To Vape or Not To Vape? Preliminary Results from a Qualitative Survey of Smokers

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Abstract

We surveyed 487 smokers in the UK and U.S. on attitudes towards, and uses of, non-combustible tobacco products. We found that a higher percentage of sampled smokers had tried them in the UK, relative to the U.S., especially among those who claimed they had tried to quit smoking previously. This difference in attitude and uptake is consistent with messaging differences in the U.S. versus the UK. While public health pronouncements by UK authorities typically state that non-combustible products are "far safer" than cigarettes, U.S. authorities have been far more muted in their support for new non-combustible tobacco products. Consistent with prior literature, we find that take-up rates of alternative smoking products amongst younger smokers are higher than the average.

Keywords: Vaping, e-cigarettes, attitude, US, UK

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1. Introduction

In the United States electronic-cigarettes, or e-cigarettes, have started to spread, particularly among young adults and teenagers. As per the Centers for Disease Control and Prevention (CDC), in 2016, 3.2 percent of adults were e-cigarette users, and more than 2 million middle and high school students (less than 5 percent of all middle school students and over 11 percent of high school students) had used e-cigarettes over the previous 30 days (Center for Disease Control, 2018). E-cigarettes are generally considered a "less harmful" (as per the CDC) alternative to regular cigarettes because they do not burn tobacco and have fewer toxic chemicals than regular cigarettes (Royal College of Physicians 2016, Majeed et al. 2017). Instead of burning tobacco, e-cigarettes use a heating filament to vaporize a liquid that makes them less harmful. This is one reason why they are becoming more popular among smokers who are trying to quit regular cigarettes. In 2015, for instance, 58.8 percent of adult e-cigarette users were current regular cigarette smokers. However, the concern is that in the absence of regulations, individuals may underestimate the harms associated with such products, and the popularity of e-cigarette use may lead to more acceptance of vaping and smoking, leading to widespread use even among adults and youth who may not have tried regular cigarettes or who had quit before (Jenssen et al. 2017, Gostin and Glasner 2014). The CDC reports that nearly 30 percent of adult e-cigarette users in 2015 were those who were former regular smokers and 11.4 percent had never been regular cigarette smokers. For young adults in the ages of 18-24, 40 percent had never been regular smokers. This explains the Food and Drug Administration's recent statements about pushing vaping brands such as Juul, Vuse, MarkTen, to come up with plans to reduce use among teenagers (LaVito, 2018). There is also the threat to pull e-cigarettes completely off the market and ban online sales. The long-term health impacts of e-cigarettes are not well understood either, which makes regulating them more

complicated. Hence, there is tremendous concern in the U.S. about the prevalence of these products and authorities such as the FDA and the CDC typically highlight that even e-cigarettes are not safe, just safer, than traditional cigarettes.

Policy in the UK is significantly more accepting of e-cigarettes and other non-combustible tobacco products. A recent 2017 report by the Department of Health states, "the evidence is increasingly clear that e-cigarettes are significantly less harmful to health than smoking tobacco. The government will seek to support consumers in stopping smoking and adopting the use of less harmful nicotine products" (Global and Public Health, 2017). The same report cites evidence of the beneficial impacts of e-cigarettes. It states that 2 million consumers in England had used e-cigarettes and completely stopped smoking and another 470,000 were using them in order to quit smoking. A blog post on the UK government website further adds that there is no evidence that e-cigarettes have encouraged smoking (Dockrell 2018). In fact, as the blog post states, because of e-cigarettes, people are far more likely to quit smoking, and nationwide the smoking rate has dropped to historic lows. It also argues that the nicotine in e-cigarettes poses "minimal risk of harm to health". In general, there appear to be significant messaging differences between the U.S. and the UK when it comes to e-cigarettes, with the U.S. highlighting the risks associated with such products to constrain their popularity, and the UK highlighting their benefits.

The literature on e-cigarettes is relatively new and developing. Some studies (Shahab et al. 2017, Goniewicz et al. 2017) find that, on the whole, current smokers are either unaffected or helped by the use of e-cigarettes. Hartman-Boyce et al. (2016) find that current smokers use e-cigarettes as a cessation device. Amongst adults, e-cigarettes are largely used by current smokers and recent quitters (Glasser et al. 2016). A recent paper by Marti et al. (2016) finds that the demand for e-cigarettes is motivated by smokers' health concerns, and not other attributes such as price.

Saffer et al. (2018) find that the use of e-cigarettes increases the probability of a quit attempt and the probability of a quit success while also increasing the probability of a quit failure and the number of quit failures.

In this paper, we present the results from a qualitative survey of adult smokers in the city of London in the UK, and the cities of Washington, DC and Philadelphia in the US. In a sample of 487 smokers with 61.0 percent from London, 15.8 percent from Washington, DC and 23.2 percent from Philadelphia, we find differences in the usage of vaping and other products that are largely consistent with the messaging on these products across the two countries. In particular, we find that smokers in the US were far less likely to have experimented with alternative products. Even smokers who are trying to quit are significantly less likely to have tried alternative options. These differences are not significant between Washington, DC and Philadelphia, but are statistically significant between London and either of the two US cities. Other results suggest that younger smokers are much more likely to have tried these products, and among those who had tried alternative smoking products, the rates of smoking were lower. Finally, we also find that the use of alternative smoking products is highly correlated with the attempt to quit smoking. Note that our data are cross-sectional, so we do not make claims about causation, merely correlation.

In the next section, we present our data, methodology and empirical results. The following section discusses our findings, and the final section concludes.

II. Data and Methodology

At public locations in main transit points of each city, people actively smoking cigarettes (or in a few instances vaping) were approached for a brief interview (see Appendix Figure A1).

Roughly one in three people approached did not want to be interviewed, but the majority were happy to discuss their smoking habits and uses of alternative products.

The median age of individuals in our sample is between the years of 26-40 (28 percent of our sample) though about 32 percent are under the age of 25, 20 percent between age 41-55 and another 20 percent over the age of 55. We have an even mix of males and females, with 61 percent of individuals based in London and 39 percent in DC and Philadelphia.

We first asked them where they typically tended to buy their products. A majority said they bought them from a gas station or grocery and other retail stores (33 and 34 percent, respectively). Others bought from a newsstand (17 percent) and a few mentioned a kiosk, pub or hotel, tobacconist, online or other (16 percent collectively). Most people (64 percent) tended to buy the same brand over time.

To gauge individuals' use of alternative smoking products, we asked them if they used other products that might help them quit smoking, such as a patch or other cessation assistance product. Finally, we also asked if they had ever used any other alternative smoking products, such as a vaping device or a heated tobacco product, and if yes, why. In addition, if they had used such a product, did it help them to quit smoking or did they continue to use regular cigarettes.

Table 1: Descriptive Statistics

Variables	Mean	Standard Deviation	Observations
Female	48.7%	0.50	237
Age <25	31.6%	0.47	154
26<Age<40	28.1%	0.45	137
40<Age<55	19.9%	0.40	97
Age>55	20.3%	0.40	99
Location London	61.0%	0.49	297
Location DC	15.8%	0.37	77

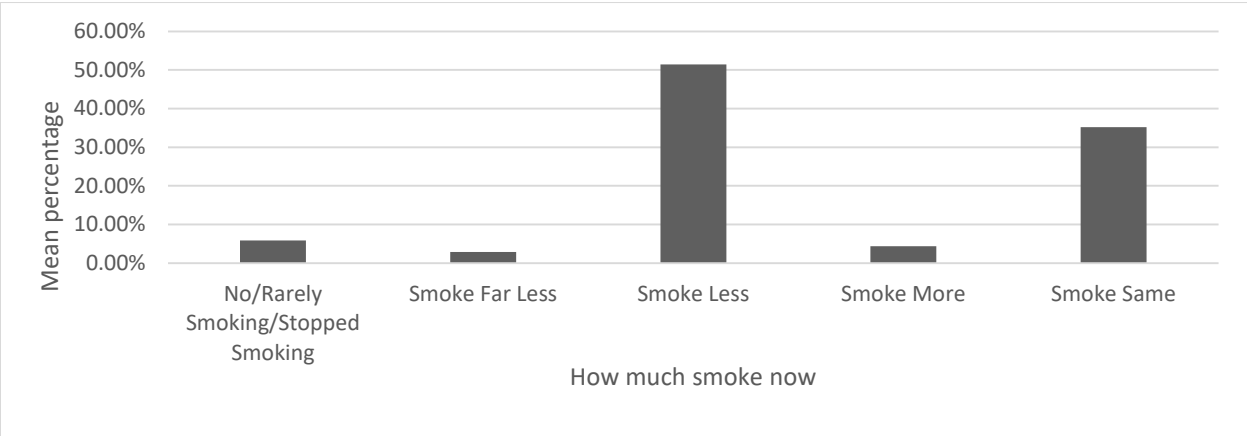
Location Philadelphia	23.2%	0.42	113
Alternative Smoking Product	30.0%	0.46	146
Tried to Quit	41.7%	0.49	203
Which Alternative Smoking Product and Why			
Heated Tobacco Product	27.3%	0.45	24
Heated Tobacco Product, Safer	1.1%	0.11	1
No Safer	40.9%	0.49	36
Vaping	10.2%	0.30	9
Cost	9.1%	0.29	8
All	11.4%	0.32	10

Source Authors' analysis of main data source of 487 qualitative interviews conducted by authors, April-May 2018. **Notes** Observations are based on the sample of smokers who were approached in transit areas of the London, DC and Philadelphia. Full list of questions that these statistics are based on is found in Appendix Figure A1.

Table 1 presents the descriptive statistics. Our results show that 30 percent of smokers in our sample had used an alternative smoking product. When questioned further on which products they used and why, some said cost was a factor, while others mentioned the relative safety of new products. Overall, about 146 smokers (out of 487) had tried an alternative product, and of these, 44 responded to our question about which product they had used and why. About 57 percent of these 44 said they had tried a heated tobacco product, and another 20 percent said they had tried vaping. Twenty-three percent said they had tried "all" products. Only a few mentioned that they thought that these products were safer than regular cigarettes.

Of those who had not tried an alternative smoking product but who responded to our question relating to use of alternative products (another 44 persons), 18 percent cited cost and nearly 82 percent cited such products as being no safer than traditional cigarettes.

Figure 1: Smoking Amongst Those Who Have Tried Alternative Products



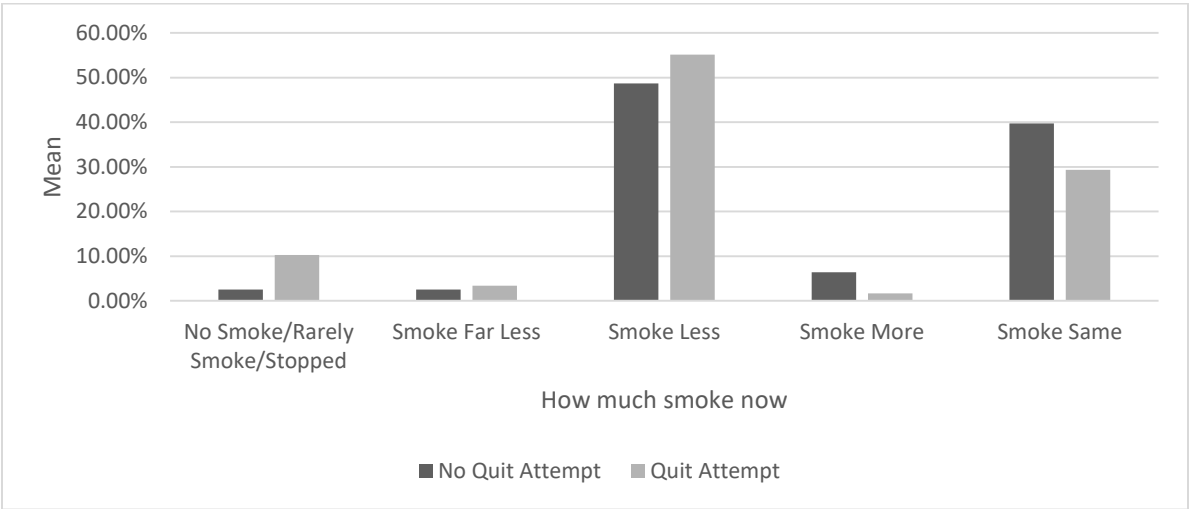
Source Authors' analysis of main data source of 487 qualitative interviews conducted by authors, April- May 2018. **Notes** percentages calculated based on those interviewed who has responded that they had tried an alternative smoking product (146 smokers of the total 487) and gave a reason (44 out of the aforementioned 147).

One of the most interesting findings, shown in Figure 1, is that of those who tried an alternative product, 51.5 percent claimed that they now smoked less, another 8.8 percent claimed to either have completely stopped smoking, to rarely smoke or to smoke far less than before. Furthermore, 35.3 percent reported smoking the same and only about 4.4 percent claimed that they were smoking more.

Another survey question was whether those who had tried to quit smoking were more likely to try alternative smoking products. Our data show that 41.7 percent of our surveyed smokers had ever tried to quit smoking, and of these, 28.6 percent tried an alternative product. Of those who had never tried to quit smoking, 31.0 percent had tried an alternative product. This suggests that current smokers are likely to try alternative products, irrespective of their desire to quit smoking. However, as Figure 2 shows, within those who had tried to quit smoking and who tried the alternative smoking product, over 55 percent reported that they now smoke less, nearly 14 reported that they now smoke far less or stopped smoking, and 29 percent reported that they smoked the same. Fewer than 2 percent reported that they were smoking more. Among those who had not made a quit attempt previously but who tried an alternative product, the percent reporting that they

smoked less was more than 6 percentage points lower, and those smoking far less or rarely smoke was over 8 percentage points lower.

Figure 2: Smoking Amongst Those Who Have Tried Alternative Products, by Quit Attempt



Source Authors' analysis of main data source of 487 qualitative interviews conducted by authors, April-May 2018. **Notes** percentages calculated based on those interviewed who has responded that they had tried an alternative smoking product (146 smokers of the total 487) *and* had either made a quit attempt (58 of the 146 smokers who tried an alternative product) and those who had not made a quit attempt (78 of the 146 smokers who had tried an alternative product).

Next, we turn to differences within the three cities. For this we use a probit analysis (with robust standard errors), where we regress the likelihood of trying an alternative product in the U.S. versus the UK, using DC and Philadelphia as proxies for the U.S., and London as a proxy for the UK, and controlling for age and gender. While this is a convenience survey and not a carefully designed stratified sample, the impact of federal or government thinking on these types of products should be strongest on those in capital (and neighboring) cities, as is the case in our sample. Therefore, we can get some sense of whether there are systematic differences in usage amongst these cities.

Summary statistics show that within our sample, 21 percent of smokers in the US had tried an alternative product relative to 36 percent in the UK. In the US, of those who responded to our

question about which alternative product they had tried and why, 87.5 percent said that they were no safer than regular cigarettes. Three people responded that they had tried either vaping or a heated tobacco product, but did not mention why. In the UK, by contrast, of those responding to this question, only 23.4 percent said it was no safer than regular cigarettes, 37.5 percent had tried a heated tobacco product and 10.9 percent had vaped.

T-tests display the significant differences in usage rates of alternative smoking products across the U.S. and UK. The difference is statistically significant with a t-value of 3.47. We also performed a t-test to see if perceptions about these products are significantly different across the two places. Again, the t-value is large (4.79) and significant, suggesting that perceptions about these products matter a lot across the U.S. and UK.

In addition, in the U.S., of those who had tried to quit, only 13 percent had tried an alternative product whereas in UK, the corresponding number was nearly 40 percent.

Table 2: Probit Regression of Use of Alternative Smoking Product

Dependent Variable:	**(1) Alternative Smoking Product use**	**(2) Alternative Smoking Product use**	**(3) Alternative Smoking Product use**
Variables			
US	-0.574***		-0.303*
	(.141)		(.179)

London		0.691***	
		(.178)	
DC		0.282	
		(.225)	
Quit Attempt	0.971***	0.977***	1.214***
	(.188)	(.187)	(.221)
Quit*US			-0.658**
			(.300)
Female	-0.027	-0.030	-0.027
	(.132)	(.132)	(.133)
26<Age<40	-1.276***	-1.281***	-1.232***
	(.182)	(.183)	(.180)
40<Age<55	-1.733***	-1.741***	-1.741***
	(.217)	(.217)	(.221)
Age>55	-1.978***	-1.988***	-2.008***
	(.256)	(.256)	(.269)
Constant	0.300**	-0.388**	0.190
	(.145)	(.193)	(.150)
Sample Size	487	487	487

Source Authors' analysis of main data source of 487 qualitative interviews conducted by authors, April-May 2018. **Notes** The dependent variable takes on the value 1 if the respondent answered "yes" to using an alternative smoking product, and zero otherwise. Variables US, London, DC are binaries, equal to 1 if the respondent was interviewed in that respective city, and 0 otherwise. Quit Attempt is a binary equal to 1 if they responded "yes" to the question regarding if they had ever tried to quit smoking, and 0 otherwise. Finally, Quit*US is an interaction term between binary terms Quit Attempt and US. All models control for gender and age and use robust standard errors, reported in parenthesis. Appendix Tablet A2 contains details on the regression model and full results of regression analysis.

*Significant at 10% level ($p < 0.10$), **Significant at 5% level ($p < 0.05$), ***Significant at 1% level ($p < 0.01$).

Table 2 shows results from a probit regression where we estimate the probability of using an alternative smoking product across the US and UK, conditional on age and gender. Our results suggest a statistically significant effect across the two countries. In Column 1, the coefficient on the U.S. dummy variable is negative and statistically significant at one percent, showing that smokers in the US (in Washington, DC and Philadelphia) are far less likely to try these products, relative to the UK (or London, specifically). We also find that while there are no gender differences in usage, those who are 26 or older are far less likely to use these products relative to our control group of smokers of 25 or younger. This is in line with the CDC and other studies that show an increasing use of these products among younger adults. A recent study by Mckeganey, Barnard, and Russell (2017) shows that vaping is appealing to younger adults between the ages of 16 and 26 because they perceive vaping as less harmful than smoking, they prefer the smell and the range

of flavors, and there is a reduced stigma associated with their use. Finally, we test to see if those who had ever tried to quit in the past were more likely to use these alternative products. We find a statistically significant effect of quit attempt on usage of alternative products.

Next, in column 2, we test to see if differences are significant within the U.S. by using as the control group, smokers in Philadelphia. In this case, the coefficient on London is positive and statistically significant at one percent, while that on DC is insignificant. This implies that smokers in London are 69 percent more likely to try these products relative to smokers in Philadelphia, but that there are no significant differences in usage across DC and Philadelphia.

Finally, in column 3, we introduce an interaction term between the U.S. dummy variable and the quit attempt variable to see if smokers in the U.S. who attempt to quit are more or less likely to use these products given the muted messaging on the probable relative benefits of these products in the U.S. We find that usage among individuals in the U.S. who are trying to quit is significantly lower than in the UK, or more specifically smokers who attempt to quit the habit in the cities of DC and Philadelphia are less likely to try these alternative products relative to smokers trying to quit the habit in London.

III. Discussion

Ever since the U.S. Congress' statement in 1964 and the subsequent requirements made under the name of the Surgeon General that all cigarette packages must be distributed with health warning labels, public pronouncements have encouraged smokers to quit their habit and discourage young people from beginning smoking (Center for Disease Control, 2009). Smoking rates have

steadily declined in the U.S., UK and indeed all OECD nations since then, but a stubborn minority remain. Cessation products, notably patches, have helped some to quit, and for many non-combustible and vaping products could be a useful addition. In the UK and U.S., smokers are aware of the danger of their habit because of such public campaigns and product warning labels. Thus, products that provide them with some of the enjoyment of a cigarette, and are potentially safer, must be a welcome addition to the market. But there is very little trust of the tobacco industry, so its pronouncements of the relative safety of newer products carry little weight. U.S. authorities have been equivocal in the safety of new products, claiming they expose users to fewer and less dangerous byproducts compared with cigarettes, but then not definitively claiming they were any safer. However, when a health authority of a major nation, such as the UK, makes the same claim that these new products are "95% safer than cigarettes", it is likely that many smokers will switch (Public Health England, 2015).

In our data, we find that a higher percentage of smokers have used these alternative products in the UK. We cannot say that public statements have driven all this difference between the U.S. and UK. After all, the UK has more products available. One such product is IQOS (an acronym for 'I quit original smoking'), which has seen massive expansion of markets and sales, but is still under review by the FDA before it is cleared to be available in the U.S. (Zacks Equity Research, 2017). According to several survey respondents, heated tobacco products like IQOS are more useful than vaping for some in weaning off smoking because they mimic the flavors and experience of smoking. Whereas for others, vaping is preferable because it is distinct from smoking. One respondent stated that she liked "fruit-flavored" vaping because it provided nicotine but did "not" make her think of smoking. The market differentiation in UK was in some senses providing different products for those requiring different products to quit. Therefore, availability

is critical to uptake, but availability is also a function of government willingness to allow such products to be sold. Essentially, the UK attitude has been more permissive for these products and as a result they are used more.

Only decades of evidence will tell whether these products are far safer or just marginally safer. However, there is one significant caveat. If these products encourage more young people to take up a tobacco habit, it is possible that the long run effect will be negative, especially if new vapers transition from vaping to smoking. So far, there is no evidence that this is likely to happen in significant ways, but it is always possible (McNeill et al. 2015). And given that companies like Juul are providing vaping flavors like crème brulee, some, such as Araiza and Alonso (2016) at the O'Neill Institute for National and Global Health Law, argue that these products attract the young. Such a claim is partly validated by the fact that teen uptake of these products is increasing (U.S. Food & Drug Administration, 2018). However, as a few respondents in our survey suggested, the very fact that some vaping flavors are sweet and totally unlike smoking is the attraction in helping them quit.

This increased trend of teen uptake does not necessarily imply that this is a negative consequence. If younger populations are turning to e-cigarettes instead of traditional tobacco products and these products are in fact safer, then this is a step in the right direction. The risk is if significant numbers of young people, who would not have smoked tobacco products otherwise, use new products and might eventually transition to cigarettes.

IV. Conclusion

We surveyed smokers in the UK and U.S. on attitudes to, and uses of, non-combustible tobacco products. We found that a higher percentage of sampled smokers had tried them in the

UK, relative to the U.S., especially among those who claimed they had tried to quit smoking previously. This difference in attitude and uptake is likely to be partly driven by public health pronouncements by UK authorities that non-combustible products are "far safer" than cigarettes. In contrast, U.S. authorities have been far more muted in their support for new non-combustible tobacco products. This might help explain why we see no significant differences in usage rates of these products among different U.S. cities (Philadelphia and DC), validating the notion that one driving mechanism is likely at the level of the federal government. While our sample is relatively small, we hope this will spur more extensive work on the role of federal policy pronouncements in influencing the take-up of vaping and other products across locations, while at the same time encouraging more evidence-based research on the advantages and costs of new products, relative to traditional smoking options, such as cigarettes.

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