

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

September 2018

## SUMMARY OF FINDINGS

### Awareness and use

- An estimated 3.2 million adults in Great Britain currently use e-cigarettes (vape), up from 700,000 in 2012, the first year ASH collected figures for e-cigarette use (table 1).<sup>1</sup>
- There are now more ex-smokers (1.7 million) who use e-cigarettes than current smokers (1.4 million). This means that over half (52%) of e-cigarette users are ex-smokers with 44% being current tobacco smokers.
- The main reason given by current vapers for use of e-cigarettes is to help them stop smoking

### Perceptions of harm

- Public perceptions of harm from e-cigarettes remain inaccurate with only 17% of respondents correctly stating that e-cigarettes are a lot less harmful than smoking.

### Products and regulation

- Only 2% of current vapers report using an e-liquid containing over 20 mg/ml (the limit in the Tobacco Products Directive)
- Liquids containing nicotine are being used by the majority of vapers but users are much more likely to report that they have decreased rather than increased their strength over time.

## BACKGROUND - HEALTH EFFECTS OF VAPING COMPARED TO SMOKING TOBACCO CIGARETTES

Using e-cigarettes (or 'vaping') is considerably less harmful than smoking tobacco cigarettes<sup>2</sup>. This is because the danger from smoking primarily comes from the inhalation of, and exposure to, tobacco smoke. The smoke from tobacco cigarettes contains a large number of toxicants which can be highly damaging to the health of users. E-cigarettes, in contrast, do not contain or burn tobacco. Instead, they heat a solution containing nicotine, flavourings and other additives which delivers nicotine vapour to the user.

Whilst nicotine consumed through inhaled tobacco smoke is addictive, long-term use of nicotine (in the form of nicotine replacement therapy, NRT) has not been found to increase the risk of serious health problems. The current best estimate is that e-cigarettes are at least 95% less harmful to your health than tobacco cigarettes, a figure which has been endorsed by Public Health England.

## ASH SURVEYS

This fact sheet reports the results of the ASH Smokefree GB surveys on the use of e-cigarettes among adults in Great Britain. ASH included questions on e-cigarette use in this annual survey starting in 2010 with questions addressed only to

## E-CIGARETTE AWARENESS AND USE

smokers.<sup>3</sup> ASH updated its annual survey with questions on e-cigarettes addressed to all respondents from 2012 onwards.<sup>4 5 6 7 8 9</sup> These surveys have all been carried out by YouGov. Using the prevalence figures provided by YouGov, ASH, working with King's College London, has estimated the number of e-cigarette users by smoking status in Great Britain.

In March 2013 an additional survey of children aged 11 to 18 was conducted, the ASH Smokefree Youth survey. This has been repeated annually since then. In summary the ASH Smokefree Youth Survey shows that regular use of e-cigarettes amongst children and young people is rare and is confined almost entirely to those who currently or have previously smoked. For full details on e-cigarette use among children please see the [ASH e-cigarette youth factsheet](#).

Since the ASH-commissioned Smokefree GB survey first commenced, 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 smoking and e-cigarette use throughout the year in England. The findings from the Smokefree GB survey and the Smoking Toolkit Study are broadly consistent although differences in the populations covered, definitions of smoking status and how the surveys are conducted lead to small differences in results. Throughout this factsheet we refer to the findings of the Smoking Toolkit Study as further illustration of the patterns of e-cigarette use. For the full findings from the Smoking Toolkit Study visit: [www.smokinginengland.info](http://www.smokinginengland.info).

**Table 1.** Number of e-cigarette users (vapers) in Great Britain

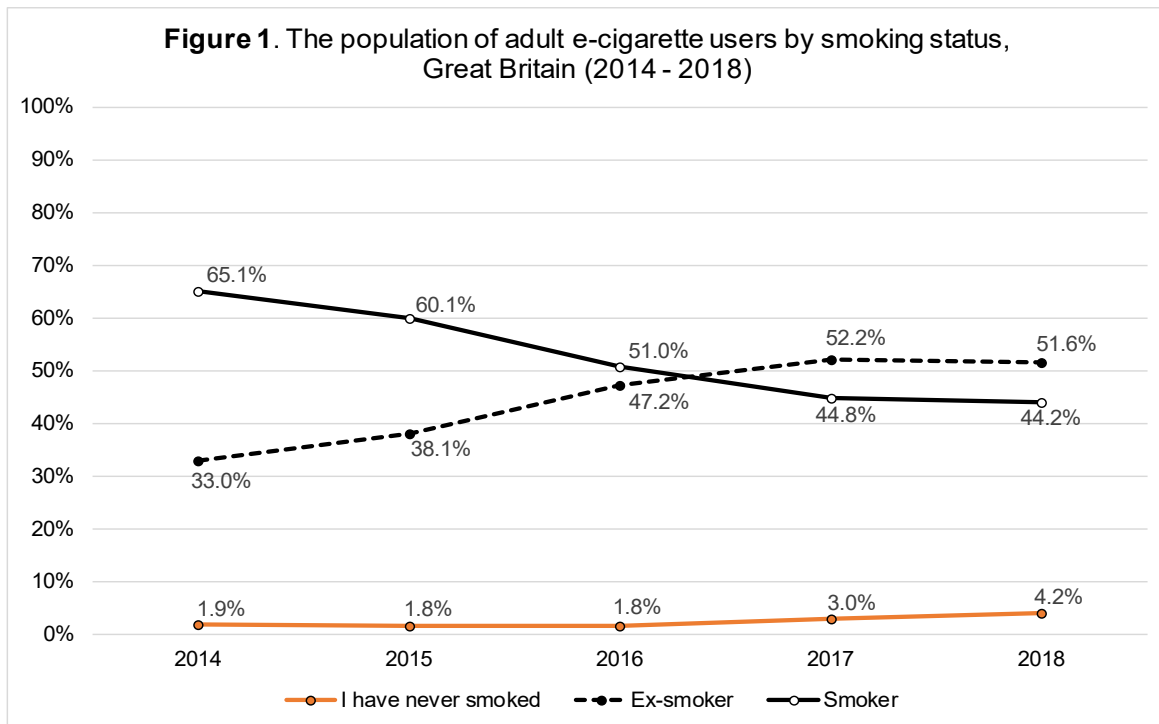
	2012	2013	2014	2015	2016	2017	2018
Number of vapers	700,000	1.3 million	2.1 million	2.6 million	2.8 million	2.9 million	3.2 million
Year on year rate of change		+86%	+62%	+24%	+8%	+4%	+10%

Awareness of e-cigarettes is now widespread among adults. The 2018 survey found that 94% of tobacco smokers and 93% of the general population had heard of e-cigarettes. This contrasts with 2012, when 49% of adults responding to the same question said they had never heard of e-cigarettes.

ASH estimates that there are currently 3.2 million adults in Great Britain using e-cigarettes (6.2% of the adult population). Of these, approximately 1.4 million (44.2%) are smokers, 1.7 million (51.6%) are ex-smokers and 100,000 (4.2%) are never tobacco smokers (table 1). This means that for the last few years the majority of e-cigarette users have been ex-smokers rather than current smokers (of tobacco cigarettes).

There has been a significant growth in the number of e-cigarette users over the past 6 years. In 2012 there were around 700,000 vapers, 1.7% of the population. This has increased to 3.2 million vapers in 2018, 6.2% of the population. The rate of uptake of e-cigarettes was much greater earlier on (between 2012 and 2013 there was an 86% increase in the number of adult vapers). However, numbers are still rising; between 2017 and 2018 the number has increased from 2.9 million to 3.2 million, a 10% rise (table 1).

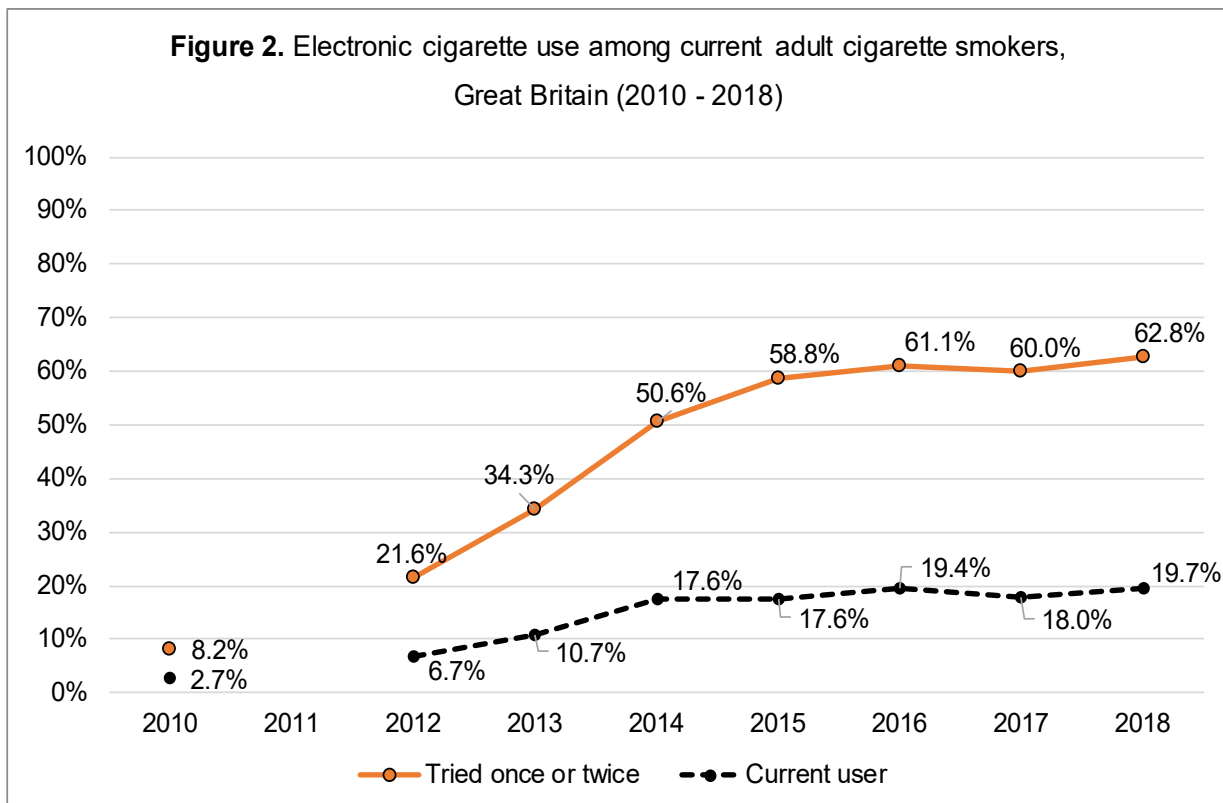
Since 2014, there has been an increase in the proportion of current e-cigarette users that are ex-smokers. In 2014 35% of current vapers were ex-smokers and 63% were smokers. However, over time this has changed and since 2017 the proportion of current e-cigarette users that are ex-smokers has been higher than the proportion that are smokers (figure 1).



Unweighted base: (2014: current e-cigarette users n=498, 2015: current e-cigarette users n=614, 2016: current e-cigarette users n=667, 2017: current e-cigarette users n=669, 2018: current e-cigarette users n=738).

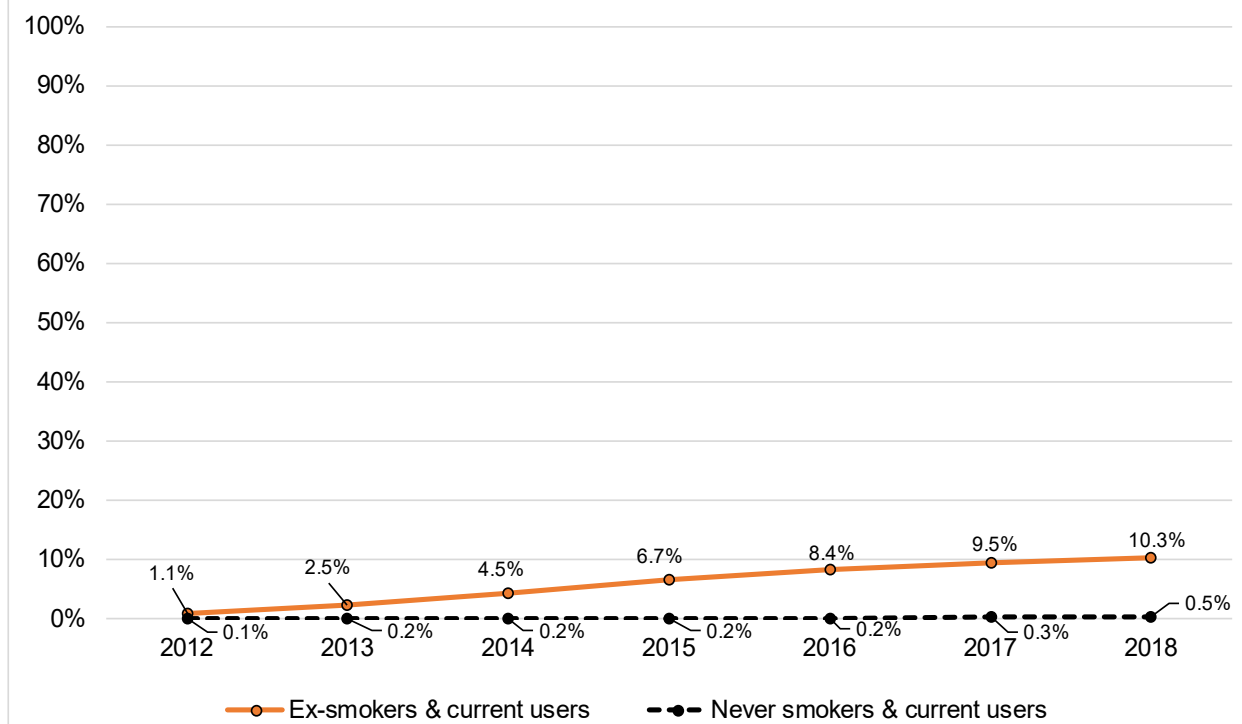
Between 2010 and 2014 there was a substantial increase in the number of current cigarette smokers who also use e-cigarettes, from 2.7% in 2010 to 17.6% in 2014. However, since 2014, the proportion of this group has largely plateaued (figure 2).

The proportion of ex-smokers using e-cigarettes has risen year-on-year from 1% in 2012 to 10% in 2018 (figure 3).



Unweighted base: GB adult smokers (2010, n=2297; 2012, n=2093; 2013, n=1895; 2014, n=1776; 2015, n=2037; 2016, n=1704; 2017, n=1632; 2018, n=1633).

**Figure 3. E-cigarette use in ex and never smokers, Great Britain (2012 - 2018)**



Unweighted base: GB adult ex-smokers (2012, n=4473; 2013, n=4303; 2014, n=4498; 2015, n=3889; 2016, n=4354; 2017 n=4438; 2018 n=4388), GB adult never smokers (2012, n=5886; 2013, n=5972; 2014, n=5995; 2015, n=6129; 2016, n=6420; 2017, n=6626; 2018, n=6746).

The trend in the Smoking Toolkit Study<sup>14</sup> is similar, which reports stability in the use of e-cigarettes among current smokers but a continuing upward trend among ex-smokers, particularly in those who reported using e-cigarettes as part of a quit attempt. The group of people who are ‘never smokers’ but report currently using an e-cigarette has grown since 2014 but remains low; currently 0.5% of never smokers report being current e-cigarette users. This is a small group in the survey and there is clearly some level of misreporting of smoking status as some of those ‘never smokers’ who are current vapers report that their main reason for using an e-cigarette is to either quit smoking or cut down.

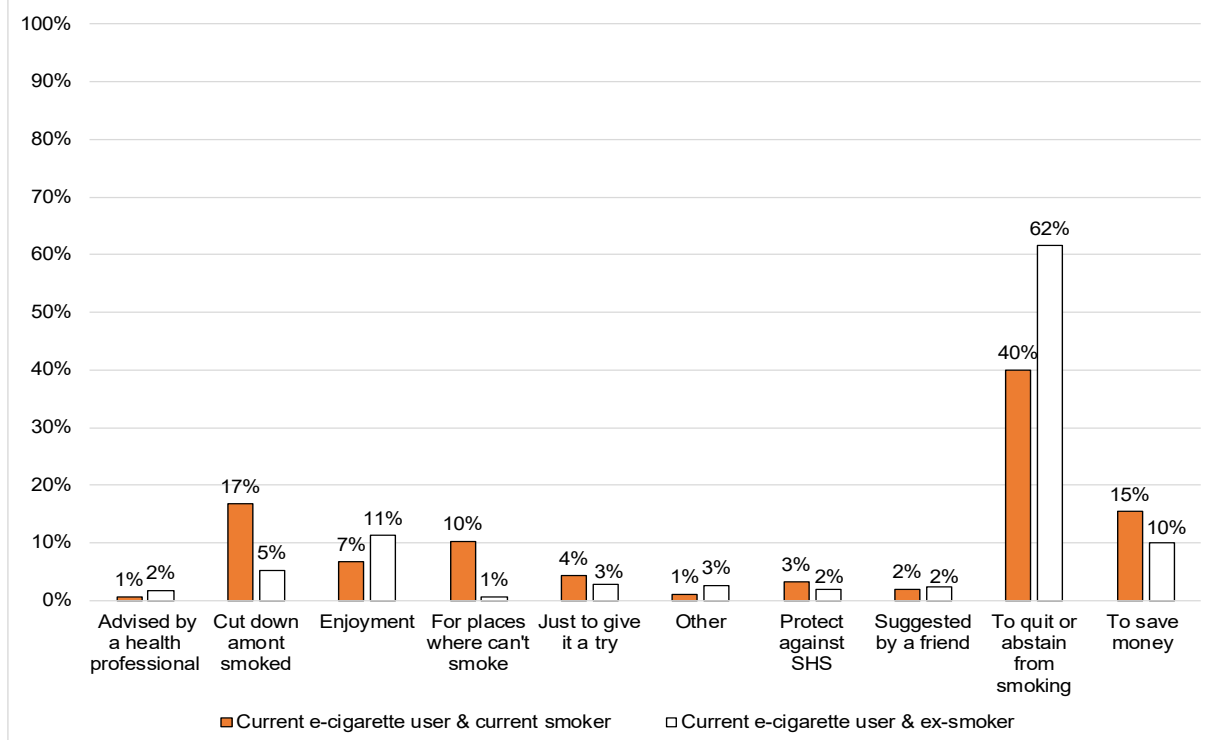
“Never smokers” who vape<sup>1</sup> are more likely to report never using a nicotine containing e-cigarette than those who have smoked (41% compared to 7%) and report using much lower volumes of liquid. While we should continue to monitor the level of never smokers who vape they currently appear to be a small group in the population and are more likely to be using a low volume of liquid without the addictive component.

## REASONS FOR USE

The top three reasons ex-smokers give for currently using e-cigarettes are: to quit or abstain from smoking (62%), because they enjoy it (11%) and to save money (10%) (figure 4). The top three reasons smokers give for currently using e-cigarettes are: to quit or abstain from smoking (40%), to help cut down the amount smoked (17%) and to save money (15%) (figure 4).

<sup>1</sup> Respondents who have never smoked tobacco, but used to use or currently use e-cigarettes, excluding those who only tried once or don’t know frequency of use

**Figure 4. Main reason current vapers are using an e-cigarette, Great Britain (2018)**



Unweighted base: GB adult ex-smoker who currently use e-cigarettes; 2018, n= 403; GB current smokers who currently use e-cigarettes; 2018, n= 308).

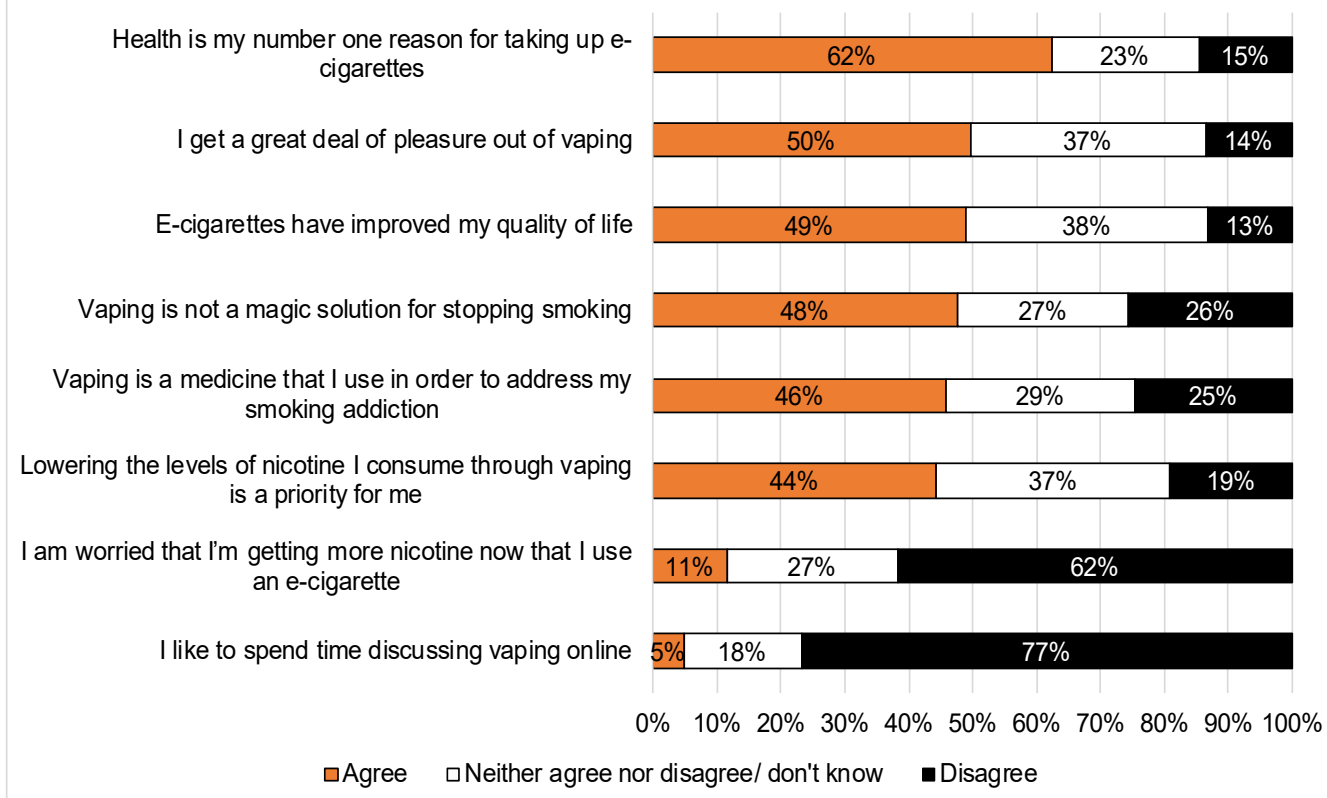
Quitting smoking remains the most important motivation for people currently using an e-cigarette but it is worth noting that other factors are also relevant. Saving money is particularly important for those vapers on lower incomes with one in six vapers in social groups D (16%) and E (15%) citing this as their main reason compared to 11% in each of social groups A and B. People with children under 5 in their household were more likely to report that they were vaping to protect others from secondhand smoke (7% compared to 2% of all vapers).

The enjoyment of vaping is cited as the main motivation for use by only 10% of vapers, but when asked if they get “a great deal of pleasure from vaping” 50% agree (14% disagree), pointing to the role of enjoyment in the popularity of e-cigarettes. However, for the majority of people using e-cigarettes, improving their health is at the heart of their reason for vaping. Among all vapers 62% agree that “health is my number one reason for taking up e-cigarettes”. This rises to 74% for vapers who have quit smoking. Health motivations are also evident among those ex-smokers who have tried but no longer use an e-cigarette. Over a third (36%) of ex-smokers who have tried e-cigarettes but no longer use them said they had used them as part of a quit attempt.

As the data are cross-sectional it means we cannot be conclusive, but the trend seems to support data from the Smoking Toolkit Study<sup>14</sup> which illustrates that e-cigarettes are supporting quit attempts. Overall 65% of those who have ever tried e-cigarettes are no longer using them.

Figure 5 provides more detail on how vapers view their use of e-cigarettes.

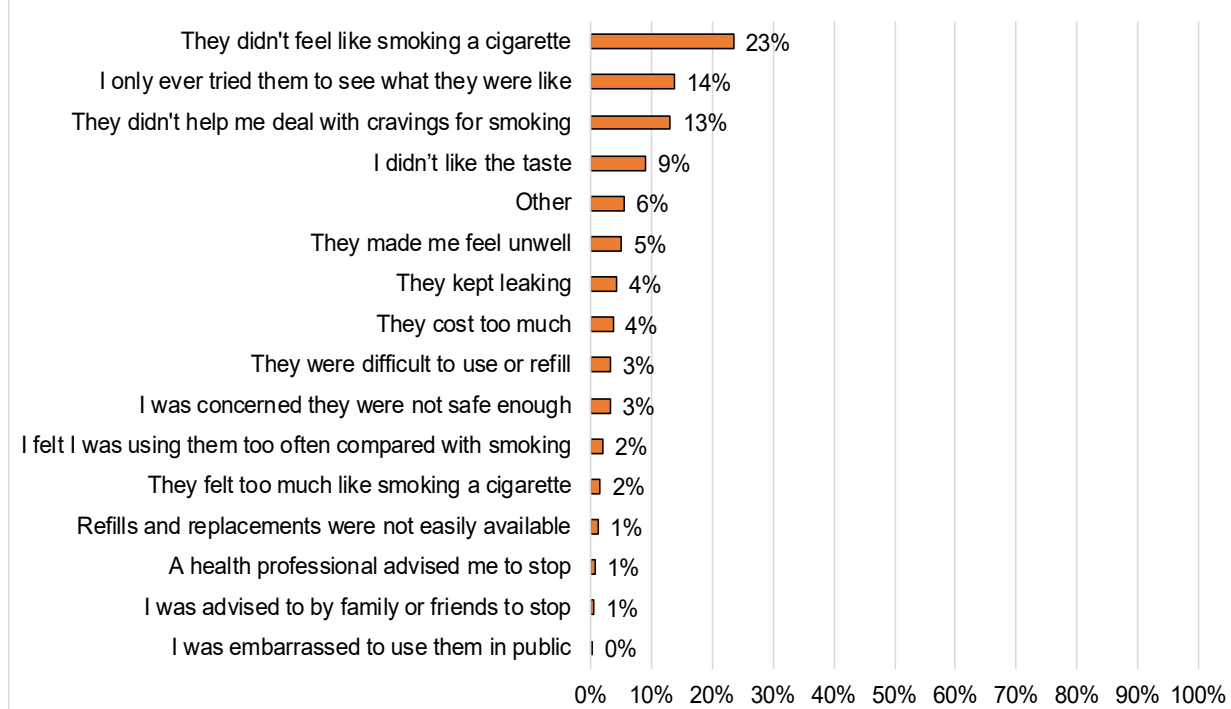
**Figure 5. How vapers view vaping, Great Britain (2018)**



Unweighted base: GB vapers; 2018, n=738.

In 2018 we asked smokers who have tried but are no longer using e-cigarettes what their main reason was for stopping (figure 6).

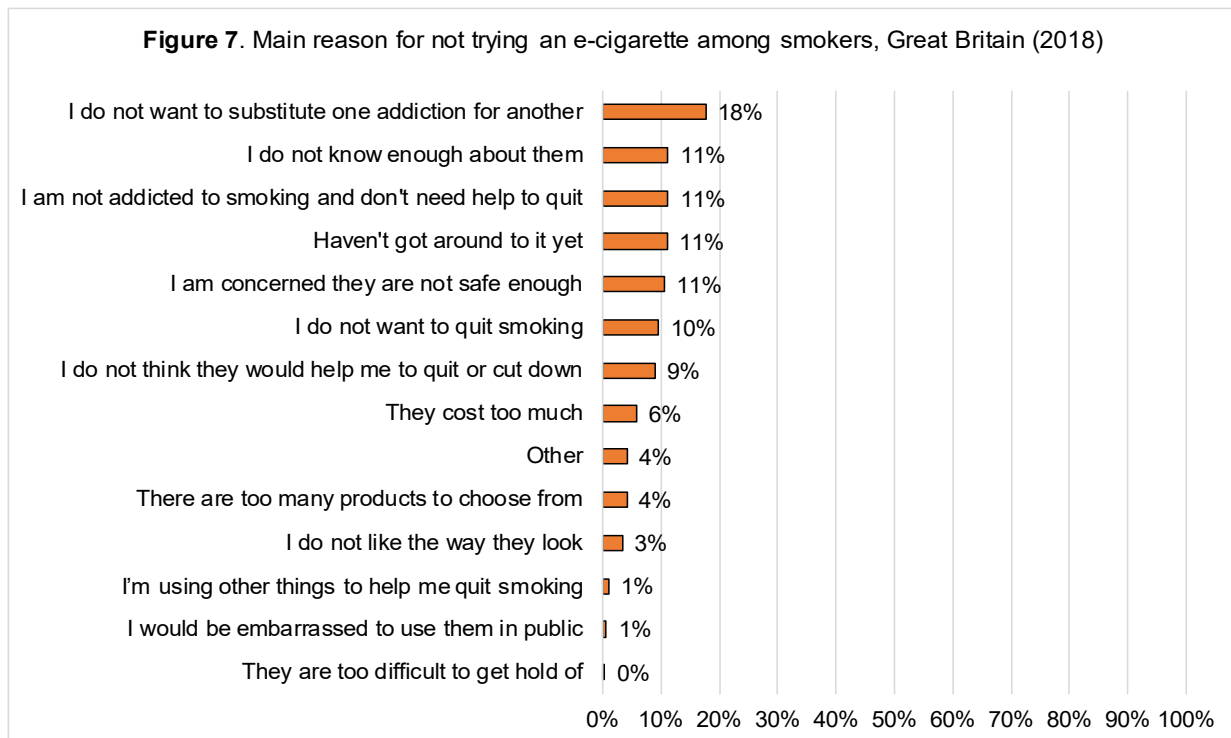
**Figure 6: Reason ex e-cig users\* and current smokers gave for no longer using e-cigarettes, Great Britain (2018)**



\*this includes those that have tried e-cigarettes once or twice in addition to longer-term users. Unweighted base: GB current smokers who are ex-users of e-cigarettes; 2018, n=710.

The most common reasons related to whether e-cigarettes were a sufficient substitute for smoking with 23% stating they didn't feel like smoking a cigarette and 13% saying they didn't help them deal with cravings (figure 6). However, safety concerns also appear to be impacting on this group. Research has shown that perceptions of harm may be inhibiting some smokers' use of e-cigarettes. This survey shows that 3% report stopping because of concerns about their own safety, while a further 2% stopped on the advice of a health professional or friend. Concerns about using the products too often (2%) may also be linked to misunderstanding about the harms from e-cigarettes.

Safety concerns are much more prominent among those smokers who are yet to try an e-cigarette (figure 7). While 11% say that concerns about safety are inhibiting their trial of e-cigarettes, concerns about whether a person knows enough about them (also 11%) and concerns about substituting one addiction for another (18%) suggest that smokers' uncertainty about the safety of products may be suppressing their appetite for trying e-cigarettes.



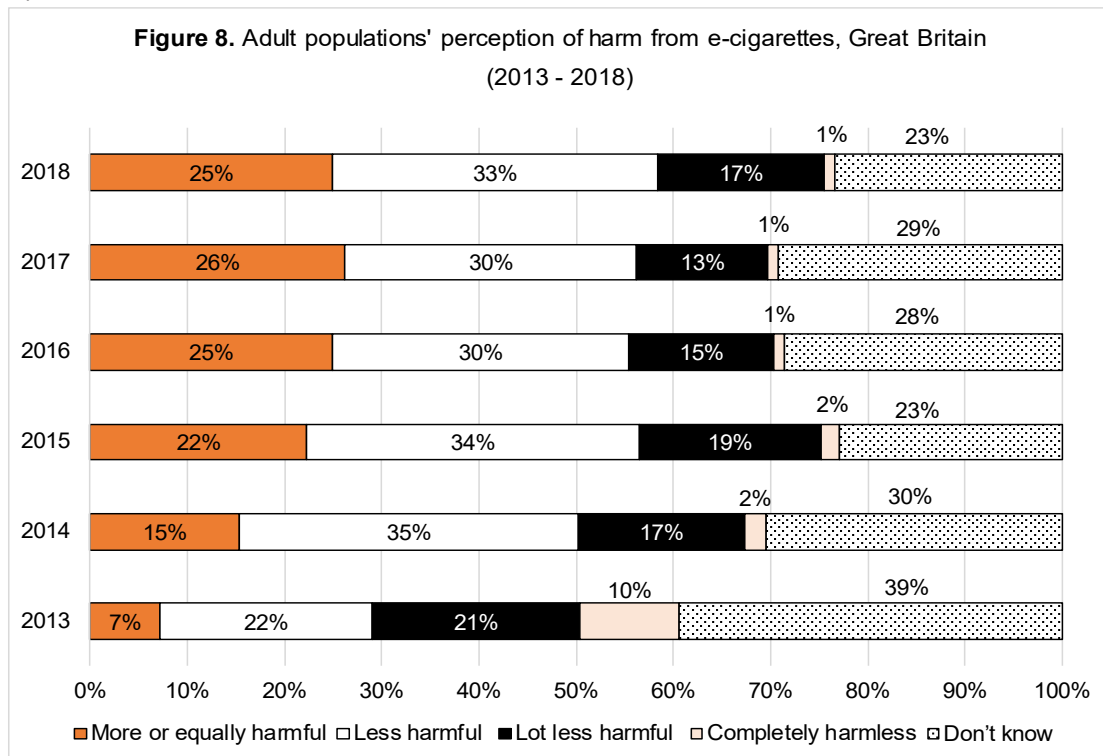
Unweighted base: GB current smokers who have not tried e-cigarettes; 2018, n=548.

## PERCEPTIONS OF HARM

Between 2013 and 2017 the accuracy with which smokers and the rest of the population understood the level of harm from e-cigarettes compared to smoking deteriorated. A growing proportion failed to recognise that e-cigarettes are less harmful than smoking. In 2017 only 13% of adults correctly identified that e-cigarettes are a lot less harmful than smoking compared to 21% in 2013. In addition, the proportion of the adult population thinking that e-cigs are as harmful, or more harmful, than smoking nearly quadrupled, increasing from 7% in 2013 to 26% in 2017 (figure 8). Over this period evidence has grown about the relative safety of e-cigarettes when compared to combustible tobacco.

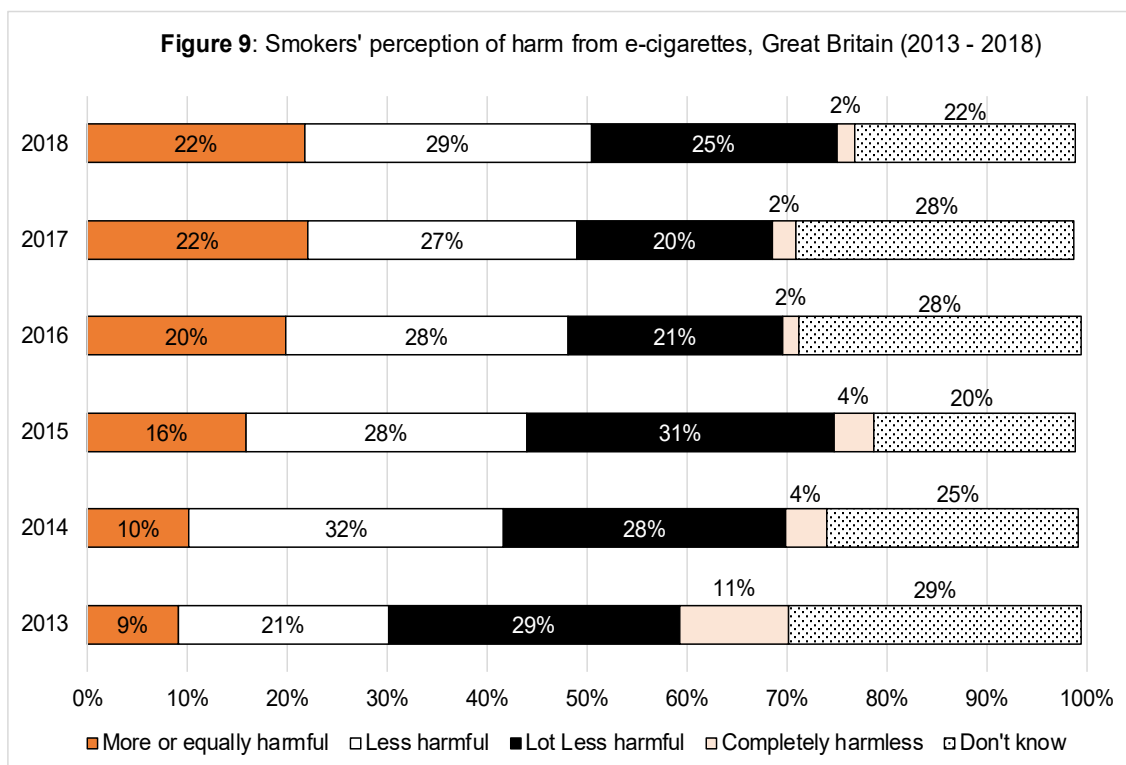
However, in 2018 there are signs that perceptions of harm may be improving in accuracy. Between 2017 and 2018 a greater proportion of the public correctly identify that e-cigarettes are less harmful or a lot less harmful than smoking (50% in 2018 compared to 43% in 2017). However, the change comes from a decline in the numbers of people reporting that they don't know rather than a big decline in those with inaccurate

views; the proportion who believe e-cigarettes are more or as harmful as smoking was 26% in 2017 and 25% in 2018).



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).

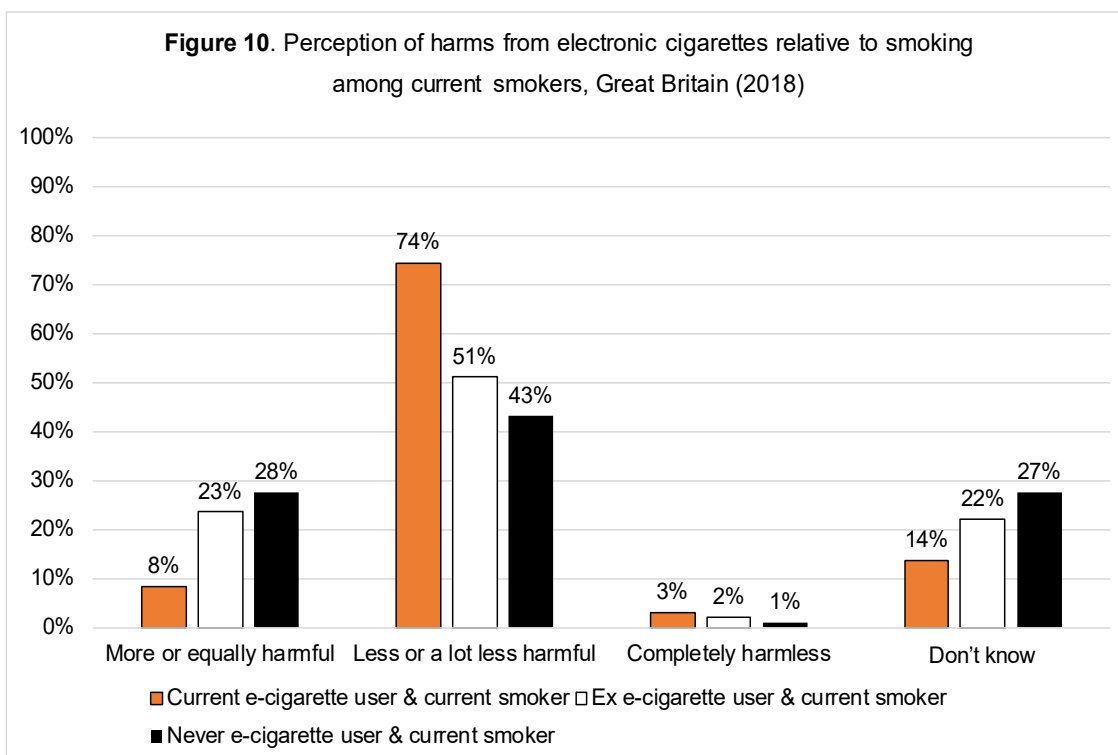
The same improvement is also seen among smokers' perceptions of harm (figure 9). Overall, they have more accurate views with 53% believing e-cigarettes to be less harmful or a lot less harmful in 2018 compared to 47% in 2017. However, the proportion reporting that vaping is as or more harmful than smoking has remained fairly stable (22.1% in 2017 21.7% in 2018) with the changes coming from a decline in the numbers reporting they 'don't know'.



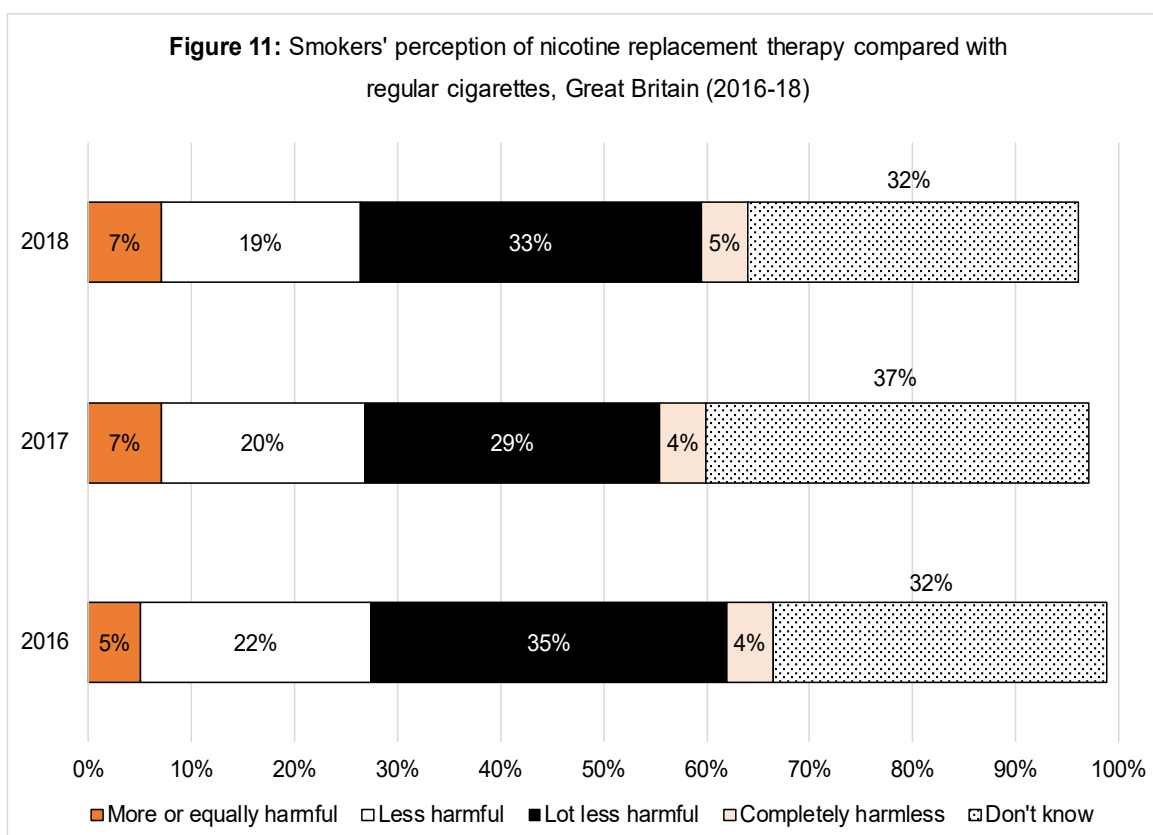
Unweighted base: GB adult smokers who have heard of e-cigarettes (2013, n=1720; 2014, n=1694; 2015, n=1945; 2016, n=1639; 2017, n=1569; 2018, n=1566).



Those smokers who are not currently using e-cigarettes continue to be the most likely to have inaccurate views, but this is improving with 43% holding accurate views in 2018 compared to 33% in 2017. A significant proportion of current smokers that have never used e-cigarettes also stated they don't know (27%) what the relative risk of using e-cigarettes is compared with tobacco cigarettes (figure 10).

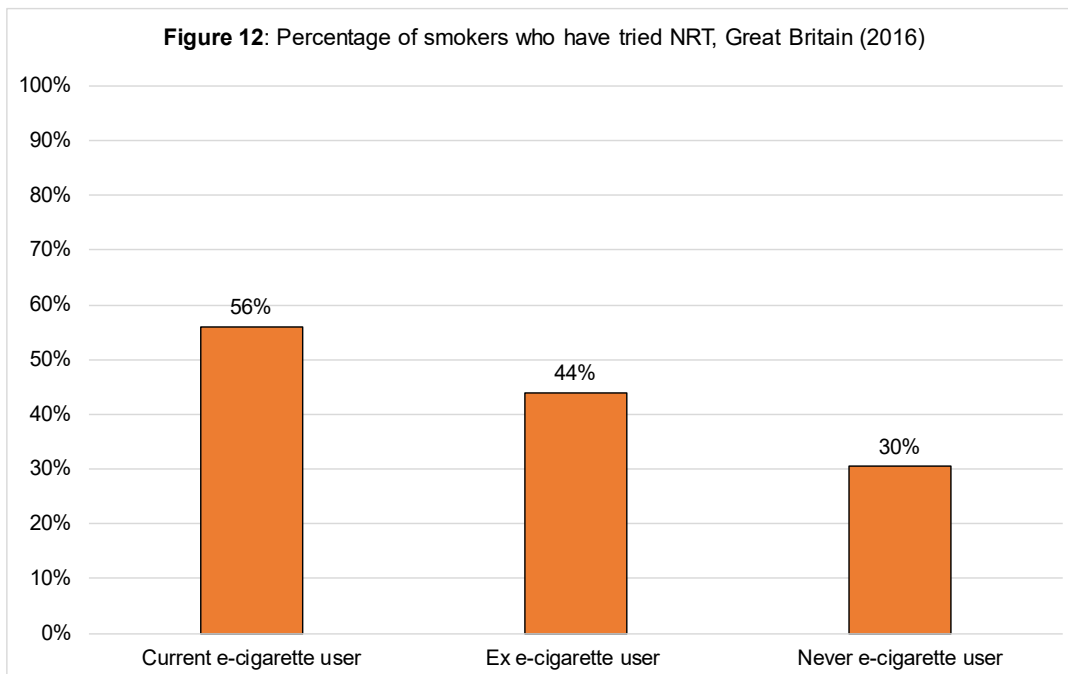


Unweighted base: GB current e-cigarette user & current smoker (2018, n=308); GB ex e-cigarette user & current smoker (2018, n=710); never e-cigarette user & current smoker (2018, n=548).

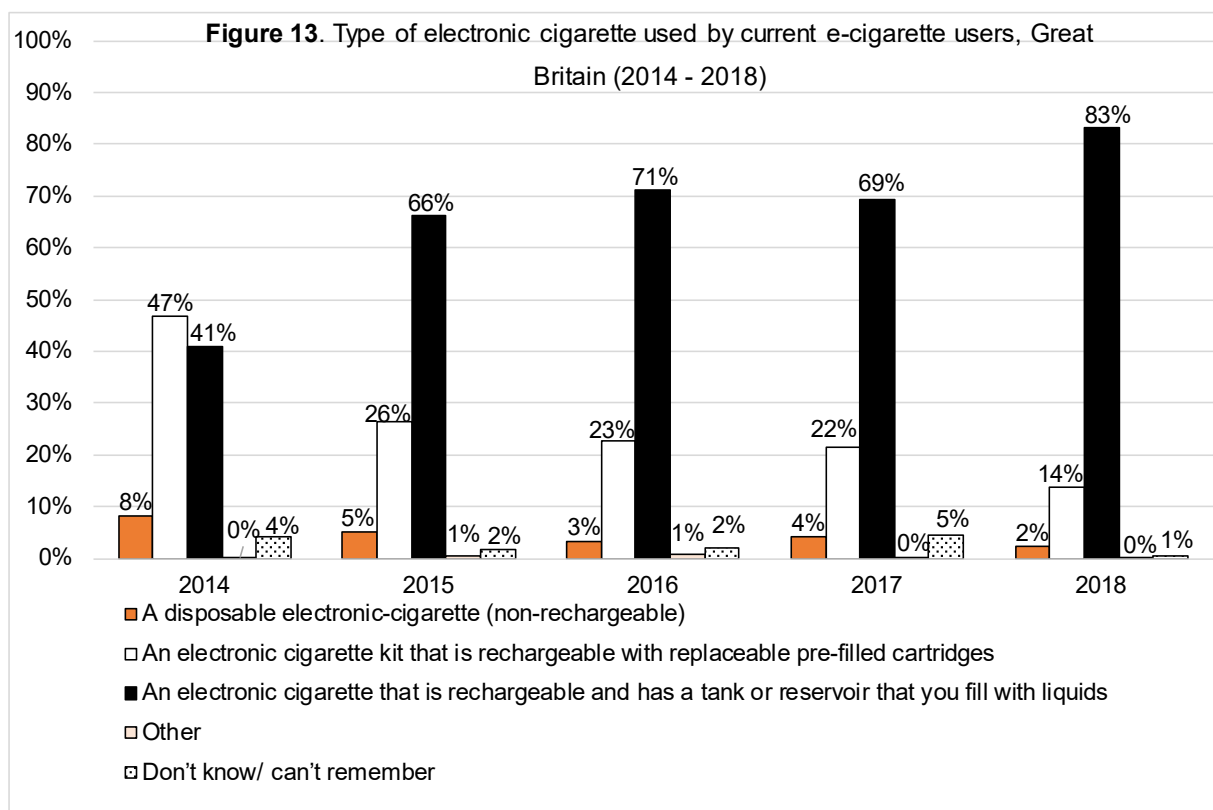


Unweighted base: GB adult smokers: 2016, n=1477; 2017, n=1632; 2018, n=1633.

Over the last three years we also asked people for their views of the relative harms of NRT products compared with tobacco smoking. Worryingly, understanding and, in particular, smokers' understanding of the relative harms from NRT is poor (figure 11). For each year where this question was asked (2016, 2017 & 2018), only around a third of smokers correctly stated that NRT is a lot less harmful than smoking. NRT is a licenced medication and there are very few risks from consumption. We found in our 2016 survey that smokers who had not tried e-cigarettes are also the least likely of current smokers to have tried NRT (figure 12).



Unweighted base: All GB adult current smokers who have tried NRT - current e-cigarette user and current smoker (n= 330), GB adult ex e-cigarette user & current smoker (n=703), GB adult never e-cigarette user and current smoker (n=645).



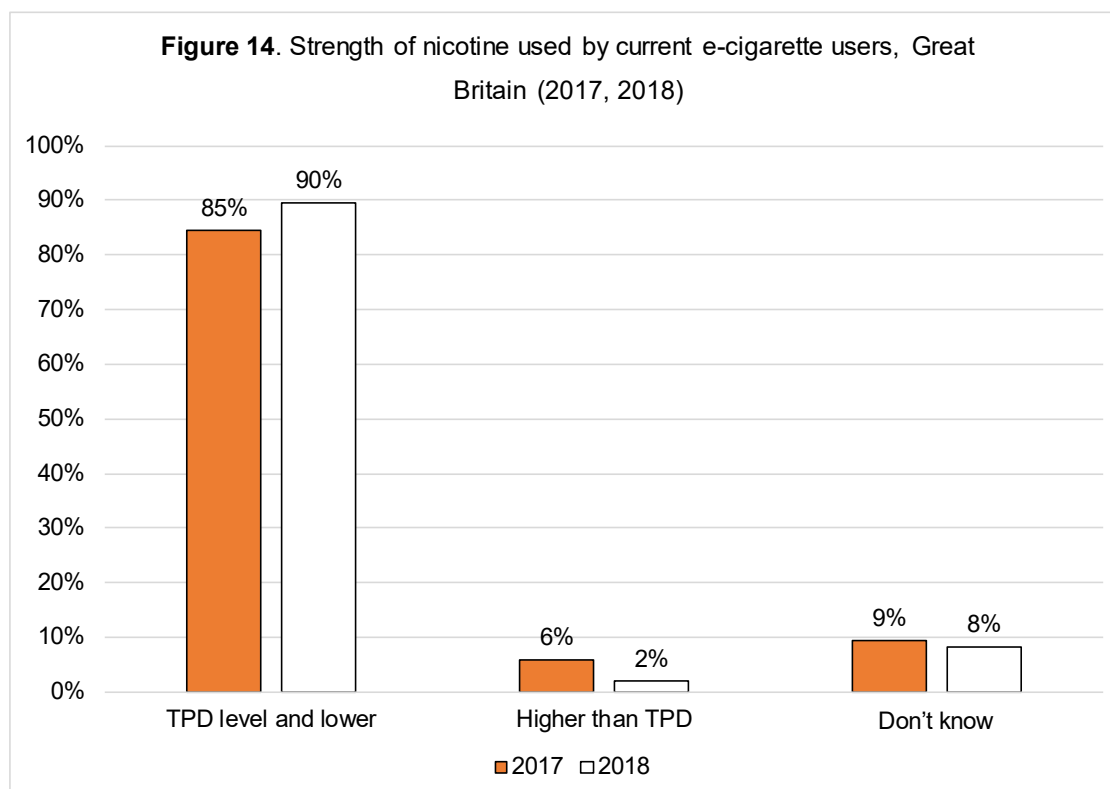
Unweighted base: All GB adults who currently use e-cigarettes, excluding those who don't know frequency of use: 2014 (n=498) ; 2015 (n= 614), 2016 (n=667); 2017 (n=669); 2018 (n=715).

## PRODUCTS AND REGULATION

Most e-cigarette users are now using a rechargeable product with a reservoir/tank. This proportion has grown since 2014 but has remained fairly consistent over the last few years. The use of disposable e-cigarettes is very low among current users (figure 13).

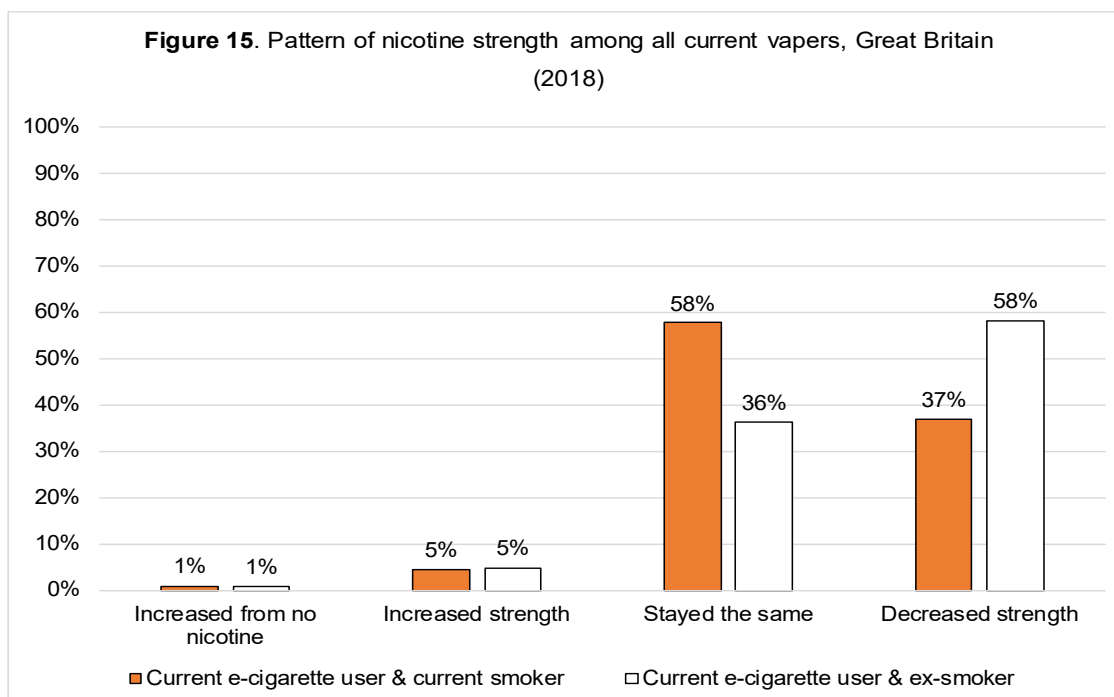
Some stakeholders have expressed concern that the cap on nicotine levels imposed by the Tobacco Products Directive (TPD) will inhibit use among smokers with the highest levels of addiction. This is an issue that should be monitored. Relevant findings from the ASH survey indicate that the current nicotine cap is not a problem for the vast majority of current vapers but it remains unclear if it is having an impact on the behaviour of smokers not using e-cigarettes.

A large majority (88%) of current e-cigarette users sometimes or always use products that contain nicotine. Most use liquids below the upper limit of nicotine concentration of the TPD's 20mg/ml. Only 2% of current users who use nicotine report using liquids with a higher concentration of nicotine compared with 6% in 2017, prior to the limit coming fully into force (figure 14).



*Unweighted base: Current GB e-cigarette user who use nicotine, 2017 (n=597); 2018 (n=365).*

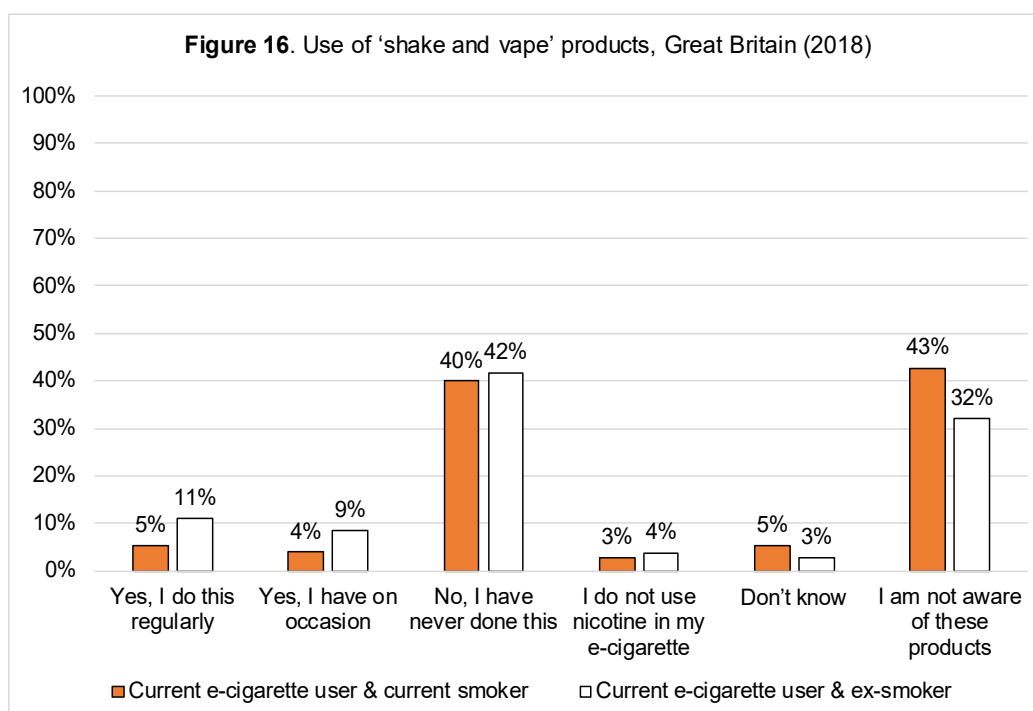
We also asked people to record the nicotine strength they used when they started vaping and 5% reported that they started at a higher level than the TPD currently allows (figure 15). The trend across the majority of vapers was to lower the strength of nicotine that they use over time (43%) or stick at the same level (49%), with a minority reporting that they have increased their strength (7%).



(Change in nicotine strength from first use to current use, excludes don't know) Unweighted base: Current GB e-cigarette user and smoker, 2018 (n=215); current GB e-cigarette user and ex-smoker, 2018 (n=332).

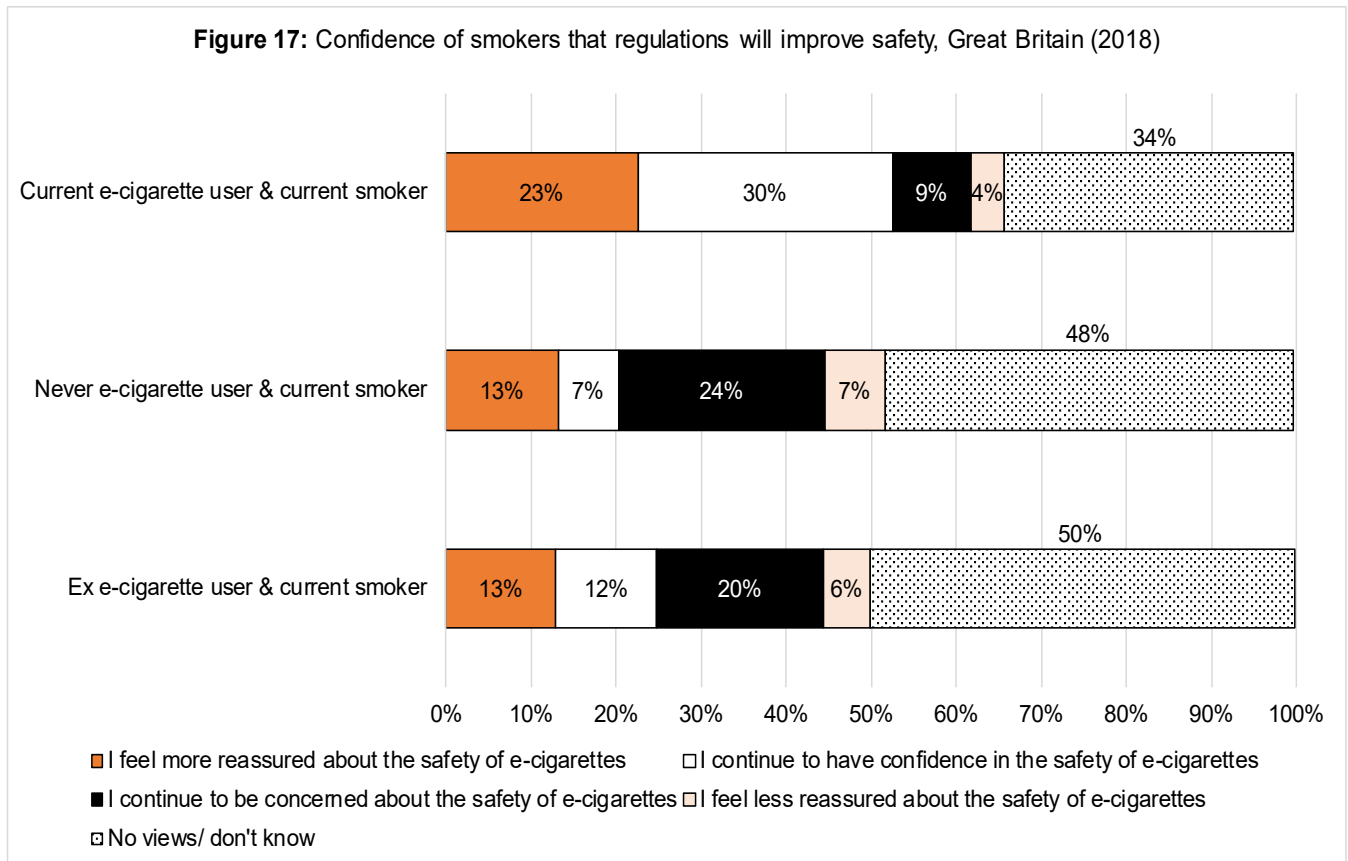
Those current vapers who have also quit smoking were more likely to report that they have decreased the strength of nicotine (58% compared to 37% of those who are still smoking, figure 15).

The TPD limits the size of bottles to less than 10ml. Among daily vapers 2.2% of vapers report using more than 10ml of liquid a day. This regulatory change has prompted a change in sales practice with larger bottles of zero strength liquid for sale alongside smaller bottles of high nicotine strength liquid, these are sold to be mixed together. This is sometimes marketed as 'shake and vape'. Our survey shows that 15% of current vapers who use tank devices report sometimes using 'shake and vape' products. Use is most common among ex-smokers who vape with 20% reporting they use 'shake and vape' products regularly or occasionally (figure 16).



Unweighted base: Current GB e-cigarette users & current smokers (2018, n=290); current e-cigarette users and ex-smokers (2018, n = 392).

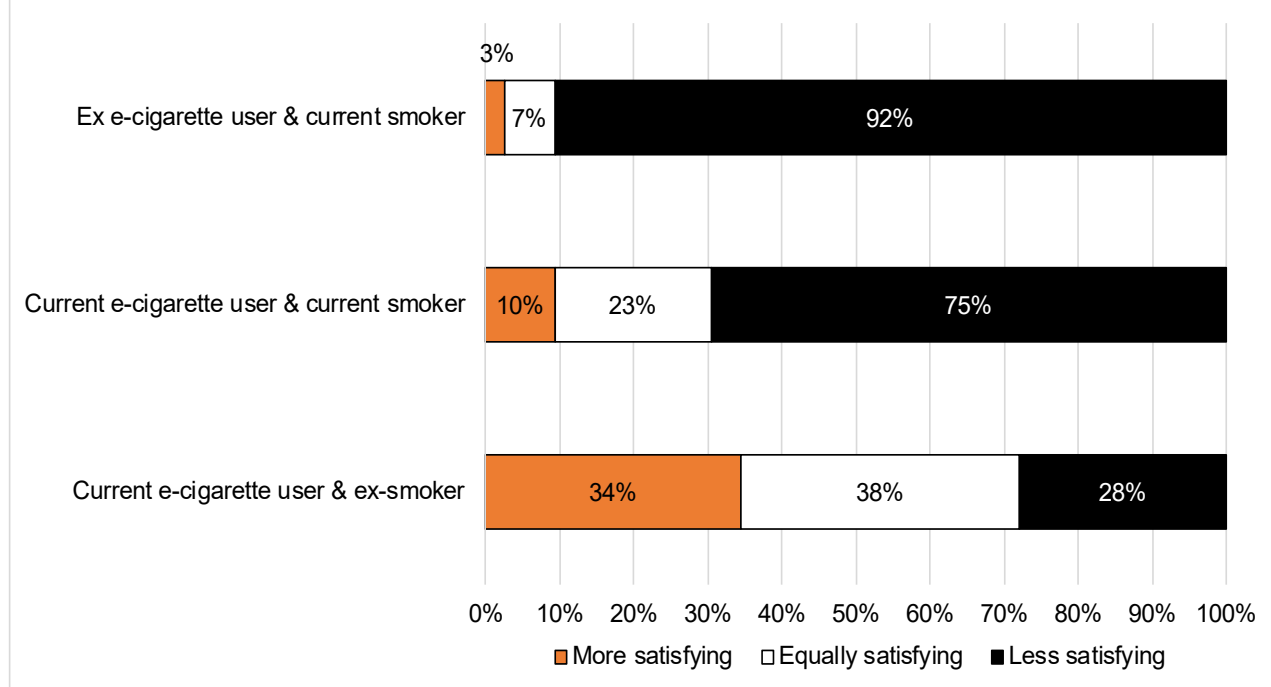
There is some evidence that regulations on the products improve smokers' confidence in e-cigarettes, though clearly they are not a panacea. There is an increase of 13% in the level of confidence among those smokers not currently using an e-cigarette when they are informed of regulations (respondents were asked "New rules have been put in place for e-cigarettes which are overseen by the medicines regulator. How does this impact your view on the safety of e-cigarettes compared to regular cigarettes?"). However, there remains a higher proportion who are not reassured or who believe that regulations will decrease the safety of products (figure 17).



*Unweighted base: Current e-cigarette users & current smokers (2018, n=308); Never e-cigarette user & current smoker (2018, n = 594); Ex e-cigarette users & current smokers (2018, n = 710) (Respondents were answering the question: "New rules have been put in place for e-cigarettes which are overseen by the medicines regulator. How does this impact your view on the safety of e-cigarettes compared to regular cigarettes?")*

However, products are still not meeting the needs of many smokers. Levels of satisfaction with e-cigarettes compared to smoking are low among people who continue to smoke with only 10% of smokers who no longer use e-cigarettes reporting that they are more or equally satisfying compared to smoking. While current vapers who no longer smoke are much more likely to report that e-cigarettes are equally or more satisfying than smoking (72%), 28% still find them less satisfying than smoking (figure 18).

**Figure 18: Current vapers\* satisfaction levels from e-cigarettes compared with smoking, Great Britain (2018)**



*\*this includes those that have tried e-cigarettes once or twice in addition to longer-term users*  
 Unweighted base: Current e-cigarette users & current smokers, excluding not applicable (2018, n=293); current e-cigarette user & ex-smoker, excluding not applicable (2018, n = 396); Ex e-cigarette users & current smokers, excluding not applicable (2018, n = 655)

## REFERENCES

1. Smokefree 2018 GB: Total sample size was 12,767 adults. Fieldwork was undertaken between 08/02/2018 - 06/03/2018. All surveys were carried out online. All figures have been weighted and are representative of GB adults (aged 18+) or children (11 to 18) as appropriate. Methodology for table 1: Calculations are by ASH and Dr Leonie Brose at King's College London. In each of the years we applied the proportions of e-cigarette use by smoking status in the YouGov survey to the most recent available ONS mid-year GB population estimates at the time the YouGov data was gathered. In 2018 ONS mid-year GB population estimates for 2016 have been used: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/2015-06-25>
2. McNeill A, Brose LS, Calder R, Bauld L & Robson D. Evidence review of e-cigarettes and heated tobacco products 2018. A report commissioned by Public Health England. London: Public Health England; 2018.
3. Total sample size was 12,597 adults. Fieldwork was undertaken between 17th and 22nd March 2010. All surveys were carried out online. All figures have been weighted and are representative of GB adults (aged 18+) or children (11 to 18) as appropriate.
4. Total sample size was 12,436 adults. Fieldwork was undertaken between 27th February and 16th March 2012.
5. Total sample size was 12,171 GB adults. Fieldwork was undertaken between 1st and 19th February 2013. All surveys were carried out online. The figures have been weighted and are representative of all GB Adults (aged 18+)
6. Total sample size was 12,269. Fieldwork was undertaken between 5th and 14th March 2014. All surveys were carried out online. The figures have been weighted and are representative of all GB Adults (aged 18+).
7. Total sample size was 12,055. Fieldwork was undertaken between 26th February and 12th March 2015. All surveys were carried out online. The figures have been weighted and are representative of all GB Adults (aged 18+).
8. Total sample size was 12,157. Fieldwork was undertaken between 2nd March and 23rd March 2016. All surveys were carried out online. The figures have been weighted and are representative of all GB Adults (aged 18+).
9. Total sample size was 12,696. Fieldwork was undertaken between 16th February and 19th March 2017. All surveys were carried out online. The figures have been weighted and are representative of all GB Adults (aged 18+).
10. Total sample size was 2,178 children aged 11 to 18. Fieldwork was undertaken 21st - 28th March 2013.

11. Total sample size was 2,068 children aged 11 to 18. Fieldwork was undertaken 21st March – 1st April 2014.
12. ONS, E-cigarette use in Great Britain, 2015. 2017 <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/datasets/ecigaretteuseingreatbritain>
13. Beard E, West R, Michie S, Brown J. Association between e-cigarette use and changes in quit attempts, success of quit attempts, use of smoking cessation pharmacotherapy, and use of stop smoking services in England: time series analysis of population trends. *BMJ* 2016 ;354:i4645, <http://www.bmj.com/content/354/bmj.i4645>
14. West et al. UCL. The Smoking Toolkit Study <http://www.smokinginengland.info/>
15. Brose LS, Brown J, Hitchman SC, McNeill A. Perceived relative harm of e-cigarettes over time and impact on subsequent use. A survey with 1-year and 2-year follow-ups. *Drug and Alcohol Dependence* 2015;157:106-11 doi: 10.1016/j.drugalcdep.2015.10.014