

The impact of implementing TPD and legalising nicotine in Norway

- First report

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Abstract

It is currently illegal to sell e-liquid containing nicotine for vaping in Norway. However, Norway has committed itself to the implementation of TPD, thus making it legal to sell and buy nicotine. The aim of the project is to study the impact of new legislation by carrying out a survey for vapers before and after the implementation of TPD: How will TPD affect consumer behaviour concerning e-liquid with nicotine? This report sums up some of the results from the first survey, conducted in 2020.

675 vapers answered the survey, 625 of them are daily vapers. This accounts for more than 1 percent of all daily vapers in Norway. The study shows that the majority of Norwegian vapers are adults who have smoked large quantities of cigarettes over a long time, but who have replaced the cigarette with vaping. Almost all of them use e-juice containing nicotine. While 96 percent of the respondents had smoked before, only 15 percent smoke today – and only 4 percent smoke daily.

Introduction

It is currently illegal to sell e-liquid containing nicotine for vaping in Norway. Vapers buy nicotine from abroad or illegal from Norwegian dealers. However, as a part of the EEA agreement, Norway has committed itself to the implementation of TPD, thus making it legal to sell and buy nicotine. Moreover, TPD will change how these products are regulated. I saw the introduction of this new legislation as a unique opportunity to examine its effects through a before-and-after study. The plan is to carry out a survey for vapers before and after the implementation of TPD, and study consumer behaviour and user patterns concerning e-liquid with nicotine, and through this, vaping vs. cigarette usage or other harm reduction options. The study's purpose is to obtain knowledge that can be used in future legislation that supports tobacco harm reduction.

I conducted the “before”-survey in 2020. Since I first planned the project, the implementation of TPD has been further postponed, so that by April 2021 it is still not in force, and the main goal of the project is therefore not yet achieved.

Research questions

The main research questions in the project are related to 1) the effect of legalisation, and 2) the effects of individual stipulations of TPD. It is not yet clear how Norway will adopt the different

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stipulations of TPD, and the study's hypothesis will therefore be further developed before the second round of the study.

1) The effects of legalisation

Today, Norwegian vapers obtain e-liquid with nicotine through several methods which are strenuous and possibly unsafe. There is no available knowledge about how common these methods are:

- Personally mixing e-liquid by buying PG, VG, and aroma in Norway or other countries, and nicotine from EU-Countries. (This is currently legal)
- Illegal sale of e-liquid with nicotine from Norwegian suppliers
- Suppliers who illegally mix nicotine into their e-liquids

Cigarettes, on the other hand, are readily available in every grocery store, convenience store, and gas station.

Allowing Norwegians to buy e-liquid will, in isolation, make it easier to choose vaping over smoking. Presumably, this will lead to an increase in legal acquisition of e-liquid, which is also safer.

2) The effects of individual stipulations of TPD

The different stipulations of TPD may enhance or diminish the positive effects of legalisation. Since Norway's current market is partly illegal and includes users who mix their own liquid, prices are relatively low, and the consumers have flexibility in choosing the desired nicotine levels and flavours of their e-liquid. Therefore, both buyer and user behaviour can be expected to strongly depend on elements such as:

- Taxation: Today, Norway has a high tax on tobacco products. If the government does not use a harm reduction perspective as a basis for taxing e-liquids, it could end up much more expensive than it is today, and therefore a less attractive option compared to cigarettes.
- Restriction on nicotine levels or flavours: This will restrict users in acquiring/mixing e-liquid according to their personal preferences, thus potentially causing vaping to be a less attractive in relation to cigarettes.

Methods

I describe the method used in the first round of the study. I plan to use the same method in the second round.

The population in the survey consist of current and former vapers. They were mainly recruited through vaping groups on Facebook. The survey was carried out with the use of Google Forms. Considerable effort was made to design a good questionnaire. My own experience as a vaper is that questions asked in such studies often use unfamiliar concepts and do not reflect what the consumers perceive as relevant aspects or options. Fellow vapers were invited to comment on the questionnaire, and the survey was piloted.

I introduced an incentive to participate in the survey, by arranging a lottery. To participate in the lottery, the respondents had to fill in their email address, and at the same time agree to receive the second round of the survey directly by mail. In this way I will get a panel of respondents. The survey was launched the 13th of September 2020 in Norway's largest Facebook group for vapers and shared

in several other groups. I also offered to receive answers by phone for those who preferred that. On the 15th of November I closed the survey with 675 answers. 607 of them provided their email address.

To summarise, the questionnaire comprised these themes:

- Sources for obtaining e-liquid with nicotine
- Daily usage
- Monthly expenditure
- Nicotine levels
- Availability of nicotine
- Preferred flavours
- Perception of attitudes from the environment
- Cigarette smoking behaviour (prior and current) and usage of other nicotine products
- Reasons for vaping (alternatively quitting vaping)
- Perceptions of the harm reduction potential of different nicotine products
- Certain personal characteristics such as gender, age and education

Results

Although the project is not completed, the first round of the study provides new knowledge about user habits for vapers in Norway. 675 people completed the survey - 658 current and 17 former vapers. 625 of the respondents said they vape every day. This means that the respondents of this survey account for over 1 percent of the estimated number of vapers in Norway (Public Health Norway, 2018). Nevertheless, we have to be mindful about the fact that this is not a random sample of all vapers in Norway. We can look at them as a group of well-established vapers. 72 percent of those who said they vape every day have done so for at least 3 years, but there are also some newcomers - 8 percent have vaped for less than a year.

The majority of vapers are adults and former smokers who smoked frequently and over a long time period

What characterizes those who vape? Firstly, a majority are adults. Among the respondents, 67 percent are 40 years or older. About 9 percent are under 30 years old.

Furthermore, the study shows that 96 percent of the respondents had smoked cigarettes before they began vaping - 90 percent every day, and 6 percent occasionally. 43 percent smoked at least 20 cigarettes daily, and 41 percent between 10 and 19. 4 percent did not smoke cigarettes before they started vaping.

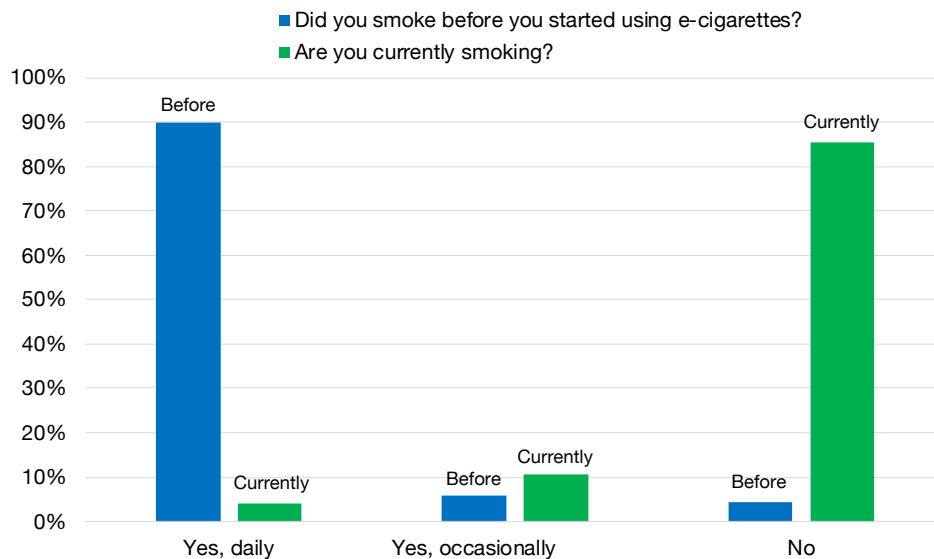
The survey further shows that many of the respondents had been daily cigarette smokers for a long time - 30 percent for 30 years or more, and 32 percent between 20 and 29 years.

Vaping replaces smoking cigarettes

Figure 1 below shows the share of the respondents who smoked cigarettes before they began vaping, and also those who still smoke cigarettes today. 15 percent answered that they still smoke today, but only 4 percent does so on a daily basis. This means that for the majority of the

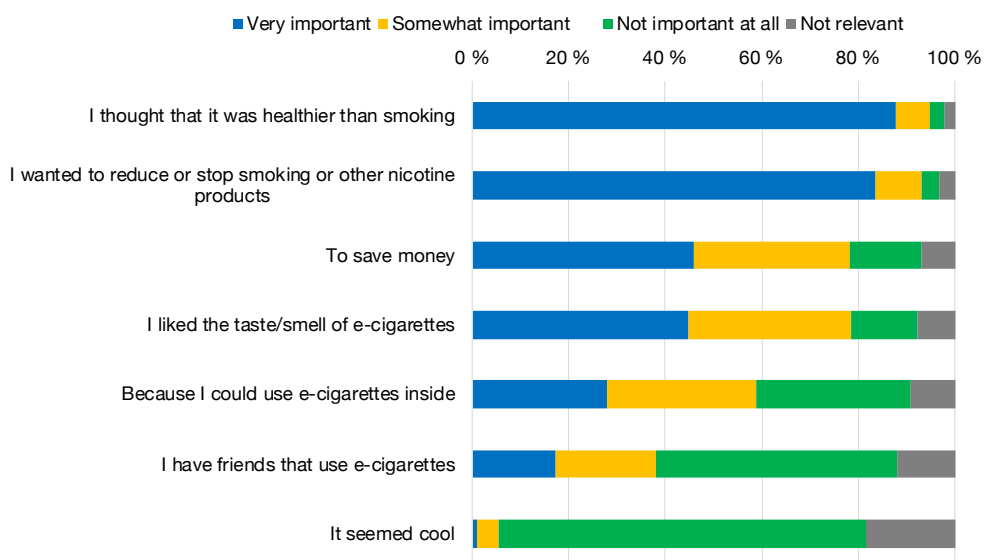
respondents, vaping has replaced smoking, and thus there is not much so-called dual use of both products.

Figure 1. Smoking habits before and after they started vaping



On questions about why they started vaping, most people answered that they wanted to improve upon their health and that they wanted to quit smoking. The figure below shows their answers to the question where they were given seven alternatives and were to state the degree to which they agreed with the given alternative. For most of the vapers, two important reasons were that they believed vaping to be healthier than smoking, and that they wanted to reduce or stop smoking or use other nicotine products. Very few stated that they started because it looks cool, that they have friends who vape, or that they can vape indoors.

Figure 2. How important were the following reasons for you when you started to use e-cigarettes?



In addition to these alternatives that the respondents were provided with, as many as 234 of them answered the open-ended question asking them if they started vaping due to any other reasons. I

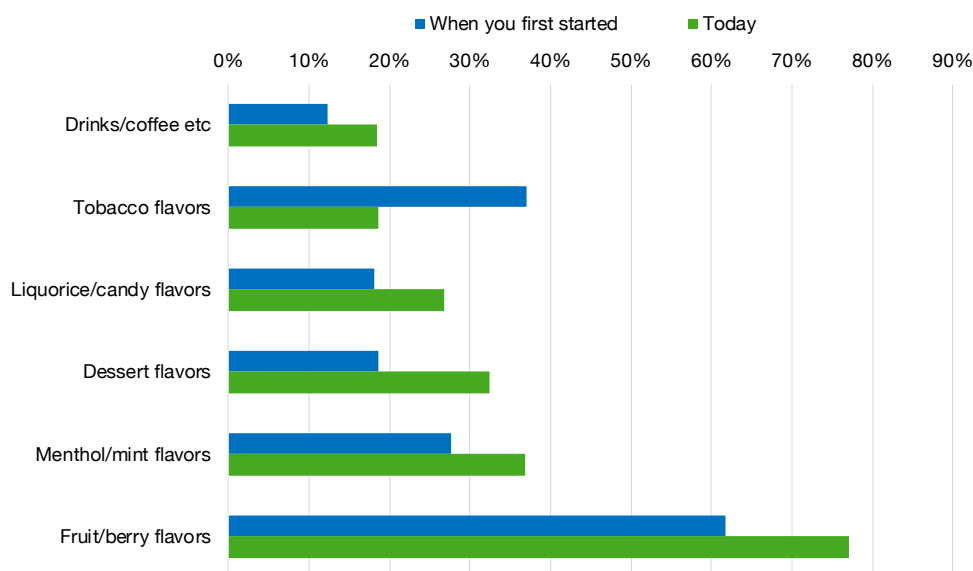
have not studied these answers systematically yet, but I can see that many of the answers relate to health or the contraction of a disease that necessitates smoke cessation. Many of them wrote about a series of unsuccessful attempts to quit smoking.

E-juice consumption

There were several questions in the survey about consumption of e-juice and nicotine.

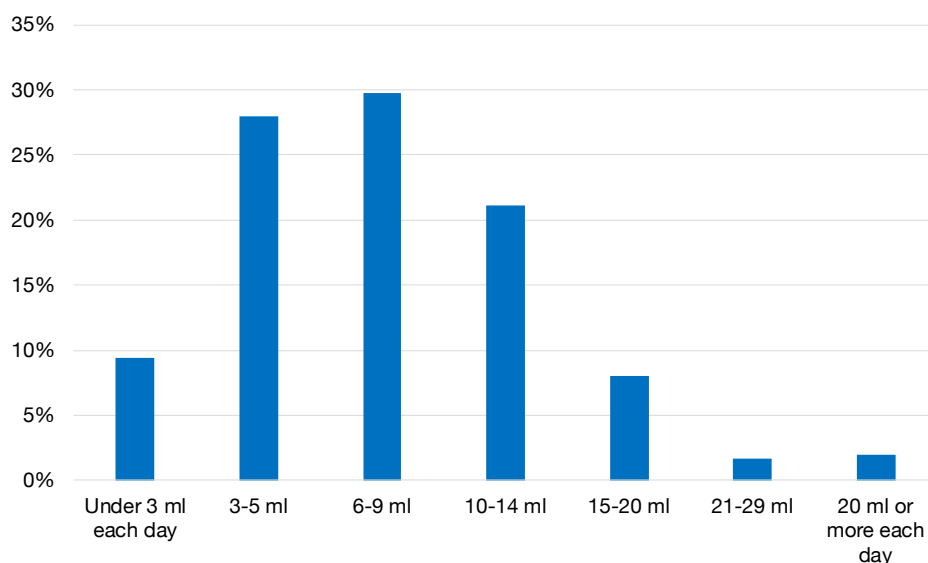
The vapers were asked about what kind of flavour they prefer – when they first started vaping, and today. They could choose multiple alternatives. The figure below shows that there is often a shift that occurs over time. In the beginning, many prefer fruit/berry flavours (62%), but also tobacco flavours (37%). However, after some time, fewer prefer the tobacco flavours, making it one of the least popular flavours (19%). For the average vaper, all the other flavours become increasingly popular over time, and fruit flavours become the favourite (77%). The result shows that even though tobacco flavours are important for many smokers who shift to vaping, other flavours are more important to keep them away from the cigarettes in the long run.

Figure 3. What kind of flavors do you prefer in your e-juice? What kind of flavors did you prefer when you first started using e-cigarettes?



How much e-juice do vapers use? Most of them estimate between 3 and 9 ml per day, but as many as 33 percent use 10 ml or more (see figure 4). The tobacco product directive (TPD) will limit the size of e-juice bottles to 10 ml. Hence, the consequence is that vapers will have to buy large quantities of e-juice bottles - roughly 20 a month for the average vaper. 56 000 daily vapers in Norway will consume around 13.4 million bottles every year.

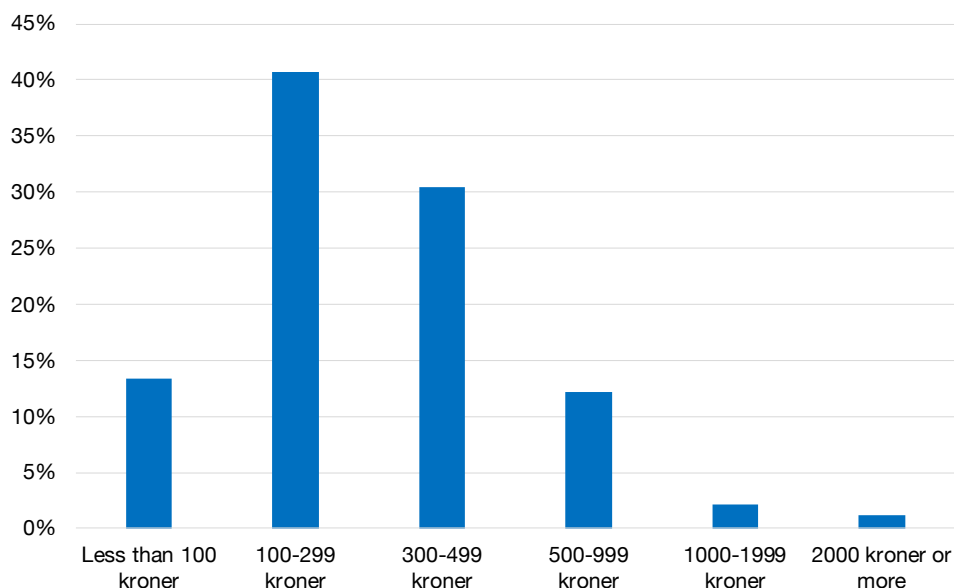
Figure 4. How many milliliters of e-juice do you currently use on average each day?



The respondents were also asked how much money they spend on e-juice every month. It is most likely difficult for them to give a precise answer to this question because many of them do not buy pre-mixed e-juice but mix it themselves. Moreover, they often buy the ingredients at different locations and at different time intervals. Nonetheless, this is a very important question when it comes to studying the effects of the new regulations, and in order to see how price changes affect people's choice of vaping instead of smoking.

In figure 5 we see that 71 percent of vapers estimate that they spend between 100 and 500 NOK per month (equals 10 to 50 Euro). In comparison, a cigarette use of 20 cigarettes per day totals over 4000 NOK per month (400 Euro). Even though we have to add costs related to vaping-equipment, vaping is still significantly cheaper than smoking in Norway.

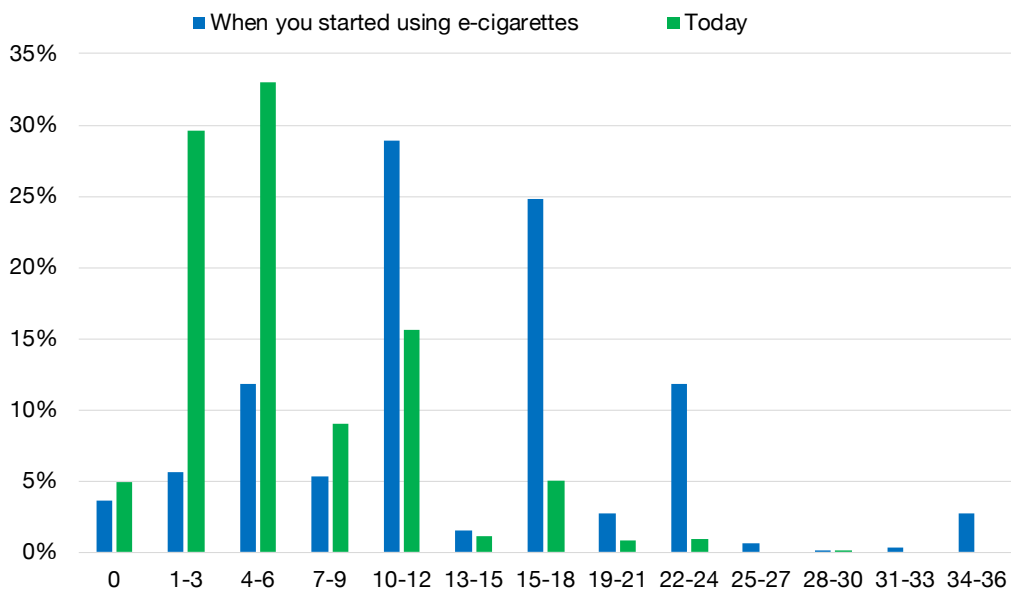
Figure 5. Estimate how much money you spend on e-juice every month (NOK)



Nicotine

Most of the respondents stated that they use e-juice containing nicotine - 88 percent daily and 7 percent occasionally. They were asked how strong their current nicotine e-juice is, and also how strong it was when they started vaping. It is common to reduce the nicotine strength after a while, and there are several reasons for this. Some feel that their need for nicotine diminishes after a while, and others change to vaping-equipment which is more suited for lower nicotine levels. Anyway, the respondents' answers reveal the nicotine strength that they prefer - initially to stop smoking, and then to keep vaping. By far the most common strengths are 3 and 6, and then 12 mg/ml. Only 8 percent use more than 12 mg/ml. The responses show that they used stronger nicotine e-juices when they began vaping than they do today. 45 percent used more than 12 mg/ml when they started, and 18 percent used more than 18 mg/ml. The tobacco product directive (TPD) sets an upper limit of 20mg/ml. The closest standard we have today is 18mg/ml. The survey shows that this limit might be an obstacle to some people who seek to substitute tobacco products with vaping.

Figure 6. How strong is the nicotine e-juice you normally use?
How strong was the nicotine e-juice when you started using e-cigarettes? Mg/ml



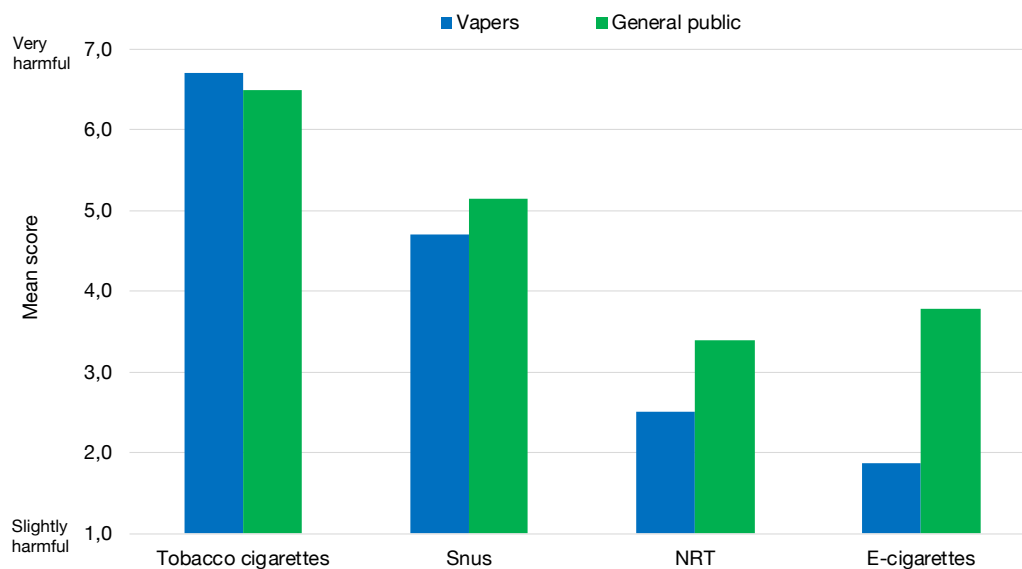
Perceptions about the risk of different nicotine products

It exists research about people's perception about the negative effects of different nicotine products. Statistics Norway have posed this question in a population study using a representative sample. The findings are for instance used in a 2019 article by Karl Erik Lund and Tord Finne Vedøy (Lund & Vedøy, 2019). However, I wanted to understand how people who vape perceive the risk of different nicotine products, and therefore gave them a similar question.

The question went like this: "We will now mention a variety of nicotine products and ask you how harmful you think daily use of these are. Use a scale from 1 to 7, where 1 is slightly harmful and 7 is very harmful". In the figure below I present the answers to this question and compare them to the population average from Lund & Vedøy (2019).

In figure 7 we can see that vapers consider tobacco cigarettes to be very harmful. The average is 6.7, something which is slightly higher than the general public. However, vapers perceive the other three products to be less harmful when comparing them to the general public. Snus averages 4.7, Nicotine replacement therapy (NRT) 2.5, and vaporizers/e-cigarettes 1.9. When we compare this with what research says about the risk of these products, we see that the general public and vapers overestimate the harm of the other products compared to cigarettes. Nonetheless, compared to the general public, the estimates of vapers are more aligned with the current research on these nicotine products. Personally, I am surprised to see that vapers consider the risk of snus to be as much as 70% percent to that of cigarettes. The fact that vapers consider vaping to be as little harmful as they do is not surprising, considering that most of them chose vaping because they perceive it to be of little harm. Moreover, many of them have been exposed to, or have sought information about the health effects of vaping.

Figure 7. How harmful you think daily use of these nicotine products are? Use a scale from 1 to 7 where 1 is slightly harmful and 7 is very harmful



Sources for obtaining e-liquid with nicotine

Several questions in the survey are about sources for obtaining e-liquid with nicotine, mixing e-liquid etc. These are important questions when it comes to the aim of the project: How will TPD affect these sources? I will publish the results from these questions after the second round of the survey is finished.

Discussion

At this stage of the project, it is premature to conclude regarding the research questions. The most interesting results will be published after the second round of the survey is completed. Still, I think there are some results from the first round that deserve attention. The survey reached over 1 percent of vapers in Norway, and although this is not a random sample, their answers convey valid knowledge about vapers' user habits and consumption.

I will highlight the following results of this first round and some implications:

- Only 9 percent of the vapers are under 30 years of age. This should reassure policy makers who are worried that legalization will recruit many youths to vaping. There are no reasons to believe that youths are more restricted by the current ban than adults.
- A great majority of the vapers are former smokers that have been heavy smokers for many years. It is a group that have taken action to protect their own health – and for many of them after several attempts to quit smoking in other ways. It is important that regulation give people access to the means to protect their own health.
- It is worth noting that 1/3 of Norwegian vapers consume 10 ml or more e-juice per day. This is a strong argument not to limit the amount per bottle to 10 ml, as is the case in TPD.
- Although the vapers use relatively low levels of nicotine strength today, many of them started up with higher levels. Restricting the allowed level to 20 mg/ml can prevent some smokers from quitting, as they need more nicotine to shift.
- Many vapers prefer tobacco flavours when they first start vaping, but all the other flavours become increasingly popular over time, making tobacco one of the least popular flavours. Flavours such as fruit/berries are important to keep the vapers away from the cigarettes.
- The costs of vaping are very low in Norway today. With a regulated market for nicotine and ordinary sale from Norwegian shops, the costs will increase. However, the critical factor to prevent it from being as costly as smoking cigarettes is taxation. It is important that the policymakers understand what quantity and strength of nicotine in vaping that is required to prevent people from smoking cigarettes. And that they determine the level of taxation from a THR perspective. The survey provides this kind of information.

References

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