

THE EU NICOTINE USERS SURVEY 2020

The EU residents report



European Tobacco Harm Reduction Advocates (ETHRA)

June 2021

Between 12th October to 31 December 2020, more than 37,000 persons responded to ETHRA's online EU Nicotine Users Survey. ETHRA partners designed the questionnaire, translated it into 16 languages and analysed the data, all on a voluntary basis. To summarise the results, we first highlight ten key facts, which are then analysed in the report on the results for the 35,296 participants from the 28 EU countries subjected to the European directive on tobacco products (TPD).

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THE EU NICOTINE USERS SURVEY 2020 IN 10 KEY FACTS

More than 35,000 residents from 28 EU countries, including the UK, participated in the survey. Each participant took on average 11 minutes to complete the questionnaire. The 44 questions addressed consumer use of nicotine, with topics including: smoking and the desire to quit, use of alternative nicotine products, and barriers to switching caused by the Tobacco Products Directive and national regulations.

Harm reduction helps us to quit smoking

1. Safer nicotine products help hugely with quitting smoking. Among those who were ever smokers, **73.7% of snus users and 83.5% of vapers had stopped smoking.**
2. **Harm reduction was the most strongly cited reason for adopting snus (75%) and vapes (93%),** followed by quitting smoking for 60% of snus users and more than 90% of vapers. Reduced costs, flavours, availability of products and (specifically for vapers) the ability to adjust vaping products, are all important factors for consumers when adopting harm reduction products.
3. More than **31% of current smokers would be interested in trying snus** if it was legalised in the EU.

Vape taxes, flavour bans and lack of access are barriers to quitting smoking

4. More than **67% of smokers want to quit** smoking. However, these smokers encounter barriers in their desire to be smoke-free. Nearly a quarter (24.3%) of EU smokers who want to quit are deterred by the high price of low-risk alternatives. This proportion increased to 34.5% in the 12 EU countries with a vape tax in 2020 and to 44.7% in the three countries with a high vape tax (Finland, Portugal and Estonia).
5. Taxes on vaping products are **a significant barrier to quitting smoking** for people who vape and smoke ('dual users'). The proportion of dual users from the 12 countries with a vape tax who are prevented from switching exclusively to vaping (28.1%) because of the cost is **more than three times** higher than for dual users from the 16 countries without vape excise (8.6%).
6. Vape flavour bans, in Finland and Estonia, and the vape sales state monopoly in Hungary, are **making it more difficult for people to stop smoking.** One of the main consequences is that consumers are using the black market and other alternative sources, or buying from abroad. In these three countries, only 45% of vapers used a

local conventional source to get e-liquids, compared to 92.8% in countries without vape tax and flavours ban.

TPD limits had unintended consequences on vape consumption

7. Compared to a large online survey conducted in 2013, before the current TPD was implemented¹, the average volume of e-liquid used per day has significantly **increased – from 3 ml/day in 2013 to 10 ml/day in 2020** – while the nicotine concentration of these e-liquids has significantly **decreased – from 12 mg/ml in 2013 to 5 mg/ml in 2020**.

Two thirds (65.9%) of vapers are using e-liquid with a nicotine concentration below 6 mg/ml. This trend appears to be in large part a consequence of the TPD 20 mg/ml nicotine concentration limit and the 10 ml volume limit on e-liquid bottles. Because of nicotine self-titration, vapers who use e-liquids with a lower nicotine concentration are likely to compensate by consuming a higher volume of liquid.

- Should the 20 mg/ml nicotine limit be lifted, **24% of vapers declared that they would consume less e-liquid and 30.3% of people who vape and smoke think they could quit smoking completely.**
- Should the 10 ml bottle limit be repealed, **87% of vapers would buy larger bottles** to reduce the cost and 89% would buy larger bottles to reduce plastic waste, while only 35.5% said they would probably continue to buy short-fills and add nicotine themselves.

These limits should be revised upwards in the next TPD.

An EU vape tax and/or flavour ban would fuel the black and grey markets

8. The survey also asked participants about other possible European regulatory developments. On the cost issue, a large proportion of vapers could or would not tolerate price increases. **If an EU wide high excise was applied to e-liquid, more than 60% of users would look for alternative untaxed sources².**

¹ Farsalinos, K. E.; Romagna, G.; Tsiapras, D.; Kyrzopoulos, S.; Voudris, V. Characteristics, Perceived Side Effects and Benefits of Electronic Cigarette Use: A Worldwide Survey of More than 19,000 Consumers. Int. J. Environ. Res. Public Health 2014, 11, 4356-4373. <https://doi.org/10.3390/ijerph110404356>

² Note that the survey was conducted in the last quarter of 2020, before the increase in vape tax in Italy, the entry into force of the vape tax stamp in Poland, the suspension of the vape tax in Estonia and the announcement of proposals for an ultra-high vape tax in Germany.

9. If flavours were banned, more than **71% of vapers would look for alternative sources** to the legal market.

EU vapers want access to clear and objective information

10. **A vast majority of vapers support public access to EU databases** on vaping products, for data on e-liquid ingredients (83%), resistance elements (66%) and characteristics of integrated circuits (56%). Also 74% would find an information page on vaping useful, such as the website provided by the New Zealand authorities³.

³ <https://vapingfacts.health.nz/>

IN LIGHT OF THESE RESULTS, ETHRA RECOMMENDS

Lifting the snus ban in the EU. Snus permits Swedish nicotine users to opt for a harm reduction path, which has led to the largest decline in smoking-related diseases in the EU. Snus has been fully recognized as a reduced risk product which is appropriate for the protection of public health by US FDA⁴. Even if only a fraction of smokers adopted snus, it would reduce the burden of smoking-related illness and premature death for millions of Europeans.

The TPD 10 ml limit on e-liquid bottles must urgently be repealed to allow vapers to buy e-liquid in normal volumes at an adequate nicotine level and permit a large proportion of them to reduce their e-liquid consumption.

Increasing the nicotine concentration limit of E-liquid would reduce the consumption of e-liquid for a quarter of vapers and allow entrenched smokers to have access to more effective products. Despite suggestions made in 2013 during the TPD debates, no vaping product higher than 20 mg/ml is available from the pharmaceutical network in 2021.

Vaping taxes, vape flavour bans and state sales monopolies are barriers to smoking cessation in the countries that apply them. They also force consumers to the black market or other alternative sources and buying abroad, with all the insecurity these situations bring, push people to smoke, and undermine the political and health authorities. Member states and the EU must stop going in this extremely dangerous direction.

The vast majority of low-risk nicotine users think that the European administration should provide **honest, open and accessible information** about safer alternatives to smoking.

⁴ FDA grants first-ever modified risk orders to eight smokeless tobacco products
<https://www.fda.gov/news-events/press-announcements/fda-grants-first-ever-modified-risk-orders-eight-smokeless-tobacco-products>

INTRODUCTION: OVER 35,000 EU PARTICIPANTS

Between 12th October and 31st December 2020, 37,303 adults responded to the online EU Nicotine Users Survey launched by the European Tobacco Harm Reduction Advocates (ETHRA). The online survey was hosted on the Evalandgo platform⁵, which complies with European GDPR⁶.

ETHRA designed, organised, translated in 16 languages and analysed the survey on a voluntary basis and without external funding⁷. The questionnaire began with a short explanation of the survey process. Participation was restricted to adults and only one answer per IP address was permitted.

Of the 37,303 respondents, 35,296 (94.6%) live in one of the 28 European Union countries which are subject to the European Tobacco Products Directive (TPD). Of them, 33,312 (94.4%) declared themselves to be citizens of one of the EU countries. Residents of Italy (7,955), France (7,279), Germany (6,283) and Spain (5,208) provided almost three quarters of the responses.

Note: Responses from British residents are included in these results because the UK was formally a member of the EU until December 31, 2020, and because UK legislation is TPD compliant. Results for some of the other European countries, including those outside the EU, may be analysed separately later (depending on the availability of ETHRA volunteers).

This report only covers responses from the 35,296 residents of the 28 EU countries which have implemented the EU Tobacco Products Directive (TPD). The TPD, which includes nicotine vape products, was decided in 2014 and implemented in member states in 2016. The sale of snus is banned in the EU, except for Sweden. The TPD also regulates the sale of cigarettes and other smoked tobacco products⁸.

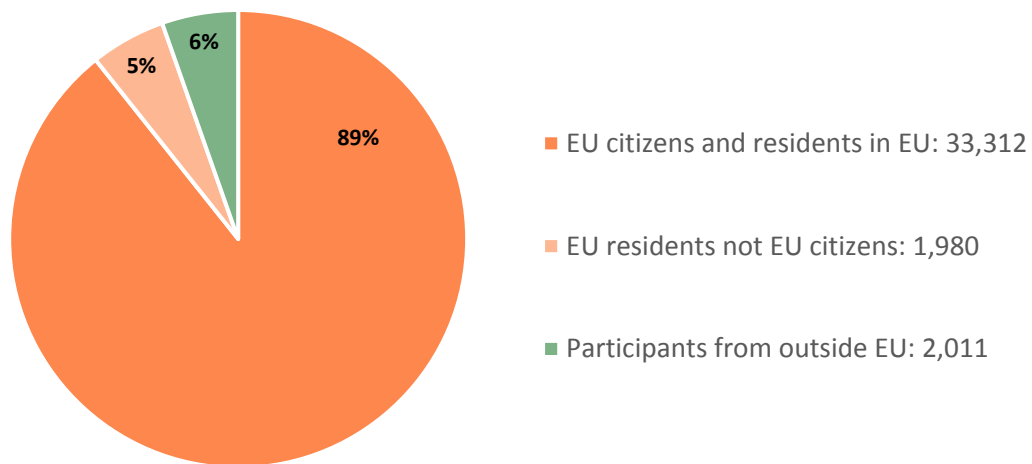
⁵ [Survey maker to create Free online forms | Eval&GO \(evalandgo.com\)](https://www.evalandgo.com/)

⁶ [EUR-Lex - 32016R0679 - EN - EUR-Lex \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016R0679)

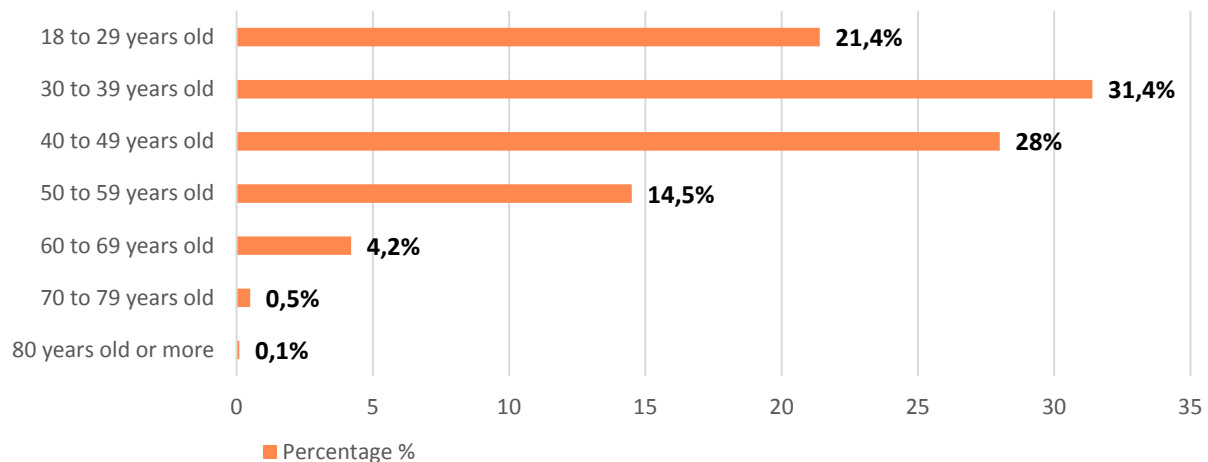
⁷ The only costs were €50/month for a subscription to the platform, paid for by the independent non-profit French association Sovape, which is a partner of ETHRA.

⁸ Tobacco Products Directive (TPD) 2014/40/EU
https://ec.europa.eu/health/sites/health/files/tobacco/docs/dir_201440_en.pdf

37,303 SURVEY PARTICIPANTS
WITH 35,292 EU RESIDENTS



PART OF RESPONDENTS BY AGE



The questionnaire contains 44 questions, some of which are conditional on previous answers. Respondents took 11 minutes on average to answer the survey. **ETHRA is very grateful to the 37,303 respondents and honoured that they could put their trust in us.** The time taken by respondents underlines that there is great interest and desire to contribute to developing knowledge on the topics of harm reduction, which are addressed in the survey.

To our knowledge, this survey is the first to cover the topic of nicotine use so comprehensively on a European scale, with 16 languages available to respondents⁹. With over 35,000 responses from residents of the 28 EU countries including the UK, its results highlight several crucial points about the state of nicotine use. The large number of responses from vape users (>30,000) and snus users (nearly 2,000) constitute substantial samples for these topics in Europe.

As a supplement to this report, ETHRA will publish on its website the selected data for respondents from the EU countries, as well as the selected data for respondents from each country. In addition, the 7,000 comments posted by participants will be published anonymously on the ETHRA website¹⁰.

The questionnaire was designed to specifically address adult nicotine users, without attempting to be representative of the general European population. The lack of a solid baseline on sociological characteristics of Europeans using safer nicotine products would make it difficult to weigh the responses. This option was also ruled out by the lack of financial means available to us.

The questionnaire was designed by users of low-risk nicotine products, with guidance from ETHRA's scientific partners¹¹. Our stakeholders' ability to point out sensitive issues seems to have been one of the driving forces behind the large participation, which was despite the lack of funding to canvass respondents and the silence of the mainstream media about its existence.

The results present strong trends among users. However, their significance must be assessed without over-interpretation due to some limits in the data. Some of the limitations to bear in mind are that it was exclusively an internet survey, vapers are over-represented, there is a predominance of males (85.1%) and there was low participation in some countries.

⁹ A previous similar (not strictly the same) survey was conducted in 2013: Farsalinos, K. E.; Romagna, G.; Tsiapras, D.; Kyrzopoulos, S.; Voudris, V. Characteristics, Perceived Side Effects and Benefits of Electronic Cigarette Use: A Worldwide Survey of More than 19,000 Consumers. *Int. J. Environ. Res. Public Health* **2014**, *11*, 4356–4373. <https://doi.org/10.3390/ijerph110404356>

¹⁰ See on: ethra.co

¹¹ [ETHRA - Scientific Partners](#)

Working notes:

- There was a display error in the Spanish questionnaire for Question 29. We have discarded all answers to this question. To get around this problem, a filter for respondents declaring to vape was applied to the answers to question 7 on smoking status. This makes it possible to establish the smoking status of current vapers.
- Some answers with outliers (on the nicotine content of the e-liquids, e-liquid volume and snus can use) were excluded in order to not to bias the results of typos, misunderstanding or malice.

SMOKING AND THE DESIRE TO QUIT SMOKING

With the exception of Sweden, the predominant way to consume nicotine in the EU countries is still by smoking tobacco¹². Our survey reached 34,991 participants who declared using at least one or more nicotine products. The sample shows a clear over-representation of vapers, which reflects the people reached by the survey's dissemination on networks supporting harm reduction. The data obviously cannot be generalised to the general population, but provide more robust information than other small-scale surveys of low-risk nicotine product users.

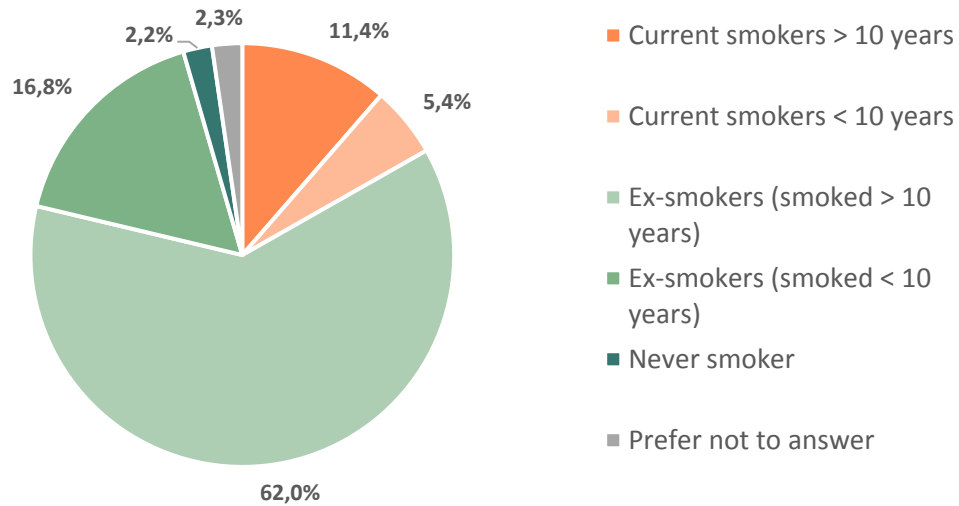
The sample of the 34,991 nicotine users is composed of:

- 94% said they are using vaping products.
- 9% smoke cigarettes and 3.6% smoke roll-your-own tobacco.
- Snus is used by 2.9% of the sample, while 1.5% use nicotine pouches ('snus without tobacco'), and 0.5% use 'chewbags'.
- 0.5% use pharmaceutical nicotine products, such as gums, patches or inhalators.
- A small proportion of respondents use various other types of combustible tobacco products: 0.9% smoke cigars, 0.5% smoke pipes and 1.3% smoke shisha.
- 1.6% use heated tobacco products.
- Snuff has 0.3% of users and other oral tobacco 0.1%.
- 2.7% of respondents report using a nicotine product other than those we listed. Some of them vape without nicotine.

On smoking status, 16.8% declare smoking while 78.8% report to have quit. 2.2 % have never smoked and 2.3% preferred not to answer.

¹² We omit the very common but at a tiny level, consumption of nicotine via solanaceous vegetables (e.g., potatoes, eggplants, sweet peppers, tomatoes, cauliflower, physalis, etc.).

SMOKING STATUS OF 35,280 PARTICIPANTS



EFFECTIVE AIDS FOR QUITTING SMOKING

More than three-quarters (78.7%) of the respondents are ex-smokers (n=27,758). Although they are in the minority (16.8%), the survey also reached over 5,600 current smokers. Data on the use of smoking cessation aids, barriers to quitting and the use of harm reduction products by these two groups of people are valuable for understanding the situation in the EU.

Of the 27,758 ex-smokers who responded to the survey:

- 97.2% cited vapes among the effective aids to help them quit smoking,
- 1.9% used snus or nicotine pouches.
- 0.2% of ex-smokers said they were helped by information from WHO.
- Nicotine substitutes (gums, patches, etc.) helped 2.8% and pharmaceutical drugs 0.6% of ex-smokers.
- 5.1% declare having quit without using any aids.
- Stop-smoking services helped 0.4% and stop-smoking phone lines supported 0.3% of ex-smokers.
- Self-help groups helped 0.8% quitters.
- Hypnosis (0.4%) and self-help books (0.8%) are also mentioned, while 1.4% ticked the box for other methods.

Of the **5,600 people who currently smoke**, two-thirds smoke daily, while one-third (32.9%) smoke but not every day. Half (48.9%) of these not-daily smokers report smoking only one cigarette on the occasions they smoke.

In what follows, the report will first look at the data on snus and vape users, the two low-risk nicotine products most cited in the survey as a means to quit smoking. Second, the report will assess participants' desire to quit smoking and the barriers to achieving that desire.

HARM REDUCTION HELPS PEOPLE TO QUIT SMOKING

Harm reduction is an approach that has long been adopted in many social practices. Seat belts in cars, condoms to reduce the risk of sexually transmitted diseases, access to clean needles for people who inject drugs are some current practical examples. When applied to harmful use of tobacco, harm reduction is a strategy for consuming nicotine in safer forms than smoking¹³.

Nicotine gum, invented by Fernö in 1969, was inspired by this approach. However, nicotine gums were only authorised as a medicine in the 1980's.¹⁴ Pharmaceutical nicotine substitutes have subsequently had only a limited effect on smoking. Currently, snus and vaping products are the two low-risk nicotine products most commonly used by smokers in the EU to quit, reduce or avoid smoking.

Snus is a traditional Swedish oral tobacco product which has been in use for three centuries. Available loose or in small pouches, snus is placed between the gum and the upper lip. During its preparation, the air-cured tobacco is not fermented but it is pasteurised. This process ensures extremely low levels of nitrosamines and carcinogens. Snus is banned for sale in the EU, except for in Sweden, which is exempt from the ban (but has to uphold an export ban).

Nicotine pouches are similar to snus pouches, but do not contain tobacco. They have only recently appeared on the market in some European countries.

Vaping has been growing since 2007 in Europe. Vaping involves heating a liquid consisting of propylene glycol (PG) and/or vegetable glycerine (VG) and possibly flavours and/or nicotine. Without combustion nor tobacco, vaping does not produce carbon monoxide, eliminates most of the thousands of toxic substances present in smoked cigarettes and

¹³ Royal College of Physicians: Nicotine without smoke: tobacco harm reduction. London: RCP; 2016. [Nicotine without smoke: Tobacco harm reduction | RCP London](#)

¹⁴ Mark J Elam: The Technopolitics of Nicotine Replacement from Nicorette® Gum to E-Cigarettes (2014), In Blok, A. and Gundelach, P. (eds) The Elementary Forms of Sociological Knowledge. Essays in Honour of Margareta Bertilsson [https://www.academia.edu/10632854/The Technopolitics of Nicotine Replacement from Nicorette Gum to E Cigarettes](https://www.academia.edu/10632854/The_Technopolitics_of_Nicotine_Replacement_from_Nicorette_Gum_to_E_Cigarettes)

drastically reduces the residual ones^{15 16 17}. A multitude of models and choices of e-liquids allow the user to adjust his or her vape (variation of draws - aerial or tight -, tastes, nicotine strength, etc.) Tens of millions of users have adopted vaping to quit or reduce their smoking. Currently, nicotine vaping is included as a related product in article 20 of the EU Tobacco Products Directive (TPD).

In the following sections, we present the data from our survey on the two most popular harm reduced products. First, we discuss snus and nicotine pouch use, with a focus on Sweden, the only EU country where the sale of snus is legal. Subsequently we present our data on the use of vaping products.

¹⁵ Public Health England: Evidence review of e-cigarettes and heated tobacco products, 2018.

<https://www.gov.uk/government/publications/e-cigarettes-and-heated-tobacco-products-evidence-review>

¹⁶ Shahab L, Goniewicz ML, Blount BC, et al. Nicotine, carcinogen, and toxin exposure in long-Term e-cigarette and nicotine replacement therapy users. *Ann Intern Med* 2017;166(6):390–400. <https://www.acpjournals.org/doi/10.7326/M16-1107>

¹⁷ Romain Dusautoir, Gianni Zarcone, Marie Verrielle, Guillaume Garçon, Isabelle Fronval, Nicolas Beauval, Delphine Allorge, Véronique Riffault, Nadine Locoge, Jean-Marc Lo-Guidice, Sébastien Anthérieu : Comparison of the chemical composition of aerosols from heated tobacco products, electronic cigarettes and tobacco cigarettes and their toxic impacts on the human bronchial epithelial BEAS-2B cells, *Journal of Hazardous Materials*, Volume 401, 2021, <https://doi.org/10.1016/j.jhazmat.2020.123417>.

SNUS: THE SWEDISH WAY TO SMOKE-FREE

Note for context. In the USA, FDA has accepted snus as a reduced risk product for all of its five criteria¹⁸. In contrast, the sale of snus has been banned in the EU since 1992, except for in Sweden which had a derogation for this reduced risk product when it joined the EU. Currently, Sweden has by far the lowest rate of smokers¹⁹ and smoking-related diseases²⁰ in the European Union. Snus is an oral tobacco with very low level of nitrosamines, due to its non-fermenting and pasteurisation production process.

Nicotine pouches are snus-like little pouches with nicotine, but without tobacco. They have only recently been introduced to some European markets. Snus and nicotine pouches were combined in the questionnaire. For ease of reading, we do not repeat the term 'nicotine pouches' each time.

Snus use

In our survey, 73.6% of snus users use it daily, 10.5% weekly, 8% occasionally (monthly) and 5.2% on rare occasions (less than once per month).

Snus users consume on average 3.4 boxes (with 20 pouches per box) of snus per week. Daily snus users declare they consume 3.9 boxes of snus per week on average²¹.

Snus: the product which allows Swedes to avoid smoking, but which is banned in the EU

- Despite the very low distribution of these products, 1.9% of EU ex-smokers in the survey declared that they had used snus or nicotine pouches to quit smoking.
- **73.7% of European snus users who ever smoked had quit smoking.** 61.4% of them had smoked for more than ten years before quitting.
- 20.9% of EU snus users also smoke. Among these 'dual users', 39.9% smoke less than daily: 17.7% smoked rarely, 9% smoke occasionally and 13.3% smoke weekly. In comparison, a quarter (25.8%) of exclusive smokers are smoking less than daily.

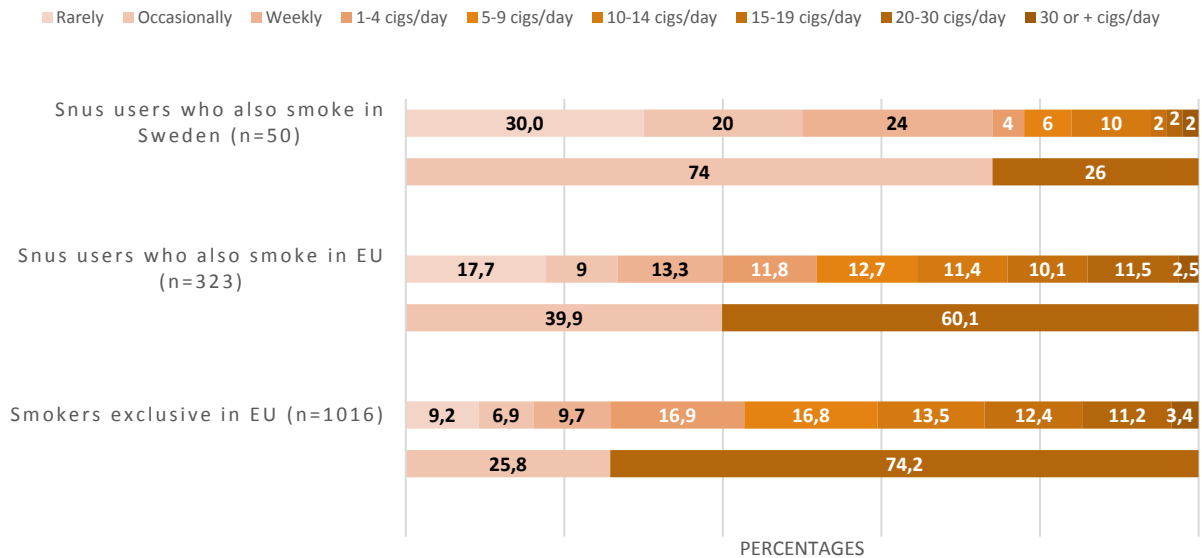
¹⁸ [FDA grants first-ever modified risk orders to eight smokeless tobacco products | FDA](#)

¹⁹ Eurobarometer 506 in 2020: [Eurobarometer \(europa.eu\)](#)

²⁰ Ramström L.: Tobacco-related mortality in Sweden and EU in 2019 ([PDF](#)) [Tobacco-related mortality Sweden&EU easier readable charts \(researchgate.net\)](#)

²¹ Note: To limit biases related to unrealistic responses due to misunderstanding, typos or malice, we excluded reports of consumption of more than 30 boxes of snus per week.

FREQUENCY OF SMOKING



Focus on Swedish respondents

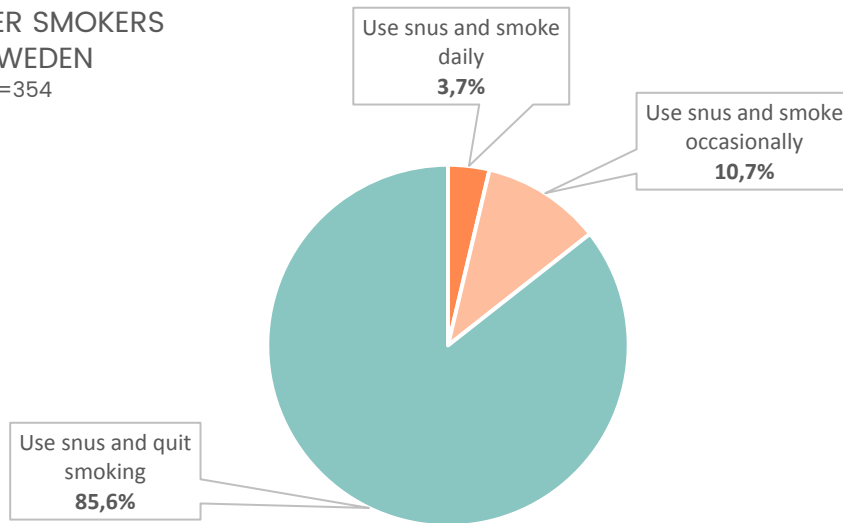
Sweden is the only country in the EU that allows the sale of snus – although it is possible to import snus for personal consumption in some countries.

Over the past 30 years, the shift in consumption from cigarettes to snus has resulted in Sweden having the lowest smoking prevalence in Europe and the lowest rates of smoking-related illness and death.

Snus and quitting smoking in Sweden

- In our survey, **85.6% of Swedish snus users** who were ever smokers had quit smoking.
- When asked about effective aids they used for quitting smoking, **43.3% of the Swedish ex-smokers** in the survey mentioned snus and/or nicotine pouches.
- Although the survey sample is not representative of the general population, the huge difference in the proportion of ex-smokers who used snus to quit, which is between 2% for EU respondents and 43% for residents of Sweden, strongly suggests that **if snus were as available as cigarettes, then a large proportion of consumers would choose the less harmful option.**

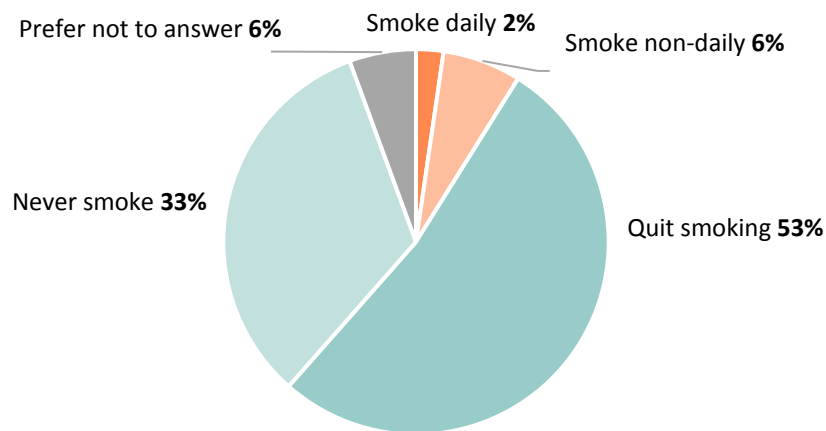
SNUS USERS WHO WERE EVER SMOKERS IN SWEDEN
n=354



- 8.9% of snus users in Sweden were currently smoking.
- **Nearly 90% of them smoke on a non-daily basis.** Only 50 Swedish dual users of snus and cigarettes responded to the survey, so the statistic should be treated with some caution. However, it should be noted that the proportion of Swedish snus users who are daily smokers are almost three times less than the proportion of daily smokers in EU who are exclusive smokers.
- **Only 2.3% of snus users in Sweden also smoke daily.**

SMOKING STATUS OF SNUS USERS IN SWEDEN

n=576



- **33% of snus users in Sweden have never smoked.** This data illustrates Sweden's social transition on nicotine consumption from using predominately cigarettes to using predominantly a harm reduced product. This positions Sweden as the European country with the lowest rates of smokers (7% in 2020, according to Eurobarometer 506) and the lowest rate of smoking-related diseases²². As shown by Ramström et al. (2016), the pattern of tobacco consumption in Sweden evolved from predominantly smoking cigarettes to using snus gradually, since the 1980s¹. In our survey conducted in 2020, 33% of snus users in Sweden have never smoked.

Our questionnaire did not ask users about their order of initiation between the different products. However, the major role snus has had in reducing smoking in Sweden is illustrated by our survey data showing that only 8.9% of snus users also smoke (mostly only occasionally) and a huge 91% of snus users do not smoke.

Snus use

- 89.6% of snus users in Sweden use snus daily and consume on average 4.7 cans (20 pouches per can) per week. 5.8% use snus weekly, 3.3% use snus occasionally and 1.2% use snus rarely.
- For Swedish residents who tried snus but did not continue using it (n= 165), none of our respondents were prevented by a lack of availability of the product, 17.6% said they did not need it and 41.2% did not like it. Some (4.9%) doubted its safety, 7.9% find it too expensive and 12.1% feel that snus does not deliver sufficient nicotine. Some (6.7%) did not know why they did not adopt snus, preferred not to answer (3.6%) or mentioned other reasons (26.7%).

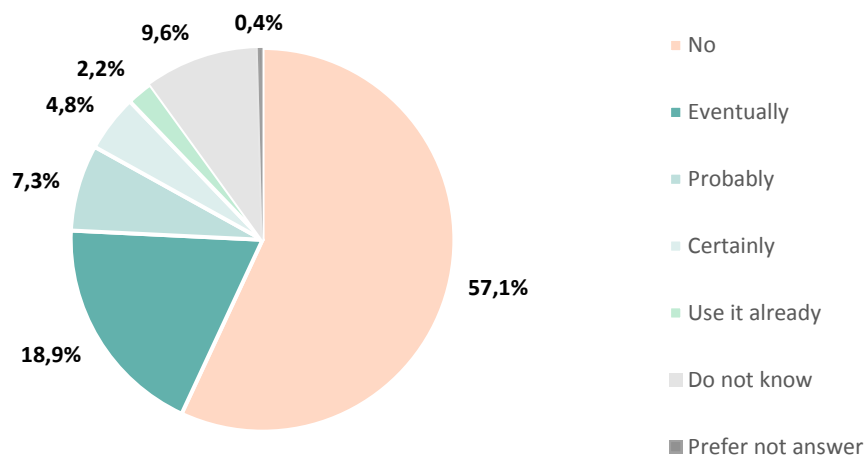
²² Ramström, L.; Borland, R.; Wikmans, T. Patterns of Smoking and Snus Use in Sweden: Implications for Public Health. *Int. J. Environ. Res. Public Health* **2016**, *13*, 1110. <https://doi.org/10.3390/ijerph13111110>

31% of EU smokers interested if snus was legalised

- Of the 2,604 EU respondents who had only tried snus, 13.8% reported lack of access and availability of the product to explain them not continuing to use it. This is in contrast to Sweden where none of the respondents were prevented from continuing to use snus by a lack of access.
- Other reasons for not continuing to use snus after having tried it include:
 - 45.2% said they didn't like it,
 - 17.1% thought that they did not need it,
 - 9.1% found that snus is not effective enough at delivering nicotine,
 - 7.9% find snus too expensive,
 - 9.9% have doubts about its safety,
 - 4.6% preferred not to answer, 10.3% did not know the reason and 10.2% mentioned other reasons.
- If snus was legalised in the EU, nearly a fifth of the whole sample would be interested (eventually, probably or certainly) in trying it. The large predominance of vapers, who already use a harm reduced product, in the survey means that this figure cannot be generalised.
- Filtered by smoking status, answers to this question show that **30.9% of current smokers would try snus** eventually (18.9%), probably (7.3%) or certainly (4.8%) in case of legalisation.

IF SNUS WAS LEGALISED IN EU, WOULD YOU TRY IT ?

4,319 RESPONSES ONLY BY CURRENT SMOKERS

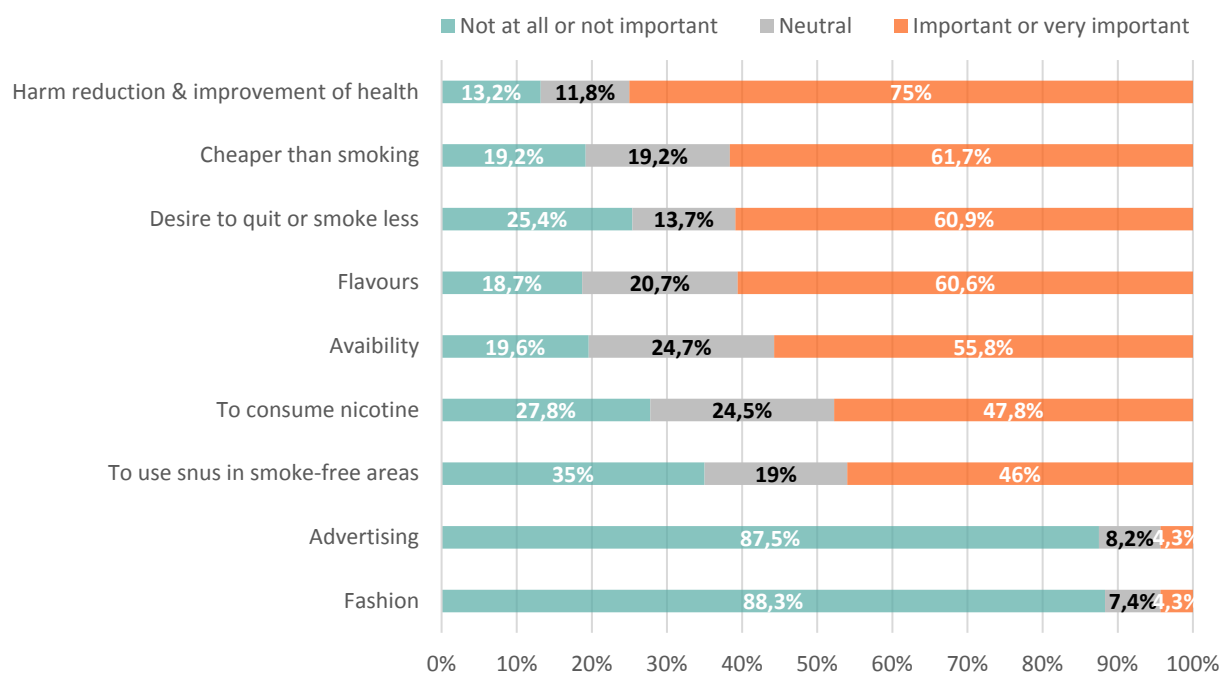


Reasons for trying snus

- Reasons for potentially trying or having already tried snus confirm the importance of avoiding smoke and reducing risk. **The main reasons quoted by users or potential triers were harm reduction (75%) and quitting or reducing their smoking (60.9%).**
- Other factors such as accessibility (55.8%), flavours (60.6%), price (61.7%) and the possibility of using it in smoke-free areas (46%) may also play an important role. Advertising and fashion were only selected as important by 4.3% of respondents.

REASONS FOR TRYING SNUS, RANKED BY IMPORTANCE

IN USERS AND PEOPLE POSSIBLY INTERESTED, N=7,150



In summary

The example of snus in Sweden is a successful case of reducing smoking related harms through the use of harm reduction by a population. It is surprising that the EU rejects this example from one of its Member States, by maintaining the ban on the sale of snus. Our survey shows that close to one third of EU current smokers would try the product if it were legalised. Consumer reasons for trying snus clearly show the importance of harm reduction

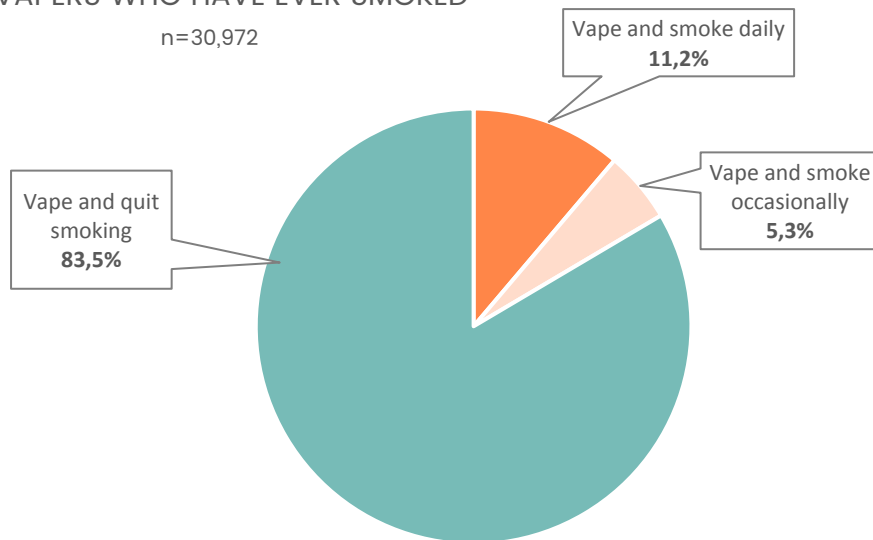
(for 75%) and quitting smoking (for 61%). For snus to guide smokers away from smoking, other factors such as price, flavour and availability may play an influential role.

VAPE IS A PUBLIC SHIFT TO HARM REDUCTION

- 83.5 % of current vapers who ever smoked (n=30,972) have quit smoking.
- More than three quarters of vaping ex-smokers smoked for more than 10 years before quitting.

EU VAPERS WHO HAVE EVER SMOKED

n=30,972

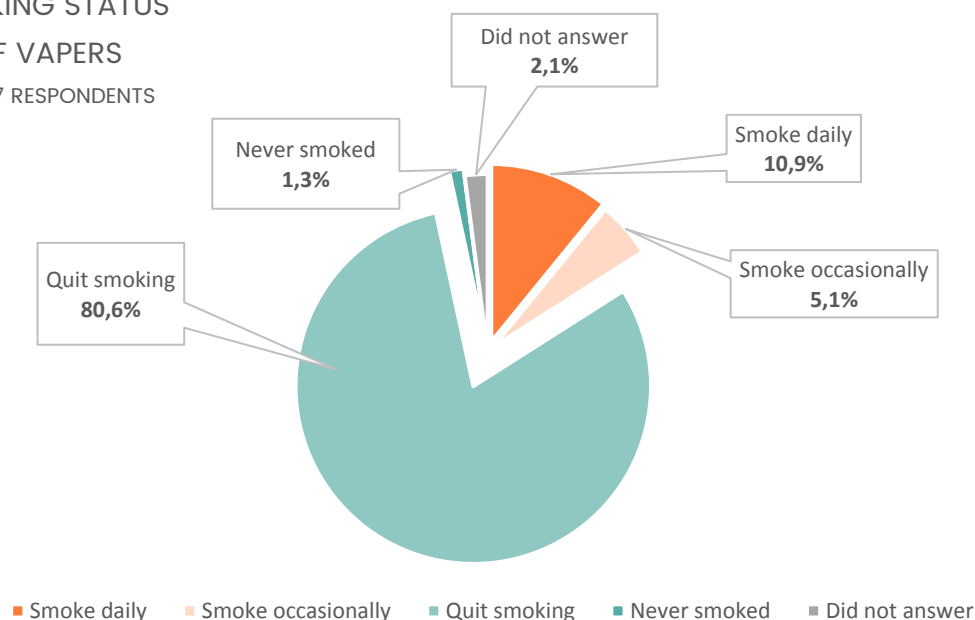


- Among the 32,057 EU vapers in the survey, 1.3% said they vaped without having previously smoked and 2% chose not to answer, 10.9% are dual users who smoke daily and 5.1% smoke occasionally.

SMOKING STATUS

OF VAPERS

32,057 RESPONDENTS



Although the survey sample cannot be considered representative of the general population, these results from more than 32,000 people strongly suggest that in Europe there is a significant mass of people who have made the switch from smoking to vaping^{23 24 25}:

They are several tens of thousands of people for whom the subject is important enough for them to give their time to participate in our survey. A large proportion of the more than 7,000 comments to the questionnaire, soon to be published online on the ETHRA website, emphasise this aspect.

²³ Levy DT, Borland R, Lindblom EN, et al. Potential deaths averted in USA by replacing cigarettes with e-cigarettes. *Tob Control* [Internet] 2018;27(1):18-25 <https://tobaccocontrol.bmj.com/content/27/1/18>

²⁴ Mendez D, Warner KE. A Magic Bullet? The Potential Impact of E-Cigarettes on the Toll of Cigarette Smoking. *Nicotine Tob Res.* 2021 Mar 19;23(4):654-661. doi: 10.1093/ntr/ntaa160. <https://doi.org/10.1093/ntr/ntaa160>

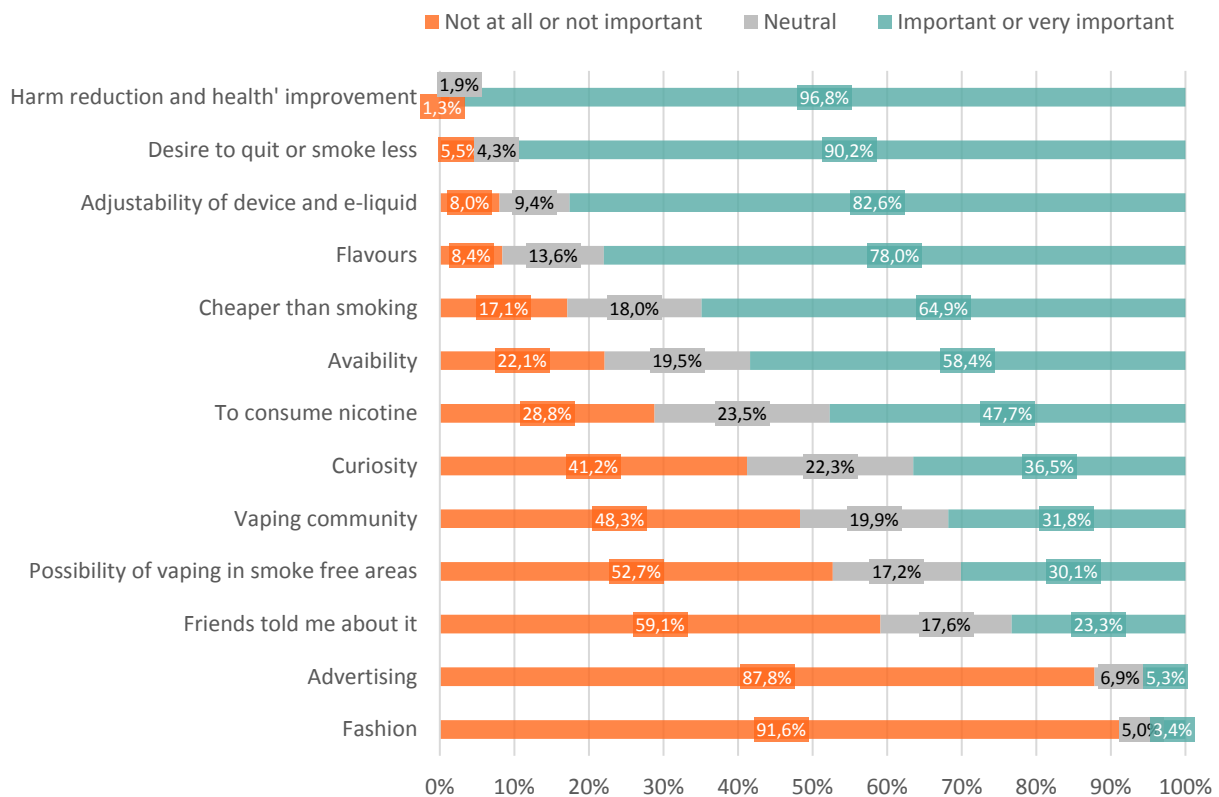
²⁵ The Eurobarometer n°506 (2021), on a much smaller panel of vapers respondents (n= 708), show that 31% of European who vape have quit smoking. [Eurobarometer 506 - European Commission \(europa.eu\)](https://ec.europa.eu/eurobarometer/eurobarometer-506)

Harm reduction and health improvement is important for 97% of vape adopters

- People who currently vape rated their reasons for adopting vaping. The most common reason given is 'harm reduction relative to smoking and to improve my health', with **90.7% finding this very important and 6% finding this important.**
- **97.6% of current vapers said they continue vaping** for the same reason, which indicates the health improvement felt by users over time.
- Desire to quit smoking, or to smoke less, is ranked as very important for 81.6% of vapers and important for 8.6%.
- Vape flavours are important (19.8%) or very important (58.2%) for 78% of vapers. Vaping being cheaper than smoking is also a major factor for switching for 64.9%, with 48.1% rating this as a very important and 16.8% rating it as an important reason for adopting vaping products.

REASONS FOR ADOPTING VAPING, RANKED BY IMPORTANCE

~30,000 RESPONDENTS WHO VAPE CURRENTLY



Other factors related to the adoption or continued use of vaping products

- In addition to harm reduction and quitting smoking, vapers also rated pleasure from the flavours and reduction of costs, **58.4% of the vapers declared the availability of vape products** to be very important (38.7%) or important (19.7%).
- 82.6 % consider the **ability to adjust** the device and e-liquids to their convenience as important (17.2%) or very important (65.4%).
- 31.9 % consider the role of the vaping community important (11.4%) or very important (20.5%) in their adoption of the harm reduction tool. The fact that friends or family told them about vaping was very important (13.3%) or important (10%) or for 23.3% of vapers.
- 30.1% consider being able to vape in smoke-free areas very important (19.4%) or important (10.8%) or for their adoption of vape and almost as important (28%) for continuing to vape.
- Curiosity was a very important (21.9%) or an important (14.7%) factor for 36.5% of vapers. Only 3.4% of vapers consider the fashion effect to be important (1.4%) or very important (2%) for their adoption. Advertising was important (2%) or very important (3.4%) for less than 6% of vapers.
- The survey also asked about reasons for continuing to vape; the results are very similar to those for the reasons for adoption (see the selected data in annexe for detail).

In summary

Harm reduction and improvement of health, followed by quitting or reducing smoking, are the main motivations for adopting vaping and are mentioned as very important or important by more than 90% of current vapers. To support the switch, the adjustability of vape products is an important element for more than 80% of the vapers surveyed. More than two thirds consider product availability important, while more than one third believes that curiosity played a role in their discovery of the product. About a third consider the role of the vaping community to have been important in their transition. 30% consider the possibility of vaping in smoke-free areas to be important to their adoption. Only a very small minority of vapers think that advertising and fashion influenced their decision to start vaping.

CONSEQUENCES OF REGULATORY RESTRICTIONS ON VAPING

Around 4 years after the implementation of the Tobacco Products Directive (TPD) in the EU countries, some of its consequences are becoming clear, as shown by this survey. The main consequence our results seem to indicate is a strong increase in the average volume of e-liquid consumed per day by vapers, concomitant with a clear decrease in the nicotine concentration of these e-liquids. The data from the survey, some studies and our own experience as users, leads us to put forward two explanatory hypotheses for this phenomenon.

The first hypothesis is that the 10 ml limit on refill bottles has pushed a large number of users towards 'short-fills', which are less expensive, but which have a very low final nicotine concentration (around 3 mg/ml). Due to the well-known self-titration phenomenon with inhaled nicotine, users are most likely compensating for these very low nicotine e-liquids by increasing the volume consumed, allowing them to obtain a sufficient nicotine intake.

The second hypothesis is that the maximum concentration limit of 20 mg/ml of nicotine in the e-liquids has forced users to increase their volume of e-liquid to compensate. In our survey, nearly a quarter (24.1%) of the vapers consider that an increase in the nicotine cap would allow them to reduce their e-liquid consumption, and 30.3% of the people who vape and smoke ('dual users') said it could help them to quit smoking completely.

This nicotine limit obviously prevents some smokers from switching to vaping. In our survey, 11.7% of all current smokers and 13.7% of smokers who want to quit indicated that the insufficient nicotine delivery of low-risk alternatives is a barrier to their quitting. A study undertaken before the TPD showed that more than 20% of beginning vapers started with e-liquids above 20 mg/ml²⁶.

Our survey does allow us to identify some of the barriers which are preventing dual users from completely switching over to vaping. The weight of the current factors that keep smokers dual-using varies greatly according to national regulations. Taxes on vaping,

²⁶ Farsalinos, K. E.; Romagna, G.; Tsiapras, D.; Kyrzopoulos, S.; Voudris, V. Characteristics, Perceived Side Effects and Benefits of Electronic Cigarette Use: A Worldwide Survey of More than 19,000 Consumers. *Int. J. Environ. Res. Public Health* **2014**, *11*, 4356-4373.

flavour bans^{27 28} and accessibility difficulties are barriers that keep large proportions of dual users smoking, in Hungary and Finland in particular. Extending these restrictions that go against the right to harm reduction to other European countries, could have out-of-control and disastrous effects, as the results presented in the next section show.

AN UNEXPECTED EFFECT OF THE TPD 10ML AND 20MG/ML LIMITS

The TPD implementation into national laws around 2016 introduced a limit on the volume of e-liquid bottles with nicotine to a maximum of 10 ml, and a cap on nicotine concentration of 20 mg/ml.

The data from this survey highlights an unexpected effect of TPD in the EU: volume consumption of e-liquid, in comparison to similar studies before the introduction of the TPD, seems to have dramatically increased.

- On average, vapers participating in the survey consume **10.2 ml at 4.94 mg/ml nicotine per day**²⁹.
- An online survey in 2013 (10 languages available) with 19,000 participants, including 74% from Europe, found a 3 ml/day in 12 mg/ml nicotine consumption on average³⁰.
- Both the survey conducted by Farsalinos et al. in 2013 and our survey in 2020 were online, with the participation of several tens of thousands of vapers. Our results presented are only for residents in the EU, while those published by Farsalinos et al (2014) are for respondents from all over the world, but 74% of respondents were resident in Europe.
- Differences between both surveys should prevent over-interpretation on comparison of their respective results. However, it seems to strongly suggest that

²⁷ Lin Li, PhD, Ron Borland, PhD, K Michael Cummings, PhD, Geoffrey T Fong, PhD, Shannon Gravely, PhD, Danielle M Smith, MPH, Maciej L Goniewicz, PhD, Richard J O'Connor, PhD, Mary E Thompson, PhD, Ann McNeill, PhD, How does the use of flavored nicotine vaping products relate to progression towards quitting smoking? Findings from the 2016 and 2018 ITC 4CV Surveys, *Nicotine & Tobacco Research*, 2021,; ntab033, <https://doi.org/10.1093/ntr/ntab033>

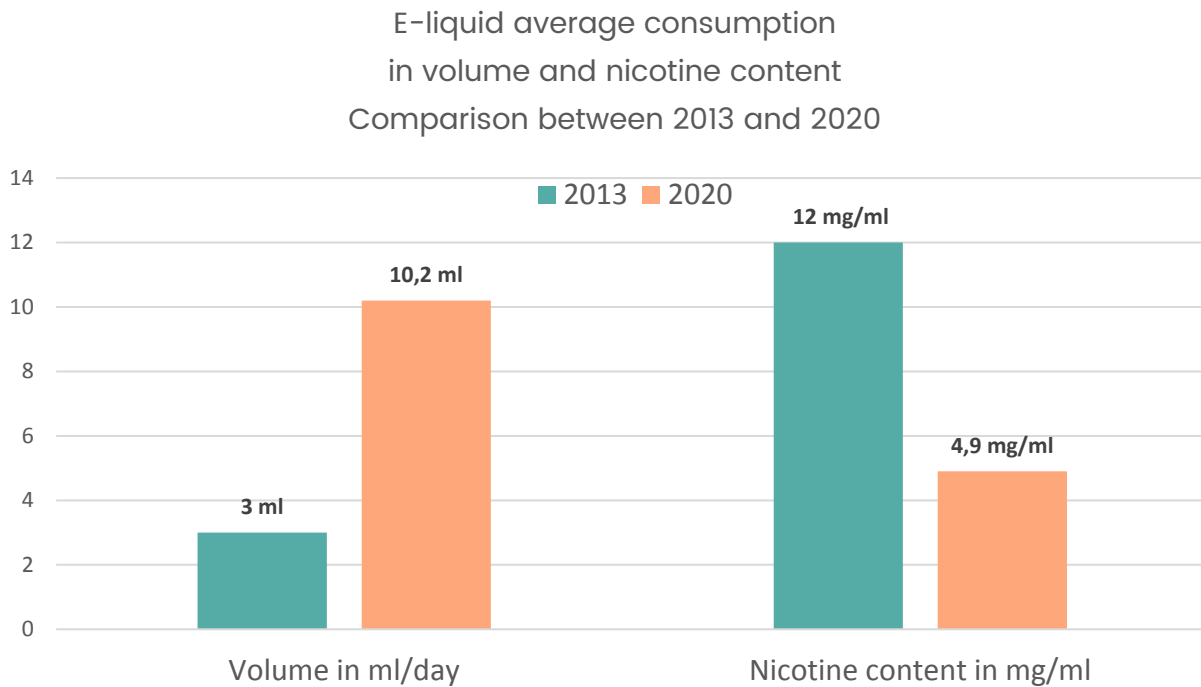
²⁸ Friedman AS, Xu S. Associations of Flavored e-Cigarette Uptake With Subsequent Smoking Initiation and Cessation. *JAMA Netw Open*. 2020 Jun 1;3(6):e203826. doi: [10.1001/jamanetworkopen.2020.3826](https://doi.org/10.1001/jamanetworkopen.2020.3826).

²⁹ Working Note: To limit bias related to unrealistic responses due to typos, misunderstanding, or malice, we excluded reports of consumption of more than 30 ml of e-liquid per day. However, we must point out that some responses could be overestimated in the self-declaration questionnaire.

³⁰ Farsalinos, K. E.; Romagna, G.; Tsiapras, D.; Kyrzopoulos, S.; Voudris, V. Characteristics, Perceived Side Effects and Benefits of Electronic Cigarette Use: A Worldwide Survey of More than 19,000 Consumers. *Int. J. Environ. Res. Public Health* **2014**, *11*, 4356-4373. <https://doi.org/10.3390/ijerph110404356>

there was a sharp increase in the volume of e-liquid consumed per day, **from 3 ml in 2013 to 10 ml in 2020**, related to a sharp decrease in the nicotine concentration of the e-liquid, **from 12 mg/ml in 2013 to 5 mg/ml in 2020**, after TPD implementation in EU countries³¹.

- Our own user experience and some statements in the only study about users' reaction to TPD measures³² corroborate this indication.

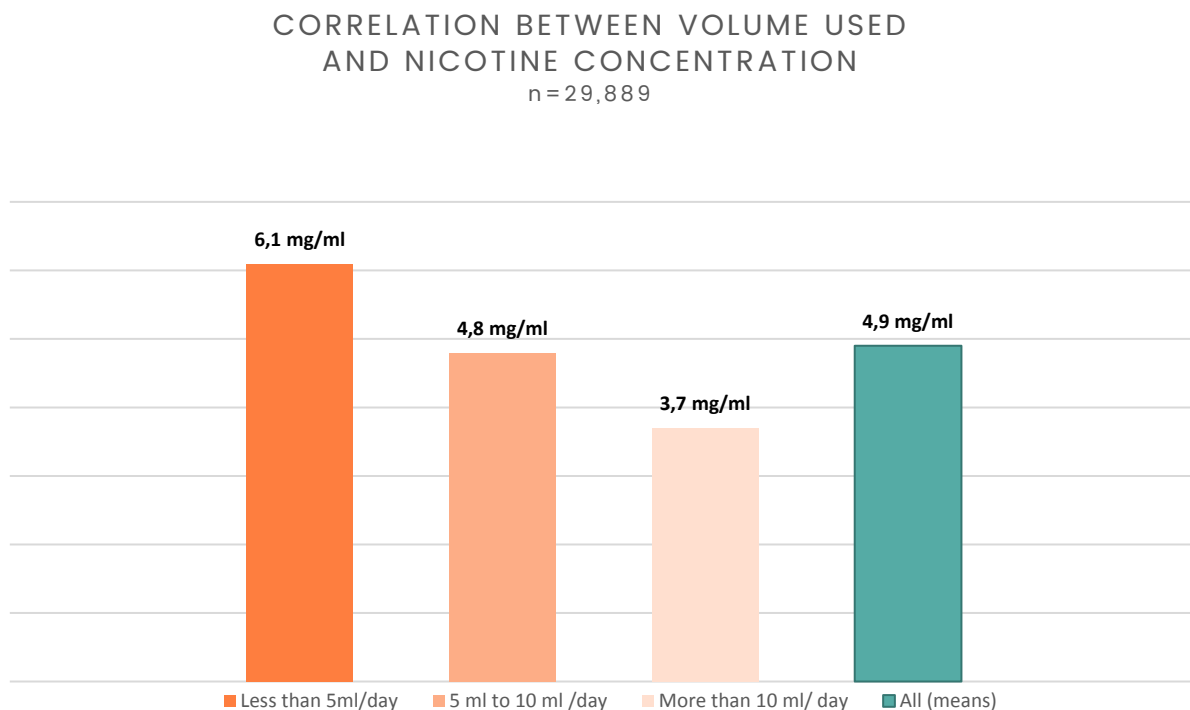


³¹ As the 2013 survey contained 74% European responses, in the 'extreme' case where Europeans accounted for almost all of the participants' e-liquid consumption, the average rate would be at most 3mg x100/74 or 4mg/ml ; and at least (12 mg/ml X 74%) to 9 mg/ml.

³² Ward E, Anholt C, Gentry S, Dawkins L, Holland R, Notley C. A Qualitative Exploration of Consumers' Perceived Impacts, Behavioural Reactions, and Future Reflections of the EU Tobacco Products Directive (2017) as Applied to Electronic Cigarettes. Tobacco Use Insights. January 2020. [doi:10.1177/1179173X20925458](https://doi.org/10.1177/1179173X20925458)

Inverse relationship between volume consumed and nicotine content

When responses to the ETHRA survey are examined by volume consumed there is a correlation between the nicotine strength and volume of e-liquid consumed. This is consistent with the well-known self-titration effect of nicotine for smokers³³ and confirmed by studies with vapers^{34 35}.



- Even the third of vapers (34.6%) consuming less than 5 ml, use on average a relatively low nicotine strength, at 6.2 mg/ml.
- The third (34.9%) using between 5 to 10 ml per day use a lower nicotine concentration, at less than 5 mg/ml on average.

³³ Benowitz NL, Jacob P 3rd. Nicotine and carbon monoxide intake from high- and low-yield cigarettes. *Clin Pharmacol Ther.* 1984 Aug; 36(2):265-70. doi: 10.1038/clpt.1984.173. PMID: 6,744,784.

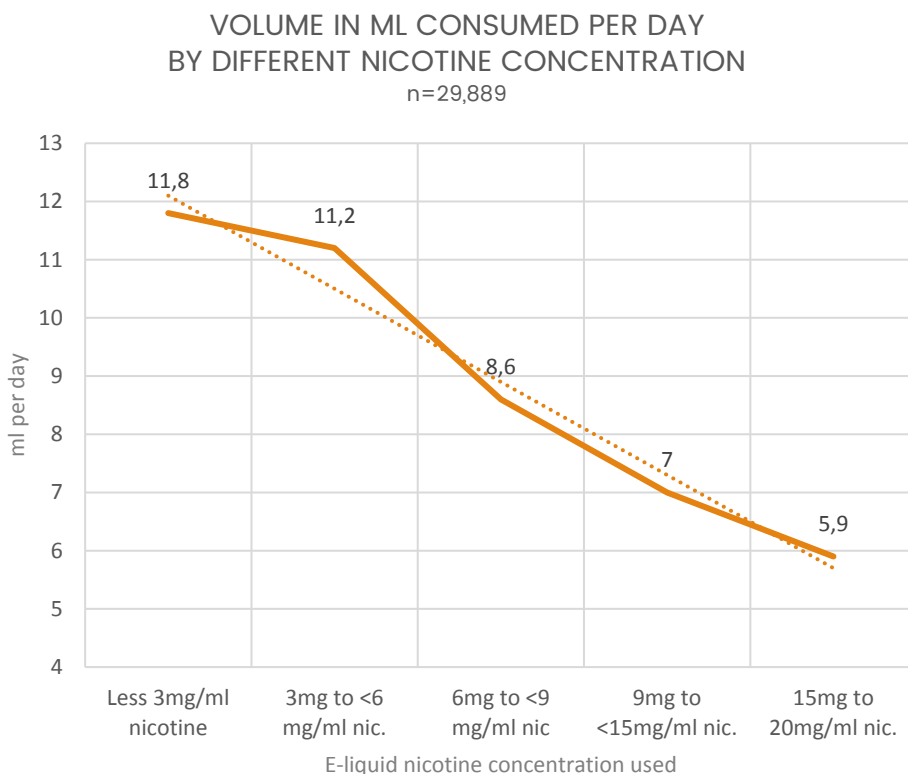
³⁴ Etter, J. F. (2016). A longitudinal study of cotinine in long-term daily users of e-cigarettes. *Drug and alcohol dependence, 160*, 218-221. <https://www.sciencedirect.com/science/article/abs/pii/S0376871616000107>

³⁵ K. Soar, C. Kimber, H. McRobbie, L.E. Dawkins : Nicotine absorption from e-cigarettes over 12 months, in *Addictive Behaviors*, Vol. 91, 2019, <https://doi.org/10.1016/j.addbeh.2018.07.019>.

- The last third (30.5%), consuming more than 10 ml per day, drops to less than 4 mg/ml on average.

The volume declared by participants refined by nicotine concentration confirms the inverse relation between them.

- 20.9% of vapers used ultra-low nicotine e-liquid at less than 3 mg/ml content and consumed nearly 12 ml per day on average,
- 45% of vapers used very low nicotine e-liquid between 3 to <6 mg/ml content and consumed more than 11 ml per day on average,
- 19% of vapers used low nicotine e-liquid between 6 to <9 mg/ml content and consumed 8.6 ml per day on average,
- 10.3% of vapers used medium nicotine e-liquid between 9 to <15 mg/ml and consumed 7 ml per day on average,
- Only 2.4% of vapers used nicotine e-liquid between 15 to 20 mg/ml content and consumed less than 6 ml per day on average.

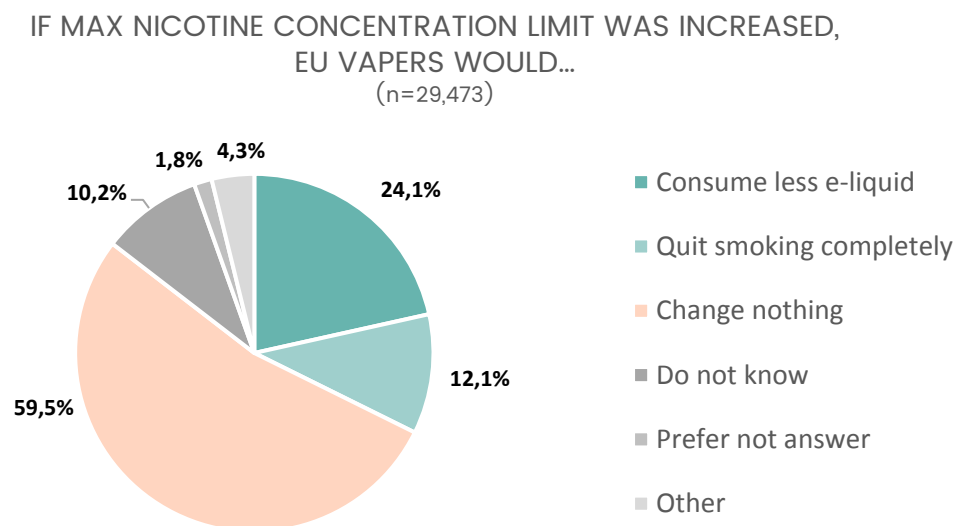


Two thirds (65.9%) of vapers used ultra or very low nicotine e-liquid at less than 6 mg/ml. This figure is consistent with our hypothesis on the 10 ml bottle limit effect: that it pushes huge numbers of vapers into using short-fills (see below).

Effect of the 20 mg/ml limit

Results from our survey indicate that the TPD limit on the maximum concentration of nicotine at 20 mg/ml seems to have a direct effect for at least a quarter of users:

- **24.1% of vapers declared that they would consume less e-liquid** if the EU increased the nicotine concentration limit. 59.6% declare that it would not change anything for them.
- Among dual users (people who vape and smoke), **30.3% think they could quit smoking completely** if the nicotine limit was raised in the EU. A recent study, published in the Lancet, supports this idea³⁶.



As a reminder, in 2013 'Nicotine concentration of more than 20 mg/mL was the initial choice for 21.5% of the population, **with former smokers being more likely to use such nicotine levels (23.3% vs. 13.8% for current smokers, $\chi^2 = 155.9, p < 0.001$)**', Farsalinos et al. (2014) [our emphasis].

The current TPD gave a *de facto* monopoly of e-liquids over 20 mg/ml of nicotine to the pharmaceutical channel. However, no laboratory has filed an application to market a vape product with higher nicotine levels. Before this TPD, nearly a quarter (23.3%) of vapers who quit smoking had done so with e-liquids above 20 mg/ml (Farsalinos, 2014). **This failure is denying a very significant number of European smokers a route out of smoking.**

³⁶ [Effect of an electronic nicotine delivery system with 0, 8, or 36 mg/mL liquid nicotine versus a cigarette substitute on tobacco-related toxicant exposure: a four-arm, parallel-group, randomised, controlled trial - The Lancet Respiratory Medicine](#)

In their comments, many respondents in our survey highlighted the importance of having access to higher nicotine concentrations in e-liquids to help more smokers to quit smoking.

In summary

The 20 mg/ml nicotine limit forces some vapers to consume more e-liquid and prevents smokers from completely switching to vaping. Our survey shows that a quarter of vapers would probably consume less e-liquid, thereby reducing the low-level of residual toxicant exposure³⁷. Additionally, 30% of dual users would be able to quit smoking if the limit were raised to a more appropriate level.

³⁷ Smith DM, Shahab L, Blount BC, Gawron M, Kosminder L, Sobczak A, Xia B, Sosnoff CS, Goniewicz ML. Differences in Exposure to Nicotine, Tobacco-Specific Nitrosamines, and Volatile Organic Compounds among Electronic Cigarette Users, Tobacco Smokers, and Dual Users from Three Countries. *Toxics*. 2020; 8(4):88. <https://doi.org/10.3390/toxics8040088>

THE TPD 10 ML REFILL BOTTLE LIMIT PUSHES VAPERS TO VAPE MORE

The increase in consumption volume could also be a result of the widespread use of e-liquids with very low nicotine levels. As mentioned above, two-thirds (65.9%) of the vapers in the survey consume liquids with ultra or very low nicotine levels with less than 6 mg/ml e-liquids.

The evolution of devices may have played a role in the increase in the volume of e-liquids consumed, as discussed by Soar et al (2019)³⁸. It seems difficult to distinguish the role of the different factors. Some users may have switched to ultra-low nicotine e-liquids because they prefer sub-ohm devices, others may have adopted these devices because they are more suitable for consuming cheaper e-liquids in more convenient packaging. It seems very likely that the two aspects are intertwined and have created a dynamic trend.

According to our user experience, this phenomenon is strongly linked to the 10 ml volume limit for nicotine containing e-liquids. This limit led to 'short-fills', where flavoured e-liquid is sold without nicotine in larger bottles (of 50, 100 ml or more) to which the consumer adds unflavoured e-liquid with 20 mg/ml of nicotine. Dilution means that the resulting e-liquid is very low in nicotine, around 3 mg/ml generally.

The main motivation for this practice seems to be a reaction to the cost of the 10 ml bottles³⁹. It is about 50% cheaper to buy a 50 ml bottle of flavoured e-liquid which does not contain nicotine (a 'short-fill') and a 10 ml bottle of unflavoured e-liquid containing 20 mg/ml nicotine to mix, than it is to buy six 10 ml bottles of the same nicotine containing e-liquid⁴⁰. Practicality also plays a role, as shown by Ward et al. (2020)⁴¹.

³⁸ K. Soar, C. Kimber, H. McRobbie, L.E. Dawkins: Nicotine absorption from e-cigarettes over 12 months, in *Addictive Behaviors*, Vol. 91, 2019, <https://doi.org/10.1016/j.addbeh.2018.07.019>.

³⁹ Before TPD full implementation, this study points out the financial motivation to own made e-liquid: Sharon Cox, Noel J. Leigh, Taylor S. Vanderbush, Emma Choo, Maciej L. Goniewicz, Lynne Dawkins: An exploration into 'do-it-yourself' (DIY) e-liquid mixing: Users' motivations, practices and product laboratory analysis, *Addictive Behaviors Reports*, Volume 9, 2019, <https://doi.org/10.1016/j.abrep.2018.100151>.

⁴⁰ Thirlway, Frances, Nicotine addiction as a moral problem: Barriers to e-cigarette use for smoking cessation in two working-class areas in Northern England; *Social Science & Medicine*, Vol. 238, 2019. DOI: 10.1016/j.socscimed.2019.112498

⁴¹ Ward E, Anholt C, Gentry S, Dawkins L, Holland R, Notley C. A Qualitative Exploration of Consumers' Perceived Impacts, Behavioural Reactions, and Future Reflections of the EU Tobacco Products Directive (2017) as Applied to Electronic Cigarettes. *Tobacco Use Insights*. January 2020. [doi:10.1177/1179173X20925458](https://doi.org/10.1177/1179173X20925458)

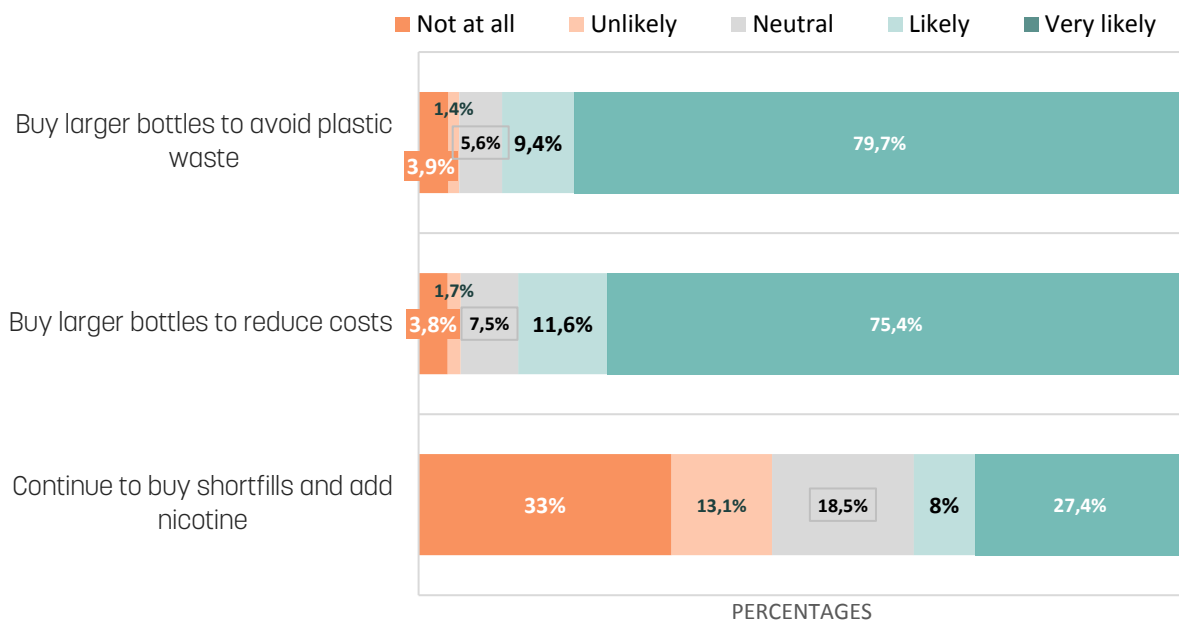
Repealing the 10 ml limit would have positive effects

The responses from vapers to our survey confirm that the vast majority of them would change their behaviour if the 10 ml limit on bottles was lifted. Out of the 32,000 vaping respondents:

- **87%** said they would buy larger bottles of nicotine e-liquid to reduce the cost if they can.
- Nearly **90%** of respondents want to avoid plastic waste by buying larger bottles.
- Almost half of them (46.1%) would probably not continue to buy short-fills and add nicotine themselves if the 10 ml limit was lifted. A third (35.4%) said that they would probably continue (8%) or be very likely (27.4%) to buy short-fills and add nicotine themselves. 18.5% are neutral.

These data suggest that a **repeal of this 10 ml volume limit would be very likely to have positive effects** on the consumption patterns of EU vapers, in terms of reducing their consumption of e-liquid and reducing the environmental footprint of bottles.

IF THE 10 ML LIMIT WAS LIFTED, VAPERS WOULD...
(N>27,000)



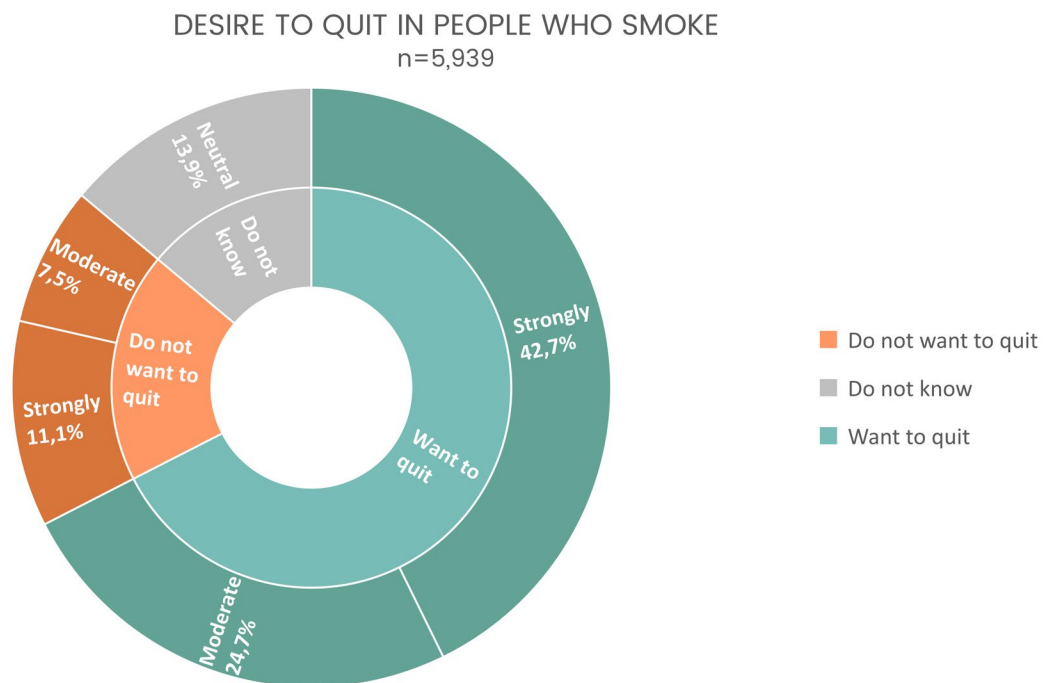
More consumption of e-liquid automatically increases the share of the residual low-risks related to vaping for consumers⁴². The 10 ml volume limit in the TPD has no health justification⁴³. Furthermore, small bottles are more easily handled and increase the risk of accidental ingestion by small children. **We strongly recommend abolishing the volume limit on nicotine e-liquids to allow a return to lower e-liquid consumption.**

⁴² Dawkins L, Cox S, Goniewicz M, McRobbie H, Kimber C, Doig M, Kośmider L. 'Real-world' compensatory behaviour with low nicotine concentration e-liquid: subjective effects and nicotine, acrolein and formaldehyde exposure. *Addiction*. 2018 Oct;113(10):1874-1882. <https://doi.org/10.1111/add.14271>

⁴³ See Letter on TPD errors sent by 14 Scientifics to European Union in 2014 [Scientific Errors in the Tobacco Products Directive A letter sent by scientists to the European Union \(ecigarette-research.org\)](#) and letter from Pr Lynne Dawkins on distortion of her message to the European Commission In 2014 [Guest blog: Lynne Dawkins puts the Commission straight « The counterfactual \(clivebates.com\)](#)

DESIRE TO QUIT SMOKING AND BARRIERS TO QUITTING IN THE EU

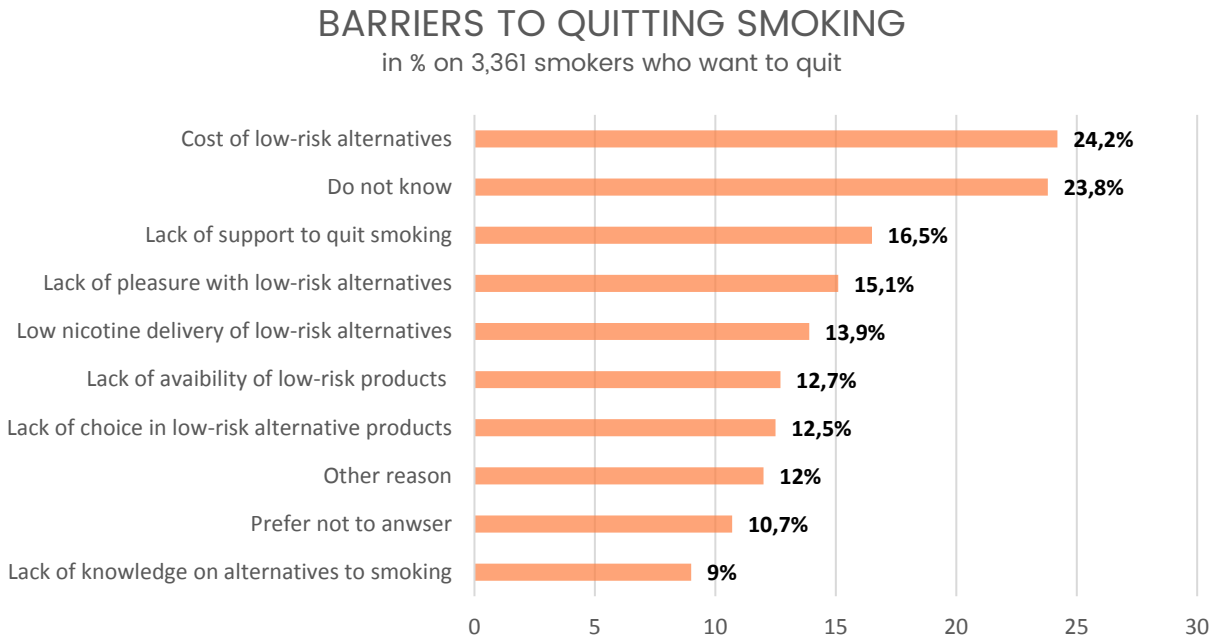
One of the most disturbing findings of our survey is that a large proportion of smokers would like to quit but are prevented from doing so by regulatory barriers. The high cost of vaping products, due to some national taxes, lack of access to products in some countries, the flavour ban in Estonia, Finland, and the *de facto* ban in Hungary, are some of the reasons for this. Our data may explain the large differences between EU countries in the proportions of complete switching and dual users (people who vape and smoke), as shown by Eurobarometer 506⁴⁴.



- 16.8 % of the total sample, 5,939 respondents, said that they currently smoke.
- **More than two thirds (67.4%) of them want to quit.**
- Among these smokers who want to quit, 24.2% say that the cost of reduced risk alternatives is a barrier to their stop smoking. 23.8% do not know why they do not quit, while 16.5% complain about the lack of support for smoking cessation. Other reasons given are: 15.1% feel a lack of pleasure with low-risk alternatives to smoking, while 13.9% feel that reduced risk products do not deliver nicotine

⁴⁴ Eurobarometer 506 in 2020: [Eurobarometer \(europa.eu\)](https://europa.eu/eurobarometer)

effectively enough. 12.7% regretted lack of access to reduced risk products – details in the graphic.



Strong variation on barriers to quitting between countries according to local vape regulations

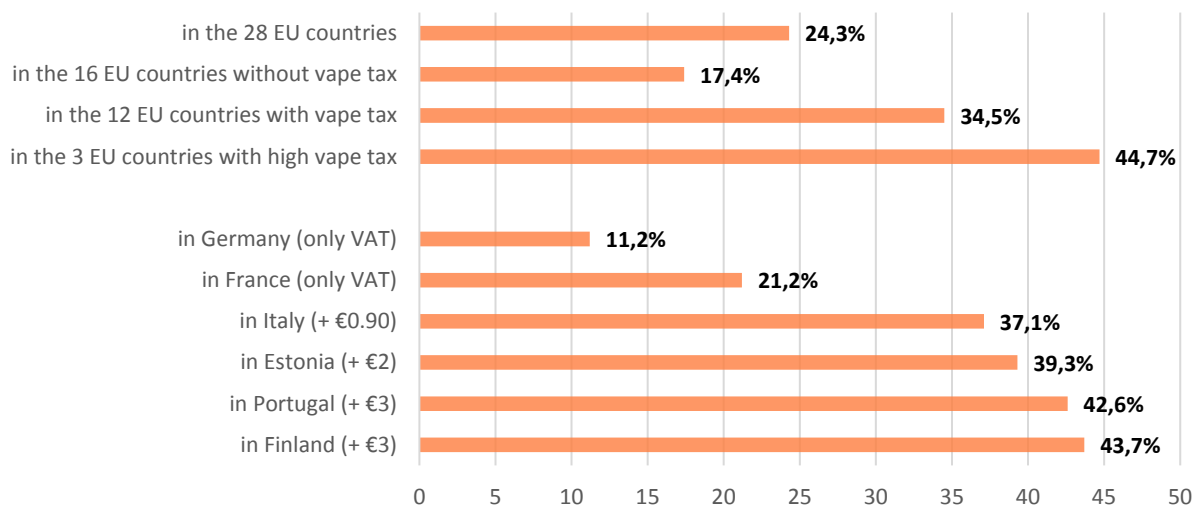
The perception of barriers to smoking cessation among the smokers surveyed varies greatly across the EU countries.

- For example, only 11.2% of German smokers wanting to quit – Germany had no tax on vaping at the time of the survey – rated the high cost of reduced -risk alternatives as a barrier to quitting smoking. However, **37.1% of respondents from Italy** – where a surcharge on e-liquids (€0.90/10 ml at the time of the survey) was already in place – rated the cost as a barrier. This increased to **43.7% in Finland** – where there is a very high tax on vape e-liquid (€3/10 ml), as well as other restrictions on vaping (flavour ban, retailers require a special license). In a small sample (to take with caution), 42.6% of the Portuguese smokers wanting to quit are blocked from doing so because of the cost of low-risk alternatives (There is a €3/10 ml tax on e-liquid in Portugal).

- When we differentiated the results according to whether the respondents are in a country with or without vape tax, the results show that high product cost is a significant barrier to quitting smoking⁴⁵.
- The number of smokers wanting to quit, who perceived barriers to smoking cessation because of the price of reduced-risk alternatives is almost twice as high in the vape-taxed countries (34.5%), compared to countries without a vape tax (17.4%).
- This barrier to quitting smoking affects **almost three times** as many smokers in the three countries (Finland, Portugal, and Estonia) with a high vape tax (€2 to €3 per 10 ml) compared to countries without vape tax. 17.4% of smokers feels prevented from quitting smoking because of the cost of the safer alternative In EU countries without vape tax. This perception increased to **44.7% of the smokers who want to quit In Finland, Portugal and Estonia**.
- The proportion of smokers who want to quit but who are prevented by the high cost of reduced risk products is **two times higher or more in countries that tax vaping products** than in countries without vape taxes.

COMPARISON OF PERCEIVED BARRIER TO QUIT FOR SMOKERS WHO WANT
BY THE HIGH COST OF LOW-RISK ALTERNATIVES

n in EU = 3,361



⁴⁵ The Effects of E-Cigarette Taxes on E-Cigarette Prices and Tobacco Product Sales: Evidence from Retail Panel Data - C. Cotti, C. Courtemanche, J. Maclean, E. Nesson, M. Pesko, N. Tefft in National Bureau of Economic Research, April 2021, DOI: 10.3386/w26724. <https://www.nber.org/papers/w26724>

environment suggesting that the benefits of ECs for smoking cessation are likely highly dependent on the regulatory environment, researchers conclude [our emphasis].

Our survey shows that high costs and the lack of availability of harm reduction alternatives to smoking are high barriers to quitting smoking in EU countries with the most repressive policies against tobacco harm reduction. We believe that this could explain the large differences in the proportions of complete switchers to vaping and dual users between EU countries, as highlighted by Eurobarometer 506 in 2020⁴⁸. The following section explores the issue of barriers to quitting smoking among people who vape and smoke ('dual users').

Regulatory restrictions are preventing a large proportion of dual users from switching

- Of the 4,857 vapers who still smoke, 31.8% said they do not want to quit, 15.2% preferred not to answer and 23.2% do not know why they had not quit.
- As for the reasons not to have switched completely, **15.2% of dual users** considered that vaping products do not deliver sufficient nicotine. Only 2.6% thought that vaping products are not easy enough to use.
- **17.1 % continue to smoke** because vaping is too expensive for them, **12% are put off from switching completely** because of a lack of availability of vaping products in their country and 11.7% had not found an adequate flavour.

These barriers maintaining dual use are in part caused by national regulations which affect price, access, flavours, and, as seen above, the TPD restrictions on nicotine concentration⁴⁹ and the 10 ml refill bottle volume limit which increases cost.

The differences in smoking cessation between countries could be explained by the barriers of tax (12 EU countries at the time of the survey), flavour bans (Finland, Estonia) and sales restricted to the state monopoly in Hungary (which include tax and a *de facto* flavour ban).

- In France, only **2.8% of dual users** blame the lack of availability of vape products for their continued smoking. This contrasts with **52.8% of dual users in Finland** (where there is a €3/10 ml e-liquid excise tax, a flavour ban and a special costly license for

⁴⁸ Eurobarometer 506 in 2020: [Eurobarometer \(europa.eu\)](https://ec.europa.eu/eurobarometer/)

⁴⁹ [Effect of an electronic nicotine delivery system with 0, 8, or 36 mg/mL liquid nicotine versus a cigarette substitute on tobacco-related toxicant exposure: a four-arm, parallel-group, randomised, controlled trial](#). Cobb CO, Foulds J, Yen MS, Veldheer S, Lopez AA, Yingst JM, Bullen C, Kang L, Eissenberg T; Randomised Control Trial Methods Workgroup of the Center for the Study of Tobacco Products. *Lancet Respir Med*. 2021 Apr 12:S2213-2600(21)00022-9. doi: 10.1016/S2213-2600(21)00022-9.

vape retailers), and **59.7% of dual users in Hungary** (with a state sales monopoly system), who continue smoking because of the lack of availability of vape products.

- The barrier of price is also illustrated by variations between countries. In countries without vape taxes (at the time of the survey), like Germany (3.9%), France (9.6%) or Spain (11.9%), price is a barrier to quitting smoking for only a small proportion of dual users.
- In countries with vape taxes, such as **Italy (31.8%), Finland (37.5%) and Hungary (31.8%)**, nearly a third of dual users continue to smoke because of the high cost of vaping products.

This means that political authorities implementing taxes on vaping products, flavour bans or which overly restrict access to vaping products are responsible for a large part of the continued smoking of dual users in their countries.

What is preventing you from switching completely to vaping and quitting smoking?

n in EU= 4573 dual users (vape and smoke)

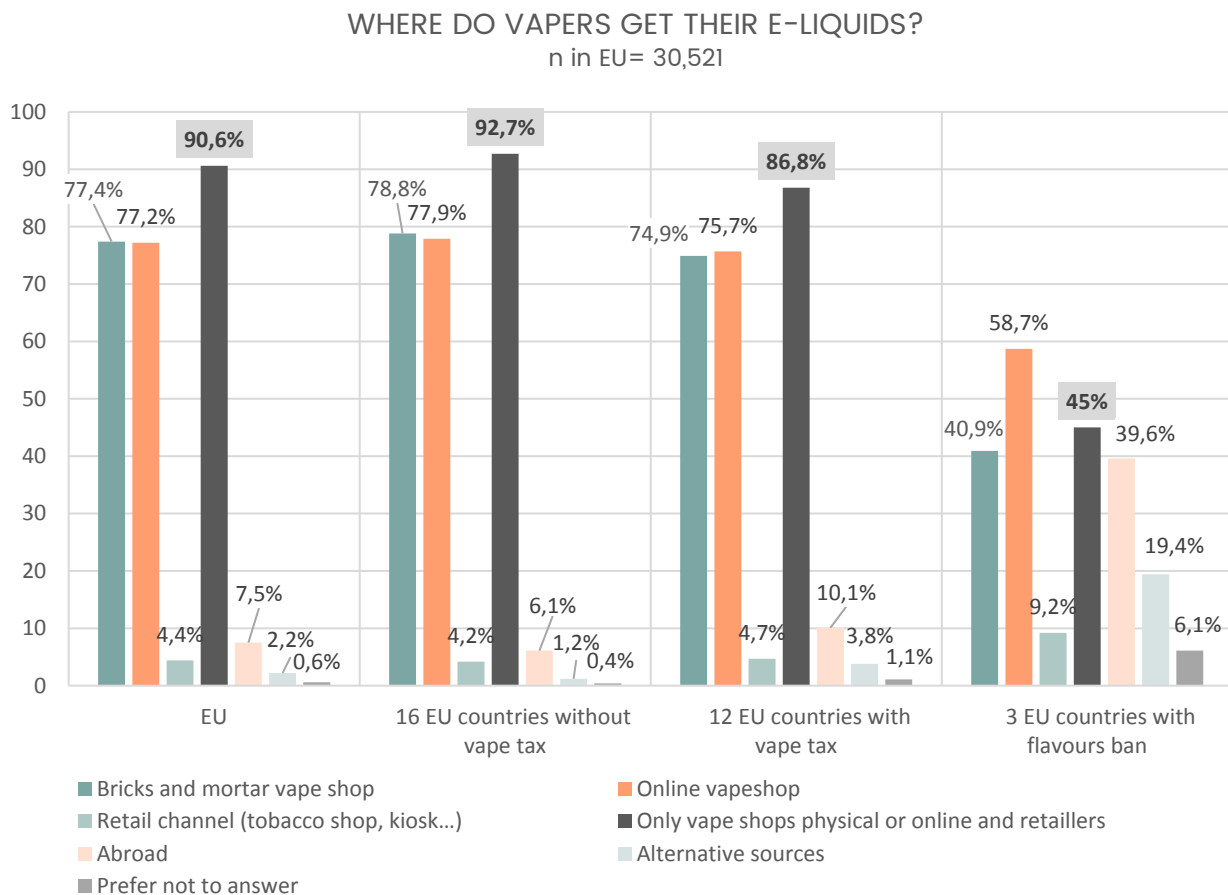
	EU	12 EU countries with vape tax	3 EU countries with flavours ban	Germany	Spain	France	Italy	Finland	Hungary
Do not want to quit smoking	31.8%	28.4%	24.9%	27.3 %	29.5%	40.5%	33.2%	24.2%	22.1 %
Vaping does not satisfy nicotine needs	15.2%	11.7%	11.4%	20.4 %	14.2 %	18.2 %	12.1 %	2.2%	14.9 %
Cost of e-liquid	17.1%	28.1%	31.5%	3.9 %	11.9 %	9.6 %	31.8 %	27.5%	31.8%
Lack of availability of vape products	12%	18.4%	56.8%	4.3 %	14.4 %	2.8 %	12.7 %	52.8%	59.7%
No vape flavour suits	11.7%	11.2%	4.8%	23%	10.6 %	5.7 %	14.1 %	4.4 %	5.2 %
Vaping not simple enough	2.6%	3.9%	5.9%	1.2 %	1.7 %	1.4 %	3.3 %	3.3 %	7.1 %
Do not know	23.2%	17.4%	12.4%	33%	21.8 %	27.8%	18.9 %	17.6 %	11%
Prefer not to answer	15.2%	18.6%	7.6%	9.9 %	19.1 %	12.5 %	12.7 %	9.9%	7.8 %

There are very few dual users (4.8%) in the three countries that have banned vape flavours who report that they haven't found the right vape flavour to quit smoking. This is very likely due to widespread use of alternative sources or buying from abroad thereby circumventing the flavour bans in these countries, as shown in the next section.

TAX AND FLAVOUR BANS ARE FORCING VAPERS TO USE BLACK OR GREY MARKETS AND TO BUY FROM ABROAD

In 2020, more than three quarters of EU vapers used physical and/or online specialist vape shops to buy their products, while 4.4% relied on tobacconists, kiosks or other non-specialist retailers. 90.6% of our EU vaping respondents buy their e-liquids from conventional channels, such as physical or online vape shops and kiosks.

In EU countries without vape tax, 92.7% of vapers use only conventional channels, while this number is 86.8% in the 12 countries with a vape tax. This contrasts hugely with the three repressive countries which impose flavour bans and vape taxes (Finland, Estonia, Hungary) where only a minority (45%) buy from conventional channels.

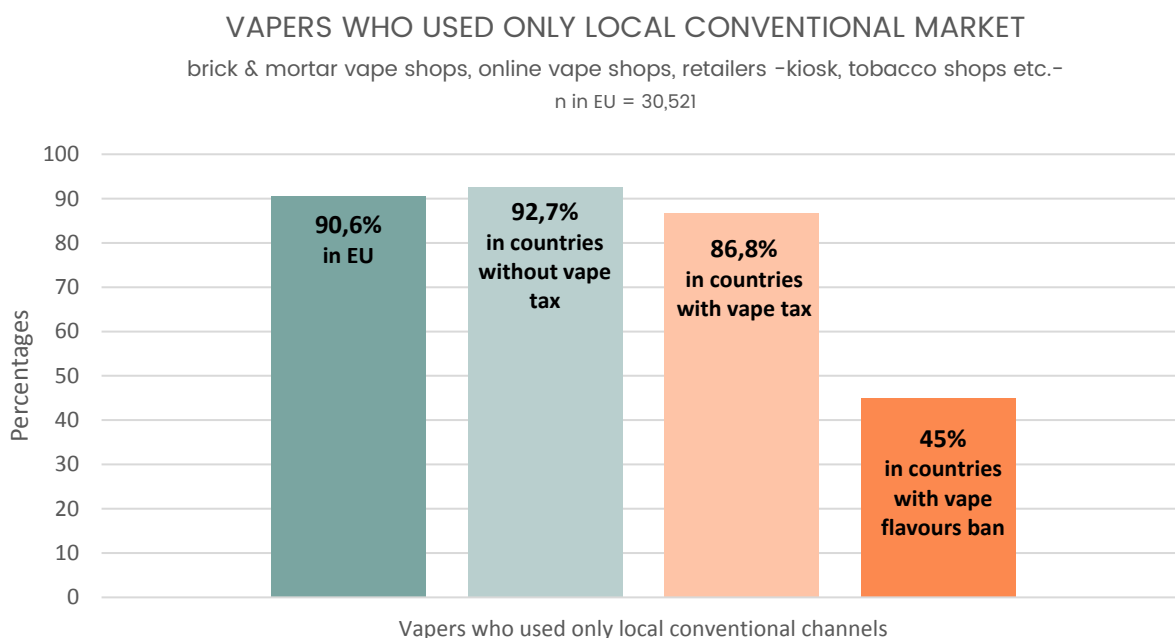


Comparison between countries shows that **vape tax (12 countries), flavour bans (Finland, Estonia) and state sales monopoly (Hungary)** pushed consumers to alternative sources:

The use of the black market or other alternative sources is 1.2% in EU countries without a tax or flavour ban, compared to 19.4% in the three countries with an effective flavour ban (Estonia, Finland, Hungary). Proportionally, more than 16 times as many vapers in countries with a vape flavours ban have to turn to alternatives to the legal market than those in countries without a tax or flavour ban.

Vapers residing in the 12 EU countries with a vape tax are 65% more likely to declare they used products bought from abroad than vapers in countries without vape tax (10.1% vs 6.1%). The declared use of black market and other alternative sources is more than three times higher (3.8% vs 1.2%) in those countries.

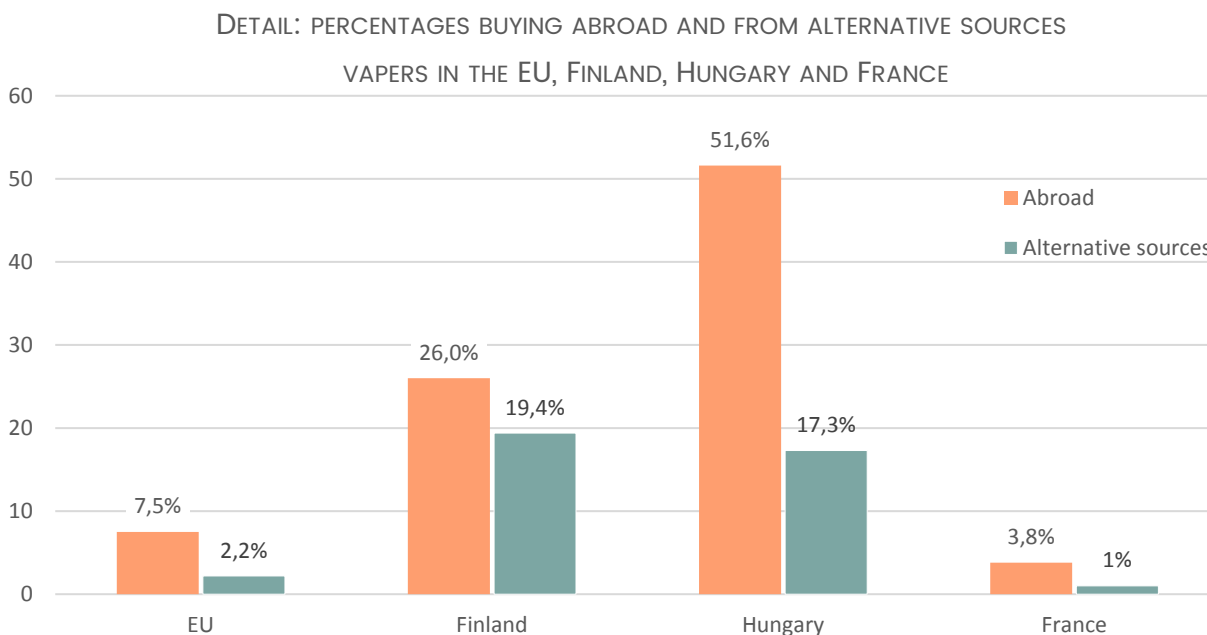
To a much greater extent, the three countries (Finland, Estonia, Hungary) with flavour bans, where there is also a vape tax, leads to an explosion in the use of purchases abroad (39.6%) and use of black market or other alternative sources (19.4%), although 6.1% prefer not to answer (versus 0.4% in countries without vape tax). **In these repressive countries, a minority (45%) only used local conventional markets** (brick and mortar vape shops, vape shops online, retailers (kiosk, tobacco shops etc.).



Proportionally, residents of these three more repressive EU countries are **6.5 times more likely to buy from abroad and more than 16 times more likely to turn to alternative sources** than vapers in EU countries without taxes or flavour bans.

- In France, where there are no surcharges or flavour bans, only 1% said they used alternative sources.

- In Finland, where there is a €3 per 10 ml bottle surcharge and flavours other than tobacco are banned, 19.4% of consumers said they use parallel sources and 26% buy from abroad while 39.4% used at least one of these channels.
- In Hungary, where there is a state monopoly sales system, 51.6% of vapers buy from abroad and 17.3% use parallel sources.



THE COST OF VAPE EXCISE

In rating reasons for adopting vapes, 65% of vapers believe that the lower cost of vaping compared to smoking was important (16.8%) or very important (48.1%) for their own adoption of vaping. This suggests that imposing taxes on the harm reduction product could reduce its attractiveness to smokers and help sustain smoking^{50 51}. Our survey provides comparative evidence on the weight of taxes on vaping in some EU countries against smoking cessation for dual users. We also surveyed users on their possible reactions to a price increase and the introduction of a high EU tax.

Reminder: vape excises in the EU in 2020	€ per 10 ml bottle nicotine e-liquid
Finland	€3
Portugal	€3
Estonia	€2
Sweden	€1,90 (20 kr.)
Slovenia	€1,80
Hungary	€1,70
Cyprus	€1,20
Latvia	€1,20
Lithuania	€1,20
Rumania	€1,10
Greece	€1
Italy	€0,90*

*Note: After the survey, Italy increased its vape tax in January 2021 (to €1.30/10 ml) and Poland implemented its vape tax stamp on April 2021 (€1/10 ml). In reverse, Estonia suspended its vape tax in April 2021. In April, the German Ministry of Finance proposed an ultra-high vape tax (under parliamentary discussion at the time of writing).

⁵⁰ Pesko MF, Courtemanche CJ, Maclean JC. The effects of traditional cigarette and e-cigarette tax rates on adult tobacco product use. *Journal of Risk and Uncertainty*, July 2020;60(3):229-258 <https://link.springer.com/article/10.1007/s11166-020-09330-9>

⁵¹ Pesko MF, Warman C. Re-exploring the early relationship between teenage cigarette and e-cigarette use using price and tax changes, SSRN online, no. 2017. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3077468

- 83% of EU vapers felt that vaping is currently cheaper or much cheaper than smoking in their country. These perceptions vary between countries according to the level of taxes
- In countries without a special vape tax (only VAT), **58.2% find vaping much cheaper** than smoking and 30.4% cheaper.
- In Italy, where the tax was 0.90€ for 10 ml with nicotine at the time of the survey, the proportion who find vaping **much cheaper is only 29.6%**, while 41% find it cheaper than smoking.
- In the eight countries with high tax on vaping products, between €1 to less than €2 per 10 ml, 35.2% find vaping much cheaper than smoking and 43.9% find it cheaper.
- In the three countries with very high tax from €2 to €3, the proportion who find **vaping much cheaper than smoking decreases to 25.4%**, and 45.2% find it cheaper.

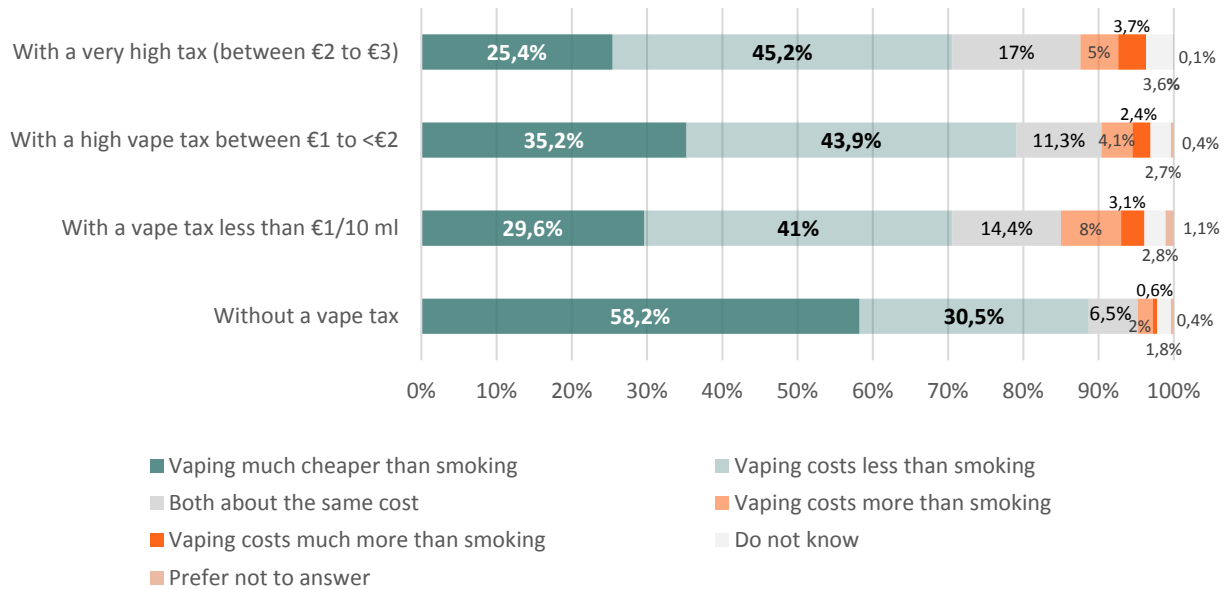
The main shortcoming of these results is that **the survey cannot take into account those people who had quit vaping or who had not adopted it because of the high cost.** A more detailed analysis of these perceptions would need to include comparative elements on the different income levels and the weight of the vape taxes⁵², and the levels of tobacco taxes in competition with vaping. Elements of anticipation of upcoming changes in taxes, such as the introduction of a tax in Poland, the suspension of the tax in Estonia or the decision to increase the tax in Italy (taken during the last ten days of the survey) may have influenced the responses. Such a task exceeds the time and resources available for this report.

However, a clear trend emerges in the perceptions of the relative cost of vaping versus smoking according to the level of tax in different EU countries: **respondents from countries with a vape tax perceive a lower financial benefit of vaping versus smoking.** Nearly twice the amount of vapers in countries without a tax feel that vaping is much cheaper than smoking compared to those in a country with a tax on vaping. This suggests a brake effect against switching to vaping in countries with vape taxes.

⁵² The Nanny State Index 2020 presents an assessment of the share of tax on vaping adjusted to average incomes in Europe (p.85) [NannyStateIndex-final.pdf](#)

PERCEPTION OF RELATIVE COST FOR VAPING AND SMOKING DUE TO LEVEL OF VAPE TAX IN COUNTRIES

n in EU=30,496



Lack of information on tax

- In general, a significant proportion of respondents were not well informed about the tax situation in their country. **34.6%** of respondents admit to not knowing about the **situation**. 31% believe that there is a vape excise in their country and 34% think that this is not the case.
- In the 10,611 respondents from the **12 EU countries which tax vaping**, **20.9%** said they **didn't know if there was a tax** and **3.8%** believed there was no excise in their country.
- Knowledge of vape excise existence appears to be a factor in response behaviour. Among Finnish and Hungarian vapers who know that e-liquids are taxed in their country, almost half of them say they use alternative sources:
 - In Hungary, **76.2%** are aware that there is a vape tax. Of these, **52.5%** say they use alternative sources to reduce costs.
 - In Finland, **82.5%** are aware that vaping products are taxed. Of these, **49.5%** report using alternative sources to reduce costs.

Various reactions to vape taxes

Between countries which tax vaping, there's an important variation in consumer reactions. These variations could be linked to different levels of vape taxes, differences in income levels, cultural attitudes to tax policies and confidence to answer on this topic in an online survey.

Does the vape tax affect your consumption?							
7,858 vapers in taxed countries who know there's a tax (multiple answers possible)							
	EU taxing 12 countries*	Finland (373 resp.)	Hungary (574 resp.)	Italy (5,317 resp.)	Sweden (222 resp.)	Portugal (305 resp.)	Romania (434 resp.)
No	35.2%	37.3 %	36.8 %	36.2 %	46.9 %	28.5 %	18.4 %
I limit vaping	33%	10.7 %	8%	37.4 %	23%	50.2 %	27.7 %
Use alternative source	23.6 %	49.9 %	52.4 %	16.9 %	30.6 %	22.3 %	26.5 %
Restart smoking	5.8 %	6.7 %	5.6 %	5.7 %	7.7 %	1.3 %	9.2 %
Use other low-risk product	1.4 %	7%	1%	0.9 %	4.1 %	0.7 %	1.4 %
Do not know	4.8 %	4.6 %	2.6 %	4.8 %	6.8 %	1%	11.8 %
Prefer not to answer	4%	3.2 %	3.7 %	4.3 %	1.4 %	1.3 %	9%
Other	5.1 %	3%	2.1 %	5.7 %	6.3 %	4.3 %	6.7 %

* Respondents from these countries, which tax vaping in 2020: Finland, Portugal, Estonia, Hungary, Italy, Sweden, Cyprus, Greece, Slovenia, Romania, Latvia, Lithuania.

IN THE EVENT OF A PRICE INCREASE

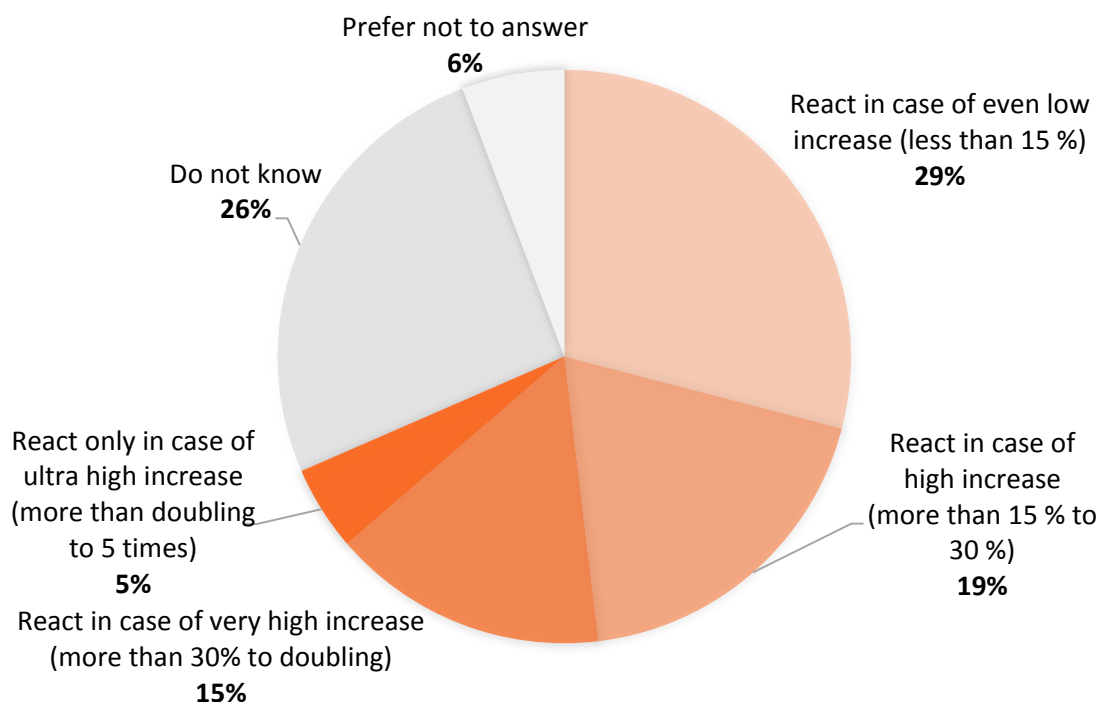
In view of the European Council's proposals to integrate vaping products into the Tobacco Excise Directive (TED), launched on 2 June 2020⁵³, we asked a series of questions about the possible reactions of vapers to price increases and a possible high tax on e-liquid.

First, we asked at what level of price increase they would change their behaviour:

- 25.8% said they did not know and 5.8% preferred not to answer.
- 29.1% of the European vapers surveyed would consider changing their behaviour as soon as the price of vape increased even if only 15%.
- 19.1% would change their behaviour should the price increase between 15% and 30% (€1 to €2/10 ml)
- 15.6% would change their behaviour from a 30% increase to doubling (€2 to €6/10 ml).
- Only 4.8% are very tolerant to price increases, declaring that they would change their behaviour only if the price doubled to five times (€6 to €30/10 ml).

⁵³ [Taxation: Council approves conclusions on future administrative cooperation and excise duty on tobacco - Consilium \(europa.eu\)](https://ec.europa.eu/economy_finance/press-room/2020/06/02-taxation-council-approves-conclusions-on-future-administrative-cooperation-and-excise-duty-on-tobacco)

AT WHAT LEVEL OF PRICE INCREASE
VAPERS WOULD CHANGE THEIR BEHAVIOR?
n=29,481



- These levels of reaction to a price increase vary between countries, from 37.3% being early reactive (with a 15% or less increase) in France to 13.5% in Austria. While the share of undecideds ('Do not know') seems to be the opposite, respectively 23.9% in France and 35.1% in Austria (to keep both the previous examples).

In the context of the TED revision

Currently, the European Commission is preparing a revision of the Tobacco Excise Directive (TED), in which it envisages taxing vaping products. Although the previous survey question was general and could include price increases for other reasons, the answers can be read through this perspective of increasing the price of vaping products in Europe via taxation.

- 29% of vapers would reject even a low-level increase.
- An increase at more than 15% (€1 for a 10 ml bottle) could provoke a reaction in 48% users.
- 20% of vapers would accept a very high increase of up to 30% additional cost (which would be about €2/10 ml or more).
- Less than 5% said they would consider reacting only in the case of an ultra-high increase (doubling price or more).

- A third of respondents answered do not know or preferred not to answer.

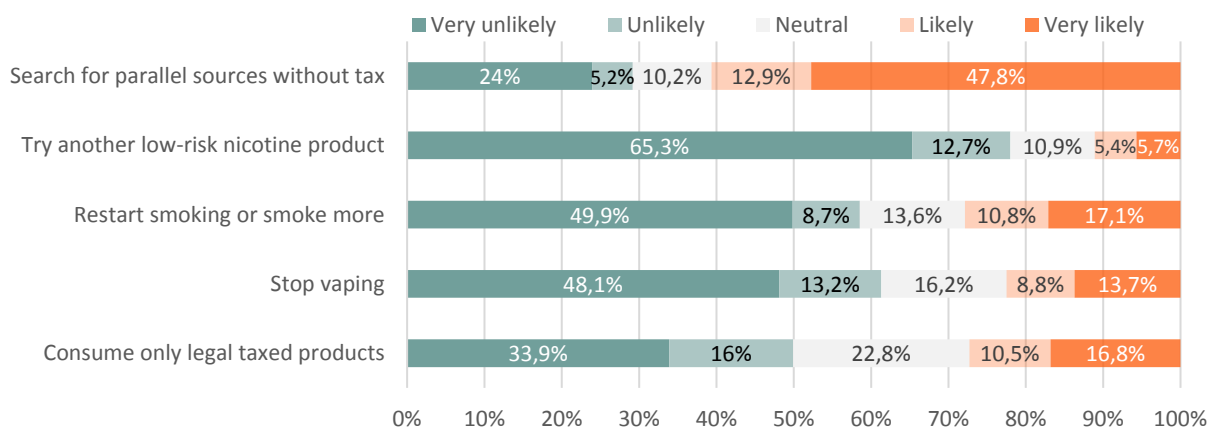
Although these questions deal with the possibility of future behaviour under potential scenarios with the strong possibility of different behaviour than declared, the responses indicate a strong consumer resistance to price increases. A price increase imposed by a vape excise, as projected by the European Commission, could fuel a big wave of adverse effects in consumer behaviours.

REACTION TO A HYPOTHETICAL HIGH EU VAPE TAX

The survey also asked more specifically what vapers would do if the EU applied a high vape tax:

- **60.7%** think they would probably (12.9%) or be very likely (47.8%) to search for a **parallel source** to find vape products not subject to the tax.
- Only a quarter think they would be very likely (16.8%) or likely (10.5%) to use only the highly taxed legal products. **49.9%** think they would be very unlikely (33.9%) and unlikely (16%) to use only legal products under these conditions.
- Only 11.1% are thinking about possibly trying another reduced risk product. In contrast, **27.9%** fear that they will restart smoking or smoke more. Slightly fewer (22.5%) think it is likely (8.8%) or very likely (13.7%) that they will quit vaping.

IF A HIGH VAPE EXCISE WAS IMPOSED IN THE EU,
VAPERS WOULD...
n~27,000



In view of the statements on the type of reactions considered, in the event of an estimated high tax it is extremely likely that large numbers of vapers, enough for a critical mass for a market upheaval, will find alternatives to the conventional market to avoid the punitive measure.

Existing examples, notably from Estonia, Finland and Portugal, strongly suggest that this interpretation is well founded. The cases of Estonia and Finland highlight that high taxes in combination with a flavour ban can have dramatic effects on decreasing the legal vape market and increasing use of alternative sources.

THE BITTER TASTE OF FLAVOUR BANS

Two EU countries, Estonia and Finland, have explicitly banned vape flavours other than tobacco flavours, while Hungary has a *de facto* flavour ban via its state sales monopoly. Denmark and the Netherlands⁵⁴ have announced flavour bans for next year. Some in tobacco control are arguing for a flavour ban in the forthcoming revision of the EU TPD. Our survey sought to assess what proportion of current vapers would be impacted by a flavour ban and the potential reactions to this.

95% OF VAPERS USE AT LEAST ONE FLAVOUR OTHER THAN TOBACCO

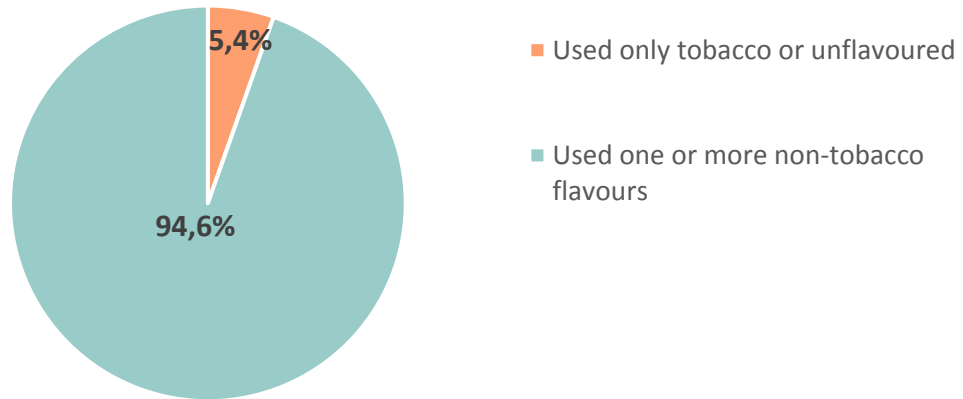
In our survey, 94.6% of more than 30,000 vapers use at least one or more non-tobacco flavours.

What kind of flavours do you vape?	Multiple answers possible (Tot>100%)	30,507 respondents
Unflavoured	2.7 %	Only tobacco or unflavoured (n=1,657) 5.4 %
Tobacco flavour	32.5 %	
Menthol alone	11.8 %	At least one of them (n=28,850) 94.6 %
Tobacco mixed with other flavours	39.9 %	
Fruit	69.1 %	
Dessert	57.2 %	
Drink	24.8 %	
Other	14%	

⁵⁴ Regulation of e-cigarette flavours in the Netherlands: a response. Pr D. Abrams, Pr K. Adriaens, C. Bates, Pr F. Baeyens, Pr R. Borland, Pr S. Cox, Pr L. Dawkins, Pr JF Etter, Dr K. Farsalinos, Pr P. Hajek, Pr M. Jarvis, Pr L. Kozlowski, Pr. E Králiková, Pr C. Lalonde, J. Le Houezec, Pr KE Lund, Pr B. Mayer, Pr R Niaura, Pr C. Notley, Pr L. Ramström, Pr L. Shahab, Pr A. Sobczak, Pr D. Sweanor, Pr U. Tirelli. <https://www.clivebates.com/documents/NLFlavoursResponseJan2021.pdf>

VAPERS AND FLAVOURS

N= 30,507

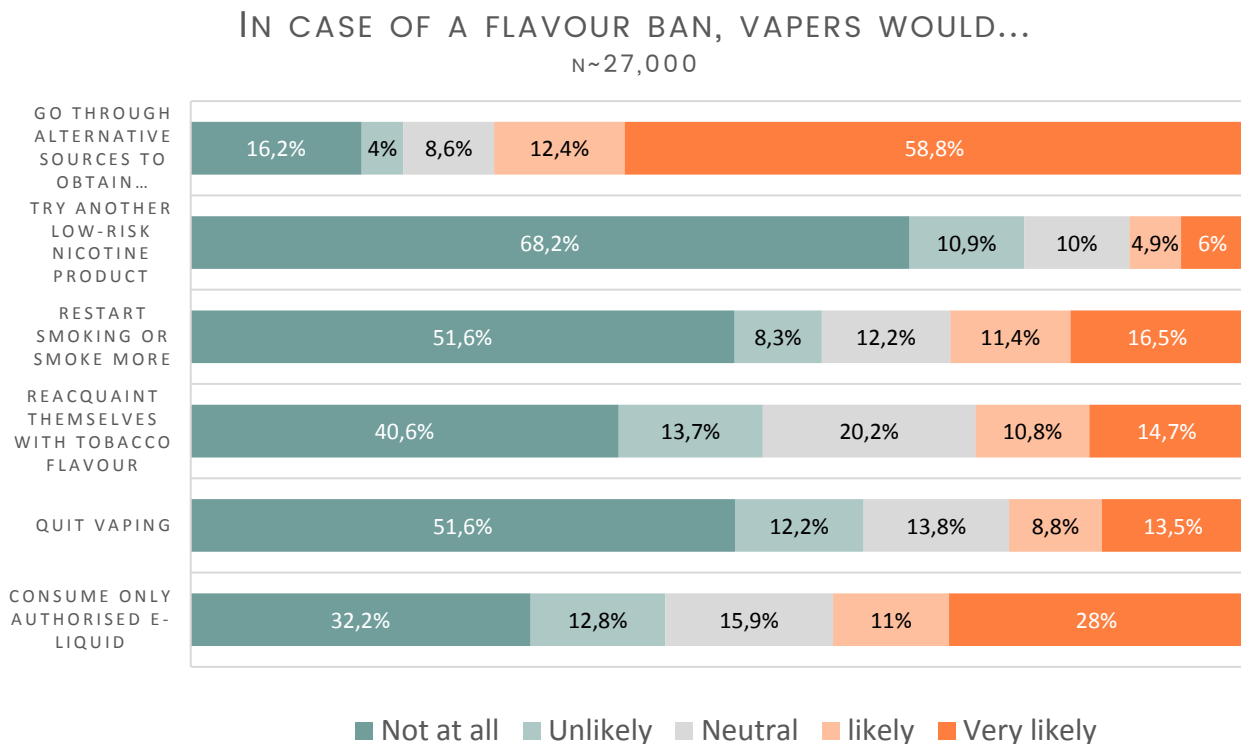


More than 71% of vapers would consider buying from alternative sources if flavours are prohibited

If vape flavours were restricted to tobacco flavour alone:

- 71.2% would consider using parallel sources to find flavours that suit them.
- 28% are afraid they would start smoking again, or smoke more.

These data indicate that flavour bans would cause social and economic harm. And above all, they would create great health insecurity by pushing consumers towards alternative sources which are outside the controlled legal market. Furthermore, a proportion of vapers would start smoking again^{55 56}.



⁵⁵ Yang Y, Lindblom EN, Salloum RG, Ward KD. The impact of a comprehensive tobacco product flavor ban in San Francisco among young adults. *Addict Behav Reports*, 2020; 11. <https://doi.org/10.1016/j.abrep.2020.100273>

⁵⁶ Friedman AS. A Difference-in-Differences Analysis of Youth Smoking and a Ban on Sales of Flavored Tobacco Products in San Francisco, California. *JAMA Pediatr*. May 24, 2021. doi:10.1001/jamapediatrics.2021.0922 <https://jamanetwork.com/journals/jamapediatrics/fullarticle/2780248>

OPEN INFORMATION: AN OPPORTUNITY FOR THE NEXT TPD

Although ill-considered restrictions would create a harmful situation, the revision of the TPD could be an opportunity to create better conditions for European vapers. Public access to the information collected by the European authorities during the product notifications process and a harm reduction information website, such as vapingfacts.health.nz from the New Zealand Ministry of Health, would be supported by European vapers.

First, a note on the 2 ml tank limit, taken from comments left by participants.

Note from survey comments on 2 ml tanks

A limit of 2 ml on empty vape tanks is applied by some EU countries, with reference to their own interpretation of the TPD. However, other EU countries have a different reading of the text, which they believe limits only **pre-filled e-liquid cartridges to 2 ml**.

A limit for a container sold **empty** does not seem to be consistent with the TPD text which is **explicitly concerned only with nicotine** products. The questionnaire did not ask about this issue, as this misinterpretation seems to be only an arbitrary choice by some governments.

However, **we must stress that this limit was strongly criticised in the survey comments by many users concerned**⁵⁷.

83% of vapers would welcome a publicly accessible database on e-liquid ingredients

Vapers responding to our survey want the information gathered by European authorities about the products placed on the market to be made publicly available. Although vape companies pay notification fees, for the moment it seems that only France offers a (not perfect) database, which the public can access (on the ANSES website⁵⁸).

⁵⁷ See also: Ward E, Anholt C, Gentry S, Dawkins L, Holland R, Notley C. A Qualitative Exploration of Consumers' Perceived Impacts, Behavioural Reactions, and Future Reflections of the EU Tobacco Products Directive (2017) as Applied to Electronic Cigarettes. Tobacco Use Insights. January 2020. [doi:10.1177/1179173X20925458](https://doi.org/10.1177/1179173X20925458)

⁵⁸ [Produits du vapotage | Anses - Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail](https://www.anses.fr/fr/system/do)

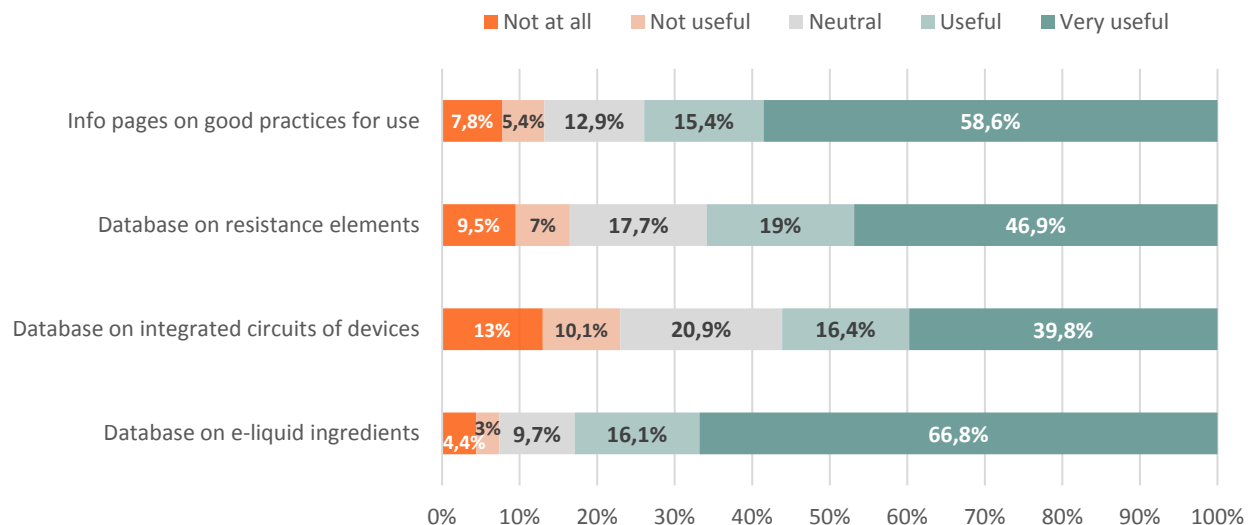
- **83% of EU vapers** would find it useful (16.1%) or very useful (66.8%) to have access to a published database with a detailed list of the ingredients for e-liquids sold in the European market.
- 56.2% would find it useful (16.4%) or very useful (39.8%) to have access to data on the integrated circuits of devices and chargers, and two thirds would find it useful (19%) or very useful (46.9%) to have access to data on resistance (coils).

74% of vapers would find an EU info-page useful

- 74% would find it useful (15.4%) or very useful (58.6%) to have public information on vaping good practices.

Nearly 28,000 vapers have given their opinion on the usefulness of creating information pages with data about e-liquids, resistance elements and integrated circuits of devices and chargers. As well as the idea of public advice pages on vaping, such as the one from the New Zealand government⁵⁹, a very large majority are in favour of having public access to the products database. The absence of databases, except in France, is incomprehensible, especially considering that administrations are charging registration fees to vaping companies.

IF THE EU CREATE A DATABASE,
VAPERS WOULD FIND USEFUL TO HAVE ACCESS TO...
N~28,000



⁵⁹ VapingFacts.nz

CONCLUSION: AUTHORITIES MUST QUIT MAKING HARMFUL POLICIES

The huge numbers participating in this survey shows that there is a great interest in Europe for the issue of harm reduction in relation to smoking. This is particularly true for vapes and snus, the two products most commonly used for this purpose.

With a vast majority of users having quit smoking, the survey clearly shows that vaping products and snus are used to avoid smoking cigarettes. Harm reduction is the most cited reason for using vapes or snus. Other factors, such as cost, pleasure from flavours, ease of access, variety and, in the case of vapes, the ability to adjust products, facilitate the adoption of smokeless nicotine products.

With regard to snus, its prohibition of sale, except in Sweden, is obviously a major barrier to its adoption. This survey shows that more than 30% of smokers might try it if it were legalised in the EU.

For vapers, this survey showed an increase in volume and a concomitant decrease in the nicotine content of the e-liquid used compared to a 2013 survey before the introduction of the TPD. Two elements of the TPD seem to have played a role in this phenomenon:

Firstly, the 10 ml limit on refill bottle volume has pushed a large proportion of users to opt for 'short fills' - bottles of more than 10 ml to which they add nicotine themselves. This practice produces e-liquids with ultra or very low nicotine levels and leads to higher e-liquid consumption. Two thirds (65.9%) of EU vapers used e-liquid with less than 6 mg/ml nicotine content.

Secondly, the 20 mg/ml nicotine limit forces some vapers to compensate for the lower nicotine level by consuming more e-liquid. About a quarter of the vapers surveyed believe that they would reduce their e-liquid consumption if the nicotine concentration limit were raised in the EU. This limit also prevents more than 30% of dual users (people who vape and smoke) from switching fully to vaping.

Some national regulations reinforce the barriers preventing a full switch to vaping for dual users. Twelve countries have introduced vape taxes, Finland and Estonia also have flavour bans, as well as the particular case of the state sales monopoly in Hungary (with tax and a *de facto* flavour ban), which are preventing a very large proportion of vapers in these countries from fully switching. These regulatory barriers are an important factor in maintaining smoking.

The results of our survey show that if the European Union were to impose overall population restrictions similar to those experienced in repressive countries in terms of taxation and/or flavour bans, it is likely that a very large proportion of consumers would seek alternative sources to the legal market.

Different practices can substitute for the controlled market, but all at the risk of losing quality control over the products. One of the shortcomings of our survey is the absence of data on the socio-economic levels of the participants. This unfortunately does not allow for a treatment of issues related to health social inequalities on the subject.

However, recourse to the black market or other alternative sources clearly does not appear to be the preferred solution for the vast majority of users. In countries without tax or flavour bans, the use of alternative sources and buying from abroad remain completely anecdotal. In contrast, nearly half of vapers in countries with anti-harm reduction laws use alternative sources or buying abroad. These behaviours are the product of abusive regulatory measures.

For several years, consumers of safer nicotine products have patiently and civically participated in public consultations from European bodies. Their views have unfortunately been treated mainly with condescension. The large participation in the ETHRA survey appears to be an urgent demand from the concerned public to be listened to by the European authorities.

ACKNOWLEDGEMENT

This work, published In June 2021, is the joint work of the European Tobacco Harm Reduction Advocates (ETHRA) with the 22 partner organisations, the help of scientific partners, vapers, snus users and friends. Nobody was paid for this work. The coordination was done by Philippe Poirson (Sovape), who has no financial ties to any industry nor business, including philanthropy ones.

ETHRA is particularly grateful to its scientific partners Dr Lars Ramström, Pr. Frank Baeyens, Pr. Bernd Mayer, Pr. Andrzej Sobczak, Jacques Le Houezec and public health advisor Clive Bates for their advice on this work, and who bear no responsibility for any errors which may have been made. We are also extremely grateful to Dr Karolien Adriaens and Hélène Berg for their helpful advice.

Many volunteers helped with the translation into 16 languages: Carmine Camino (ANPVU), Norbert Zillatron (IG-ED), ANESVAP, NNA UK and Ireland, ACVODA, Claudio (Portugal), NNA Sweden, DADAFO, Päivi Arffman (Vapers Finland), Villanypara Egyesület (Hungary), Kasia (Poland), Greek Vapers Club, NNA Estonia, Slobodan (Serbia), Caesar (Romania), Aiduce and Sovape.

The use of the Evalandgo survey platform (€50/month subscription) was offered by Sovape, non-profit association with no links to the tobacco or pharmaceutical industries.

ETHRA thanks all media, organisations and people who helped to spread the questionnaire.

Of course, ETHRA thanks a lot all 37,303 participants to the survey.

We present our apologies if anyone is missing from this list.

ETHRA brings together 22 European groups: ACVODA (Netherland), AIDUCE (France), ANESVAP (Spain), ANPVU (Italia), DADAFO (Denmark), EU For Snus (EU), Greek Vapers Club (Greece), IG-E-Dampfen (Germany), IG eX-Raucher (Austria, Germany, Switzerland, Hungary), Je défume (France), MOVE (EU), NNA Estonia (Estonia), NNA Ireland (Ireland), NNA Sweden (Sweden), NNA UK (UK), Nikan (Norway), NDS (Norway), Sovape (France), Vapers Finland (Finland), Vapers.org.uk (UK), Villanypara Egyesület (Hungary), Zdruzenje Vejperjev Slovenije (Slovenia).

ETHRA is registered on the EU Transparency Register, number 354946837243-73.

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