree/Disagree/Strongly disagree' scale, plus a 'Don't know' option.*

## SATISFACTION

Those who tried vaping were also asked how satisfying they found it.

### **Ex-smokers who currently vape**

Around two thirds of e-cigarette users who no longer smoke find vaping more or equally satisfying as smoking (63%). The proportion finding it less satisfying is 32% (Figure 6). Although enjoyment of vaping is cited as the main motivation for use by only 13% of current e-cigarette users, our 2019 survey found that when asked if they get "a great deal of pleasure from vaping" and whether "e-cigarettes had improved my quality of life" 51% of e-cigarette users agreed (Table 3).

### **Smokers who currently vape**

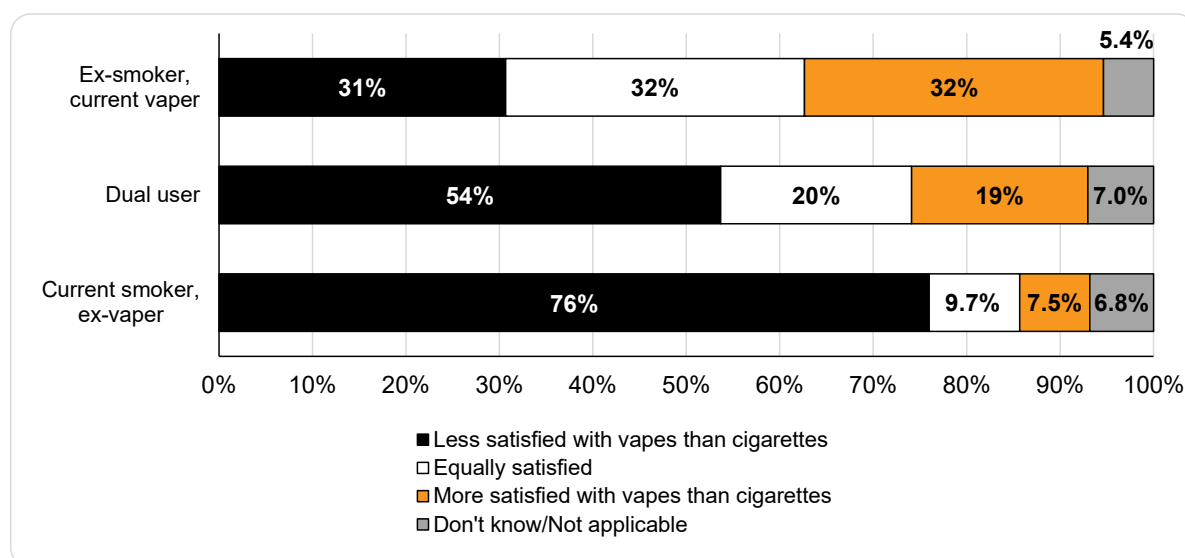
More than half of vapers (54%) who also smoke find it less satisfying than smoking, and 39% find it more than or equally as satisfying as smoking. These figures are very similar to 2021 (55% and 40%, respectively).

### **Smokers who are ex-vapers**

Satisfaction levels are lowest of all for smokers who have tried but no longer use e-cigarettes, 76% of whom say they found vaping less satisfying than smoking, little changed from 79% in 2021. Products have improved over the years, and it could be worth encouraging ex-vapers who smoke to try vaping again to prompt further quit attempts.



**Figure 6 - Satisfaction levels from e-cigarettes compared with smoking in adults, Great Britain 2022**



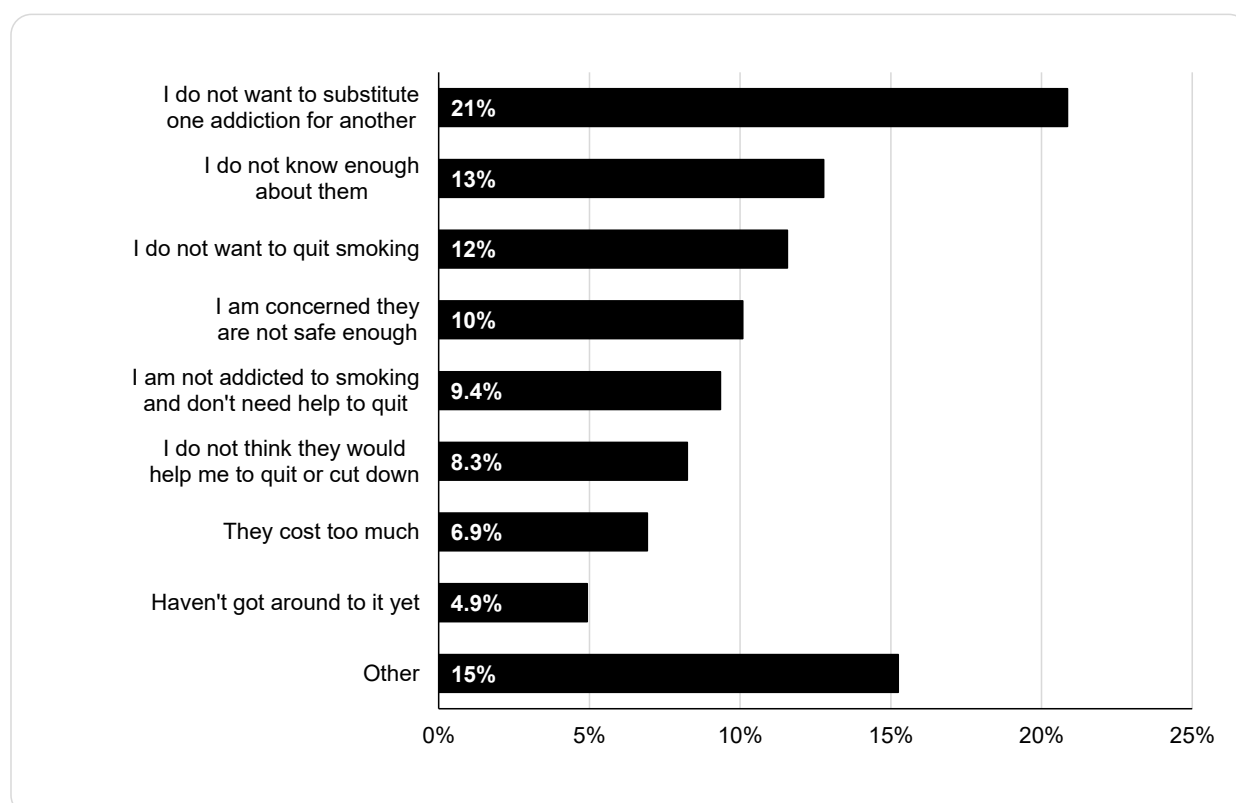
*Unweighted base: GB Adults who have ever used e-cigarettes, excluding those that have tried e-cigarettes only once or twice. Current vaper & ex-smoker n= 590; Ex-vapers & current smokers n=442; Current vapers & current smokers n=390.*

### REASONS WHY SMOKERS HAVEN'T TRIED OR HAVE STOPPED USING E-CIGARETTES

Less than a third, 28%, of smokers have not yet tried e-cigarettes. Smokers' views on addiction were the most frequently cited main reason, with 21% saying they do not want to substitute one addiction for another, while conversely 9.4% say that they're not addicted to smoking and don't need help to quit. A further 12% say that they do not want to quit smoking, similar to 2021 (12%).

Not knowing enough about e-cigarettes is the main reason for 13% of smokers who hadn't tried them, and a further 10% say their main reason was concern for the safety of e-cigarettes. A further 8.2% say that they do not believe that e-cigarettes could help them quit or cut down, showing a lack of confidence in these products. (Figure 7).

**Figure 7 - Main reason for not trying an e-cigarette among adult smokers, Great Britain 2022**



*All adult GB current smokers who have not tried e-cigarettes 2022. n=432. Other options to choose are grouped under 'Other': 'There are too many products to choose from' (3.8%), 'I do not like the way they look' (3.7%), 'I'm using other things to help me quit smoking' (2.7%), 'I would be embarrassed to use them in public' (1.6%), 'They are too difficult to get hold of' (0.3%) and 'Other' (3.2%).*

Almost half, 47%, of smokers have tried but no longer use e-cigarettes. The main three reasons cited for stopping using e-cigarettes were the same as last year:

- 23%: that vaping did not feel like smoking a cigarette (23% in 2021)
- 17%: that vaping did not help them deal with cravings (14% in 2021)
- 14%: that they had only tried them to see what they were like (9.9% in 2021)

Negative experiences included feeling unwell (5.7%), not liking the taste (4.9%), and leaks (4.3%).

Availability and accessibility of vapes was rarely the main problem, with few people saying that they cost too much (3.0%), refills and replacements were not easily available (1.1%), they were embarrassing to use in public (0.6%) or the flavours they wanted were unavailable (0.6%).

## Perceptions of harm

### ADULT POPULATION MISPERCEPTIONS OF HARM

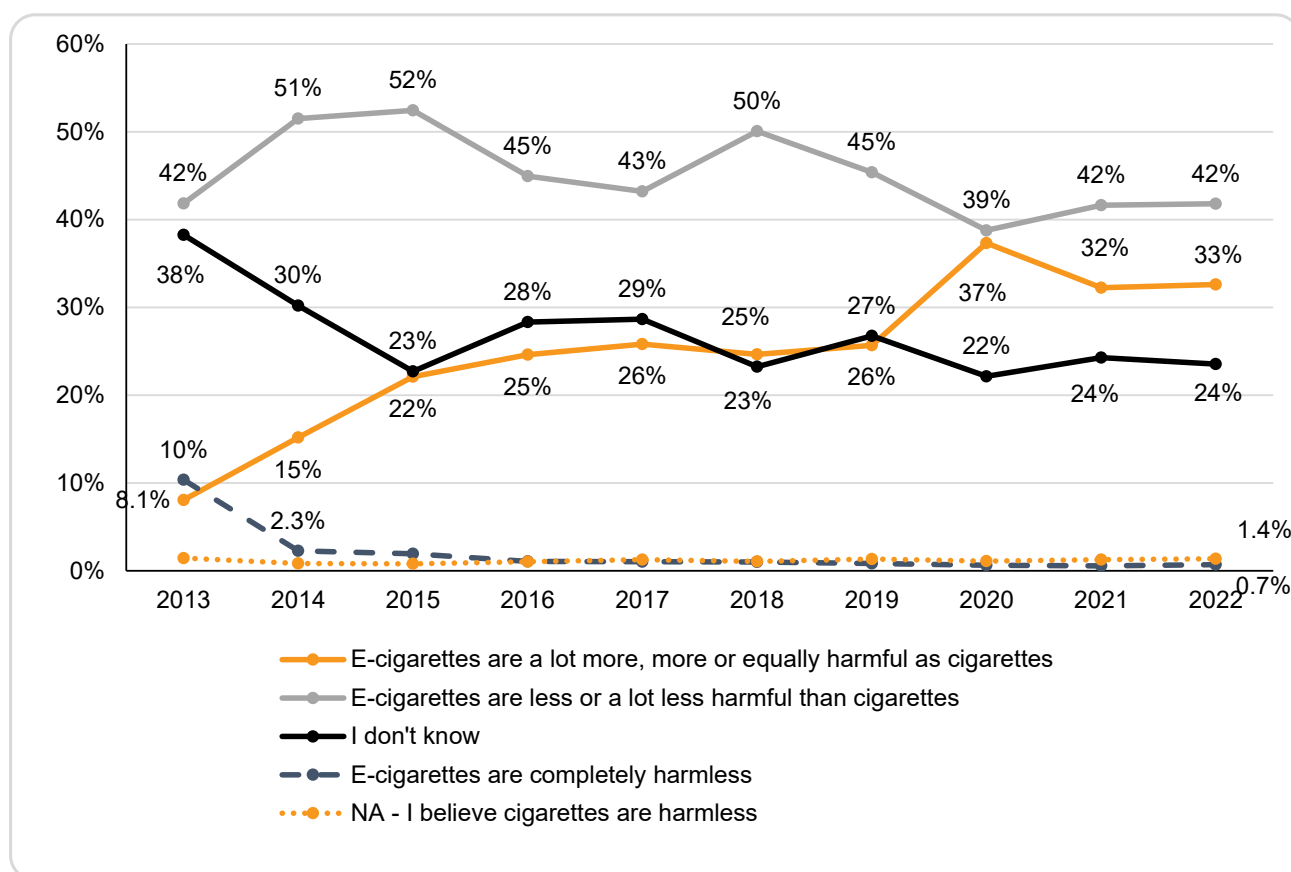
From 2016 to 2019 the proportion of adults who inaccurately believed that vaping is as, or more harmful than smoking hovered around one in four, with between 43% and 50% believing it was less harmful. However, in 2020 the proportion believing it was more or equally harmful rose significantly to 37% with the proportion believing it to be less harmful falling to 39%.

The likely driver for this change in public perception was the impact of the media coverage of an outbreak of serious lung injury to vapers in the US, called EVALI. The number of hospital admissions from EVALI peaked in September 2019 and by February 2020 the US had reported 2,807 hospitalised cases and 68 deaths.<sup>9</sup>

Since 20 May 2016, the MHRA reported that there have been three fatalities in the UK linked with vaping products, one of which appeared to meet the criteria for 'e-cigarette, or vaping product, use-associated lung injury' ('EVALI').<sup>10</sup> While the cause of this outbreak has since been identified as vitamin E acetate used to adulterate cannabis-containing e-liquids the media coverage of the initial outbreak was far more prominent than the subsequent explanation or the fact that both vitamin E acetate and THC containing liquids are banned under UK rules.

The proportion believing vaping was more or equally harmful fell back from 37% in 2020 to 32% in 2021 and 33% in 2022. Similarly, the proportion believing it to be less harmful than smoking rose slightly from 39% in 2020 to 42% in 2021 and 2022. Although the 2020 change has partly reversed, still only 12% of adults correctly state that e-cigarette use is a *lot* less harmful than smoking.

**Figure 8 - Adults' perception of harm from e-cigarettes, Great Britain (2013-2022)**

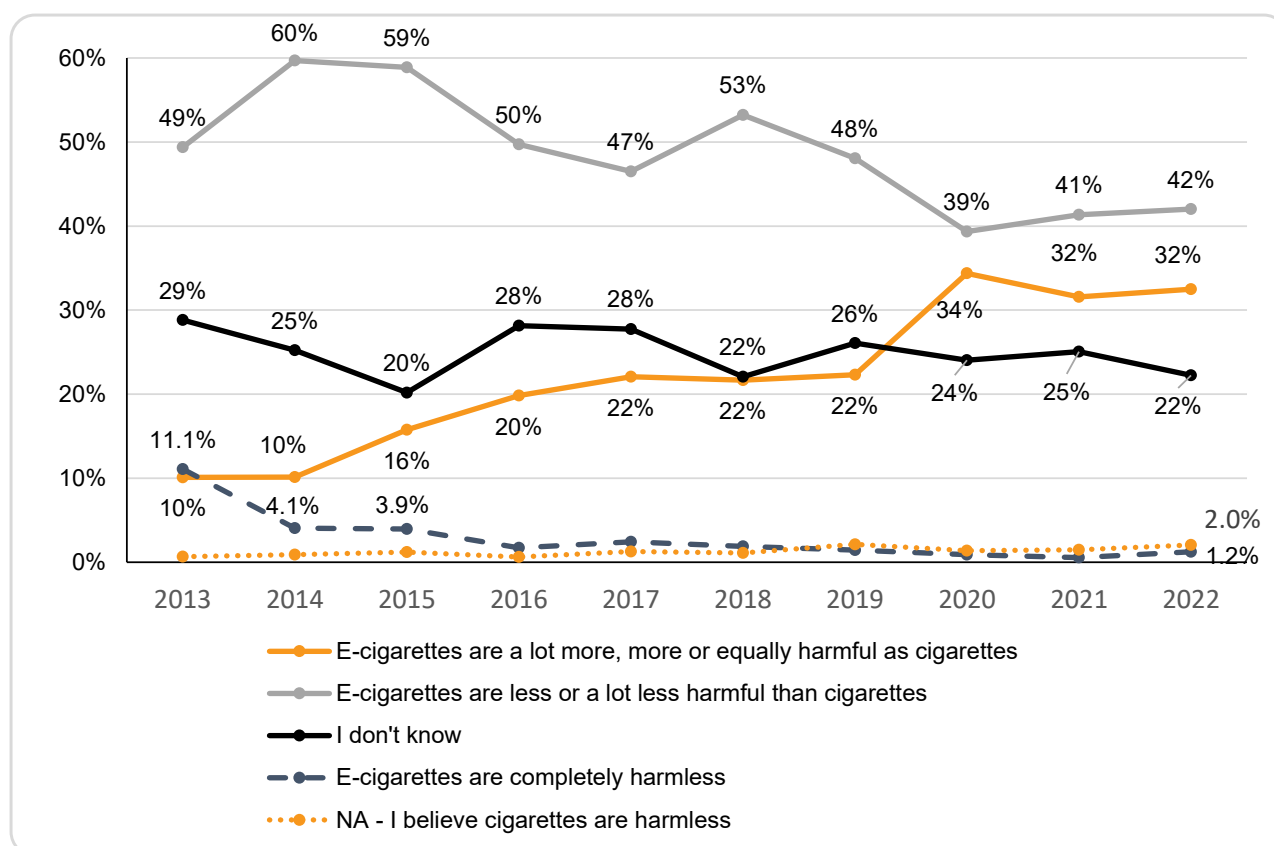


*Unweighted base: All GB adults who have heard of e-cigarettes: 2013 n=8936; 2014 n=11,307; 2015 n=11,340; 2016 n=11,489; 2017 n=12,101; 2018 n=12,070; 2019 n=11,634; 2020 n=11,954; 2021 n=11,429; 2022 n=12,039)*

## SMOKERS' PERCEPTIONS OF HARM

A similar pattern can be seen among smokers' perceptions of harm in 2022 (Figure 9) with nearly a third (32%) believing vaping was more or equally harmful, and more than one in five (22%) saying they don't know. The proportion thinking that vaping is less harmful than smoking is similar to that among the general population (42% compared to 42%), but a higher proportion think e-cigarettes are a lot less harmful (14% compared to 12%).

**Figure 9 – Smokers' perception of harm from e-cigarettes, Great Britain (2013-2022)**

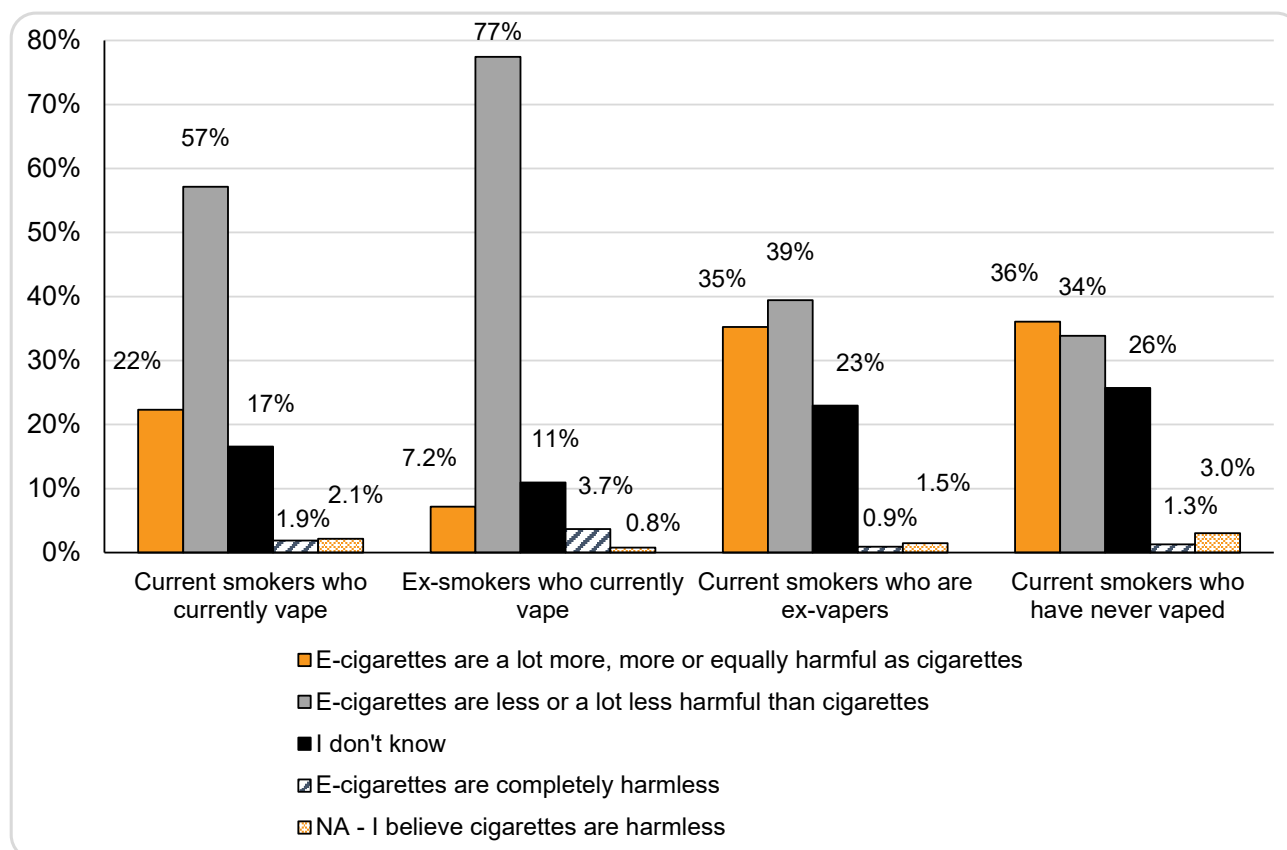


*Unweighted base: GB adult smokers who have heard of e-cigarettes (2013, n=1720; 2014, n=1694; 2015, n=1945; 2016, n=1639; 2017, n=1569; 2018, n=1566; 2019 n = 1,679; 2020 n=1; 2021 n=1,438; 2022 n=1,641). The 'E-cigarettes are less harmful than cigarettes' response does not include those saying that e-cigarette use is 'completely harmless'.)*

Smokers who currently use e-cigarettes have more accurate perceptions of their harm, with 57% thinking that e-cigarettes are less harmful (down from 71% in 2019) and 22% thinking that they are more or equally harmful (up from 9.2% in 2019). (Figure 10). The proportion of current smokers who have never tried e-cigarettes who believe they are more than or equally as harmful as cigarettes increased between 2019 and 2022 from 27% in 2019 to 36% in 2022.

Ex-smokers who currently use e-cigarettes have the most accurate perceptions of the harm of e-cigarettes. In 2022, 77% of them correctly thought e-cigarettes are less harmful than smoking. However, like the other groups, this is a lower proportion than in 2019 (83%). In 2022, 7.2% of ex-smokers who currently use e-cigarettes said that they are more or equally harmful (5.0% in 2019). (Figure 10).

**Figure 10 - Adults' perception of harm from e-cigarettes by smoking and vaping status**



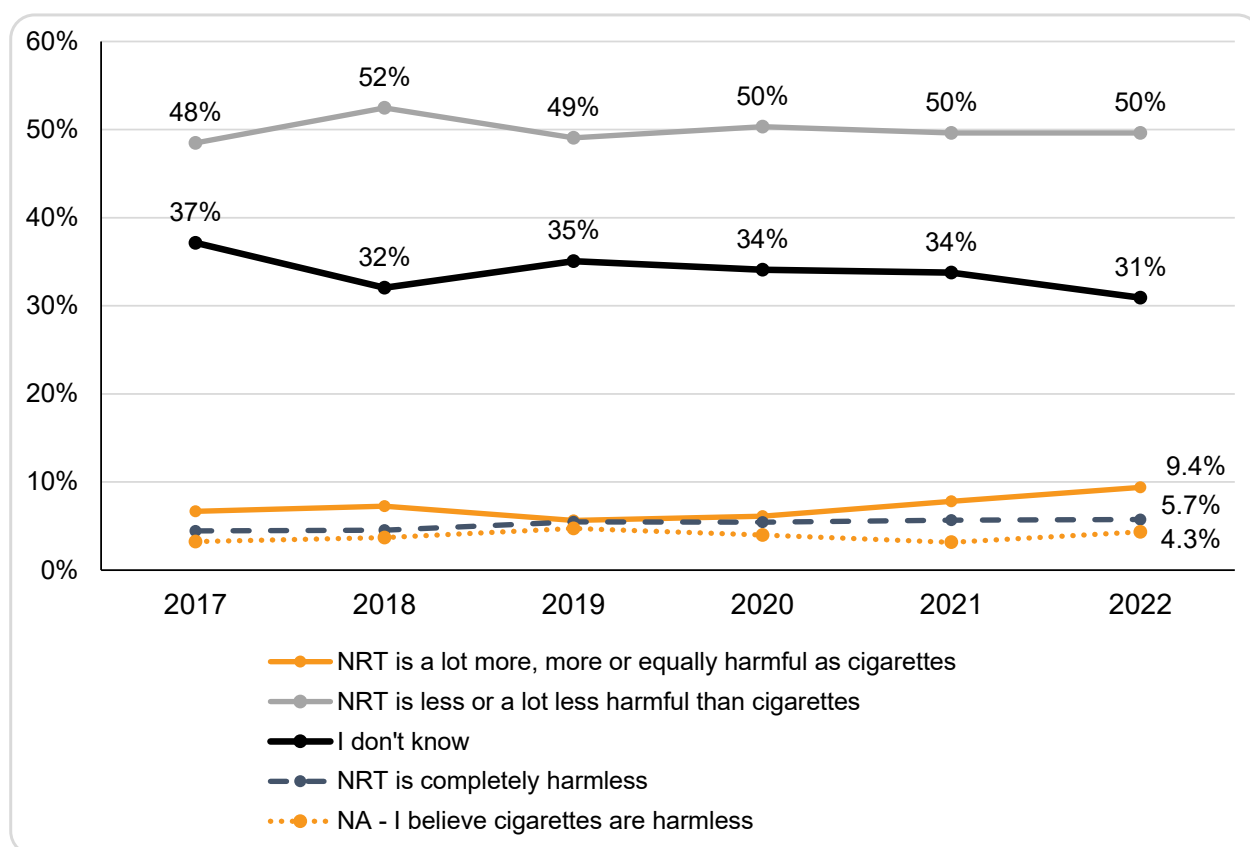
Unweighted base: GB adults who have heard of e-cigarettes. Current e-cigarette user & current smoker = 394; Current e-cigarette user & ex smoker= 594; Ex e-cigarette user & current smoker= 815; Never e-cigarette user & current smoker= 432. The 'E-cigarettes are less harmful than cigarettes' response does not include those saying that e-cigarette use is 'completely harmless'.

## PERCEPTIONS OF HARM FROM NICOTINE REPLACEMENT THERAPIES (NRT)

Over the last seven years we also asked people for their views of the relative harms of NRT compared with tobacco smoking. NRT is a licensed medication with minor side effects.

Understanding of the relative risk of NRT compared to smoking among smokers remains poor. (Figure 11). However, it is considerably better than their understanding of the relative risk of vaping and smoking. (Figure 9). In 2022 nearly a third (31%) of smokers said that they did not know how harmful NRT is compared to smoking, 9.4% thought it was more than or equally as harmful as smoking, and only 32% correctly identified NRT as being *much* less harmful than smoking.

**Figure 11 - Adult smokers' perception of NRT compared with regular cigarettes, Great Britain (2016-2022)**



Unweighted base: GB adult smokers. 2016 n=1477; 2017 n=1632; 2018 n=1633; 2019 n=1777; 2020 n=1694, 2021 n=1512, 2022 n=1751

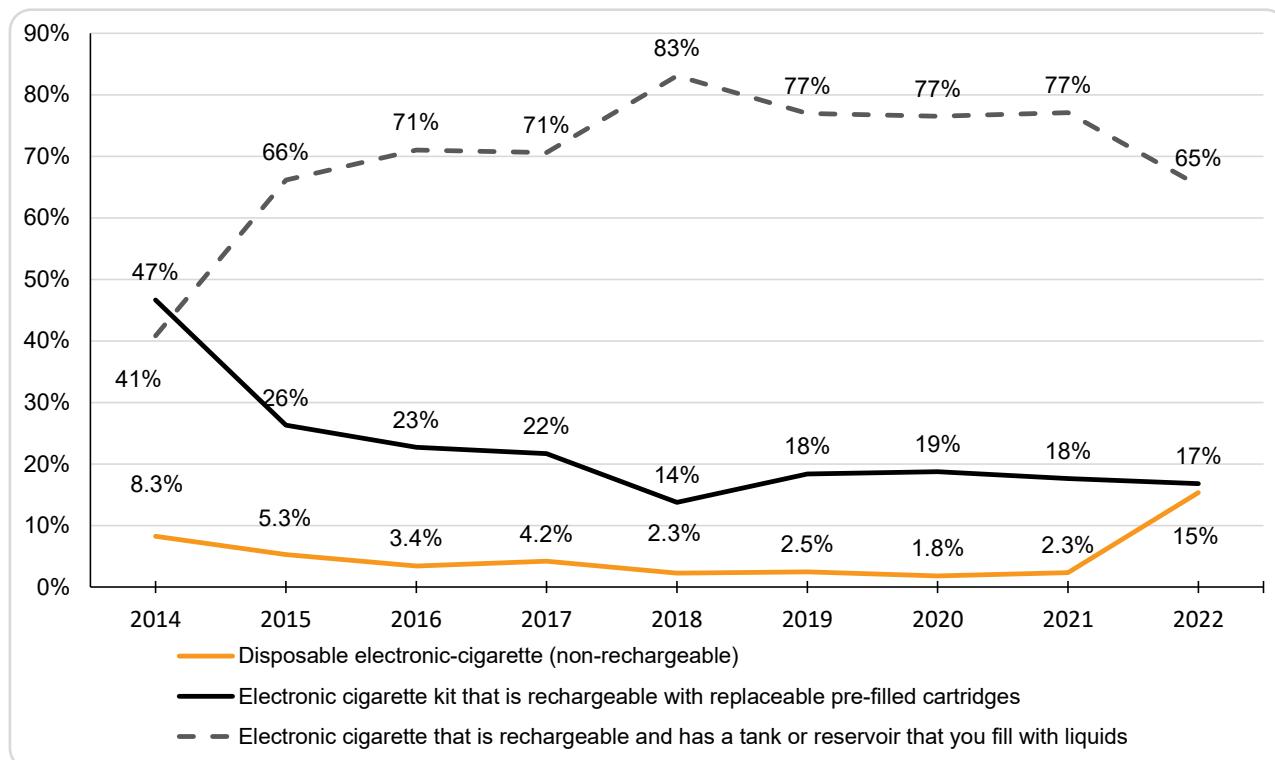
## Types of device and e-liquids in use

### E-CIGARETTE DEVICE USED

The most frequent type of e-cigarette device remains a refillable tank system, with 65% of current vapers reporting this type as their main device. (Figure 12). However, this decreased since last year when 77% of current vapers mainly used a tank-type e-cigarette. There has been a corresponding increase in the main use of disposable e-cigarettes, from 2.3% in 2021 to 15% in 2022. The proportion of current e-cigarette users who mainly use devices that are rechargeable with prefilled cartridges is 17%, which has been stable since 2019.

Of those who currently vape with a cartridge, the most popular types of rechargeable devices with pre-filled cartridges are JUUL (19%), Logic (17%), Vuse (16%), Vype (16%) and blu (14%).

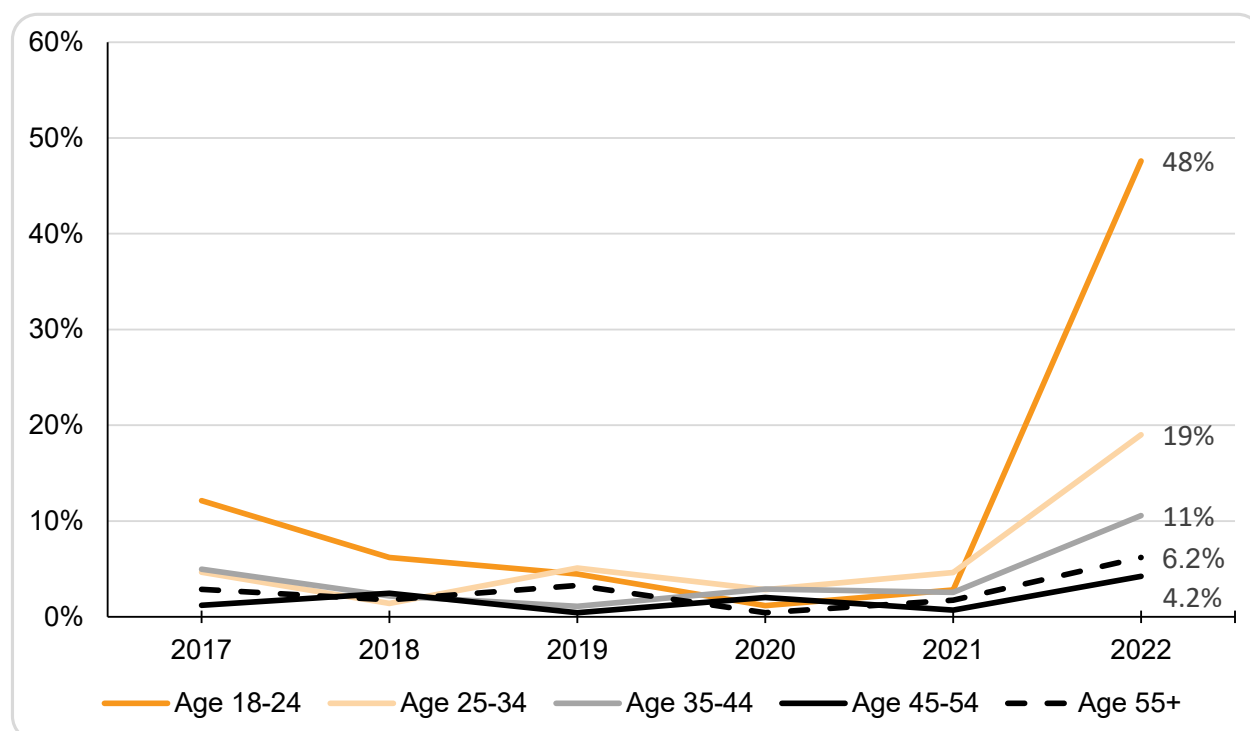
**Figure 12 - Type of e-cigarette used by current e-cigarette users, Great Britain (2014 - 2022)**



Unweighted base: All GB adults who currently use e-cigarettes, from 2017 onwards excluding those who only used them once or twice. 2014 n=498; 2015 n=614; 2016 n=667; 2017 n=657; 2018 n=715; 2019 n=800; 2020 n=767; 2021 n=790; 2022 n=1033

Younger adults are mostly driving the increase in 2022 in using disposable e-cigarettes as the main type of e-cigarette. (Figure 13). For 18-24 year olds, almost half of current e-cigarettes users (48%) use disposables as their main type in 2022, an increase from only 2.8% in 2021. In 2022, disposable e-cigarettes are also the most common main device type among 11-17 year old e-cigarette users (52%).<sup>14</sup>

**Figure 13 - Use of disposable e-cigarettes by age group, Great Britain (2017-2022)**



ASH Smokefree GB Adult Surveys 2022. Unweighted base: Adult current e-cigarette users, excluding only tried once or twice - see Table in Appendix for counts.

In 2021 nearly three quarters (73%) of all e-cigarette users said they only used one device. The most used additional device was a tank system, particularly for current vapers who are ex-smokers. This question was not asked in 2022.

In 2020 users were asked why they used the device they did. The most popular reasons for both tank and cartridge users was the hit of nicotine delivered (14% cartridge users 13% tank users) ease of use (11% for cartridge users 11% tank users) and price (10% cartridge users 12% tank users). However, there were also divergent reasons. For cartridge users, easy access to the device in local shops was more important (13% cartridge users, 4.9% tank users) while for tank users it was more important that the device was refillable (10% tank users, 0.9% cartridge users). This question was not asked in 2021 or 2022.

## NICOTINE CONSUMPTION

Some stakeholders have expressed concerns that the cap on nicotine levels imposed by the Tobacco Products Directive (TPD)<sup>11</sup> could be discouraging use among smokers with the highest levels of addiction.<sup>12</sup> For example, in the US, where there is no cap on nicotine levels, the most popular product, Juul, sells in two strengths, 59 mg/ml and 35 mg/ml,<sup>13</sup> both much higher than the legal limit in the EU. In the UK only 18 mg/ml Juul products are available, below the legal maximum of 20 mg/ml.<sup>14</sup>

In 2016, before the legislation was introduced, more than three quarters of current or former e-cigarette users surveyed by ASH vaped liquids with concentrations of nicotine of 18 mg/ml or less (77%), with nearly half (49%) using e-liquid containing 12 mg/ml or less. One in ten (10%) used more than 18 mg/ml (20 mg/ml was only included as a specific break point from 2017 onwards). In 2017, at the time the sell through period was coming to an end, 5.9% of current vapers were using above the TPD limit, falling to 2.1% in 2018 and 1.0% in 2019. (Table 4).

The ASH survey suggests that the current nicotine cap of 20 mg/ml is not a problem for the majority of e-cig users who use e-liquid containing nicotine, as they are using strengths well under the legal limit. In 2022, 0.9% of current e-cigarette users said they use nicotine strengths above the legal limit, and a further 6.3% used nicotine strengths just under or at the legal limit (19-20mg/ml). 9.0% did not know what strength they used.

**Table 4**

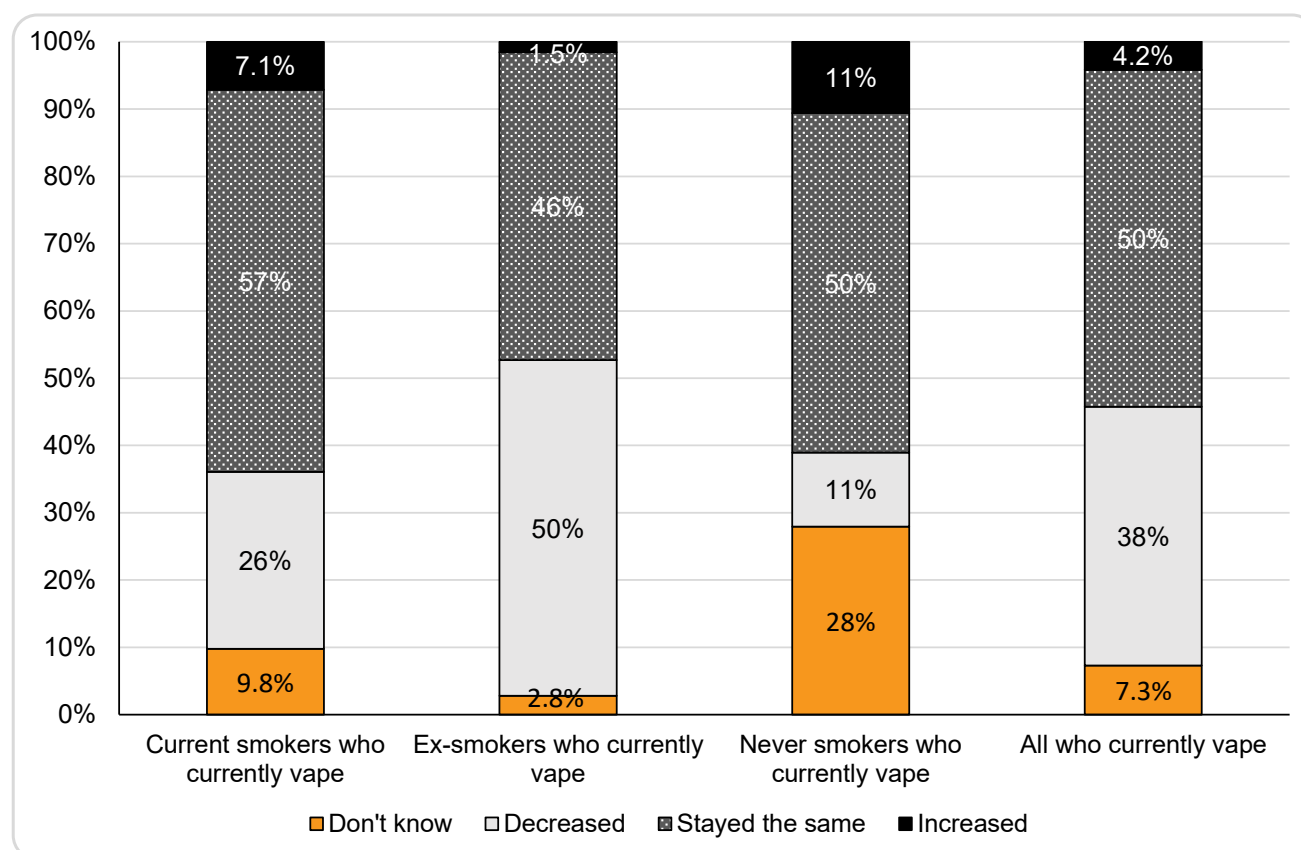
Strength of nicotine used by current e-cigarette users						
Strength	2017	2018	2019	2020	2021	2022
TPD level and lower	85%	90%	88%	91%	92%	90%
Higher than TPD	5.9%	2.1%	2.0%	2.1%	1.5%	0.9%
Don't know	9.5%	8.4%	9.8%	7.0%	6.5%	9.0%

*Unweighted base: Current GB adult e-cigarette users who use nicotine. 2017 n=597; 2018 n=365; 2019 n=720; 2020 n=693; 2021 n=633; 2022 n=938*

In 2022, 50% of current vapers say they use the same strength e-liquid as when they started, while 38% have decreased the strength. Only 4.2% have increased the strength over time. (Figure 14). E-cigarette users who have quit smoking are more likely than dual users to report using a lower nicotine strength over time (26% of current dual users compared with 50% of ex-smokers who vape).



**Figure 14 - Change over time of e-liquid nicotine strength among current adult vapers, Great Britain 2022**



Unweighted base: Current vapers excluding any current vapers who don't use nicotine-containing e-cigarettes. Current smokers n=394; Ex-smokers n=594; Never smokers n=101; All n=1089. Question asked e-cigarettes users about any change in nicotine strength comparing their first use to current use.

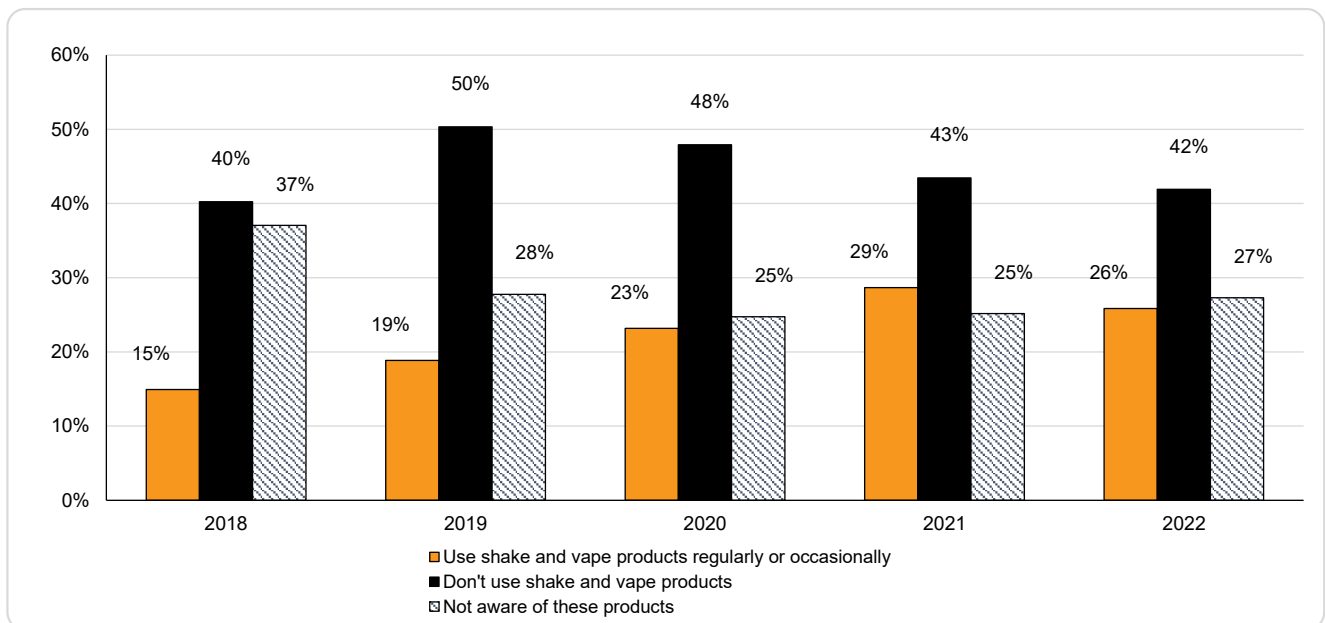
## AMOUNT OF E-LIQUID USED IN TANK-TYPE E-CIGARETTES AND DEDICATED REFILL BOTTLES

Legislation limits the volume of e-liquid in an e-cigarette to less than 2ml and dedicated refill bottles for tank-type devices to 10ml.

In 2016, prior to this legislation coming into force, 44% of those vaping daily and using a tank device reported using 2ml or less a day with 0.2% reporting using more than 10ml of liquid a day. In 2022, the proportions were 28% of all daily e-cig users using 2ml or less a day and 2.4% more than 10 ml a day. We have not asked why vapers have increased the amount of liquid they use, but the most likely reasons are either the cap on nicotine strengths and/or changes in the types of products being used.

To get around the limits, larger bottles of zero-strength liquid are on sale alongside smaller bottles with the highest legal limit nicotine strength liquid, sold to be mixed together. This is sometimes marketed as 'shake and vape'. The product is only used with open or tank systems, as disposable and cartridge-type devices do not have refillable liquid. The ASH YouGov survey finds that 26% of current vapers who use tank devices with nicotine report using 'shake and vape' products. The proportion not aware of 'shake and vape' has been steady at 24%-28% between 2019 and 2022, declining from 37% in 2018. (Figure 15). Rates of awareness of shake and vape products are lower in current smokers (66%), than in ex-smokers (77%) and never-smokers (80%).

**Figure 15 - Change in awareness and use of 'shake and vape' products, Great Britain (2018 and 2022)**



*Unweighted base: Current GB e-cigarette user using tank as main device and using nicotine. 2018 n=696; 2019 n=775; 2020 n=744; 2021 n=769; 2022 n=993*

## OTHER E-CIGARETTE PRODUCTS

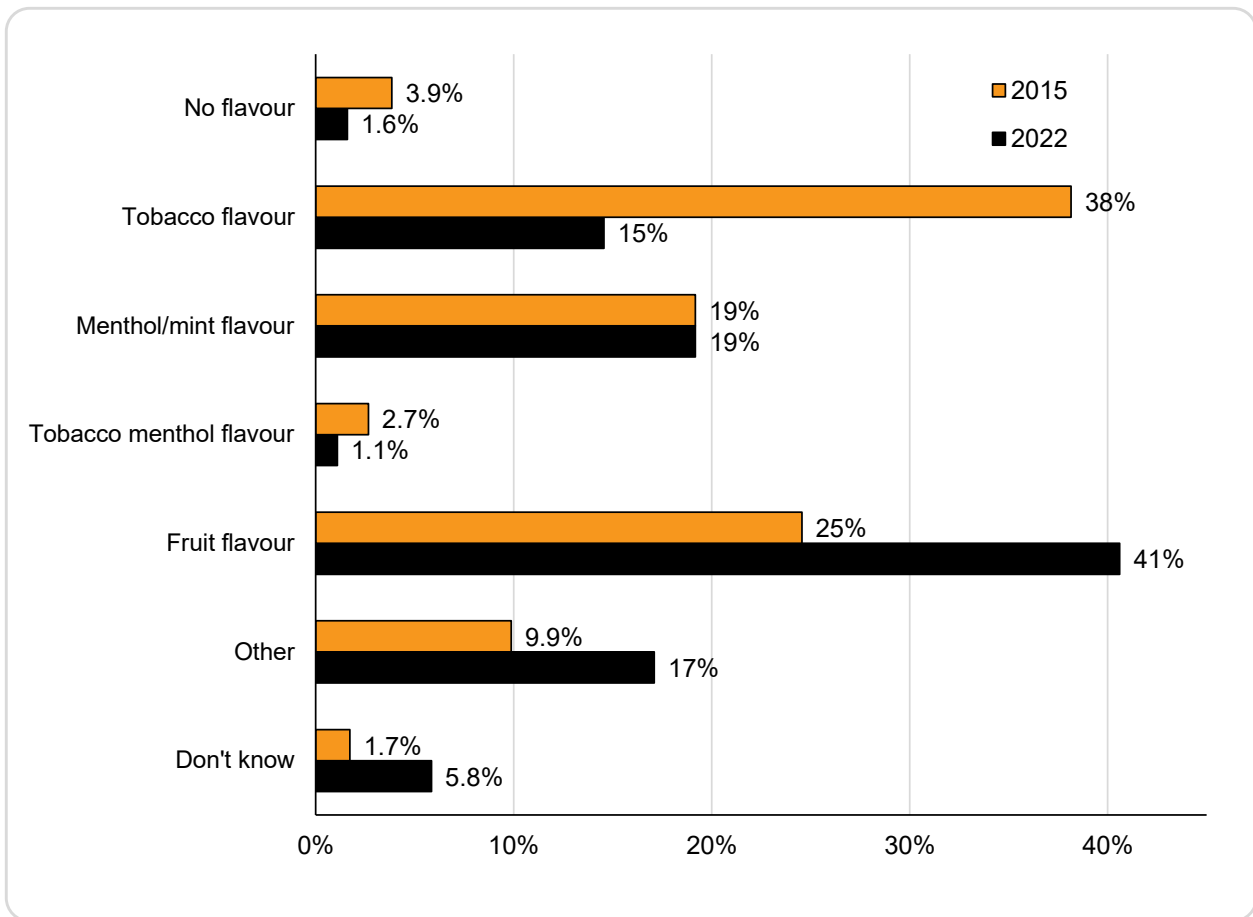
From 2017, after the launch of the Philip Morris International (PMI) product IQOS, the ASH Smokefree GB survey has asked about knowledge and use of heated tobacco products (also known as heat not burn). However, population level of knowledge and use was low to start with and has not grown significantly, so no detailed analysis can be carried out to date. In 2021, 14% of the public had heard of heated tobacco products and 1.7% had ever tried them. This finding is consistent with both the Smoking Toolkit Study and the ONS, which also find very low levels of knowledge and use of these products. In 2022 we did not ask about heat not burn products.

In 2020 we also included questions about other novel nicotine products to assess public awareness. Voke, a medically licenced inhalator which resembles an e-cigarette had ever been tried by 0.9% of the population with 9.0% aware of the product. Nicotine pouches (which includes brands such as Zin and Nordic Spirit) appear to have greater public awareness with 44% of people reporting they have heard of these products in 2022. However, ever use is still low at 3.9%.

## USE OF FLAVOURS

In 2015, we started asking e-cigarette users what flavour they used most often. (Figure 16). In 2015 tobacco was most popular at 38% followed by fruit flavour at 24.6% and menthol 19%. This has changed over time with fruit flavours now the most popular at 41%, followed by menthol at 19%. Tobacco flavour has fallen to third most popular at 15%. Very few report using products with no flavours.

**Figure 16 - Flavours used by adult vapers, Great Britain (2015 and 2022)**



*Unweighted base: All GB adults who currently use e-cigarettes 2015 n=614; 2022 n=1089; Other options to choose are grouped under 'Other'; in 2022 they were 'Coffee', 'Vanilla', 'Chocolate, desserts, sweet or candy flavour', 'Energy drink or soft drink' 'An alcoholic flavour' and 'Other'. In 2015, 'Mix of flavours' and 'Other' were options. All were under 2% of replies, except 'Chocolate, desserts, sweet or candy flavour' in 2022 at 6.3%.*

Patterns of behaviour are similar for ex-smokers who vape and for dual users, although tobacco and menthol are more popular with ex-smokers and fruit flavours are more popular with current smokers. (Table 5). Never smokers are much more likely than other groups to not know what flavour e-cigarettes they use (31%), with very few choosing menthol or tobacco flavours (3.1% and 1.1%).

**Table 5**

Vape liquid flavour most often used (current e-cigarette users)			
	Current smokers (dual users)	Ex-smokers	Never smokers
<b>Fruit flavour</b>	44%	39%	41%
<b>Menthol/mint flavour</b>	15%	24%	3.1%
<b>Tobacco flavour</b>	14%	17%	0.0%

*Unweighted base: All GB adults who currently use e-cigarettes 2022. Current smokers n=394; ex-smokers n=594; never smokers=101*

In 2020, we asked vapers to describe their use of flavours and a higher proportion of ex-smokers who currently vape (74%) said they stick to the same flavours compared to dual users (61%).

# Appendix 1

## METHODS

This briefing reports the results of the ASH Smokefree GB surveys on the use of e-cigarettes among adults in Great Britain. All figures, unless otherwise stated, are from YouGov Plc. ASH included questions on e-cigarette use in this annual survey starting in 2010 with questions addressed only to smokers. ASH updated its annual survey with questions on e-cigarettes addressed to all respondents from 2012 onwards. (Appendix Table 1). These surveys have all been carried out online once a year in Spring by YouGov. All figures have been weighted and are representative of GB adults (aged 18+). Not all questions are asked every year, especially where answers have proven stable in the past. A few new questions are also introduced each year. ASH has also carried out a survey of youth e-cigarette use (11-18-year olds) since 2013. Analysis of e-cigarette use among youth is published separately.<sup>14</sup>

Calculations of the total number of vapers in Great Britain set out in Table 1 are by ASH. In each of the years we applied the proportions of e-cigarette use in the YouGov survey to the most recent available ONS mid-year GB population estimates at the time the YouGov data was gathered. In 2021 and 2022 the [ONS mid-year GB population estimate for 2020](#) has been used.<sup>15</sup>

**Table 1 - History of ASH Smokefree GB Surveys**

Year	Sample Size	Dates
2008	3,329	20th – 25th February
2009	13,075	25th – 30th March
2010	12,597	17th – 22nd March
2012	12,436	27th February – 16th March
2013	12,171	1st – 19th February
2014	12,269	5th – 14th March
2015	12,055	26th February – 12th March
2016	12,157	2nd – 23rd March
2017	12,696	16th February – 19th March
2018	12,767	8th February – 6th March
2019	12,393	12th February – 10th March
2020	12,809	17th February – 11th March
2021	12,247	18th February – 18th March
2022	13,088	16th February – 21st March

Since the ASH-commissioned Smokefree GB survey first started, there have been a number of other surveys which have gathered data on e-cigarette use. The Smoking Toolkit Study is probably the most extensive of these and tracks both smoking and e-cigarette use throughout the year.<sup>16</sup> The study started in England in January 2007 and expanded to Scotland and Wales in December 2020. The countries' surveys are reported separately rather than together as Great Britain, and only the England data are discussed here. The trends are similar in both surveys,<sup>17</sup> but the ASH Smokefree GB survey consistently estimates a slightly lower figure for the proportion of e-cigarette users who are current smokers. The difference results from the assessment of smoking status: there are fewer ex-smokers and more current smokers in the Smoking Toolkit Study

than in the ASH Smokefree GB survey. Within the different categories of smoking status, the prevalence of e-cigarette use is similar between the surveys. For further information see the [Smoking Toolkit](#).

## COVID-19

The YouGov data collection for the ASH Smokefree surveys occurs in February and March, so we do not expect that the 2020 data was significantly affected by the COVID-19 pandemic. The data in subsequent years may capture changes in smoking and vaping attitudes and behaviours that are causally related to the pandemic or lockdown. In 2020, data collection for both the Annual Population Survey<sup>18</sup> and the Smoking Toolkit Study<sup>19</sup> had to be changed from face-to-face to telephone interviews. This means it is difficult to determine how far the changes in vaping patterns in these surveys were due to changes in the mode of data collection and how far they were directly due to COVID-19. The ASH Smokefree survey has always been online, so did not have a discontinuity in method during the pandemic.

**Table 2 - Sample sizes for Figure 13**

		Year					
		2017	2018	2019	2020	2021	2022
Age	18-24	52	50	56	55	52	217
	25-34	53	68	101	104	129	181
	35-44	127	129	159	168	177	217
	45-54	190	199	223	176	156	188
	55+	235	269	261	264	276	230

## Appendix 2

### E-CIGARETTE REGULATIONS

In 2015 a minimum age of sale for e-cigarettes of 18 was introduced, making it illegal to sell e-cigarettes containing nicotine to under 18s or to purchase them on behalf of under 18s.<sup>20</sup> From 20th May 2016, a regulatory framework for e-cigarettes was introduced in the UK under the EU Tobacco Products Directive (TPD) Article 20.<sup>14</sup> From that date, the advertising or promotion, directly or indirectly, of electronic cigarettes and re-fill containers on a number of media platforms, including on television, radio, newspapers and magazines, was prohibited. The only advertising still allowed is at point of sale and other local advertising such as billboards.

The new product rules under the TPD for electronic cigarettes introduced a notification process for manufacturers and importers in May 2016.<sup>21</sup> Non-compliant stock was allowed on sale for a further year until 20th May 2017.<sup>22</sup> See below for a summary of the key product standards:

#### Nicotine strength of e-liquid

- Electronic cigarettes which contain up to 20 mg per ml of nicotine are regulated as consumer products.
- Products containing over 20mg per ml of nicotine cannot be sold unless they have a medicinal licence.<sup>23</sup>
- Zero nicotine products are not included in the TPD and do not require a medicinal licence.

#### Quantity of e-liquid

- Disposable electronic cigarettes, cartridges and tanks can contain a maximum of 2ml of e-liquid, while dedicated refill containers can contain up to 10ml.

## Safety

- Products must be child-resistant and tamper evident.

## Health warnings

- The pack must carry a health warning covering 30% of the surfaces of the unit packet and any outside packaging stating '*This product contains nicotine which is a highly addictive substance.*'

The Medicines and Healthcare products Regulatory Agency (MHRA) is the competent authority for the notification scheme for e-cigarettes and refill containers in the UK.<sup>24</sup> Consumers and healthcare professionals can report side effects and safety concerns with e-cigarettes or refill containers to the MHRA through the Yellow Card reporting system.<sup>25</sup> They can also report products suspected to be defective or non-compliant to their local Trading Standards service or to [TPDsafety@mhra.gov.uk](mailto:TPDsafety@mhra.gov.uk).

The Yellow Card Scheme was put in place for e-cigarettes on 20 May 2016. Between then and February 2021, MHRA received 231 Yellow Card adverse reaction reports.<sup>26</sup> MHRA assess all reports received in associated with nicotine-containing e-cigarettes and should any potential safety concerns be identified regulatory action would be taken and communicated as appropriate. The MHRA also receives reports of potential safety concerns and works with local Trading Standards teams to investigate as needed.

There was a legal requirement to review the regulations within five years of implementation and publish a report by 20 May 2021.<sup>27</sup> The Department for Health and Social Care carried out a post-implementation review consultation January to March 2021.<sup>28</sup> The review found that the regulations were fit for purpose and to be retained in their current format.<sup>29</sup> ASH asks e-cigarette users questions about the type of product they use to inform our understanding of the impact of the current regulations and how the market for e-cigarettes is evolving.

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