Improving our understanding of e-cigarette and refill packaging in the UK

How is it used for product promotion and perceived by consumers, to what extent does it comply with product regulations, and could it be used to better protect consumers?

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Together we will beat cancer

CANCER RESEARCH UK

Reference

This report should be referred to as follows:

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Cancer Research UK

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Executive Summary

Background

The use of electronic cigarettes (e-cigarettes) has proven popular in the UK, with approximately 8% of adults using e-cigarettes in 2022 (ASH UK, 2022). The majority of adults using e-cigarettes formerly smoked (57%) or are dual users (35%); however, some users of e-cigarettes have never smoked (8% of UK adults) (ASH UK, 2022). There are concerns about the use of e-cigarettes by young people, with 20% of 11-17 year-olds reporting having tried vaping in 2023 (ASH UK, 2023), and 6.7% of adults using vapes who have never smoked (ASH UK, 2023).

The UK's Tobacco and Related Products Regulations 2016 (TRPR) provide specifications on the product requirements and packaging of e-cigarette products (e-cigarette devices and e-liquid refills). A 2018 study explored compliance to the product requirements and products labelling outlined in TRPR (Girvalaki et al., 2020); however, there is a need to expand the evidence base with respect to the promotional role and impact of e-cigarette packaging. It is also important to understand how current health messaging could be improved to better inform those who smoke who could benefit from using e-cigarettes to quit smoking, whilst safeguarding young people and those who do not smoke.

This study combined an evaluation of the compliance of e-cigarette products sold in the UK with focus groups to explore perceptions of e-cigarette packaging. Work package 1 involved a pack analysis to explore key packaging features of e-cigarette products on sale in the UK and their compliance to the packaging requirements specified by the TRPR. Work package 2 involved focus groups to explore exposure to, and appeal of, e-cigarette packaging and perceptions of pack warnings and other packaging measures to different groups. The participants included school-aged children (11-17 year-olds), adults who do not smoke, adults who smoke and use e-cigarettes (dual users), and adults who smoke and do not use e-cigarettes.

The findings from the focus group discussions provide insights into how e-cigarette packaging is perceived by people who smoke and could benefit from using e-cigarettes as a smoking cessation tool, as well as young people and adults who do not smoke and who do not require smoking cessation tools.

Key findings

The analysis of e-cigarette product packaging showed limited instances of packaging not meeting the TRPR regulations. With respect to the packaging as a means of promotion, manufacturers are using pack structure, colours, graphics (e.g., fonts, logos and imagery), and other elements of pack design (e.g., cellophane) to communicate and differentiate products.

Results from the focus groups suggest that e-cigarette packaging is an important promotional tool. Colour was most frequently mentioned and discussed by participants when discussing the appeal of packaging. Pack colour helped signal taste, as it matched the flavour, and also product type, with brightly coloured packs linked to disposables. Brightly coloured packs were also seen as appealing to young people and the products designed for, and targeted to, children and young people. Participants described pack structure, specifically small pack sizes (for disposables) as reminiscent of other products that appeal to young people, e.g., lipsticks or make-up. From the discussions it was clear there was high exposure to e-cigarettes and e-cigarette packaging, which appeared to have a normalising effect. Exposure was most common in shops (e.g., point-of-sale displays), schools (for young people), various social media platforms, and as litter.

When participants were asked about possible ways e-cigarette packaging could be changed to make them less appealing to people who do not smoke, larger warnings and dull, generic packaging were suggested. Adults suggested that products in dull packaging would reduce the appeal to children. Most teenage groups viewed e-cigarette packaging with dark colouring as unattractive.

Besides colour, participants viewed flavours as having an important role in attracting young people to e-cigarettes, often referring to fruit and confectionery/soft drinks-related flavours, as well as the range of flavours available. Some participants mentioned banning e-cigarette flavours, predominantly because they were viewed as appealing to youth, while others opposed this idea.

There was considerable misunderstanding of the harms of nicotine and while several participants felt that presenting information about nicotine being addictive was necessary, it was not perceived as a deterrent. Regarding the use of alternative messages explaining the relative risk of using e-cigarettes versus smoking, many participants argued that there was no proof that e-cigarettes are less harmful than cigarettes or safe to use and concern was expressed about the potential impact of relative risk messaging on encouraging youth uptake.

Conclusion

Although there was limited evidence of non-compliance to TRPR regulations, this work raised some issues with the TRPR codes and accompanying guidance. The current regulations may be problematic in terms of the on-pack display of nicotine descriptors, environmental aspects of packaging, and language within flavour descriptors. Despite high adherence to the TRPR regulations on packaging, e-cigarette packaging was viewed within the focus groups as something that helped create interest in the product. Participants suggested that the appeal of disposables to young people, in particular, was related to high visibility in stores, small size (and therefore convenience and discretion), low price, simplicity of use, and lack of long-lasting odour. The messaging on e-cigarette packs was not considered to be salient or informative.

Contents

Introduction

Background to the study

Electronic cigarettes (e-cigarettes) are products that typically use a heating element to aerosolise a solution of propylene glycol and/or glycerol, water and, in many cases, nicotine and flavouring, to deliver a vapour (McNeill et al., 2019). In recent years, e-cigarettes have proven popular in the UK, being used by an estimated 8% of adults (approximately 4.3 million people) in 2022 (ASH UK, 2022). Most current e-cigarette users formerly smoked (57%), although approximately one in 12 (8%) current e-cigarette users have never smoked (ASH UK, 2022). E-cigarettes are endorsed by the UK Government as a tool for smoking cessation, with the Khan (2022) review of the UK Government's plan for a smokefree England by 2030 promoting vaping as a substitute for smoking.

The Tobacco Control Plan for England (2017-2022) suggests there is increasingly clear evidence that e-cigarettes are less harmful than smoking (Department of Health, 2017). An evidence update on nicotine vaping in England concluded that "vaping poses only a small fraction of the risks of smoking" (McNeill et al., 2022, p1250). However, there is confusion among consumers about the comparative risk of e-cigarettes (Wilson et al., 2019; Malt et al., 2020; ASH UK, 2022; Loud et al., 2022). One of the 15 "far reaching" recommendations in the Khan (2022) review suggests investing £15 million per year in a well-designed national mass media campaign to direct people who smoke to support and "dismantle myths about smoking and vaping". Packaging is another way to communicate relevant product information.

Regulations on product requirements, labelling and presentation of e-cigarettes

The 'Tobacco Products Directive' (TPD) (European Commission, 2014) sets product regulations for e-cigarettes and refills (any receptacle containing a nicotine-containing liquid which can be used for an electronic cigarette) (UK Government, 2016) across all European Union (EU) countries. These regulations were transposed into UK law, specifically the 'Tobacco and Related Products Regulations' (TRPR) (UK Government, 2016) prior to the UK leaving the EU. The TRPR specifications on product requirements, information and labelling and presentation are outlined below:

- **Product requirements.** E-cigarettes and refill containers must: be within the volume parameters set and have a nicotine content of no more than (20mg/ml); have containers that are child-resistant and tamper-evident and protected against breakage and leakage.
- **Product information and labelling.** E-cigarettes and refill containers must: display a text warning about nicotine being addictive (with details on how this should be presented); explain that the product is not recommended for use by young people and people who do not smoke; include leaflets with information on instructions for use, storage, ingredients, contra-indications, possible adverse effects, addictiveness and toxicity.
- **Product presentation.** E-cigarettes and refill containers must not: create an erroneous

impression about the product's characteristics, health effects, risks or emissions; suggest that the product is less harmful than other e-cigarettes or refill containers; suggest that the product has vitalising, energising, healing, rejuvenating, natural or organic properties or any other health or lifestyle benefits. Additionally, products are not allowed to refer to taste, smell or additives (except flavourings), resemble a food or a cosmetic product, indicate improved biodegradability or other environmental advantages, or suggest an economic advantage (e.g., discounts, free distribution, two-for-one or similar offers).

A study in 2018 in nine European countries (including the UK) explored compliance with the product requirements and product labelling set by the TPD (Girvalaki et al., 2020) and incorporated into the TRPR in the UK. The study found high overall compliance, although this was lower for the inclusion of a leaflet, refilling instructions or warnings (Girvalaki et al., 2020). The findings provide an insight into compliance, which is important to assess for companies selling any nicotine-containing products, not least as health messaging and warnings on packs may help inform consumers if present. Research building on the work of Girvalaki et al (2020) is needed, both because the study included only a small sample of products (*n*=14) in the UK and did not disaggregate the findings across the nine countries, and because the UK e-cigarette market has since changed. In addition, non-compliant disposable e-cigarettes (e.g., with packaging displaying 'For sale in the U.S. only') are reported as being widely available in the UK and online (Gay, 2021).

Research exploring response to e-cigarette labelling

Research on e-cigarette labelling is emerging, particularly in comparison to cigarettes and tobacco, but there is growing academic interest (Lee et al., 2016; Berry et al., 2017; Katz et al., 2017; Katz et al., 2020). In the UK and most of Europe e-cigarettes must display a warning on the addictiveness of nicotine. Experts on warning labels have suggested that a nicotine addiction warning is informative but may not resonate with young people (Wackowski et al., 2017), with two studies in the UK providing some support for this contention. The first, conducted shortly after the warning about nicotine being addictive was legally required on e-cigarette packs, found that only 10% of 16–19 year-olds in England who had noticed warnings on packs could recall the use of the word 'nicotine' (Sontag et al., 2019). The second found that 14-16 year-olds in England, Scotland and Wales considered flavour to be a more important driver of use than nicotine (Moore et al., 2020).

In contrast to warnings on cigarette and tobacco packs, which are intended to deter anyone from using these products, warnings on e-cigarette packs need to convey potential risks without suggesting that they are as harmful as cigarettes (Wackowski et al., 2017). Experimental survey research in the UK, where intervention participants were exposed to images of messages on e-cigarette packs (a control group were not exposed to a message), found that people who smoke that were exposed to a relative risk message ('Use of this product is much less harmful than smoking') had higher intentions to quit and higher intentions to purchase an e-cigarette in the next month than those exposed to the message about nicotine being addictive (Kimber et al., 2020). The relative risk message did not result in increased intentions to use an e-cigarette among people who did not smoke (Kimber et al., 2020). A recent systematic review of e-cigarette messaging similarly found that for those who smoke, intentions to purchase, try or switch to nicotine vaping products were higher when exposed to a relative risk message and lower when exposed to a nicotine addiction warning (Erku et al., 2021).

As much of the work on warnings on e-cigarette packs is from the US or involves quantitative research, and given our relatively limited understanding of the potential impact of the warning on e-cigarette packs in the UK (Moore et al., 2020) and different e-cigarette warning themes (Wackowski et al., 2019), qualitative research in the UK is needed to explore responses to the current warning on e-cigarette packs and other potential messages. How e-cigarette warnings are perceived has been found to differ by age, e-cigarette use and smoking status (Katz et al., 2017; Katz et al., 2020; Ambrose et al., 2014; Cohn et al., 2021); therefore, it is important to consider how different groups respond.

Perceptions of e-cigarette packaging

The health messaging on e-cigarette and refill packs can and should help consumers make more informed decisions, but it competes with companies' efforts to make packs appealing. Despite significant interest in how e-cigarettes are marketed (Collins et al., 2019), the promotional role of the packaging has captured less attention (Katz et al., 2020). The packaging of e-cigarettes is often eye-catching, e.g., with bright colours, stylish imagery or evocative names and descriptors, and intended to create interest. It can thus fulfil the same promotional role as fully-branded packaging for tobacco products (Collins et al., 2019; Kirkpatrick et al., 2019). There is limited research exploring perceptions of e-cigarette packaging. A survey in the US found that e-cigarette pack colours and flavour descriptors influenced product appeal and harm perceptions (Cohn et al., 2021), with similar attitudes to e-cigarette packaging observed in focus groups with young adults in the US (Katz et al., 2019). This is consistent with the literature on tobacco packaging. Tobacco companies have long recognised the importance of pack colour in helping to shape product expectations (Moodie et al., 2012), and extensive literature reviews show that flavoured cigarettes promote and sustain tobacco use (Tobacco Products Scientific Advisory Committee, 2011; World Health Organization, 2016; Huang et al., 2017; Villanti et al., 2017). Thus, research exploring the response of consumers in the UK, particularly young people and adults who smoke and those who do not, to fully-branded e-cigarette packaging, including flavour descriptors, is needed.

Research aims and objectives

In undertaking this commissioned research for Cancer Research UK, our objectives were to:

1) collect and systematically document a wide selection of e-cigarette and refill packs to explore the extent to which they comply with the TRPR, and how the packaging is being used as a promotional tool;
2) explore how fully-branded e-cigarette and refill packaging and on-pack messages (including warnings, labels and descriptors) are perceived by young people and adults;
3) examine whether revised health messaging on packs and/or further regulations on packaging may be perceived as a means of discouraging e-cigarette use among people who do not smoke and/or encouraging those who do smoke to use these products to quit.

To meet these objectives, we formulated five research questions (RQ):

RQ1: What are the key packaging features of e-cigarettes and refills currently on sale in the UK?

RQ2: Do e-cigarette and refill packs meet the pack requirements specified by the TRPR?

RQ3: How do young people, adults who do not smoke, adults who smoke, and adults who smoke and use e-cigarettes, perceive, interpret and engage with e-cigarette and refill packs currently on sale in the UK, including on-pack messaging?

RQ4: What are the perceived risks to young people and people who do not smoke from e-cigarette and refill packaging?

RQ5: How do young people, adults who do not smoke, adults who smoke, and adults who smoke and use e-cigarettes, respond to alternative on-pack messaging, and what other e-cigarette pack-related changes do they recommend to discourage e-cigarette use among people who do not smoke and encourage people who do smoke to use these products to quit?

Methodology

Study design

We conducted two work packages to address our objectives and research questions. Work package 1 (WP1), ***Pack Analysis***, comprised a systematic analysis of packs currently on sale in the UK to document the types of pack design and promotional features used and whether the packaging of e-cigarettes and refills in the UK meets the requirement specified by the TRPR. This allowed us to address Objective 1 and RQ 1 and RQ2. Work package 2 (WP2), a ***Focus Group Study***, explored how young people, adults who do not smoke, adults who smoke, and adults who smoke and use e-cigarettes, view e-cigarette packaging, including flavour descriptors, health messaging, alternative health messages, and possible further regulations on e-cigarette packaging. This allowed us to address Objective 2 and 3 and RQ3-5.

Work package 1: Pack analysis

The pack analysis methods were informed by a previous content analysis of e-cigarette marketing (Stead, Ford et al., 2021; Stead, Hitchman, et al., 2021) and content analyses of gambling marketing conducted by the research team (Stead et al., 2016; Critchlow et al., 2020).

Sampling method

We sought a representative sample of e-cigarette products and their packaging and thus required a sampling frame from which products could be randomly selected. We first undertook a scoping exercise to identify, as far as possible, the range of e-cigarette products, brands and variants available in the UK. This generated as comprehensive as possible a list of products, which informed the development of the sampling frame.

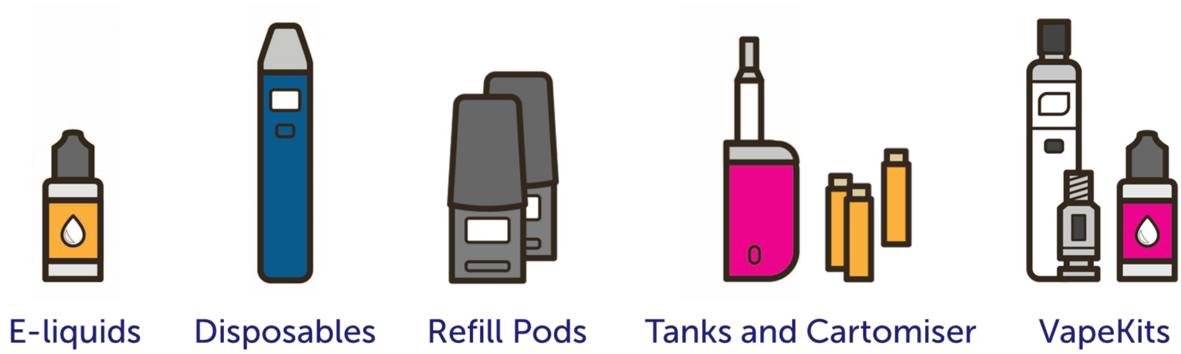
The development of the sampling frame comprised four key steps:

1. Searching for online vape retailers in the UK and scanning their websites for the range of products, brands and variants available.
2. Identifying a website from one of the online retailers which was most suited, in terms of product coverage, to informing the sampling frame (see below).
3. Cross-referencing data obtained from step 2 against data from websites of the main supermarkets in the UK (Asda, Tesco, Sainsbury's and Morrisons) to check for any missing brands or products.
4. Supplementing data obtained from steps 2 and 3 with our existing knowledge of the e-cigarette market gained through vigilance around e-cigarette products, brands and variants available locally and concurrent ongoing qualitative research by research team members for a separate study.

In total, 26 websites were identified and scanned, including online only retailers and specialist vape stores that also had a land-based store. This process suggested that one particular website, electrictobacconist.co.uk (ET), was suited to being the key source for informing development of the sampling frame. ET was therefore selected as the key source of product information and was supplemented by data from other websites and sources as required (Steps 3 and 4). Due to the rapid expansion of the disposable vape market, even during the course of the study, the sampling frame for this product category was checked alongside another three websites (alectrofag.co.uk; ukvapeking.com; vapoholic.co.uk) for newly emerging brands or brands which might be missing from ET.

During the scoping exercise we identified five categories of product type of interest: E-liquids; Disposable Vapes; Refill Pods; Tanks and Cartomisers; and Vapekits (see Figure 1). The sampling frame was designed to incorporate each of these product categories. Nicotine free versions of products were excluded from the sampling frame as these are out of scope of the TRPR. For product categories where items were available in different strengths of nicotine (E-liquids, Disposable Vapes and Refill Pods) products were split by their nicotine strength to enable stratification by product strength.

Figure 1: Five categories of e-cigarette products identified: E-liquids; Disposable Vapes; Refill Pods; Tanks and Cartomisers; and Vapekits



A total of 156 products were selected. A minimum of 12 items in each product category and strength category were selected. This provided a sufficient but manageable range of items within each category. Table 1 details the different product categories and product category x nicotine strength, alongside the total number in the sampling frame and the number of items selected for coding. To allow for instances where some selected products would, inevitably, be unavailable for purchase, a minimum of three spare items were also sought within each product category and product x strength category.

Due to the vast number of E-liquids available (2,907) across a range of strengths, these were sub-categorised into four strengths:1-5mg; 6-10mg; 11-15mg; and 16-20mg. As disposable vapes and refill pods appeared in smaller numbers, with the lowest nicotine strengths least prevalent only two strength categories were used for disposable vapes (1-18mg and 20mg) and three strength categories used for refill pods (1-10mg; 11-15mg and 16-20mg). Due to the rapid rate of development of the disposable vape market and the tendency for these products to be sold at the maximum 20mg strength a total of 48 items (and a corresponding number of spares) were sought from the disposable vape category. For refill pods, 12 items were selected within each strength category (total 36), while we sought a total of 12 items for Tanks & Cartomisers and for Vapekits, as these are not subdivided by strength category.

Development of the codebook

Apart from basic administration and product information codes, there were two main parts of the codebook to systematically document the packaging of the sample of UK e-cigarette products: i) meeting the packaging requirements specified by the TRPR (mostly under Regulations 36 to 38; UK Government, 2016); and ii) key packaging design and promotional features of e-cigarettes and refills. Each element of TRPR regulations **4, 16, 31** (excerpts), **36, 37** and **38** (in full, including 31st December 2020 revisions) was tabulated (n=56 elements) and categorised as either regulating manufacturer/supplier compliance, packaging, product design or product information. The full methods used to tabulate the elements of the TRPR regulations and to consequentially review the packaging are detailed in Appendix 1. The codebook also included elements of the pack design and promotional elements not explicitly covered by the TRPR or that we wished to look at in more detail. These included informational items (text and symbols) that explicitly communicated information to the consumer and were not covered by the TRPR, graphic elements printed on the pack (colours, typeface and imagery) giving it a visual identity and structural elements, the functional parts (shape and materials) that implicitly communicate information to the consumer.

Table 1: Product sampling

Product Category	Strength	Number selected	Spares selected	Number of products in sampling frame
E-liquid				
	1-5 mg	12	3	497
	6-10 mg	12	3	932
	11-15 mg	12	3	582
	16-20 mg	12	3	896
	Total	**48**	**12**	**2,907**
Disposable vapes				
	1-18 mg	12	3	55
	20 mg	36	9	313
	Total	**48**	**12**	**368**
Refill Pods				
	1-10 mg	12	3	74
	11-15 mg	12	3	52
	16-20 mg	12	3	140
	Total	**36**	**9**	**266**
Tanks and Cartomisers	**n/a**	**12**	**3**	**89**
Vapekits	**n/a/**	**12**	**3**	**91**
Total – all products		**156**	**39**	**3,721**

Analysis

Data were analysed using SPSS Version 28. Descriptive statistics were computed for key packaging features (e.g., structure/materials) and packaging-relevant TRPR variables by category of e-cigarette product. Open-ended text responses were uploaded to NVivo for coding and analysis. Frequencies and proportions (%) are presented for how often items in the codebook appeared on packs. E-cigarette and refill brands are named as illustrative examples of coded items.

Work package 2: Focus groups

Design and sample

Sixteen focus groups were conducted in England and Scotland between August and September 2022, with six groups involving young people (11-17 years) and ten involving adults who either did not smoke, who did smoke, or who smoked and used e-cigarettes. Groups were segmented by age and gender to help participants feel at ease. In total, there were 70 participants, with the sample profile shown in Table 2. Focus groups enable open, free-flowing discussion, allow participants to handle stimuli, and are a valuable means of exploring, in-depth, reactions to the types of e-cigarette packs on the market. All groups explored how participants perceived, interpreted and engaged with e-cigarette packaging on sale in the UK.

Table 2: Sample for focus groups

Group	Gender	Age	Social grade	Country	Nicotine use	Number in group
1	F	18–39	C2DE	Scotland	Dual users	5
2	M	18–39	C2DE	Scotland	Smokes (doesn't use e-cigarettes)	4
3	F	40+	C2DE	Scotland	Smokes (doesn't use e-cigarettes)	4
4	M	40+	C2DE	Scotland	Dual users	4
5	M	11–13	ABC1	Scotland	N/A	6
6	F	11–13	C2DE	Scotland	N/A	6
7	M	14–15	ABC1	Scotland	N/A	5
8	F	14–15	C2DE	Scotland	N/A	6
9	M	18–39	C2DE	England	Dual users	3
10	F	18–39	C2DE	England	Smokes (doesn't use e-cigarettes)	4
11	M	40+	C2DE	England	Smokes (doesn't use e-cigarettes)	3
12	F	40+	C2DE	England	Dual users	4
13	F	16–17	C2DE	England	N/A	4
14	F	40+	ABC1	England	Does not smoke	4
15	M	16–17	ABC1	England	N/A	4
16	M	18–39	ABC1	England	Does not smoke	4

Notes: Sample size=70. Mean age=28 years. Mean duration of groups=91 mins (longest=100 mins, shortest=84 mins)

There were up to six participants per group. For the six groups with young people (11-17 year-olds), given low smoking prevalence we did not apply a quota on nicotine use. For the ten groups with adults, two groups were with people who do not smoke, four with people who smoke and do not use e-cigarettes, and four with people who smoke and who also use e-cigarettes (dual users). It was important that the discussions drew insight from those who do not smoke (who should not be encouraged to use e-cigarettes) and benefit from the inclusion of people who both smoke and use e-cigarettes and those who do not. As those in deprived groups are much more likely to smoke, all eight groups of people who smoke included individuals in social grade C2DE.

Participants were recruited using market recruiters. Using quota sampling, possible participants were identified from professional recruiters' existing research panels or from within their local community by a combination of door knocking of residential properties and, where appropriate, street intercepts. Participants were screened for eligibility using recruitment questionnaires which captured age, gender, smoking and electronic cigarette use; 11-17 year-olds were not asked about smoking or e-cigarette use. Those eligible were given an information sheet and had to provide signed consent in advance of the groups. Parental consent was obtained for 11-15 year-olds. The groups were conducted in informal venues (hotel function rooms or community halls) and typically lasted 90 minutes (range 84-100 minutes). The moderator(s), with the aid of a semi-structured topic guide, used broad and open questioning techniques to encourage participants to speak freely, using their own language. With participant consent, discussions were recorded on digital voice-file. All groups were moderated by DJ, with DM, AMM and AF co-moderators.

Procedure

Within the groups we explored responses to a range of e-cigarette packaging, including packs for different types of e-cigarette devices and refills, and pack characteristics, including design, imagery and flavour descriptors. We also explored views of the current warning and messaging on packs, alternative on-pack health messaging, and possible further regulations on e-cigarette packaging. Participants were shown examples of e-cigarette and refill packs, including with alternative (reduced risk) messaging, to facilitate discussion and explore their reactions. We focused on perceptions of acceptability and harm in relation to alternative messaging and possible additional packaging regulations, and the extent to which they may help to reduce the appeal of e-cigarettes to young people and non-nicotine users without undermining their potential value to people who smoke as a means of quitting smoking.

Analysis

The audio recordings were transcribed verbatim using professional transcribers. Transcriptions were then checked for accuracy and imported into QSR NVivo 20 for thematic analysis. Analysis was deductive, through the topics covered on the topic guide, and inductive, from participants' responses. A coding framework was developed based on an initial reading of the transcripts and discussion within the team. Two researchers independently coded a sample of transcripts to test and refine the initial coding framework. All remaining transcripts were coded once discrepancies had been discussed and resolved. The coded themes were then used as the categories for analysis. Themes and sub-themes were explored between participants (e.g., by age, gender and smoking status). Discussion within the team helped refine, label and interpret themes. In the WP2 Results section, themes are presented with illustrative quotes, alongside age, gender (M/F), social grade and smoking status.

Findings

WP1: Pack Analysis Results

Key packaging features of e-cigarettes and refills in the UK

Research Question 1: What are the key packaging features of e-cigarettes and refills currently on sale in the UK?

The results of the content analysis of the 156 packs purchased in the UK in the second half of 2022 are reported for the five categories of product: Disposables (all strengths), E-liquids (all strengths), Refill pods (all strengths), Tanks & Cartomisers, and Vapekits. The results cover the structure and materials of the packs, design and promotional features of the pack fronts, symbols that appeared anywhere on the packaging, and other items such as the product price, websites and social media links anywhere on the packaging.

Pack structures and materials

Table 3 reports observations on the pack structure, overall and by product type.

Table 3: Key packaging features: structure/materials

Variable and product type		**Yes**		**No**		**Unclear**	
	N	**n**	**%**	**n**	**%**	**n**	**%**
Is the shape of the pack typical/common for the enclosed contents?	156	146	93.6	10	6.4	0	0
Disposables	*48*	*48*	*100*	*0*	*0*	0	0
E-liquids	*48*	*43*	*89.6*	*5*	*10.4*	0	0
Refill pods	*36*	*36*	*100*	*0*	*0*	0	0
Tanks & cartomisers	*12*	*7*	*[58.3]*	*5*	*[41.7]*	0	0
Vapekits	*12*	*12*	*[100]*	*0*	*0*	0	0
Is the opening mechanism of the pack typical/common for the enclosed contents?	156	147	94.2	9	5.8	0	0
Disposables	*48*	*48*	*100*	*0*	*0*	0	0
E-liquids	*48*	*48*	*100*	*0*	*0*	0	0
Refill pods	*36*	*36*	*100*	*0*	*0*	0	0
Tanks & cartomisers	*12*	*12*	*[100]*	*0*	*0*	0	0
Vapekits	*12*	*3*	*[25.0]*	*9*	*[75.0]*	0	0
Is cardboard the main constituent material of the packaging layer?	156	142	91.0	14	9.0	0	0
Disposables	*48*	*47*	*97.9*	*1*	*2.1*	0	0
E-liquids	*48*	*35*	*72.9*	*13*	*27.1*	0	0
Refill pods	*36*	*36*	*100*	*0*	*0*	0	0
Tanks & cartomisers	*12*	*12*	*[100]*	*0*	*0*	0	0
Vapekits	*12*	*12*	*[100]*	*0*	*0*	0	0

Variable and product type		Yes		No		Unclear	
Is plastic the main constituent material of the packaging layer?	156	14	9.0	142	91.0	0	0
Disposables	*48*	*1*	*2.1*	*47*	*97.9*	0	0
E-liquids	*48*	*13*	*27.1*	*35*	*72.9*	0	0
Refill pods	*36*	*0*	*0*	*36*	*100*	0	0
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*	0	0
Vapekits	*12*	*0*	*0*	*12*	*[100]*	0	0
Does the product have a tear-off layer of cellophane?	156	14[a]	9.0	142	91.0	-	-
Disposables	*48*	*4*	*8.3*	*44*	*91.7*	-	-
E-liquids	*48*	*0*	*0*	*48*	*100*	-	-
Refill pods	*36*	*1*	*2.8*	*35*	*97.2*	-	-
Tanks & cartomisers	*12*	*1*	*[8.3]*	*11*	*[91.7]*	-	-
Vapekits	*12*	*8*	*[66.7]*	*4*	*[33.3]*	-	-
Is there a view of or an image of the product/pack contents anywhere on the packaging?	156	114[b]	73.1	42	26.9	-	-
Disposables	*48*	*39*	*81.3*	*9*	*18.8*	-	-
E-liquids	*48*	*15*	*31.3*	*33*	*68.8*	-	-
Refill pods	*36*	*36*	*100*	*0*	*0*	-	-
Tanks & cartomisers	*12*	*12*	*[100]*	*0*	*0*	-	-
Vapekits	*12*	*12*	*[100]*	*0*	*0*	-	-

Notes: [%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)] [a] Cellophane was either plain/clear (*n*=6) or printed/coloured (*n*=8); see Table S1, Appendix 2. [b] Packs either had an image of the contents (*n*=101) or the contents were visible (*n*=13); see Table S2, Appendix 2.

The vast majority (*n*=146, 94%) of the external packaging was a typical/common shape for the enclosed contents (Table 3), i.e., a cuboid box or a short, cylindrical plastic bottle. All Disposables, Refill Pods and Vapekits were deemed a typical/common shape, while a small proportion of E-liquids (*n*=5, 10%) and almost half of the Tanks & Cartomisers (*n*=5, of 12) were not deemed to be typical/common shapes. All the non-typical/uncommon shapes of packs were Tanks & Cartomisers in boxes with a hang tab and E-liquids in wider than typical boxes containing a standard plastic E-liquid bottle. None of the non-typical pack shapes were highly unusual or novelty shapes.

The opening mechanism was also typical/common on the vast majority of packs (*n*=147, 94%). All Disposables, E-liquids, Refill Pods and Tanks & Cartomisers had typical/common opening mechanisms while most of the Vapekits (*n*=9, of 12) were non-typical/common. Examples of non-typical/common opening mechanisms include Vapekits in boxes with slide-out 'drawer' with ribbon tab, slide out boxes or with cardboard sleeves.

Cardboard was the main constituent material for the vast majority of packs (*n*=142, 91%) and for all Refill Pods, Tanks & Cartomisers and Vapekits. More than a quarter of E-liquids (*n*=13, 27%) had plastic packaging, and one of the Disposables (*n*=1, 2%) was packaged in a plastic sachet. A minority (*n*=14, 9%) of packs had a tear-off layer of cellophane (see also Table S1, Appendix 2). None of the E-liquids used cellophane and only small proportion of Disposables (*n*=4, 8%), Refill Pods (*n*=1, 3%), Tanks & Cartomisers (*n*=1, of 12) did so. Cellophane was present on most Vapekits (*n*=8, of 12). Most packs (*n*=114, 73%) contained a view of the product (e.g., through a clear plastic pack or cellophane window/cut-out) or included an image of the product on the pack (see also Table S2, Appendix 2). While all Refill Pods, Tanks & Cartomisers, and Vapekits did so, most E-liquids (*n*=33, 69%) and almost a fifth of Disposables (*n*=9, 19%) did not.

Outer pack retention

Table 4 reports observations on expected outer pack retention, overall and by product type.

Table 4: Key packaging features: whether outer packaging expected to be retained

Variable and product type		**Yes – has retain packaging message**		**Yes – all contents not used / used up first time**		**No - likely to discard**	
	N	**n**	**%**	**n**	**%**	**n**	**%**
Is it likely that the manufacturer expects the packaging be retained by the consumer?	156	2	1.3	68	43.6	86	55.1
Disposables	*48*	*1*	*2.1*	*0*	*0*	*47*	*97.9*
E-liquids	*48*	*0*	*0*	*13*	*27.1*	*35*	*72.9*
Refill pods	*36*	*0*	*0*	*36*	*100*	*0*	*0*
Tanks & cartomisers	*12*	*1*	*[8.3]*	*11*	*[91.7]*	*0*	*0*
Vapekits	*12*	*0*	*0*	*8*	*[66.7]*	*4*	*[33.3]*

Notes: [%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

For most products (*n*=86, 55%) it was judged likely that the manufacturer would not expect the consumer to retain the outer packaging. However, differences by product type were apparent. Packaging for practically all the Disposables (*n*=47, 98%) was expected to be discarded, with only one Disposable package containing a message indicating that the package should be retained. Where E-liquid bottles were cased within a cardboard box, the outer packaging was expected to be discarded. Therefore, for most of the E-liquids (*n*=35, 73%) the outer packaging was expected to be discarded. However, for just over a quarter of E-liquid bottles (*n*=13, 27%) it was considered that the packaging would be retained due to contents being left over after first use. Packaging for all Refill pods was expected to be retained while the packaging for all Tanks & Cartomisers (*n*=12, 100%) and most Vapekits (*n*=8, 67%) was expected to be retained.

Design and promotional features of the pack fronts

Table 5 reports observations on design and promotional features of the pack fronts, overall and by product type.

Most products (*n*=97, 62%) had 'fancy' features on the front of the packaging, such as shiny product images, embossed brand logos, and metallic or foil details, although this was less common for E-liquids (*n*=15, 31%). Only five products (*n*=5, 3%) showed a cartoon character on the front of the pack. The five products that did so, all Vampire Vapes or Button Junkie E-liquids, had a cartoon character within their logos. Some products (*n*=30, 19%) used cartoonish script or crayoned font for the predominant text on the front of the pack (true for 10 Disposables and 20 E-liquids). While almost all products (*n*=154, 98%) showed a brand name or logo on the front of the pack, there were very few instances of co-branding observed (*n*=7, 5%). For example, NZO highlighted its collaboration with Red Liquids (an E-liquid brand) on the front of Refill Pod packs.

Table 5: Key packaging features on the front of packs

Variable and product type		Yes		No		Unclear		N/A	
	N	n	%	n	%	n	%	n	%
Does the front of pack have any 'fancy' features as part of the packaging?	156	97	62.2	59	37.8	-	-	0	0
Disposables	*48*	*33*	*68.8*	*15*	*31.3*	-	-	*0*	*0*
E-liquids	*48*	*15*	*31.3*	*33*	*68.8*	-	-	*0*	*0*
Refill pods	*36*	*30*	*83.3*	*6*	*16.7*	-	-	*0*	*0*
Tanks & cartomisers	*12*	*9*	*[75.0]*	*3*	*[25.0]*	-	-	*0*	*0*
Vapekits	*12*	*10*	*[83.3]*	*2*	*[16.7]*	-	-	*0*	*0*
Does the front of pack show a cartoon character?	156	5	3.2	151	96.8	*0*	*0*	0	0
Disposables	*48*	*0*	*0*	*48*	*100*	*0*	*0*	*0*	*0*
E-liquids	*48*	5	10.4	*43*	*89.6*	*0*	*0*	*0*	*0*
Refill pods	*36*	*0*	*0*	*36*	*100*	*0*	*0*	*0*	*0*
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*	*0*	*0*
Vapekits	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*	*0*	*0*
Is the predominant text (large) on the front of the pack written in cartoonish script or crayoned font?	156	30	19.2	123	78.8	3	1.9[a]	0	0
Disposables	*48*	*10*	*20.8*	*38*	*79.2*	*0*	*0*	*0*	*0*
E-liquids	*48*	*20*	*41.7*	*25*	*52.1*	3	6.3	*0*	*0*
Refill pods	*36*	*0*	*0*	*36*	*100*	*0*	*0*	*0*	*0*
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*	*0*	*0*
Vapekits	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*	*0*	*0*
Does the front of pack show a brand name or brand logo?	156	154	98.7	2	1.3	-	-	0	0
Disposables	*48*	*48*	*100*	*0*	*0*	-	-	*0*	*0*
E-liquids	*48*	*48*	*100*	*0*	*0*	-	-	*0*	*0*
Refill pods	*36*	*36*	*100*	*0*	*0*	-	-	*0*	*0*
Tanks & cartomisers	*12*	*12*	*[100]*	*0*	*0*	-	-	*0*	*0*
Vapekits	*12*	*10*	*[83.3]*	*2*	*[16.7]*	-	-	*0*	*0*
Does the front of pack show another company's or producer's brand name or brand logo?	156	7	4.5	149	95.5	-	-	0	0
Disposables	*48*	*0*	*0*	*48*	*100*	-	-	*0*	*0*
E-liquids	*48*	*0*	*0*	*48*	*100*	-	-	*0*	*0*
Refill pods	*36*	*5*	*13.9*	*31*	*86.1*	-	-	*0*	*0*
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*	-	-	*0*	*0*
Vapekits	*12*	*2*	*[16.7]*	*10*	*[83.3]*	-	-	*0*	*0*

Notes: [%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)] [a] For example, coloured lightning strike effect through letters.

Colour scheme on front of pack

Table 6 reports observations on the predominant colour scheme on the front of the pack, overall and by product type. A range of colour schemes were observed. Overall, 85% were deemed to be colourful. This included those packs categorised as 'bright and intense' (*n*=31, 20%), 'light, muted or faded' (*n*=70, 45%), and 'half-and-half' (*n*=32, 21%). Except for Tanks and Cartomisers and Vapekits, all product types featured a range of colour schemes. No Tanks and Cartomisers or Vapekits featured bright and intense colouring. For Disposables, E-liquids and Refill pods, the most observed colour scheme was light, muted or faded. For Tanks and Cartomisers and Vapekits, colours were mainly light, muted or faded, or dark and intense.

Table 6: Key packaging features on the front of packs: colour-scheme

Variable and product type		Dark and intense[a]		Bright and intense[b]		Light, muted or faded[c]		Half-and-half[d]	
	N	n	%	n	%	n	%	n	%
Front of pack, excluding the 30% warning, what is the predominant colour-scheme?	156	*23*	*14.7*	*31*	*19.9*	*70*	*44.9*	*32*	*20.5*
Disposables	*48*	*6*	*12.5*	*10*	*20.8*	*19*	*39.6*	*13*	*27.1*
E-liquids	*48*	*4*	*8.3*	*11*	*22.9*	*20*	*41.7*	*13*	*27.1*
Refill pods	*36*	*3*	*8.3*	*10*	*27.8*	*20*	*55.6*	*3*	*8.3*
Tanks & cartomisers	*12*	*5*	*[41.7]*	*0*	*0*	*6*	*[50.0]*	*1*	*[8.3]*
Vapekits	*12*	*5*	*[41.7]*	*0*	*0*	*5*	*[41.7]*	*2*	*[16.7]*

Notes: [%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)] The predominant colours on the front of pack are [a] mainly dark blue, dark brown, deep purple, black, for example; [b] more powerful, bright colours (e.g. intense red, very bright yellow/orange, bright primary colours); [c] more subtle, light colours (e.g. muted primary colours, light blue, washed/pastel shades); or [d] a proportional mix of any two of the three previous categories.

Flavour descriptors

Tables 7a-7c report observations on flavour descriptors used on packs, overall and by product type. As a result of two of the Vapekits (IVG Starter Kit and OK Vape Pod Starter Kit) and one pack of Refill Pods (VOOM Fruit Multipack Pods) containing multiple items, with a range of flavours, the number of products on which we observed flavours increased from the 156 packs to 163. The IVG Starter Kit contained four different flavour pods, the OK Vape Pod Starter Kit contained three different flavour pods and the VOOM Fruit Multipack Pods contained three different flavours.

Table 7a: Flavour Descriptors: Flavour category

	Total		Disposables		E-liquids		Refill Pods		Tanks & cartomisers		Vapekits	
	N=163		*N=48*		*N=48*		*N=38*		*N=12*		*N=17*	
	n	%	n	%	n	%	n	%	n	%	n	%

	Total		Disposables		E-liquids		Refill Pods		Tanks & cartomisers		Vapekits	
Flavour category												
Flavour blend	*103*	*63.2*	*38*	*79.2*	*31*	*64.6*	*29*	*76.3*	*0*	*0*	*5*	*[29.4]*
Flavour concept	*18*	*11.0*	*3*	*6.3*	*11*	*22.9*	*1*	*2.6*	*3*	*[25.0]*	*0*	*0*
Single recognisable flavour	*30*	*18.4*	*7*	*14.6*	*6*	*12.5*	*8*	*21.1*	*3*	*[25.0]*	*6*	*[35.3]*
Not applicable / no flavour or concept given	*12*	*7.4*	*0*	*0*	*0*	*0*	*0*	*0*	*6*	*[50.0]*	*6*	*[35.3]*

Table 7a shows the overall categorisation of the flavour descriptors that were observed on the pack. Flavours were coded according to a method used by Kreslake et al (2023), which categorises flavours into flavour blend and concept flavours. Where a flavour descriptor referred to more than one flavour or a combination of flavour and sensation this was categorised as flavour blend. Examples of flavour blends include *Strawberry Ice*, *Vanilla Custard*, *Sweet Cherry* and *Raspberry Menthol*. Where the descriptor did not convey a taste or recognisable flavour but, instead, referred to a sensation or an ambiguous descriptor this was coded as a flavour concept. Examples of flavour concept include *Energy*, *Smooth*, *Red Lips* and *Tropical Tsunami*. Where descriptors referred to a distinct and single taste this was coded as Single Recognisable Flavour. Examples of a Single Recognisable Flavour include *Cherry Flavour*, *Menthol Flavour*, *Tobacco Flavour* and *Banana*.

Presence of flavour descriptors differed depending on product category (Table 7a). Flavour descriptors were observed on all Disposables, E-Liquids and Refill Pods. However, many Tanks & Cartomisers (*n*=6, [50%]) and Vapekits (*n*=6, [35%]) lacked any flavour descriptors, likely due to the absence of E-liquids within the kits. Most flavour descriptors (*n*=103, 63%) referred to flavour blends. Flavour blend was the predominant category for Disposables (*n*=38, 79%), E-liquids (*n*=31, 65%) and Refill Pods (*n*=29, 76%). Flavour descriptors that mentioned only concept flavours (e.g., *Energy*, *Smooth,* etc), without referring to any taste or recognisable flavour were observed on one in nine packs (*n*=18, 11%). Concept flavour descriptors were observed on more than a fifth of E-liquids (*n*=11, 23%) and on three of the twelve Tanks & Cartomisers. Concept flavour descriptors were observed on a limited number of Disposables (*n*=3, 6%) and Refill Pods (*n*=1, 3%) but did not feature on any Vapekits. Flavour descriptors on almost a fifth of products (n=30, 18%) referred to a single recognisable flavour and featured across all product types.

Table 7b: Flavour Descriptors: Flavour Blends & Single Flavours

	Total		Disposables		E-liquids		Refill Pods		Tanks & cartomisers		Vapekits	
	N=163		*N=48*		*N=48*		*N=38*		*N=12*		*N=17*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Flavour Blend												
Fruit Blend	**63**	**38.7**	**30**	**62.5**	**14**	**29.2**	**18**	**47.4**	**0**	**0**	**1**	***[5.9]***
Fruit: Fruits	*12*	*7.4*	*6*	*12.5*	*4*	*8.3*	*2*	*5.3*	*0*	*0*	*0*	*0*

	Total		Disposables		E-liquids		Refill Pods		Tanks & cartomisers		Vapekits	
Fruit: Concept	*17*	*10.4*	*5*	*10.4*	*4*	*8.3*	*8*	*21.1*	*0*	*0*	*0*	*0*
Fruit: Other	*10*	*6.1*	*4*	*8.3*	*3*	*6.3*	*3*	*7.9*	*0*	*0*	*0*	*0*
Fruit: Dish/drink	*6*	*3.7*	*3*	*6.3*	*1*	*2.1*	*2*	*5.3*	*0*	*0*	*0*	*0*
Fruit: Sweets	*3*	*1.8*	*2*	*4.2*	*1*	*2.1*	*0*	*0*	*0*	*0*	*0*	*0*
Ice Blend	***33***	***20.2***	***14***	***29.2***	***10***	***20.8***	***6***	***15.8***	***0***	***0***	***3***	***[17.6]***
Ice: Fruits	*15*	*9.2*	*10*	*20.8*	*1*	*2.1*	*3*	*7.9*	*0*	*0*	*1*	*[5.9]*
Ice: Food/drink	*3*	*1.8*	*0*	*0*	*2*	*4.2*	*0*	*0*	*0*	*0*	*1*	*[5.9]*
Ice: Concept	*4*	*2.5*	*3*	*6.3*	*1*	*2.1*	*0*	*0*	*0*	*0*	*0*	*0*
Ice: Mint	*9*	*5.5*	*1*	*2.1*	*6*	*12.5*	*2*	*5.3*	*0*	*0*	*0*	*0*
Ice: Other	*2*	*1.2*	*0*	*0*	*0*	*0*	*1*	*2.6*	*0*	*0*	*1*	*[5.9]*
Other Blend	***22***	***13.5***	***4***	***8.3***	***8***	***16.7***	***8***	***21.1***	***0***	***0***	***2***	***[11.8]***
Tobacco blend (e.g., original, smooth, golden)	*7*	*4.3*	*1*	*2.1*	*3*	*6.3*	*2*	*5.3*	*0*	*0*	*1*	*[5.9]*
Tobacco: Mint	*1*	*0.6*	*0*	*0*	*0*	*0*	*1*	*2.6*	*0*	*0*	*0*	*0*
Mint Concept	*9*	*5.5*	*2*	*4.2*	*2*	*4.2*	*5*	*13.2*	*0*	*0*	*0*	*0*
Other sweet foods/candy	*5*	*3.1*	*1*	*2.1*	*3*	*6.3*	*0*	*0*	*0*	*0*	*1*	*[5.9]*
Single Flavour	***30***	***18.4***	***7***	***14.6***	***6***	***12.5***	***8***	***21.1***	***3***	***[25.0]***	***6***	***[35.3]***
Fruit	*12*	*7.4*	*4*	*8.3*	*4*	*8.3*	*2*	*5.3*	*0*	*0*	*2*	*[11.8]*
Mint	*6*	*3.7*	*1*	*2.1*	*0*	*0*	*3*	*7.9*	*1*	*[8.3]*	*1*	*[5.9]*
Tobacco	*7*	*4.3*	*0*	*0*	*0*	*0*	*2*	*5.3*	*2*	*[16.7]*	*3*	*[17.6]*
Other	*5*	*3.1*	*2*	*4.2*	*2*	*4.2*	*1*	*2.6*	*0*	*0*	*0*	*0*

Within flavour blends there were three broad categories observed: Fruit, Ice and Other (Table 7b). Fruit blends were the most prevalent (*n=63*, 39%) and included blends of multiple fruit flavours as well as descriptors which conveyed blends of fruits and food/drink items and mention of fruits along with concepts, for example *Strawberry Ice* and *Sweet Cherry*. An ice blend featured on around one in five products (*n=33*, 20%) with almost three in ten Disposables (*n=14*, 29%) featuring an ice blend. Other blends included tobacco blends (*n=7*, 4%) which were often described as a concept (such as *Smooth*, *Original,* etc) along with the term tobacco. Mint concept blend (*n=9*, 6%) also featured the term mint along with a concept descriptor (e.g., *Creamy Mint, Crisp Mint*).

Table 7c: Flavour Descriptors: Flavour Theme

	Total		Disposables		E-liquids		Refill Pods		Tanks & cartomisers		Vapekits	
	N=163		*N=48*		*N=48*		*N=38*		*N=12*		*N=17*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Flavour												
Any mention of fruit flavour	*75*	*46.0*	*34*	*70.8*	*18*	*37.5*	*20*	*52.6*	*0*	*0*	*3*	*[17.6]*
Any mention of mint flavour	*25*	*15.3*	*4*	*8.3*	*8*	*16.7*	*11*	*28.9*	*1*	*[8.3]*	*1*	*[5.9]*
Any mention of tobacco flavour	*15*	*9.2*	*1*	*2.1*	*3*	*6.3*	*5*	*13.2*	*2*	*[16.7]*	*4*	*[23.5]*

Fruit flavours were the most observed flavours (*n=75*, 46%), particularly for Disposables (*n=34*, 71%) and Refill Pods, where most (*n=20*, 53%) featured fruit flavours (Table 7c). Mint flavours featured on a minority (*n=25*, 15%) of products while tobacco flavours were only observed in fewer than one in ten (*n=15*, 9%) products and were rare on Disposables.

Symbols that appeared anywhere on the packaging

Table 8 reports observations on symbols appearing on e-cigarette packaging, overall and by product type.

Table 8: Key packaging features: symbols

Variable and product type		**Yes**		**No**	
	N	**n**	**%**	**n**	**%**
Are there any environmental packaging/product disposal symbols anywhere on the pack?	156	131	84.0	25	16.0
Disposables	*48*	*47*	*97.9*	*1*	*2.1*
E-liquids	*48*	*25*	*52.1*	*23*	*47.9*
Refill pods	*36*	*36*	*100*	*0*	*0*
Tanks & cartomisers	*12*	*11*	*[91.7]*	*1*	*[8.3]*
Vapekits	*12*	*12*	*[100]*	*0*	*0*
Are there any environmental packaging source materials symbols anywhere on the pack?	156	14	9.0	142	91.0
Disposables	*48*	*6*	*12.5*	*42*	*87.5*
E-liquids	*48*	*5*	*10.4*	*43*	*89.6*
Refill pods	*36*	*3*	*8.3*	*33*	*91.7*
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*
Vapekits	*12*	*0*	*0*	*12*	*[100]*

Variable and product type		Yes		No	
Are there any not tested on animals/cruelty-free/vegan symbols anywhere on the pack?	156	0	0	156	100
Disposables	*48*	*0*	*0*	*48*	*100*
E-liquids	*48*	*0*	*0*	*48*	*100*
Refill pods	*36*	*0*	*0*	*36*	*100*
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*
Vapekits	*12*	*0*	*0*	*12*	*[100]*
Are there any age restriction symbols anywhere on the pack?	156	149	95.5	7	4.5
Disposables	*48*	*47*	*97.9*	*1*	*2.1*
E-liquids	*48*	*43*	*89.6*	*5*	*10.4*
Refill pods	*36*	*35*	*97.2*	*1*	*2.8*
Tanks & cartomisers	*12*	*12*	*[100]*	*0*	*0*
Vapekits	*12*	*12*	*[100]*	*0*	*0*
Are there any 'not for consumption while pregnant' symbols anywhere on the pack?	156	92	59.0	64	41.0
Disposables	*48*	*43*	*89.6*	*5*	*10.4*
E-liquids	*48*	*21*	*43.8*	*27*	*56.3*
Refill pods	*36*	*12*	*33.3*	*24*	*66.7*
Tanks & cartomisers	*12*	*8*	*[66.7]*	*4*	*[33.3]*
Vapekits	*12*	*8*	*[66.7]*	*4*	*[33.3]*
Are there any authenticity and safety standards symbols anywhere on the pack?	156	104	66.7	52	33.3
Disposables	*48*	*47*	*97.9*	*1*	*2.1*
E-liquids	*48*	*0*	*0*	*48*	*100*
Refill pods	*36*	*34*	*94.4*	*2*	*5.6*
Tanks & cartomisers	*12*	*11*	*[91.7]*	*1*	*8.3*
Vapekits	*12*	*12*	*[100]*	*0*	*0*
Are there any GB CLP Hazard pictograms anywhere on the pack?	156	140	89.7	16	10.3
Disposables	*48*	*46*	*95.8*	*2*	*4.2*
E-liquids	*48*	*48*	*100*	*0*	*0*
Refill pods	*36*	*36*	*100*	*0*	*0*
Tanks & cartomisers	*12*	*3*	*[25.0]*	*9*	*[75.0]*
Vapekits	*12*	*7*	*[58.3]*	*5*	*[41.7]*
Are there any tactile CLP hazard warnings (raised triangle) anywhere on the pack?	156	118	75.6	38	24.4
Disposables	*48*	*40*	*83.3*	*8*	*16.7*
E-liquids	*48*	*35*	*72.9*	*13*	*27.1*
Refill pods	*36*	*35*	*97.2*	*1*	*2.8*
Tanks & cartomisers	*12*	*3*	*[25.0]*	*9*	*[75.0]*
Vapekits	*12*	*5*	*[41.7]*	*7*	*[58.3]*
Are there any GB flag symbols anywhere on the pack?	156	21	13.5	135	86.5
Disposables	*48*	*7*	*14.6*	*41*	*85.4*
E-liquids	*48*	*12*	*25.0*	*36*	*75.0*
Refill pods	*36*	*2*	*5.6*	*34*	*94.4*
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*

Variable and product type		Yes		No	
Vapekits	*12*	*0*	*0*	*12*	*[100]*
Are there any 'Keep out of reach of children' symbols anywhere on the pack?	156	8	5.1	148	94.9
Disposables	*48*	*8*	*16.7*	*40*	*83.3*
E-liquids	*48*	*0*	*0*	*48*	*100*
Refill pods	*36*	*0*	*0*	*36*	*100*
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*
Vapekits	*12*	*0*	*0*	*12*	*[100]*
Are there any other generic symbols anywhere on the pack?	156	5	3.2	151	96.8
Disposables	*48*	*0*	*0*	*48*	*100*
E-liquids	*48*	*0*	*0*	*48*	*100*
Refill pods	*36*	*2*	*5.6*	*34*	*94.4*
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*
Vapekits	*12*	*3*	*[25.0]*	*9*	*[75.0]*

Notes: [%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

While most packs (*n*=131, 84%) had environmental packaging/product disposal symbols (e.g., recycling '3-arrows' Mobius loop symbol), approximately half (*n*=23, 48%) of the E-liquids did not. The majority of products (*n*=91%) did not have any environmental packaging source materials symbols anywhere on the pack (e.g., FSC® (Forest Stewardship Council), or Green Dot). None of the products (100%) had any 'not tested on animals', cruelty-free, or vegan-friendly symbols anywhere on the packaging (e.g., Vegan Trademark).

Almost all packs (*n*=149, 96%) displayed age restriction symbols (e.g., crossed-out 18 in circle). Approximately three-fifths of packs (*n*=92, 59%) carried "not for consumption while pregnant" symbols (e.g., crossed-out pregnant woman in circle), which was particularly common for Disposables (*n*=43, 90%).

Two-thirds of the products (*n*=104, 67%) had authenticity and safety standards symbols (e.g., CE, UKCA) on the packaging. None of the E-liquid packs (*n=48)* did so. The majority of packs (*n*=140, 90%) had GB classification, labelling and packaging (CLP) hazard pictograms (e.g., exclamation mark) to indicate the presence of a hazardous chemical, with three-quarters (*n*=118, 76%) carrying a tactile CLP hazard warning (i.e., raised triangle). A symbol indicating that the product should be kept out of reach of children was observed on only eight (5%) products, and only featured on Disposables (*n*=8, 17%)

A minority of packs (n=21, 14%) featured a GB flag somewhere on the pack. This was mainly observed on E-liquids (n=12, 25%) and Disposables (n=7, 15%) while two of the Refill Pods (6%) also featured a GB flag. A small number of packs (*n*=5, 3%) had other generic symbols, including other countries' flags.

Other design features that appeared anywhere on the packaging

Table 9 reports on other features on e-cigarette packaging, overall and by product type.

Table 9: Key packaging features: miscellaneous

Variable and product type		Yes		No	
	N	n	%	n	%
Is there a hologram anywhere on the packaging?	156	46	29.5	110	70.5
Disposables	*48*	*30*	*62.5*	*18*	*37.5*
E-liquids	*48*	*0*	*0*	*48*	*100*
Refill pods	*36*	*4*	*11.1*	*32*	*88.9*
Tanks & cartomisers	*12*	*8*	*[66.7]*	*4*	*[33.3]*
Vapekits	*12*	*4*	*[33.3]*	*8*	*[66.7]*
Is the price of the product printed anywhere on the packaging?	156	0	0	156	100
Disposables	*48*	*0*	*0*	*48*	*100*
E-liquids	*48*	*0*	*0*	*48*	*100*
Refill pods	*36*	*0*	*0*	*36*	*100*
Tanks & cartomisers	*12*	*0*	*0*	*12*	*[100]*
Vapekits	*12*	*0*	*0*	*12*	*[100]*
Are there website or social media account links or icons anywhere on the packaging?	156	138[a]	88.5	18	11.5
Disposables	*48*	*47*	*97.9*	*1*	*2.1*
E-liquids	*48*	*34*	*70.8*	*14*	*29.2*
Refill pods	*36*	*35*	*97.2*	*1*	*2.8*
Tanks & cartomisers	*12*	*11*	*[91.7]*	*1*	*[8.3]*
Vapekits	*12*	*11*	*[91.7]*	*1*	*[8.3]*

Notes: [%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)] [a] Packs included a company/brand website only (*n*=93), social media channels only (*n*=2), or a combination of company/brand website and social media channels (*n*=43); see Table S3, Appendix 2.

While most products (*n*=110, 71%) did not have on-pack holograms, they were a relatively common feature for Disposables (*n*=30, 63%). None of the products (*n*=156, 100%) had the price printed anywhere on the packaging. Most products (*n*=138, 89%) included a website address (e.g., main company brand page) or social media account links/icons (e.g., Instagram, Facebook) on the packaging (see also Table S3, Appendix 2). Packs that did so tended to include a company/brand website only (*n*=93) or a combination of company/brand website and social media channels (*n*=43), with very few packs (*n*=2) including social media channels only.

Packaging requirements specified by the TRPR

<u>Research Question 2: Do e-cigarette and refill packs meet the packaging requirements specified by the TRPR?</u>

The results of the content analysis of the 156 packs purchased in the UK in the second half of

2022 are reported for the five categories of product: Disposable (all strengths), E-liquids (all strengths), Refill pods (all strengths), Tanks & Cartomisers, and Vapekits. The packaging-related provisions of three Sections of the Tobacco and Related Products Regulations (TRPR) 2016 are reported separately below.

Section 36 of the Tobacco and Related Products Regulations 2016

Section 36 of the TRPR 'Product Requirements' has eleven sub-sections (including 18 paragraphs or sub-paragraphs). Two subsections, 36(7) and 36(9) were judged as relevant to the external packaging of e-cigarettes and e-liquids:

> *"(1) No person may produce or supply an electronic cigarette or refill container unless it complies with paragraphs (2) to (8), so far as relevant to the product concerned.*
> *[…]*
> *(7) An electronic cigarette or refill container must be—*
> *(a) child-resistant and tamper-evident; and*
> *(b) protected against breakage and leakage.*
> *[…]*
> *(9) For the purposes of paragraph (7), a product is tamper-evident if it has one or more indicators or barriers to entry which, if breached or missing, can reasonably be expected to provide visible evidence that the product (or its packaging) has been opened."* (UK Government 2016)

For the content analysis, paragraph 36(7a) was split in two to assess 'child-resistance' and 'tamper-evident' separately (informed by paragraph 36(9)), so three assessments were made, as shown in Table 10. Packs were opened to assess whether the external and internal packaging was child resistant and tamper-evident.

All the E-liquids (100%) were child-resistant packs with a plastic bottle including a manual 'press and turn', or similar, childproof mechanism. Around one-quarter of E-liquids (27%) were plastic bottles only and the rest (73%) were in cardboard boxes (see Table 3). If an E-liquid was contained in a cardboard box, the external packaging was opened to make this assessment. All the other four product types (Disposables [100%], Refill pods [100%], Tanks & Cartomisers [100%] and Vapekits [100%]) were contained in packs that were not considered child-resistant. This highlighted the syntactic ambiguity of the TRPR text, "*An electronic cigarette or refill container must be…*" to be misinterpreted as an "electronic cigarette container" or a "refill container". It was beyond the scope of the project to test all e-cigarettes, pods, tanks and cartomisers, rather than just their packs, for child-resistance.

All packs (100%) in all five categories were assessed as tamper-evident, i.e., having one or more indicator or barrier to entry which, if breached or missing, could reasonably be expected to provide visible evidence that the product or packaging had been opened. Fourteen packs (9%) had a cellophane outer-wrapper (see Table 3) and, as previously noted, all E-liquids' packs had a childproof mechanism. Other examples included plastic and foil blister-packs or sealed soft plastic packs that would provide visible evidence of tampering had they been opened.

Table 10: Packaging-related TRPR 36 provisions: product requirements

Variable and product type	TRPR codes		Yes		No	
		N	n	%	n	%
Is the pack child-resistant?	TRPR 36.(7)(a)	156	48	30.8	108	69.2
Disposables	TRPR 36.(7)(a)	*48*	*0*	*0*	*48*	*100*
E-liquids	TRPR 36.(7)(a)	*48*	*48*	*100*	*0*	*0*
Refill pods	TRPR 36.(7)(a)	*36*	*0*	*0*	*36*	*100*
Tanks & cartomisers	TRPR 36.(7)(a)	*12*	*0*	*0*	*12*	*[100]*
Vapekits	TRPR 36.(7)(a)	*12*	*0*	*0*	*12*	*[100]*
Is the pack tamper-evident?	TRPR 36.(7)(a)	156	156	100	0	0
Disposables	TRPR 36.(7)(a)	*48*	*48*	*100*	*0*	*0*
E-liquids	TRPR 36.(7)(a)	*48*	*48*	*100*	*0*	*0*
Refill pods	TRPR 36.(7)(a)	*36*	*36*	*100*	*0*	*0*
Tanks & cartomisers	TRPR 36.(7)(a)	*12*	*12*	*[100]*	*0*	*0*
Vapekits	TRPR 36.(7)(a)	*12*	*12*	*[100]*	*0*	*0*
Does the pack protect against breakage and leakage?	TRPR 36.(7)(b)	156	156	100	0	0
Disposables	TRPR 36.(7)(b)	*48*	*48*	*100*	*0*	*0*
E-liquids	TRPR 36.(7)(b)	*48*	*48*	*100*	*0*	*0*
Refill pods	TRPR 36.(7)(b)	*36*	*36*	*100*	*0*	*0*
Tanks & cartomisers	TRPR 36.(7)(b)	*12*	*12*	*[100]*	*0*	*0*
Vapekits	TRPR 36.(7)(b)	*12*	*12*	*[100]*	*0*	*0*

Notes: [%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)] The above categories are not mutually exclusive. Packs were scored against each of the codes above. It is possible for packs to not comply on more than one of the above.

All packs (100%) in all five categories were also assessed as providing reasonable protection for the e-cigarette or e-liquid inside from breakage and leakage. None of the products had leaked in transit or during the analysis.

Section 37 of the Tobacco and Related Products Regulations 2016

Section 37 of the TRPR, 'Product information and labelling requirements', has ten sub-sections (including 25 paragraphs or sub-paragraphs). Five subsections, 36(2-6) were judged as relevant to the external packaging of e-cigarettes and e-liquids:

> *"(1) No person may produce or supply an electronic cigarette or refill container unless it complies with paragraphs (2) to (6).*
> *(2) Each unit packet of the electronic cigarette or refill container must include a leaflet with information on—*
> [(a) to (g) list of seven items…]
> *(3) Each unit packet and any container pack must include—*
> *(a) a list of all ingredients contained in the product set out in descending order by weight;*
> *(b) an indication of the nicotine content of the product and the delivery per dose;*

(c) the batch number; and

(d) a recommendation to keep the product out of reach of children.

(4) Each unit packet and any container pack must carry a health warning consisting of the text: "This product contains nicotine which is a highly addictive substance".

(5) The health warning must—

(a) appear on both the front and back surfaces of the unit packet and any container pack;

(b) cover 30% of the area of each of those surfaces, calculated in relation to the area of the surface concerned when the pack is closed;

(c) be in black Helvetica bold type on a white background;

(d) be in a font size which ensures that the text occupies the greatest possible proportion of the surface area reserved for it; and

(e) appear at the centre of that area.

(6) The health warning must be parallel to the main text on the surface concerned." (UK Government 2016)

For the content analysis, two provisions were simplified, and one was split in two. Subsection 37(2) was simplified to exclude the seven required items and only to assess whether and where the main information was available. The Medicines and Healthcare Products Regulatory Agency (MHRA) guidance for GB production and supply states that, "Where all the required leaflet information can fit on the unit pack and other labelling within the pack without loss of legibility to the consumer, our interpretation of the TPD is that the packaging can be considered to include the leaflet, and a separate leaflet insert is not required" (MHRA, 2022a). To keep the assessment meaningful, the external packaging was opened to answer the first question (Does the pack include an information leaflet?). Paragraph 37(3a) was simplified to give a visual check that an ingredients list was present. Paragraph 37(3b) was split in two to assess 'nicotine content' and 'nicotine delivery dose' separately. Thus 13 assessments were made in relation to Section 37 of the TRPR, and these are reported in Table 11.

Table 11: Packaging-related TRPR 37 provisions: product information and labelling requirements

Variable	**TRPR codes**		**Yes**		**No**		**Unclear**		**N/A**	
		N	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Does the pack include an information leaflet?	TRPR 37.(2)	156	*135*	*86.5*	*15*	*9.6*	*6[a]*	*3.8*	*0*	*0*
Disposables	TRPR 37.(2)	*48*	*41*	*85.4*	*5*	*10.4*	*2*	*4.2*	*0*	*0*
E-liquids	TRPR 37.(2)	*48*	*44*	*91.7*	*0*	*0*	*4*	*8.3*	*0*	*0*
Refill pods	TRPR 37.(2)	*36*	*33*	*91.7*	*3*	*8.3*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(2)	*12*	*5*	*[41.7]*	*7*	*[58.3]*	*0*	*0*	*0*	*0*

Variable	TRPR codes		Yes		No		Unclear		N/A	
Vapekits	TRPR 37.(2)	*12*	*12*	*[100]*	*0*	*0*	*0*	*0*	*0*	*0*
Does the pack include a list of all ingredients contained in the product?	TRPR 37.(3)(a)	156	*139*	*89.1*	*1*	*0.6*	*0*	*0*	*16*	*10.3*
Disposables	TRPR 37.(3)(a)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(3)(a)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Refill pods	TRPR 37.(3)(a)	*36*	*36*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(3)(a)	*12*	*3*	*[25.0]*	*0*	*0*	*0*	*0*	*9*	*[75.0]*
Vapekits	TRPR 37.(3)(a)	*12*	*4*	*[33.3]*	*1*	*[8.3]*	*0*	*0*	*7*	*[58.3]*
Does the pack include an indication of the nicotine content of the product?	TRPR 37.(3)(b)	156	*140*	*89.7*	*0*	*0*	*0*	*0*	*16*	*10.3*
Disposables	TRPR 37.(3)(b)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(3)(b)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Refill pods	TRPR 37.(3)(b)	*36*	*36*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(3)(b)	*12*	*3*	*[25.0]*	*0*	*0*	*0*	*0*	*9*	*[75.0]*
Vapekits	TRPR 37.(3)(b)	*12*	*5*	*[41.7]*	*0*	*0*	*0*	*0*	*7*	*[58.3]*
Does the pack include an indication of the nicotine delivery per dose?	TRPR 37.(3)(b)	156	*140*	*89.7*	*1*	*0.6*	*0*	*0*	*15*	*9.6*
Disposables	TRPR 37.(3)(b)	*48*	*47*	*97.9*	*1*	*2.1*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(3)(b)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Refill pods	TRPR 37.(3)(b)	*36*	*36*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(3)(b)	*12*	*3*	*[25.0]*	*0*	*0*	*0*	*0*	*9*	*[75.0]*
Vapekits	TRPR 37.(3)(b)	*12*	*6*	*[50.0]*	*0*	*0*	*0*	*0*	*6*	*[50.0]*
Does the pack include the batch number?	TRPR 37.(3)(c)	156	*126*	*80.8*	*13*	*8.3*	*17*	*10.9*	*0*	*0*
Disposables	TRPR 37.(3)(c)	*48*	*43*	*89.6*	*5*	*10.4*	*0*	*0*	*0*	*0*

Variable	TRPR codes		Yes		No		Unclear		N/A	
E-liquids	TRPR 37.(3)(c)	*48*	*30*	*62.5*	*1*	*2.1*	*17*	*35.4*	*0*	*0*
Refill pods	TRPR 37.(3)(c)	*36*	*36*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(3)(c)	*12*	*8*	*[66.7]*	*4*	*[33.3]*	*0*	*0*	*0*	*0*
Vapekits	TRPR 37.(3)(c)	*12*	*9*	*[75.0]*	*3*	*[25.0]*	*0*	*0*	*0*	*0*
Does the pack include a recommendation to keep the product out of reach of children?	TRPR 37.(3)(d)	156	*141*	*90.4*	*15*	*9.6*	*0*	*0*	*0*	*0*
Disposables	TRPR 37.(3)(d)	*48*	*47*	*97.9*	*1*	*2.1*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(3)(d)	*48*	*43*	*89.6*	*5*	*10.4*	*0*	*0*	*0*	*0*
Refill pods	TRPR 37.(3)(d)	*36*	*36*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(3)(d)	*12*	*4*	*[33.3]*	*8*	*[66.7]*	*0*	*0*	*0*	*0*
Vapekits	TRPR 37.(3)(d)	*12*	*11*	*[91.7]*	*1*	*[8.3]*	*0*	*0*	*0*	*0*
Does the pack carry the health warning: "This product contains nicotine which is a highly addictive substance"?	TRPR 37.(4)	156	*150*	*96.2*	*1*	*0.6*	*5*	*3.2*	*0*	*0*
Disposables	TRPR 37.(4)	*48*	*46*	*95.8*	*0*	*0*	*2*	*4.2*	*0*	*0*
E-liquids	TRPR 37.(4)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Refill pods	TRPR 37.(4)	*36*	*34*	*94.4*	*0*	*0*	*2*	*5.6*	*0*	*0*
Tanks & cartomisers	TRPR 37.(4)	*12*	*11*	*[91.7]*	*1*	*[8.3]*	*0*	*0*	*0*	*0*
Vapekits	TRPR 37.(4)	*12*	*11*	*[91.7]*	*0*	*0*	*1*	*[8.3]*	*0*	*0*
Does the health warning appear on both the front and back surfaces of the pack?	TRPR 37.(5)(a)	156	*142*	*91.0*	*13*	*8.3*	*0*	*0*	*1*[b]	*0.6*
Disposables	TRPR 37.(5)(a)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(5)(a)	*48*	*35*	*72.9*	*13*	*27.1*	*0*	*0*	*0*	*0*

Variable	TRPR codes		Yes		No		Unclear		N/A	
Refill pods	TRPR 37.(5)(a)	*36*	*36*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(5)(a)	*12*	*11*	*[91.7]*	*0*	*0*	*0*	*0*	*1*	*[8.3]*
Vapekits	TRPR 37.(5)(a)	*12*	*12*	*[100]*	*0*	*0*	*0*	*0*	*0*	*0*
Does the health warning cover 30% of the area of each of those surfaces of the pack?	TRPR 37.(5)(b)	156	*131*	*84.0*	*11*	*7.1*	*13*[c]	*8.3*	*1*[b]	*0.6*
Disposables	TRPR 37.(5)(b)	*48*	*39*	*81.3*	*9*	*18.8*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(5)(b)	*48*	*35*	*72.9*	*0*	*0*	*13*	*27.1*	*0*	*0*
Refill pods	TRPR 37.(5)(b)	*36*	*35*	*97.2*	*1*	*2.8*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(5)(b)	*12*	*11*	*[91.7]*	*0*	*0*	*0*	*0*	*1*	*8.3*
Vapekits	TRPR 37.(5)(b)	*12*	*11*	*[91.7]*	*1*	*[8.3]*	*0*	*0*	*0*	*0*
Is the health warning in black Helvetica bold type on a white background?	TRPR 37.(5)(c)	156	*128*	*82.1*	*27*	*17.3*	*0*	*0*	*1*[b]	*0.6*
Disposables	TRPR 37.(5)(c)	*48*	*39*	*81.3*	*9*	*18.8*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(5)(c)	*48*	*38*	*79.2*	*10*	*20.8*	*0*	*0*	*0*	*0*
Refill pods	TRPR 37.(5)(c)	*36*	*34*	*94.4*	*2*	*5.6*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(5)(c)	*12*	*8*	*[66.7]*	*3*	*[25.0]*	*0*	*0*	*1*	*[8.3]*
Vapekits	TRPR 37.(5)(c)	*12*	*9*	*[75.0]*	*3*	*[25.0]*	*0*	*0*	*0*	*0*
Is the health warning in a font size which ensures that the text occupies the greatest possible proportion of the surface area reserved for it?	TRPR 37.(5)(d)	156	*119*	*76.3*	*35*	*22.4*	*1*	*0.6*	*1*[b]	*0.6*
Disposables	TRPR 37.(5)(d)	*48*	*35*	*72.9*	*13*	*27.1*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(5)(d)	*48*	*40*	*83.3*	*8*	*16.7*	*0*	*0*	*0*	*0*
Refill pods	TRPR 37.(5)(d)	*36*	*33*	*91.7*	*3*	*8.3*	*0*	*0*	*0*	*0*

Variable	**TRPR codes**		**Yes**		**No**		**Unclear**		**N/A**	
Tanks & cartomisers	TRPR 37.(5)(d)	*12*	*5*	*[41.7]*	*6*	*[50.0]*	*0*	*0*	*1*	*[8.3]*
Vapekits	TRPR 37.(5)(d)	*12*	*6*	*[50.0]*	*5*	*[41.7]*	*1*	*[8.3]*	*0*	*0*
Does the health warning appear at the centre of the surface area reserved for it?	TRPR 37.(5)(e)	156	*155*	*99.4*	*0*	*0*	*0*	*0*	*1*[b]	*0.6*
Disposables	TRPR 37.(5)(e)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(5)(e)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Refill pods	TRPR 37.(5)(e)	*36*	*36*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(5)(e)	*12*	*11*	*[91.7]*	*0*	*0*	*0*	*0*	*1*	*[8.3]*
Vapekits	TRPR 37.(5)(e)	*12*	*12*	*[100]*	*0*	*0*	*0*	*0*	*0*	*0*
Is the health warning parallel to the main text on the surface concerned?	TRPR 37.(6)	156	*155*	*99.4*	*0*	*0*	*0*	*0*	*1*[b]	*0.6*
Disposables	TRPR 37.(6)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
E-liquids	TRPR 37.(6)	*48*	*48*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Refill pods	TRPR 37.(6)	*36*	*36*	*100*	*0*	*0*	*0*	*0*	*0*	*0*
Tanks & cartomisers	TRPR 37.(6)	*12*	*11*	*[91.7]*	*0*	*0*	*0*	*0*	*1*	*[8.3]*
Vapekits	TRPR 37.(6)	*12*	*12*	*[100]*	*0*	*0*	*0*	*0*	*0*	*0*

Notes: [%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)] The above categories are not mutually exclusive. Packs were scored against each of the codes above. It is possible for packs to not comply on more than one of the above. [a] For example, information was on the box and a non-peelable label. [b] Pack did not display the nicotine health warning. [c] Packs did not display the nicotine health warning on the front and back, but did cover 30% of the respective surfaces.

TRPR Sub-Section 37(2)

As previously noted, the MHRA guidance states that, "Where all the required leaflet information can fit on the unit pack and other labelling within the pack without loss of legibility to the consumer, our interpretation of the TPD is that the packaging can be considered to include the leaflet, and a separate leaflet insert is not required" (MHRA, 2022a). The legibility to the consumer of the labelling was not assessed nor the full content of any leaflets contained within the packs, but the external packaging was opened to check for the presence/absence of leaflets contained in the pack to assess this code in our analysis. Information could be printed on the pack, loose on an information sheet in the packs, or printed on a peel-back (or tag) label. All 12 Vapekits included a 'leaflet' or on-pack information. Almost all E-liquid packs (92%) and Refill pod packs (92%) included a leaflet, as did many Disposables' packs (85%) (see also Table S4, Appendix 2). Over half of the Tanks and Cartomisers (*n*=7 of 12) did not include a leaflet.

TRPR Paragraph 37(3a)

All the packs in the Disposables (100%), E-liquids (100%) and Refill pods (100%) product types had an ingredients list printed on the pack; all were packs of products containing an e-liquid. Of the three Tanks and Cartomisers that contained an e-liquid, all had an ingredients list on the pack. Of the five Vapekits that contained e-liquid, one (an IVG Starter Kit) did not include a list of ingredients on the pack while the other four Vapekits that contained e-liquid did. It was beyond the scope of the project to assess the final formulation of an e-liquid and whether all ingredients were listed, and listed in order of quantities used, for full compliance with TRPR paragraph 37(3a).

TRPR Paragraph 37(3b)

All the packs in the Disposables (100%), E-liquids (100%) and Refill pods (100%) categories contained e-liquid and included an indication of the nicotine content of the product as required by paragraph 37(3b) (Table 11). Of the three Tanks and Cartomisers that contained an e-liquid (*n*=3 of 12), all (*n*=3 of 3) included an indication of the nicotine content of the product. Of the five Vapekits that contained e-liquid (*n*=5 of 12), all (*n*=5 of 5) included an indication of the nicotine content of the product.

Only one of the packs in the Disposables category (2%) did not display an indication of the nicotine delivery per dose of the product as required by paragraph 37(3b) (Table 11). All the packs in the E-liquids (100%) and Refill pods (100%) categories indicated the nicotine delivery per dose. Of the three Tanks and Cartomisers that contained an e-liquid (*n*=3 of 12), all (*n*=3 of 3) displayed the nicotine delivery per dose of the device. For Vapekits, all five that contained e-liquid, plus one Vapekit that contained no e-liquid, displayed an indication of the nicotine delivery per dose (*n*=6 of 12). We coded an indication of nicotine delivery dose being present where it was displayed as per puff (inhalation) or per pack; where the manufacturer used the word 'dose'; or where the nicotine level (i.e., the amount of nicotine contained in 1ml of liquid) was displayed.

TRPR Paragraph 37(3c)

All packs for refill pods (n=36, 100%) displayed a batch number on the outside of the pack, as required. Most of the packs missing a batch number were for Tanks and Cartomisers (*n*=4 of 12) and Vapekits (*n*=3 of 12). Among Disposables' packs, one in ten (10%) had no batch number. One Fantasi Disposables box had the text, "BATCH NO: ", but no batch number had been printed. In the E-liquids category, while only one pack (2%) was missing a batch number on the pack exterior, over one-third (35%) of packs had no external batch number but instead included the text "Check inside for batch number" (or similar). The remaining E-liquids (63%) included a batch number on the outside of the pack, as required.

TRPR Paragraph 37(3d)

The TRPR text and guidance is unclear on the acceptable format of this recommendation (i.e., to keep the product out of reach of children). Because of this, either text or symbols were accepted as the recommendation being present. Most packs in the sample conformed to this recommendation, including all Refill pods (100%). However, the recommendation to keep the product out of reach of children was missing from two-thirds (*n*=8 of 12) of Tanks and Cartomisers packs. Four packs from the same brand of Tanks and Cartomisers (Smok) had stickers obscuring their list of warnings and recommendations, and thus were coded as absent. The recommendation was absent from one in ten or fewer E-liquid (10%), Vapekit (*n*=1 of 12) and Disposables packs (2%).

TRPR Sub-Section 37(4)

The MHRA advise that, “If your e-cigarette product does not contain nicotine when sold, but can be used to contain nicotine, the warning statement ‘this product contains nicotine which is a highly addictive substance’ must still be applied” (MHRA, 2022a). The packs for all E-liquids (100%) included the required text (see also Table S5, Appendix 2). The packs for most Disposables (96%), Refill pods (94%), Tanks and Cartomisers (*n*=11 of 12) and Vapekits (*n*=11 of 12) also had the required health warning text. Only one pack in the Tanks and Cartomisers category (OXVAX Replacement Pods) was missing any type of text warning. Alternative wording was used on packs in the Vapekits (*n*=1 in 12), Disposables (4%) and Refill pods (6%) categories, including the longer alternative allowed in the European Union by the TPD, “This product contains nicotine which is a highly addictive substance. It is not recommended for use by non-smokers” or similar variations, or in some cases completely non-compliant wording: “WARNING: This product contains nicotine. Nicotine is an addictive chemical”.

TRPR Paragraphs 37(5a−e)

As reported in the previous paragraph, only one pack from the whole sample (in the Tanks and Cartomisers category) was missing any type of text health warning; hence in the subsequent assessment of health warning features, NA is recorded for this one pack.

The health warning appeared on both the front and back surfaces of all the packs in the Disposables (100%), Refill pods (100%), Vapekits (n=11 of 12) and the remaining Tanks and Cartomisers (*n*=11 of 11) categories (see also Table S6, Appendix 2). Among the E-liquid packs, over one-quarter (27%) did not have the warning on both the front and back surfaces. All were e-liquids in plastic bottles: some had one health warning visible front-on (*n*=9), others on the back only (*n*=3) and one had two warnings, one on each side (*n*=1).

After assessing whether the warning appeared on the front and back of the pack (TRPR Paragraph 37(5a)), all the subsequent warning assessments were made to the front of pack warning only. Almost one-fifth (19%) of the health warnings on Disposables packs were judged to cover less than 30% of the area of the front surface, calculated in relation to the area of the surface concerned when the pack is closed (see also Table S7, Appendix 2). Only one Refill pods pack (3%) and one Vapekit pack (*n*=1 of 12) were judged similarly. In the E-liquid packs category, over one-quarter (27%) were judged as ‘Unclear’ that the health warning on the front was the correct size. These were the same packs that did not have a warning on the front face of the bottle. The remaining E-liquid packs had the correct size of health warning (73%). Of the 11 Tanks and Cartomisers which included a health warning, all were judged to have health warnings covering 30% or more of the area.

All health warnings on packs were in black type on a white background; however, not all packs used black Helvetica bold type (see also Table S8, Appendix 2). Those packs that did not, included three Tanks and Cartomisers (*n*=3 of 11) and three Vapekits (*n*=3 of 12), around one-fifth of E-liquids (21%) and Disposables (19%), and 6% of Refill pods. Across the product types, examples of incorrect warnings included not using the Helvetica font or Helvetica bold or compressing the spacing between letters. It was unclear from the guidance whether upper case was permitted, and these cases were coded as incorrect.

The health warning was judged not to be in a font size which ensured that the text occupied the greatest possible proportion of the surface area reserved for it on a large number of packs, including over half the Tanks and Cartomisers (*n*=6 of 11) and five of the Vapekits (*n*=5 of 12) (see also Table S9, Appendix 2). One Vapekit, coded as 'Unclear', used a font size that broke-up and hyphenated some words over lines in order to 'occupy the greatest possible portion' of the area. Over a quarter of Disposables (27%), 17% of E-liquids and 8% of Refill pods used too small a font size. All the health warnings (100%) in all five product categories were at the centre of the warning area.

TRPR Sub-Section 37(6)

All the health warnings (100%) in all five product categories were parallel to the main text on the surface concerned.

Section 38 of the Tobacco and Related Products Regulations 2016

Section 38 of the TRPR, 'Product presentation requirement', has five sub-sections (including 11 paragraphs or sub-paragraphs). All subsections, were judged as relevant to the external packaging of e-cigarettes and e-liquids:

> *"(1) No person may produce or supply an electronic cigarette or refill container unless it complies with paragraphs (2) to (4).*
> *(2) The unit packet and any container pack of the electronic cigarette or refill container may not include any element or feature falling within paragraph (3).*
> *(3) An element or feature falls within this paragraph if it—*
> > *(a) promotes an electronic cigarette or refill container, or encourages its consumption by creating an erroneous impression about its characteristics, health effects, risks or emissions;*
> > *(b) suggests that a particular electronic cigarette or refill container—*
> > > *(i) is less harmful than other electronic cigarettes or refill containers,*
> > > *(ii) has vitalising, energising, healing, rejuvenating, natural or organic properties, or*
> > > *(iii) has other health or lifestyle benefits;*

(c) refers to taste, smell or other additives (except flavourings) or the absence of any such thing;
(d) resembles a food or a cosmetic product; or
(e) suggests that a particular electronic cigarette or refill container has improved biodegradability or other environmental advantages.

(4) The unit pack or container pack in which an electronic cigarette or refill container is, or is intended to be, presented for retail sale may not contain any element or feature which suggests economic advantage by including printed vouchers or offering discounts, free distribution, two-for-one or other similar offers.
(5) The elements and features referred to in paragraphs (2) to (4) include (but are not limited to) text, symbols, names, trademarks, figurative or other types of sign." (UK Government 2016)

For the content analysis, provisions from the different subsections were combined to make nine assessments, as shown in Table 12, including one paragraph 38(3d) split in two to allow assessment of 'resembling a food product' and 'resembling a cosmetic product' separately. For example, subsections 38(2) and 38(5) were combined with subparagraph 38(3b(ii)) to assess whether "elements or features of the pack suggest that a particular electronic cigarette or refill container has vitalising, energising, healing, rejuvenating, natural or organic properties". Guidance for GB production and supply from the MHRA states that "We understand that the reasons for these restrictions are to ensure that people are not misled as to the nature of the product or its effects on health or invited to choose a particular option because of a perceived comparative benefit against other e-cigarette products that may be erroneous" (MHRA, 2022b).

Table 12: Packaging-related TRPR 38 provisions: product presentation requirements

Variable	**TRPR codes**		**Yes**		**No**		**Unclear**	
		N	**n**	**%**	**n**	**%**	**n**	**%**
Does the pack mislead by creating an erroneous impression about product characteristics, health effects, risks or emissions?	TRPR 38.(3)(a)	156	2	1.3	146	93.6	8	5.1
Disposables	TRPR 38.(3)(a)	*48*	*0*	*0*	*42*	*87.5*	*6*	*12.5*
E-liquids	TRPR 38.(3)(a)	*48*	*2*	*4.2*	*46*	*95.8*	*0*	*0*
Refill pods	TRPR 38.(3)(a)	*36*	*0*	*0*	*36*	*100*	*0*	*0*
Tanks & cartomisers	TRPR 38.(3)(a)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Vapekits	TRPR 38.(3)(a)	*12*	*0*	*0*	*10*	*[83.3]*	*2*	*[16.7]*

Variable	TRPR codes		Yes		No		Unclear	
Does the pack suggest that a particular electronic cigarette or refill container is less harmful than other electronic cigarette or refill containers?	TRPR 38.(3)(b)(i)	156	1	0.6	155	99.4	0	0
Disposables	TRPR 38.(3)(b)(i)	*48*	*0*	*0*	*48*	*100*	*0*	*0*
E-liquids	TRPR 38.(3)(b)(i)	*48*	*1*	*2.1*	*47*	*97.9*	*0*	*0*
Refill pods	TRPR 38.(3)(b)(i)	*36*	*0*	*0*	*36*	*100*	*0*	*0*
Tanks & cartomisers	TRPR 38.(3)(b)(i)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Vapekits	TRPR 38.(3)(b)(i)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Does the pack suggest that a particular electronic cigarette or refill container has vitalising, energising, healing, rejuvenating, natural or organic properties?	TRPR 38.(3)(b)(ii)	156	8	5.1	104	66.7	44	28.2
Disposables	TRPR 38.(3)(b)(ii)	*48*	*2*	*4.2*	*18*	*37.5*	*28*	*58.3*
E-liquids	TRPR 38.(3)(b)(ii)	*48*	*5*	*10.4*	*37*	*77.1*	*6*	*12.5*
Refill pods	TRPR 38.(3)(b)(ii)	*36*	*1*	*2.8*	*29*	*80.6*	*6*	*16.7*
Tanks & cartomisers	TRPR 38.(3)(b)(ii)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Vapekits	TRPR 38.(3)(b)(ii)	*12*	*0*	*0*	*8*	*[66.7]*	*4*	*[33.3]*
Does the pack suggest that a particular electronic cigarette or refill container has other health or lifestyle benefits?	TRPR 38.(3)(b)(iii)	156	2	1.3	147	94.2	7	4.5
Disposables	TRPR 38.(3)(b)(iii)	*48*	*0*	*0*	*42*	*87.5*	*6*	*12.5*
E-liquids	TRPR 38.(3)(b)(iii)	*48*	*2*	*4.2*	*46*	*95.8*	*0*	*0*
Refill pods	TRPR 38.(3)(b)(iii)	*36*	*0*	*0*	*36*	*100*	*0*	*0*
Tanks & cartomisers	TRPR 38.(3)(b)(iii)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Vapekits	TRPR 38.(3)(b)(iii)	*12*	*0*	*0*	*11*	*[91.7]*	*1*	*8.3*

Variable	TRPR codes		Yes		No		Unclear	
Does the pack refer to taste, smell or other additives (except flavourings) or the absence of any such thing?	TRPR 38.(3)(c)	156	1	0.6	154	98.7	1	0.6
Disposables	TRPR 38.(3)(c)	*48*	*0*	*0*	*48*	*100*	*0*	*0*
E-liquids	TRPR 38.(3)(c)	*48*	*0*	*0*	*48*	*100*	*0*	*0*
Refill pods	TRPR 38.(3)(c)	*36*	*0*	*0*	*36*	*100*	*0*	*0*
Tanks & cartomisers	TRPR 38.(3)(c)	*12*	*1*	*[8.3]*	*11*	*[91.7]*	*0*	*0*
Vapekits	TRPR 38.(3)(c)	*12*	*0*	*0*	*11*	*[91.7]*	*1*	*[8.3]*
Does the pack resemble a food product?	TRPR 38.(3)(d)	156	0	0	156	100	0	0
Disposables	TRPR 38.(3)(d)	*48*	*0*	*0*	*48*	*100*	*0*	*0*
E-liquids	TRPR 38.(3)(d)	*48*	*0*	*0*	*48*	*100*	*0*	*0*
Refill pods	TRPR 38.(3)(d)	*36*	*0*	*0*	*36*	*100*	*0*	*0*
Tanks & cartomisers	TRPR 38.(3)(d)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Vapekits	TRPR 38.(3)(d)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Does the pack resemble a cosmetic product?	TRPR 38.(3)(d)	156	0	0	153	98.1	3	1.9
Disposables	TRPR 38.(3)(d)	*48*	*0*	*0*	*45*	*93.8*	*3*	*6.3*
E-liquids	TRPR 38.(3)(d)	*48*	*0*	*0*	*48*	*100*	*0*	*0*
Refill pods	TRPR 38.(3)(d)	*36*	*0*	*0*	*36*	*100*	*0*	*0*
Tanks & cartomisers	TRPR 38.(3)(d)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Vapekits	TRPR 38.(3)(d)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Does the pack suggest that a particular electronic cigarette or refill container has improved biodegradability or other environmental advantages?	TRPR 38.(3)(e)	156	14	9.0	142	91.0	0	0
Disposables	TRPR 38.(3)(e)	*48*	*6*	*12.5*	*42*	*87.5*	*0*	*0*

Variable	TRPR codes		Yes		No		Unclear	
E-liquids	TRPR 38.(3)(e)	*48*	*5*	*10.4*	*43*	*89.6*	*0*	*0*
Refill pods	TRPR 38.(3)(e)	*36*	*2*	*5.6*	*34*	*94.4*	*0*	*0*
Tanks & cartomisers	TRPR 38.(3)(e)	*12*	*0*	*0*	*12*	*100*	*0*	*0*
Vapekits	TRPR 38.(3)(e)	*12*	*1*	*[8.3]*	*11*	*[91.7]*	*0*	*0*
Does the pack suggest that a particular electronic cigarette or refill container has economic advantage with vouchers, discounts, free distribution, 2-for-1 or similar?	TRPR 38.(4)	156	4	2.6	152	97.4	0	0
Disposables	TRPR 38.(4)	*48*	*4*	*8.3*	*44*	*91.7*	*0*	*0*
E-liquids	TRPR 38.(4)	*48*	*0*	*0*	*48*	*100*	*0*	*0*
Refill pods	TRPR 38.(4)	*36*	*0*	*0*	*36*	*100*	*0*	*0*
Tanks & cartomisers	TRPR 38.(4)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*
Vapekits	TRPR 38.(4)	*12*	*0*	*0*	*12*	*[100]*	*0*	*0*

Notes: [%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)] The above categories are not mutually exclusive. Packs were scored against each of the codes above. It is possible for packs to not comply on more than one of the above.

TRPR Sub-Sections 38(2), 38(3a) and 38(5)

Two packs, both in the E-liquid product category (4% of E-liquids), were assessed as having elements or features of the pack which could mislead by creating an erroneous impression about its characteristics, health effects, risks or emissions. The MHRA guidance states that, "We interpret this as including a prohibition on misleading safety claims, such as that the product is 'safe' or 'risk-free'. It would also preclude claims for any health benefits of using the product. Any representation of a food ingredient, such as a picture of fruit on the pack, would only be permitted if the product contains that ingredient or flavouring. Any reference to food ingredients should not suggest the product is a 'healthy' option" (MHRA, 2022b). The first of these two packs was judged to mislead on 'health'. The Dr Vapes Ruby 10ml Nic Salt E-Liquid, used the company name "Dr Vapes" (with the name on two sides and the top of the box) and included the hashtag "#StayPrescribed" on one side. The second was assessed as being misleading on 'health effects' by using the text "less allergenic" and "easy on the throat". The Just Juice Berry Burst & Lemonade 10ml Nic Salt E-Liquid stated on the back of the pack, "Just Juice comes in the tangiest, tastiest, fruitiest flavours around. Long-lasting, less allergenic and easy on the throat".

Three other elements or features on packs were considered 'Unclear'; even after discussion within the team it was difficult to assess whether some products could be interpreted as misleading in the sample, in the Disposables (13%) and Vapekits (*n*=2 of 12) categories. The Riot Squad Q Bar Disposables packs all declared "Neotame & Ace-K Free" beside an icon of a crossed-out chemicals flask, and "Sweetened With Stevia" beside a leaf icon, potentially indicating the replacement of chemical/artificial sweeteners with natural sweeteners. Among the Vapekits, the UWELL Caliburn AK2 kit had a reference to food on the pack back, and image of a Nice-type biscuit and “Cute As Biscuit” [sic] text, and the UWELL Caliburn Pod Mod Vape Kit mentioned safety, by using the brand tag “Caliburn Think Simplicity Think Safety”.

All packs containing Refill pods (100%) and Tanks & Cartomisers (*n*=12 of 12), and most E-liquid packs (96%), Disposables packs (88%) and Vapekit packs (*n*=10 of 12) were judged not to mislead by creating an erroneous impression about product characteristics, health effects, risks or emissions.

TRPR Sub-Sections 38(2), 38(3b(i)) and 38(5)

Only one pack in the sample, an E-liquid pack (2% of E-liquids), had elements or features of the pack that were assessed as misleading to suggest that a particular electronic cigarette or refill container is less harmful than other electronic cigarettes or refill containers. The guidance from MHRA states that, “We interpret this as including a prohibition on any comparative safety claims vs other e-cigarette products” (MHRA, 2022b). The Just Juice Berry Burst & Lemonade 10ml Nic Salt E-Liquid was judged as misleading because it included the comparison “less allergenic” on the back of the pack, “Just Juice … Long-lasting, less allergenic and easy on the throat.”

All the packs in the Disposables (100%), Refill pods (100%), Tanks & Cartomisers (*n*=12 of 12), and Vapekit pack (*n*=12 of 12) categories, plus most E-liquid packs (98%) were judged not to mislead by suggesting that a particular electronic cigarette or refill container is less harmful than other electronic cigarettes or refill containers.

TRPR Sub-Sections 38(2), 38(3b(ii)) and 38(5)

The MHRA Guidance states that this restriction would “prohibit claims for benefits from using the product or from its ingredients including any suggestion of effects on energy or health (and related terms). Any description of an ingredient as of ‘natural’ origin or organically produced would be similarly prohibited. In summary, MHRA and the Chartered Trading Standards Institute are of the opinion that the use of terms within product names such as “energy”, “mild” and related or similar terms are clearly in breach of this Regulation” (MHRA, 2022b).

A tenth (10%) of E-liquid packs were assessed as suggesting that the product had vitalising, energising, healing, rejuvenating, natural or organic properties. These included two Vampire Vape “Energy” flavour e-liquids, two Juice N Power e-liquids using the hashtag #FeelThePower, and a Just Juice e-liquid that suggested an effect on energy or health with, “Get that summer feeling all year round with our limited-edition fruitilicious fusion” and “Refreshing citrus blast”. Two Disposables’ packs (4% of Disposables) were assessed along the same lines, for using ‘energy’ as a flavour descriptor: ELF BAR NC600 “Kiwi Energy” and Chief's Totem 600 Puffs “Energy Ice”. One Refill Pod pack, NZO Blackcurrant Lemonade Pods, (3% of Refill Pods) also used “Refreshing” to describe “a refreshing twist of blackcurrant and lemonade”.

Almost 3 in 5 Disposables (58%) were coded as ‘Unclear’ if the pack suggested vitalising, energising, healing, rejuvenating, natural or organic properties. All Beco Bars and Beco Mates, Elf Bars, Geek Bars, True Bars and IVG Instants in the sample had a version of “Natural and/& Artificial Flavo(u)rs/Flavourings” listed under Ingredients on the pack. As above, the guidelines state that “any description of an ingredient as of ‘natural’ origin … would be similarly prohibited”. The Riot Squad Q bar packs all declared “Neotame & Ace-K Free” beside an icon of a crossed-out chemicals flask, and “Sweetened With Stevia” beside a leaf icon, potentially indicating natural sweeteners. Similarly, 13% of E-liquid packs (all V4 V4POUR e-liquids) in the sample, and 17% of Refill pods (all Elf Pods and Hexa Pods) in the sample, were coded as ‘Unclear’ due to a version of ‘natural flavourings’ listed in the on-pack ingredients. Among Vapekits (*n*=4 of 12) were coded as ‘Unclear’, three UWELL Calliburn Vapekits’ packs for the company name “UWELL” (You Well?) and one Vapekit (Hexa) that had a version of ‘natural flavourings’ listed in the on-pack ingredients.

All packs containing Tanks and Cartomisers (*n*=12 of 12) and four fifths of Refill pods (81%) were judged not to include any element or feature suggesting that a particular electronic cigarette or refill container has vitalising, energising, healing, rejuvenating, natural or organic properties. Over three quarters of E-liquid packs (77%), eight Vapekit packs (*n*=8 of 12) and 38% of Disposables’ packs were also judged as not suggesting this.

TRPR Sub-Sections 38(2), 38(3b(iii)) and 38(5)

These sub-sections of the TRPR, which prohibit any suggestion of other health or lifestyle benefits, are interpreted by the MHRA guidance for GB production and supply to “preclude any suggestion in the name or graphics that use of the product confers social status or sexual benefits” (MHRA, 2022b). The MHRA Guidance also includes this text from Article 13 of the TPD, “Certain packaging and tobacco products could also mislead consumers by suggesting benefits in terms of weight loss, sex appeal, social status, social life or qualities such as femininity, masculinity or elegance” (MHRA, 2022b). Two packs, both E-liquids (4% of E-liquids), were judged to confer social status using text (‘sophisticated’) or flavour descriptors (‘Millionaire’s’). Ionic Salts Blueberry 10ml Nic Salt E-Liquid was described on the pack reverse as “Smooth, sophisticated and unbelievably satisfying”, with Vapouriz 10ml Nic Salt E-Liquid using the flavour variant “Millionaire's Menthol”.

Seven packs were judged as being ‘Unclear’ as to whether other health or lifestyle benefits were suggested by the pack. Six Disposables (13%) were coded as ‘Unclear’, mostly related to flavour descriptors such as the Crystal Bar 600 Puff Disposable Vape Device in “Tiger Blood” flavour, which is a US snow-cone/slushy fruit flavouring, but also a term with lifestyle, strength and masculinity connotations. Similarly, five products from the Nasty Fix brand used terms, often slang or sexualised, from another social scene, including ‘Fix’ (a narcotic injection), ‘Trap Queen’, ‘Slow Blow’ and ‘True Ice’. One Vapekit (*n*=1 of 12) was coded as ‘Unclear for the text “Distinguishably Zesty” beside an image of a drop of liquid on the back of the UWELL Caliburn AK2 pack.

All the packs in the Refill pods (100%) and Tanks and Cartomisers (*n*=12 of 12) categories, and most packs in the E-liquids (96%), Vapekits (*n*=11 of 12) and Disposables (88%) categories, had no elements or features of the pack suggesting other health or lifestyle benefits of its contents.

TRPR Sub-Sections 38(2), 38(3c) and 38(5)

One pack, in the Tanks and Cartomisers category (*n*=1 of 12), was assessed as having elements or features of the pack that refer to taste, smell or other additives (except flavourings). On the back of the SMOK NOVO 2 Pods pack was the text “Smooth throat-hit Pure taste”. One Vapekit (*n*=1 of 12) was coded as ‘Unclear’ for the text “Distinguishably Zesty” beside an image of a drop of liquid on the back of the UWELL Caliburn AK2 pack.

All packs in the E-liquids (100%), Disposables (100%) and Refill pods (100%) categories, plus most packs (*n*=11 of 12) Tanks and Cartomisers and Vapekit categories, had no pack elements or features that referred to taste, smell or other additives (except flavourings).

TRPR Sub-Sections 38(2), 38(3d) and 38(5)

These sub-sections of the TRPR are interpreted by the MHRA guidance for GB production and supply “as requiring that the presentation of the product does not mislead consumers as to the nature of the product. It should be clear that the product is not a food or a cosmetic product. References to foods or food ingredients are permissible in the name or on the pack as factual descriptions of a flavour ingredient of the product, provided the nature of the product is clear” (MHRA, 2022b). It was noted that one Disposable device viewed side-on only (True Bar 600 Puffs Disposable Vape Device: Flavour: Cotton Candy), had the potential to mislead consumers with images of sweets, marshmallows and ambiguous text; however, the restriction applies to the whole pack.

All the packs in the E-liquids (100%), Disposables (100%), Refill pods (100%), Tanks and Cartomisers (*n*=12 of 12), and Vapekit (*n*=12 of 12) categories, were judged to not include any element or feature resembling a food product. Three packs, all Disposable e-cigarettes (6% of Disposables), were assessed as ‘Unclear’ as to whether the pack suggested a cosmetic product. Two Doozy Nix Disposables (Sweet Cherry and Strawberry Milk) packs were judged as potentially resembling lipsticks aimed at younger girls/‘tweenagers’ (i.e., less sophisticated cosmetic brands). A third pack, for an ELF BAR T600 Disposable Pod Juicy Peach flavour, was judged as potentially resembling a perfume atomiser.

All packs in the E-liquids (100%), Refill pods (100%), Tanks & Cartomisers (*n*=12 of 12), and Vapekit (*n*=12 of 12) categories, and most Disposables (94%), were judged to not include any element or feature resembling a cosmetic product.

TRPR Sub-Sections 38(2), 38(3e) and 38(5)

The MHRA guidance for these sub-sections of the TRPR states “We interpret this as including a prohibition on any reference to the product being eco-friendly, environmentally ‘green’ or similar as well as any comparative biodegradability or environmental claims versus other e-cigarette products. This would also include any such references in the name of the product” (MHRA, 2022b).

More than one tenth (13%) of Disposables packs were assessed as having elements or features of the pack that suggest they had improved biodegradability or other environmental advantages. All were Riot Squad Q Bar Disposables with the seedling logo (an eco-source of pack materials) and the text “RIOT RECYCLE PROGRAMME” printed on the pack. One tenth (10%) of E-liquid packs included the green dot symbol (an eco-source of pack materials) on the box (Dr Vape) or bottle label (Vampire Vapes). 6% of Refill pods packs had the same green dot symbol (Voom pods). One Vapekit pack (*n*=1 of 12), for the JOYETECH AIO ECO, includes “ECO” in the product name on front, one-side, back and base of the box. (“Eco”, not harming the environment (adjective) or representing ecology (prefix)).

All the packs in the Tanks & Cartomisers (*n*=12 of 12) category, and most packs in the Disposables (88%), E-liquids (90%), Refill pods (94%), Vapekit (*n*=11 of 12) categories, were judged to not have elements or features that suggest that a particular electronic cigarette or refill container has improved biodegradability or other environmental advantages.

TRPR Sub-Sections 38(4) and 38(5)

Four packs, all products in the Disposables category (8% of Disposables), had elements or features which suggested economic advantage. All were Nasty Fix brand and had a sticker on the pack front, under the cellophane, that said “SCAN & WIN $250,000 IN CASH PRIZES. PEEL HERE”. All packs in the E-liquids (100%), Refill pods (100%), Tanks & Cartomisers (*n*=12 of 12), and Vapekit (*n*=12 of 12) categories, plus most (92%) Disposables packs, displayed no elements or features which suggested economic advantage.

WP2: Focus Groups Results

The findings from 16 focus groups with a total of 70 young people aged 11-17 years and adults (who do not smoke, who smoke but do not use e-cigarettes, and who smoke and use e-cigarettes), conducted between August and September 2022, are reported here. Table 13 shows key sample characteristics. The analysis covers exposure to, and appeal of, e-cigarette packaging; on-pack warnings; appeal to school-aged children, young people and adults who do not smoke; on-pack messages; and additional measures that could be introduced to reduce the appeal of e-cigarettes to children and people who do not smoke.

Table 13: Key sample characteristics for the focus groups

Group	Gender	Age	Social grade	Nicotine use
1	F	18–39	C2DE	Dual users
2	M	18–39	C2DE	Smokes (doesn't use e-cigarettes)
3	F	40+	C2DE	Smokes (doesn't use e-cigarettes)
4	M	40+	C2DE	Dual users
5	M	11–13	ABC1	N/A
6	F	11–13	C2DE	N/A
7	M	14–15	ABC1	N/A
8	F	14–15	C2DE	N/A
9	M	18–39	C2DE	Dual users
10	F	18–39	C2DE	Smokes (doesn't use e-cigarettes)
11	M	40+	C2DE	Smokes (doesn't use e-cigarettes)
12	F	40+	C2DE	Dual users
13	F	16–17	C2DE	N/A
14	F	40+	ABC1	Does not smoke
15	M	16–17	ABC1	N/A
16	M	18–39	ABC1	Does not smoke

Research Question 3: How do young people and adults who do not smoke, who smoke, and who smoke and use e-cigarettes, perceive, interpret and engage with e-cigarette and refill packs currently on sale in the UK, including on-pack messaging?

Exposure to e-cigarette packaging

Across all groups, the ubiquity of e-cigarette packaging was noted, with several participants expressing the view that e-cigarette packaging is "*everywhere*" (e.g., 18-39M, C2DE, smokes; 40+M, C2DE, dual user). Participants, including teenagers, noted the high visibility of e-cigarette packaging, and reported regularly seeing it in corner shops, petrol stations, specialist vape shops, supermarkets and as litter on the streets:

> "*They're quite prominent in* [name of a major supermarket]*… they've normally got five or six different flavours, like, just on the shelf behind the counter. Like, where the lottery bit is. And obviously 'cause they're bright, they stand out.*" (18-39M, C2DE, smokes)

Moderator: ***"Any other place you might see them?"***

Participant 4: *"On the street"*
Moderator: ***"On the street? Would that be in a shop or on the ground?"***
Participant 4: *"Both."* (11-13M, ABC1)

Moderator: ***"Where do you tend to see them, vapes, or e-cigarettes, where do you tend to see them?"***
Participant 2: *"Mostly in, like, corner shops, like smaller shops, not really in bigger shops, like* [large supermarket name]*, or* [other large supermarket name]*, or something. More like in wee-er shops."*
Participant 1: *"Yeah."*
Moderator 2: ***"What are they like, the ones that you see in there, like, what do they look like?"***
Participant 5: *"They're all different, like, bright colours."* (11-13F, C2DE)

When this group of young girls were asked if they ever saw packaging for e-cigarettes or vaping products, one said *"Yeah, on like the floor, in streets"* and another confirmed this by saying "*Yeah, like especially around school*" (11-13F, C2DE). A group of 14-15 year-old girls said "*you see them laying everywhere"* (Participant 1), "*like on the ground, and stuff*" (Participant 3) and "*yeah, just empty ones in packages everywhere.*" (Participant 5) (14-15F, C2DE)

For teenagers, this pervasive visibility of packaging seemed to mirror the popularity of e-cigarette use:

Participant 1: "*You see everyone with them just walking… You basically see it everywhere*"
Participant 4: "*Outside my college is like a big cloud basically because everyone just goes outside college to vape. Like parties and stuff, it's become like a social thing that everyone passes vapes around and tries each other's flavours and stuff like that.*" (16-17M, ABC1)

The rise in exposure to e-cigarette products and packaging in shops over recent years was also noted in several groups:

> "*It used to be that you'd go into an e-cigarette shop and get it but no, you're getting them when you're doing your shopping now.*" (18-39F, C2DE, dual user)
>
> "*Like, where they used to have chewing gum, now it's vapes.*" (18-39M, C2DE, smokes)

This ubiquity was contrasted with the lack of visibility of cigarettes in shops, given legislative restrictions on the display of tobacco products:

> "*The cigarettes are all behind* [the counter] *and hidden and all that but* [e-cigarettes]*, they're like front and centre right on, sort of at the cash desk, right down the front.*" (18-39M, C2DE, smokes)

"*It's all out on display. It's not hidden away the way your cigarettes are. It's all there.*" (40+F, C2DE, smokes)

"*With cigarettes now, you know, the whole… it's behind that closed thing* [counter]*… whereas with the vapes, they're just there* [in front of you]*… so readily available.*" (40+F, C2DE, dual user)

This contrast was also obvious to young people, who were accustomed to plain packaging and display regulations for cigarettes:

Participant 3: "*I've noticed that cigarettes in shops they're always held in like a closet in the back behind a bunch of shutters and stuff. Whereas the vapes, although some are contained there as well, a lot of them are just out in the open, just showing, and it makes them look less dangerous, less restricted.*

Moderator: ***"Any comments on that? Because you're kind of agreeing that cigarettes are kind of held behind and these* [e-cigarettes] *are more accessible. Any comments about that?"***

Participant 2: *"Vapes will seem more accessible, because there are specialist vape shops which are everywhere* [Agreement]. *It's so much more easy. You don't really get cigarette shops, like solely for cigarettes. Whereas you get so many vape shops which are full of just vapes."*

Moderator: ***"So, do you see them as contributing to the appeal?"***

Participant 2: *"It just normalises it because it's everywhere, so you don't really see a problem with it I think over time."*

Participant 1: *"Every corner shop has vapes in it now, so they're just really accessible."*

Participant 4: *"Like sometimes you see these areas, no-smoke areas; you don't really see that for vapes. So, that makes it seem less harmful, because obviously why would they not put it up if it's harmful, like they do for smoking.*" (16-17M, ABC1)

A notable exposure to e-cigarette packaging (and e-cigarette use) for teenagers was around school, particularly in the school toilets where use appeared to be common. When asked about use in schools, a 14-15 year-old boy said: "*the majority of people have them these days*" (14-15M, ABC1). Groups of 11-13 year-old and 14-15 year-old girls discussed the visibility of e-cigarettes in their schools and how they see people their own age use e-cigarettes in school:

Moderator: ***"I heard you mention earlier about in school. Has anyone else seen these vapes in school?"***

Participant 1: *"Yeah"*

Moderator: ***"You're all saying, yes. Where would they tend to be in school?"***

Participant 5: *"In the bathrooms"*

Participant 3: *"Toilets"*

Participant 2: *"In my school they just do it, they don't care"*

Participant 6: *"Uh-huh"*

Moderator: ***"Just everywhere?"***

Participant 6: *"Yeah"*

Participant 2: *"They don't care"*

Participant 3: *"Usually in our school it's just like in the toilets"*

Moderator: ***"And would that be like during class time, or break time, or how does it kind of work?"***
Participant 1: *"A mix of both."* (14-15F, C2DE)

Moderator 2: ***"Is that people your age* [in school] *that you see with them?"***
Participant 1: "*Yeah"*
Participant 2: *"Yeah"*
Participant 5: "*Yeah."*
Moderator 2: ***"Yeah."***
Participant 2: *"Like all, like everyone."* (11-13F, C2DE)

Several teenagers and adults recalled seeing e-cigarette packaging online, via pop-up adverts including on Facebook, Twitter, Instagram and TikTok:

> "*You know on your Hotmail, when you go in on the side it comes up automatically, the pictures, you know, they advertise, they push them onto you. I see them quite a lot there… it just comes up automatically, like for different vapes.*" (40+M, C2DE, smokes)

Participants who did not smoke did not recall being exposed to social media e-cigarette advertising and promotion, but reported exposure in public, including as litter, and via advertising in sports stadia, e.g., "*Isn't that an interesting conversation, that an e-cigarette brand is sponsoring sports?*" (40+F, ABC1, does not smoke)

> "*Yes, these ones* [disposables] *that you see everywhere, like on the street where I live, they're just everywhere. I counted about 12 in the space of, like, a minute's walk."*
> *"Just bright yellow."*
> *"Yellows, pinks…Yes, they're just getting chucked on the floor*." (18-39M, ABC1, does not smoke)

Appeal of e-cigarette packaging

Perceptions of product-consumer targeting, and intended user profiles

Participants were given examples of e-cigarette packaging to look at and handle, to assess product-consumer targeting and suitability. Most participants, including those in the teenage groups, were clear about who was being targeted by the packaging and which products were designed with different ages and genders in mind, with one participant noting "*You can see which ones* [products] *are going for which demographic*" (18-39F, C2DE, dual user). For example, the consensus among male groups was that the pink packaging and 'swirly' graphics on the Ripple were designed with females in mind, e.g., "*You wouldn't see any self-respecting guys in Glasgow buying that*" (40+M, C2DE, dual user). Similarly, female groups in particular described the Blu Pro, Riot Squad and Black Panther as "*masculine*" products (18-39F, C2DE, dual user). The JUUL starter kit, considered "*unattractive*" (40+F, C2DE, smokes) because of its predominantly grey packaging, was viewed as designed for people who smoke, e.g., "*I* *would say that looks like a packet of cigarettes… It's not attracting the non-smoker, that packet, so it's a smoker's pack*" (40+M, C2DE, dual user). Fantasi bar packaging was viewed as emulating soft drinks or confectionary packaging and, as a result of the pack colours and flavours, participants in all groups associated this product, and Geek Bars and Elf Bars, with children and young people:

Participant 1: "*Now, I would like to see the guy who actually created this and try and get him to tell me that he's not marketing this to kids. Honest to God"*
Participant 3: *"Looks like a packet of jelly beans."* (40+M, C2DE, dual user)

Participant 5: "*I think the Elf Bars and stuff are, like, colourful, and I think they're more appealing to, like, children, or like teenagers, and stuff, kind of our age. And like, the other ones* [non-disposables] *are kind of, maybe not directed at adults, and stuff, but maybe like, maybe people are more mature and can understand that they come with danger, so they know anyway.*" (14-15F, C2DE)

Moderator 2*: "See these products* [pointing to a group of disposable e-cigarettes], *would the person who uses these kinds of ones be different?"*
Participant 6: *"Yeah"*
Participant 2: *"Yeah, I would say, these are for younger."*
Participant 1: *"Yeah, and these* [larger, rechargeable devices] *are for old men."*
Participant 2: *"Yeah, these ones, older people maybe use bigger, metal ones."*
Participant 6: *"Yeah, or like more expensive ones, that they can just recharge or something."*
Participant 2: "*Yeah, because these ones* [smaller, disposables] *are kind of a bit easier to, like, hide."*
Participant 6: "*Yeah"*
Moderator 2*: "Okay, so it's the discreetness, as well, with those ones?"*
Participant 2: *"Yeah"*
Moderator 2: *"Okay. Why do you think specifically older people for these ones?"*
Participant 4: *"Because they last, like way longer than the disposable ones.*" (11-13F, C2DE)

Some teenagers felt that many of the disposable products were designed particularly with their age group in mind, in contrast to devices which they assumed were intended for older people who had quit smoking or those trying to quit. The colours used in packaging could be taken to indicate not just appropriateness for certain age groups, but also by implication a lack of 'risk':

> "*Those ones don't really seem dangerous, or anything, just because they're like, really bright, and kind of more childish*." (14-15F, C2DE)

In some of the teenage groups, when presented with a range of e-cigarettes currently on the market, they expressed surprise at the appearance of some of them, e.g., "*I thought vapes had like a standardised design look. These seem really varied*" (16-17 M, ABC1). This same group discussed how one product "*looks like a lipstick*" (Participant 3), that another "*looks* *like an eye drop*" (Participant 1) and yet another "*looks very feminine, it's the pinkness of it, it looks like a feminine hygiene product, the packaging. It doesn't look like a vape at all*" (Participant 3). A group of teenage girls also thought some packaging was reminiscent of make-up items, products that one had indicated at the start of the interview that she liked to spend money on:

Participant 2: "*I wouldn't have thought that was a vape."*
Participant 3: *"No"*
Participant 1: *"Neither would I have"*
Moderator: ***"What does it remind you of, is there anything…?"***
Participant 1: *"Like, makeup."*
Participant 5: *"Yeah, like an eyeshadow pallet."*
Participant 2: *"Yeah, something bright and colourful."*
Participant 1: *"Yeah.*" (11-13F, C2DE)

Pack graphics

Participants in every group were familiar with disposable e-cigarette brands such as Elf bars and Geek bars, noting their visibility in shops because of their brightly coloured packaging on display:

> "*The cabinet in* [my local supermarket] *is massive and it's really bright so it's like rainbow, every time I'm there it always catches my eye.*" (18-39F, C2DE, dual user)
>
> "*I think the most recent e-cigarettes, you know, with the block colour… they draw you because of the block colour and the different colours. I think it's colour for me over anything. It's like seeing a rainbow on a wall, you're drawn to looking at it.*" (18-39F, C2DE, smokes)

In several groups, including the teenage groups, colour was viewed as a primary factor that can influence consumer behaviour when deciding on whether or not to purchase products generally, and this was reported in relation to e-cigarette product purchasing decisions:

> "*I always see the bright colours on them* [e-cigarette packs], *so that's why I normally get them.*" (14-15F, C2DE)

Participant 2: "*I think Elf Bars looked quite cool to me at one point because they always come in nice colours, and I do like the packaging of them because they're all very simple, all very nice colours and they're smaller and stuff."*
Participant 1: *"They look great. They look stylish. It's not like a cigarette where it's like just the same. Because I've seen my friend holding a vape and it looks like really put, like high quality. It doesn't look as cheap as well. It just looks great."*
Participant 3*: "Just the appearance in general are pretty appealing. They have lights at the end that shine up when you use them. The way you see them in shops like rows of them different colours, if you don't know what they do then they generally do look like interesting devices.*" (16-17M, ABC1)

E-cigarette packs with dark colouring, such as the Vuse, were viewed as particularly unattractive by several groups, including most teenage groups, on this basis:

Participant 4: *"Once it's out* [of the pack] *it's probably going to be quite a nice wee sleek unit but the packaging itself probably wouldn't attract me to it."*
Participant 3: "*No"*
Participant 2: "*That's, kind of like, the black packaging of cigarettes and tobacco. So that's made me think… cigarette like.*" (40+F, C2DE, smokes)

In some groups, and notably among female lower income groups, the attraction of e-cigarette packs and their impact on purchasing decisions was modified by practical factors such product size and price:

> "*I always feel like when I'm in vape shops, but they always seem to be the most expensive ones with the coolest packaging so I don't ever really get them but they always do kind of catch my eye, like they're always the first ones I look at… the ones with pictures on it like, do you know what I mean? The ones that actually look like the flavour.*" (18-39F, C2DE, dual user)

For some, this reinforced their decision to purchase disposables rather than re-fillable models:

> "*Like the Elf Bars* [stand out to me] *because they're small and like cute and you can sit them in your bag and stuff, they're not like, it's not like a pure monster thing that you need to push a button for or anything, I can just take it out at the weekends with me and stuff and then just chuck it away.*" (18-39F, C2DE, dual user)
>
> "*I think because there's deals on them as well… a big glass cabinet of Elf Bars and they're two for a tenner, everywhere you go. So they're cheap as well, and you're getting flavour.*" (40+F, C2DE, smokes)

The convenience of disposables was also noted by a few adults as a reason for use of disposables given their availability in most corner shops, for example. In addition, in a few groups, participants spoke of buying disposables as a 'back up', either to use when they run out of cigarettes or can't afford to buy a new packet, or to use them in public places where smoking is not permitted:

Participant 1: "*If I'm in a social situation I would use a vape because as I say, more socially acceptable... I prefer cigarettes. I'll just buy five of the throw away ones for 20 quid and then use them when necessary*."
Participant 3: "I'm the same, I've started using just the disposable ones, just to have it in case you've run out of cigarettes or you can't afford a packet that day and you'll just be on the vape that day or you're in, as I was saying, somewhere you can't smoke." (40+M, C2DE, dual user)

Perceived ease of use compared to refillable devices was also noted as a draw in a few cases:

> *"I can't use one of those (refillable devices). One of my friends has got those, it looks like, you know…you need, like, a degree to use it."* (40+F, C2DE, dual user)

Young people too commented that the lower price of disposables was one factor which made them more attractive to teenagers and children. For example, one group explained how the affordability of disposables enabled them to experiment with trying different e-cigarette flavours:

Participant 3: "*And I think it's just 'cause with these* [disposable e-cigarettes], *like, when you get into them you can try a flavour and if you don't like it…*
Participant 2: "*You can try another one*."
Participant 3: "*…you can get another one, 'cause it's not like they're expensive*."
Participant 4: "*Yeah*."
Participant 3: "*And with the ones with the liquid [refillable e-cigarettes], it's either, like, throw… if you don't like it, throw the liquid away and you've just wasted all… like, quite a decent amount of your money. Or, like… yeah*."
Participant 4: "*Yeah... If you're only spending, like, four quid or something on a, like, disposable, then it's, like, not that big a deal*." (16-17F, C2DE)

Only one group of adults currently using e-cigarettes spoke of experimenting with flavours in a similar way:

Moderator: ***"So how do you, kind of, decide which flavours you're going to use?"***
Participant 1: "*Trial and error sometimes*."
Participant 4: "*Trial and error, yeah*."
Participant 1: "*Yeah. Some of them are disgusting, even though they sound great*."
Participant 2: "*And if they have a mix of… a lot of… like, you can get so many now for… like, four for a tenner or it… you know, so you can …mix and match and then, you know, what's…*
Participant 3: "*You get, like, your three you like and then try and another one for the fourth*." (40+F, C2DE, dual user)

Packaging and taste

The panoply of e-cigarette flavours available offers consumers considerable choice, and several participants noted that e-cigarette packaging plays an important role in conveying how products might taste, because of associations between pack colours and graphics, and taste:

> "*Yeah, these* [packs] *like, scream, 'I've got flavour for you'. Just 'cause of the colour. It could taste like rubbish but just by the colour it's going to make me think, oh, maybe that's got a bit more taste to it.*" (18-39M, C2DE, dual user)

> "*There's some* [e-cigarettes]*… they're obviously sweetie flavours, like Peach Rings… Jelly Strawberry or, I don't know Cola Bottle and stuff. But it's like the packaging actually looks like whatever sweet it is, do you know what I mean? Like so if it was like Peach Rings it would be like, it would be pink coloured.*" (18-39F, C2DE, dual user)

The (suggested) flavours were also seen to be part of what attracted young people to e-cigarettes. One girl said "*the names of the flavours make them sound appetising… cotton candy*" (Participant 2; 14-15F, C2DE). In the same group, the girls discussed the likely flavours and appeal of a group of disposable 'fruit-flavoured' e-cigarettes and other devices:

Participant 4: "*Yeah, and you wouldn't really think the ones that are, like, based off of cigarettes* [i.e., refillable devices] *would taste good, like the ones that are packaged like cigarettes."*
Participant 1: *"I feel like these ones wouldn't really have a proper flavour to them."*
Participant 3: *"Uh-huh"*
Moderator 2: *"Why do those ones remind you of cigarette packaging?"*
Participant 2: "*Because they're packaged the same way as cigarettes, kind of."*
Participant 5: *"They're just talked about more, really, to be like cigarettes."*
Moderator 1*: "Uh-huh. And the ones that might taste good, what about the pack is kind of giving you that opinion, why might they taste good?"*
Participant 1: *"Because its fruit flavours.*" (14-15F, C2DE)

On-pack warnings

Salience of warnings

Most participants who used e-cigarettes said they did not pay attention to the pack warnings, and most groups of adults who smoke and who do not smoke were unaware that packs contained warnings, e.g., "*It's flavours what stand out to me*" (18-39F, C2DE, smokes). Teenagers also did not think people would pay much attention to warnings:

> "*I think there are always health warnings, but because they're on everything you kind of ignore them at this point... It's like the terms and conditions, like when email or something, like when you sign up for an account, you never read it; you just kind of skip through and press agree.*" (16-17M, ABC1)

> "*I don't think a lot of people really read the message*." (14-15F, C2DE)

Participants consistently alluded to the small size of the warning text, and for many this was difficult to read, e.g., "*The warnings are very small*" (14-15M, ABC1). Some participants were not familiar with on-pack messaging regarding product toxicity (i.e., '*Toxic if swallowed or in contact with skin'*), and whilst some groups were unaffected by this messaging, e.g., "*Everything's toxic nowadays*" (18-39F, C2DE, smokes), others felt it was "*scary*" (e.g., 40+F, ABC1, does not smoke). Some of the groups of teenagers seemed bemused:

Participant 2: "*As it's a vape it's not really going to touch your skin. I mean it's going in* *you so I guess it's touching you more than just your skin."*

Participant 3: "*This just looks like the kind of label you'd see on anything. If you're buying cleaning products for your kitchen or something. It doesn't feel that crazy"*

Participant 2: "*It's just like on shampoo bottles and stuff, so it's not going to scare you away from it.*" (16-17M, ABC1)

Two groups of people who do not smoke, like all teenage groups, suggested that these warnings needed to be larger to increase prominence on e-cigarette packs (40+F, ABC1, does not smoke). In addition, on-pack warnings, including the nicotine addiction warning, are often placed only on the back of e-cigarette packs, which was also felt to reduce the salience of on-pack warnings:

> *"You wouldn't read it. You're buying these in an off licence really quick, or in a supermarket or a petrol station quickly, you're dashing back to your car…you're not sitting reading them."* (18-39F, C2DE, smokes)

> *"Aye, no one's going to buy this, look on the back and think 'oh, danger, oh I'll go and get my money back'. They've already bought it for a reason, you know?"* (18-39M, C2DE, smokes)

Participant 3: "*They* [warnings] *just don't stand out on the packaging. Like, the flavour stands out more than the, all the bad symbo*ls."

Moderator: "*Okay. And what might help to make them stand out more, do you think?*"

Participant 3: "*Maybe making them bigger, and then also putting them on the front of the package*." (14-15F, C2DE)

On this basis, participants across most adult groups held the view that e-cigarette manufacturers used on-pack warnings to represent themselves as socially responsible, and they were highly cynical of this approach:

> "*It's like, 'we'll put that on and then we'll make the rest of it look all colourful and fantastic, but we'll just put that boring bit* [on-pack warnings] *there'… it's similar to... like, gambling places, isn't it? You know, they give you all these free offers but 'don't forget to bet responsibly'… They're tempting you on the one hand, but they're giving you a warning on the other hand.*" (40+F, ABC1, does not smoke)

The teenage groups were also cynical, saying that the warnings were there to protect the manufacturers and not the user:

> "*I think it's there for legal reasons* [agreement from the group]. *Like if someone was to touch their skin, they can't really sue the company because it does say somewhere on the packaging that it is toxic if it does touch it.*" (16-17M, ABC1).

Teenage groups made similar points in relation to warnings about the products not being for use by under-18s:

Participant 3: "*Or the company can kind of say, well we did put it on there.*"
Participant 6: *"Yeah, if they're getting, like, sued or something."*
Participant 3: "*Uh-huh, so they're not generally getting the blame, because they have put it on there, so it's not actually their fault that people our age are having them, because they've still put them on the packaging."*
Moderator: ***"Okay. Anyone else agree with that?"***
Participant 5*: "Uh-huh"*
Participant 1*: "Yeah*." (14-15F, C2DE)

Warning content

While some participants felt that the inclusion of the nicotine addiction warning was useful, others did not consider it informative or helpful. Relatedly, it appeared that many participants misunderstood the harms of nicotine, thinking that this was more harmful than it is. Participants also held strong views about other specific on-pack warnings they were shown, for instance '*This product is not for use by children and non-smokers*'. The consensus view was that this messaging would not dissuade children from purchasing the product for three reasons. First, all groups felt that some of the packs they were shown which contained this message, which included disposables, were "*clearly marketed at children*" (40+F, C2DE, dual user) because of the brightly coloured packaging, appealing flavours and, in some cases, QR codes:

Participant 2: "*It says pink lemonade as well, which is sort of…"*
Participant 3: *"Aimed at children."*
Participant 2: *"…appealing isn't it.*" (40+F, ABC1, does not smoke)

Participant 3: "*They've got QR codes on them which I think is just disgusting."*
Participant 4: *"That is crazy. That's well… definitely aimed at children, isn't it. 'Cause my mum wouldn't know how to use a QR code.*
Participant 3: *"I get it 'cause they want you to see more flavours, blah, blah, blah, 'go on the website, let's buy more', but… I wouldn't use them, I'm not in to QR codes.*" (18-39F, C2DE, smokes)

Second, one group suggested that teenagers often don't identify themselves as 'children', potentially limiting the extent to which this warning resonates with this age group:

> "*Is it also to make kids… say, 14 and 15 and 16 year-olds, think oh it's alright for us* [to vape] *because we're not children*." (40+F, ABC1, does not smoke)

This view was echoed by many teenagers, and the groups discussed what 'children' meant to them, but regardless they thought the age warning may be ineffective:

Moderator: **"*What do you think of when it says, this product is not for use by children, what age range would you put on that?"***
Participant 2*: "Adults"*
Participant 3*: "I think it's still like our age, our age don't get it."*

Moderator 2*: "Uh-huh"*
Participant 1*: "Usually children, I think of under 10."*
Participant 5*: "Yeah, same"*
Participant 3: *"Yeah"*
Participant 1: *"But when it comes to, like, vapes, it does say, like over 18s it's for, so probably under 18s, I would class that as children."*
Moderator 1*: "Uh-huh"*
Moderator 2*: "Uh-huh, but normally, just for children, you would think of, like, little, like under 10?"*
Participant 1*: "Yeah"*
Moderator 1: *"Okay. And in terms of children and non-smokers, would they pay attention to a message like this, do you think?"*
Participant 6*: "No"*
Participant 1*: "No"*
Moderator 1*: "No?"*
Participant 6*: "Because they've already decided they want to do it, so they're not going to go and buy one, read that, and then just throw it away, they're going to do it anyway."* (14-15F, C2DE)

Moderator*: "This product is not for use by children and non-smokers. Do you have any thoughts about that message?"*
Participant 1*: "It has to be bigger… because say children went into a shop with their mum and dad, or something, or anyone, and then they ask that parent and said, can I get this, they wouldn't see that, so it needs to be bigger."*
Moderator: *"Needs to be bigger, okay. Not big enough, okay. And just yourselves, guys, right, when you see the word, children, like, what age are we talking, do you think, when it says, children?"*
Participant 4: *"Under 11"*
Moderator*: "Under 11?"*
Participant 1*: "Like two, three, or four to six, or something."*
Moderator*: "Okay. And yourself?"*
Participant 2*: "Yeah."*
Moderator*: "Like that, uh-huh."*
Participant 1*: "On the Elf Bar, it doesn't say that bit, of non-smokers."*
Moderator*: "Uh-huh. And do you that children and non-smokers would pay attention to a message like that?"*
Participant 1*: "Yeah, if it was bigger."*
Moderator: *"They would if it was bigger, yeah, okay. What about yourselves, do you think that people would pay attention to that message about not for children or non-smokers?"*
Participant 4*: "No, I think they would just take the box, take it out and just fling it away."* (11-13M, ABC1)

Third, within another group it was suggested that displaying this warning on cigarette packs could have the opposite effect: "*Like reverse psychology. 'It's not good for me but, hey, I'll take it… it's just that rebellion factor for teenagers.*" (40+M, C2DE, dual user)

Groups were generally less vocal in response to the warning shown that e-cigarette products were not for use by people who do not smoke, although one participant reflected that those who do not smoke were also an important target-consumer for e-cigarette manufacturers:

> *"I've noticed quite a few of these say 'not to be used by children' obviously, or non- smokers. But the majority of people that I see smoking these they've never smoked a cigarette in their life… From what I can gather, they're like, marketed for the non-smokers."* (18-39M, C2DE, smokes)

Research Question 4: What are the perceived risks to young people and people who do not smoke from e-cigarette and refill packaging?

Appeal to school-aged children and young people

Appeal of disposable e-cigarette packaging

The appeal of brightly coloured disposable e-cigarette packaging, considered prominently displayed in shops, was highlighted by all adult groups as a risk to young people. All teenage groups similarly commented on how this brightly coloured packaging was appealing to people of their age. Some adults reflected on seeing their own children drawn to packs in this way:

> *"I've been in the shop with my nine-year-old and he's been looking at them, because they're bright colours and everything. He wouldn't go looking at a pack of cigs. But he's looking at a vape… because of the colours. But even if the cigs were there* [on display], *he wouldn't be looking at them, would he, with the mouldy foot* [warning on the pack] *and all that… But a nine-year-old wanting to look at them*" (18-39F, C2DE, smokes)

Several participants, in particular those who smoke, noted that packaging of some disposable e-cigarettes conveyed '*playfulness*' and '*fun*', which would also appeal to young people, an impression supported in the discussions in the teenage groups. Teenage and adult groups contrasted this type of packaging with cigarette packs, which highlight the health hazards:

> *"I think for years though smoking, when it comes to cigarettes, has been made out to, it's not been made out to be a fun practice anymore. Whereas you now flip it on its head and all of a sudden with the introduction of these new* [e-cigarette] *products it suddenly does seem fun. They are colourful, the names are… kind of goofy… you know, it catches your attention that way. And it does make it more appealing I think, especially to young people."* (18-39M, C2DE, smokes)

> *"I think it's* [the pack is] *saying like 'smoke me', in comparison to a pack of fags which says 'don't smoke me', know what I mean?*" (18-39M, C2DE, smokes)

Most groups suggested that disposable e-cigarette packaging was designed with children in mind, despite on-pack warnings stating that they are only for use by adults:

> "*It's interesting that a lot of these cheap ones have got 18 somewhere on the packaging. And yet they look like they're kids' products, they're done in cartoon writing, they've got cartoon-y images on… and they're called Elf Bars or Geek Bars or something… I wouldn't walk into a shop and say I wanted a Geek Bar or an Elf Bar. I'm in my bloody 50s, it's just like… they look like they're aimed at children... I don't think it's a very ethical market.*" (40+F, C2DE, dual user)

> "*I see children with these ones that you're talking about, the colourful* [disposable] *ones, I see children with these more than I do adults.*" (40+F, ABC1, does not smoke)

Indeed, a group of young people did not just draw out these commonly observed distinctions between different types of products, but one went as far as suggesting that the difference in appearance and packaging meant that "*they're more like their own kind of separate thing. And they don't really go under any of the actual ones you'd think of being bad*" (14-15F, C2DE).

Participant 2: "*They* [rechargeables] *look a lot more serious."*
Participant 1: *"They look a lot more grown-up. Like, those ones* [disposables] *look like they're just for people our age, who think it's like cool to do it. But I feel like adults who are actually trying to stop, I think they would go for more of those ones."*
Participant 3: *"These have a similar taste to, like, cigarettes, and stuff, so it might be the taste that they're actually, that they like about it, so they might go for them."*
Moderator 1: *"So, more similar, they look like a more serious, similar taste, okay, very interesting."*
Moderator 2: *"Do you think someone trying to give up cigarettes would ever choose that kind* [disposables]*?*
Participant 2: *"No"*
Participant 3: "*Not like never choose, but I think it would be more common."*
Moderator 2: "*More common for them to choose those?"*
Participant 3: *"Yeah"*
Moderator 2*: "And what about packs that may appeal to a person who has never smoked, any of these packs that might appeal, do you think?"*
Participant 1: *"Probably those ones"*
Moderator 1: *"The disposable ones, what about them?"*
Participant 1: *"I think because they're a lot more common, like, you see them a lot more, like, I've never really seen any of those ones, but you see those ones a lot of the time."*
Moderator 1*: "Uh-huh. You were going to say something?"*
Participant 3: *"I was just going to say, like the same, they're just like all well-known, between like school and stuff."*
Moderator 1*: "Uh-huh. Anything about the packaging, itself, so you're saying it's really well-known, but anything about the kind of way they're packaged that might appeal to a non-smoker, someone who's never smoked?"*
Participant 4: "*They're kind of not actually like cigarettes, or anything, or like e-cigarettes,*

they're more like their own kind of separate thing. And they don't really go under any of the actual ones you'd think of being bad." (14-15F, C2DE)

The appeal of the e-cigarette flavours shown on the pack

There was general consensus that the availability of myriad flavours, often reflected in pack colour and graphics, also appeals to children:

> "*Most of them are just all fruits, like blueberry, strawberry, banana, strawberry ice, pink lemonade, and then like colours like blue and that… the colours are really nice, I think it would probably taste good*." (14-15M, ABC1)

Participants spoke of a range of specific flavours that they felt were designed and marketed to appeal to children:

Participant 4: "*They're doing, like, Vimto ones and bubble gum.*"
Participant 2: *"Popcorn"*
Participant 3: *"Red Bull type ones. I mean, they do a flavour for everything, I think."*
Participant 4: *"Blueberry, Fanta"*
Participant 2: *"Strawberry banana."*
Participant 3: *"What's that other one? Pink lemonade… They* [e-cigarette manufacturers] *know what they're doing, I'm sorry, they do… They're attracting younger kids to smoke in my opinion because as an adult, when you're a smoker, vapes are to replace smoking. You don't smoke sour apple... cigarettes don't taste like that... So why are we all of a sudden selling every flavour under the sun in a vape. It doesn't make any sense.*" (18-39F, C2DE, smokes)

The teenage groups indicated that flavoured products were intended to increase their appeal, including to people their age:

Moderator*:* **"*Why do you think the brands use names like pink lemonade, like why do you think they use those kind of words?"***
Participant 1*:* *"I think because it's like, I've had pink lemonade before, and I think that, like, they think they're tastes, or like drinks, or something, that people like the most, and then they make things out of them, and put them into vapes, so more people will buy them."*
Moderator*:* ***"Okay"***
Participant 5: *"They might try to make loads of flavours so you can try, get all of them, and they make more money."*
Moderator*:* ***"Okay, yeah. So it's like kind of to appeal to people?"***
Participant 1*:* *"And the more flavours you can make and spread out."*
Participant 2*:* "*Yeah, the more flavours they have, the more you can get, because I think, if you like a specific thing like strawberry and banana, then there'll be a vape for you that you can get.*" (11-13M, ABC1)

Another group of teenagers similarly suggested that references to flavours made brands of disposable e-cigarettes sound pleasant:

Moderator: ***"What about the names of the products, the names, or the flavours, anything kind of standing out about that, for any of you?"***
Participant 6: *"They're quite like similar kind of style of names."*
Participant 2*: "Uh-huh, Zero Bar, Elf Bar."*
Participant 1: *"Uh-huh, it's like blueberry, sour apple, pink lemonade, strawberry and bananas, so it's kind of like…"*
Moderator*:* ***"What about the kind of words that they use?"***
Participant 6: *"They make them sound, like normal."*
Participant 2: *"And they make them sound, like, nice."*
Participant 5: *"Uh-huh, like drinks or something like that, like a milk shake, or something."*
Participant 2*: "Yeah"*
Moderator: ***"Why do you think they do that?"***
Participant 2*: "To make people want to buy them."* (11-13F, C2DE)

The same group also likened the appeal of the range of e-cigarette flavours to the desire to try "*all the different*" flavours of drinks available at school:

Moderator: ***"What do you think about that, where it shows all the different flavours, what are your thoughts on that one?"***
Participant 1: *"Yeah, I think they probably shouldn't do that, because then that's just going to make you want to try all the different flavours."*
Participant 6: "*Because that's like at my school, so we've got a bunch of different drinks in my school, and since they're all different flavours, everyone wants to try all the different ones.*" (11-13F, C2DE)

Additional reasons why disposable e-cigarettes appeal to young people

Several participants offered other reasons why disposable e-cigarettes appeal to children, including their small size and lack of long-lasting odour. Teenage groups also commented that both factors could make e-cigarette use easy to conceal from parents and within schools. Their relatively low price was referred to by one group as "*pocket money prices*" (40+F, C2DE, dual user):

Participant 1: "*They tend to be on the cheaper… less expensive than, you know, those* [refillable] *ones. And you can get… them on offer, some of the places have, like, three for two and… you know."*
Participant 2: *"And they're easy to hide for these kids smoking, they're hiding them from the parents, aren't they.*" (40+M, C2DE, smokes)

"*Cause you can't smell them, and the affordability for it. Kids can afford it off their school money, going to school, the way my generation used to be able to buy cigarettes going to school. You could not afford to go to school and buy cigarettes if you're a 14 year-old/15 year-old. You're going to vape, two/three quid.*" (40+M, C2DE, dual user)

Disposable e-cigarettes were also viewed by a few groups as relatively easy for children to use compared to refillable e-cigarettes, which could also make them an attractive choice:

Participant 4: *"I don't think the refillable ones are as attractive for, like, teenagers, 'cause they don't understand they're filling them up."*
Participant 2: *"Yeah. I think it's more older people who use the actual fillable ones 'cause you have to do all the coils and stuff, don't you, and they're a bit harder than throwaway ones. And they're expensive."* (18-39M, C2DE, smokes)

Children who had not tried vaping commented that disposable products looked less daunting and easier to use. Lastly, several participants suggested that children may find it relatively easy to purchase e-cigarettes from some shops, as some retailers sell e-cigarettes to children despite it being illegal to do so:

> *"I would imagine if you go in to a small shop, like there's one in our village… they get a load of school children in there, they're not going to turn down a hundred pounds worth of business by saying, 'well you're in your school uniform', much like they didn't when I went from school to the corner shop and asked for ten Benson & Hedges."* (40+M, C2DE, smokes)

E-cigarette use by children: a risk or a new norm?

In all adult groups, participants recalled seeing school-aged children vaping, echoing the view expressed in teenage groups that use of e-cigarettes by pupils in their schools was widespread. Whilst some adults suggested this was "*trendy*" (e.g., 18-39M, ABC1, does not smoke), one group referred to this as "*an epidemic*" (18-39M, C2DE, smokes). Others felt the use of e-cigarettes by children was already an entrenched norm:

Participant 4: "*Yeah, when I was on the way to work this morning there were loads of kids, school uniforms on, vaping."*
Participant 2: *"I saw someone the other day and he's a dead good kid and he was sat on the kerb just puffing away on one, you know."*
Participant 4: *"It's just the norm nowadays, though, isn't it?"* (40+F, ABC1, does not smoke)

Appeal to those who do not smoke

While the primary concern was the use of disposable e-cigarettes among school-aged children, adults who smoke and dual users in particular commented that e-cigarette use appears to be growing in popularity amongst non-smoking adults too:

> *"I always thought with vaping, when it first came out, it was to help people stop smoking rather than become a trend… and the amount of people nowadays… people aren't even smoking cigarettes. They're just going straight to vaping. So they're not using it as a way to cut… stop smoking, they're just use it to start something else."* (40+F, C2DE, smokes)

Some participants described an increased use of e-cigarette products by those who do not smoke in recent years as a generational shift, linked to reduced smoking prevalence:

> "*A lot of my friends are smoking them now, my brother. My brother never even smoked cigarettes and he's gone straight to vapes. I think some of his friends are the same, and my brother's 19. It's kind of this thing, generational shift away from traditional smoking.*" (18-39M, C2DE, smokes)

Participants in other groups felt that the palatable taste and smell of e-cigarette flavours and more affordable price of e-cigarettes compared to cigarettes had contributed to this shift:

Participant 2: "*I know a lot of people who have never smoked in their life and are now vaping... and I'll say to them, why have you… you've never smoked, so you've not got an addiction, and you just… you're constantly vaping. And they'll say, oh it tastes nice and the smell and the… you know. And they're just… they're constantly buying vapes and they've never smoked.*" (40+F, C2DE, dual user)

Participant 3: "*Plus the expense of cigarettes are now… I think it's got a big thing to do with the vapes, the expense of cigarettes. Especially if you're a heavy smoker, can smoke 30 cigarettes a day, no problem.*"
Participant 4: "*And the amount of people who don't smoke who are on a vape. Like, you go to a… if you go to a bar you'll get… you'll see at least 20/25 lassies who don't smoke all standing there with their vapes.*" (40+M, C2DE, dual user)

Research Question 5: How do young people, adults who do not smoke, adults who smoke, and adults who smoke and use e-cigarettes, respond to alternative on-pack messaging, and what other e-cigarette pack-related changes do they recommend to discourage e-cigarette use among people who do not smoke and encourage people who do smoke to use these products to quit?

On-pack messaging

Participant views on alternative messages on packs were explored by showing each group two e-cigarette packs displaying the relative risk message '*Use of this product is much less harmful than smoking*' or '*Completely switching to e-cigarettes is a healthier alternative to smoking*'.

Participants held mixed views. Some adults who smoke suggested they would be more inclined to buy e-cigarettes if this type of messaging was on the pack, but most felt that it might encourage more people (including people who do not smoke) to buy e-cigarettes, which was viewed as undesirable. It was suggested that this type of messaging promoted e-cigarettes as "*healthy*" (18-39F, C2DE, smokes), which could encourage use by those who do not smoke and young people:

> "*I just, they'd just, think oh it's not so bad so I'll do that*." (18-39F, C2DE, dual user)

In addition, several groups questioned the extent to which e-cigarette use is less harmful than smoking cigarettes, with many participants postulating that the long-term harms associated with e-cigarette use are unknown:

> "*It's less harmful than smoking? You don't know the long term.*" (18-39F, C2DE, smokes)

On this basis, one group agreed that the wording should be rephrased:

> "*I think the wording is wrong on that and it probably should say 'Use of this product may be less harmful'… because we don't know.*" (40+F, ABC1, does not smoke)

Other groups suggested alternative messaging that might increase the use of e-cigarettes as a smoking cessation aid, including factual information regarding the number of life years gained by switching from cigarettes to e-cigarettes, or the financial benefits associated with switching to e-cigarettes, although it was noted that "*highlighting that it's cheap might draw in other people that weren't expected to use it*" (18-39M, C2DE, dual user). Some participants were not supportive of messages that may increase the appeal of e-cigarettes for those currently smoking, voicing their concerns regarding the long-term health impacts of e-cigarette use:

Moderator: ***"What about making the packaging more appealing to smokers?"***
Participant: *"No."*
Moderator: ***"No? Is there anything that can be done?"***
Participant: *"I'm sorry, that's just mad… I'm actually quite worried about what's going to come out about vapes in the next like 20 years. I don't think it's going to be good.*" (18-39F, C2DE, dual user)

Aside from on-pack warnings, adults proposed other ways in which the packaging or display of packs could be changed to reduce the appeal of e-cigarettes to children and those who do not smoke, which could also indirectly help to refocus e-cigarette products as a cessation aid.

Standardised or plain packaging

There was a consensus among adults, whether they smoked or not, that introducing e-cigarette packaging restrictions could significantly reduce appeal to children, specifically by eliminating brightly coloured packaging and graphics:

> "*Just plain black and white and then it is what it is. And people know if they want it, they can go and get it. The kids won't look it. Won't appeal to the kids if it's just black and white.*" (40+F, C2DE, smokes)

Most adult groups, whether they smoked or not, suggested that introducing plain packaging (sometimes described using terms such as '*dull*', '*monotone*' or '*generic*'), as required for tobacco products in the UK, would be most beneficial on this basis:

> "*Take away the glossy image, really. Like they did for cigarettes, you know,*

cigarette packaging, really. Duller colours. I don't know. Maybe a dark colour. Maybe a horrible colour, you know, a horrible green colour or something like that… [so] *it all looks identical. That's the initial kind of put off. Maybe the 18 sign should be a bit more prominent… front and back… it might be another step towards putting people off, especially younger people.*" (40+M, C2DE, smokes)

"*Get rid of the personalised branding… basically like what they've done to cigarette packets, there isn't any branding anymore. There's the same font for every single one. And it's the same packaging*." (18-39F, C2DE, smokes)

Display restrictions

In addition, several adult groups suggested that plain packaging and display restrictions could reduce e-cigarette use in children and those who do not smoke, because of reduced visibility and appeal:

"*Don't put it up in front of you* [in the shop] *in the glass cabinet where the prized possessions go, do you know what I mean? It's in the front as soon as you walk in, the glass cabinet with all the vapes. Put them behind* [the counter] *where nobody can see them… the way they've done the cigarettes now. They're not allowed to be in sight. You can't see them… they're all in the same packaging and all that now as well. They're just plain and that's it.*" (40+F, C2DE, smokes)

Restricting e-cigarette flavours

Several adult groups (including those who smoke, do not smoke and dual users), also suggested that restricting e-cigarette flavours could reduce appeal to children and people who do not smoke, as the array of available flavours was viewed as "*too tempting*" (40+F, C2DE, smokes).

"*If it's just tobacco* [flavour] *it won't appeal to kids at all, 'cause it's usually just all the flavours they want, like pink lemonade.*" (40+F, C2DE, smokes)

Discussion

Our research provides a better understanding of how the packaging of e-cigarettes and e-liquids is used as a marketing tool in the UK; the compliance of companies selling e-cigarettes and refill packs with existing laws and accompanying GB guidance; how consumers view e-cigarette packaging and messaging; and whether different types of messaging and/or further e-cigarette regulations may help reduce the appeal of these products while not limiting their potential value as a means of quitting smoking.

Work package 1 (pack content analysis)

Key features of pack design

The pack content analysis explored pack structure (e.g., shape, size, materials), pack graphics (e.g., colours, typeface, imagery), and inclusion of informational items (symbols, websites, social media links, price).

Analysis of tobacco industry research shows that structural changes to cigarette packaging, such as variations in shape, size, and opening mechanism, can potentially influence perceptions of appeal, product harm, purchase interest, and sales (Kotnowski & Hammond, 2013). Through our pack analysis we found there was some variation in the typical pack structure for e-cigarettes. Between 6-9% of packs were found to either have an atypical shape (e.g., inclusion of a hang tab) or opening mechanism (e.g., slide-out boxes with a drawer or cardboard sleeve) or were made with non-common materials (e.g., a disposable packaged in a plastic sachet). Only for vapekits was the use of cellophane common. This contrasts with cigarettes, where the inclusion of cellophane, often used as an additional layer of communication (Borland et al., 2019), is the standard. Almost three-quarters of packs included an image of the product on the pack or contained a view of the product (e.g., through a clear plastic pack or cellophane window/cut-out).

Colour and promotional features

The wider marketing literature shows that pack graphics may help to capture attention to products, as well as influence beliefs and purchase intentions (Bone & France, 2001). We focused on the graphics shown on the pack front, as this is most prominent and important when communicating with consumers (Borland et al., 2009; Dereń et al., 2021). Overall, 85% were deemed to be colourful. This included packs categorised as 'bright and intense', 'light, muted or faded', and 'half-and-half'. Most packs (62%) had what we have described as 'fancy' features on the pack front, such as shiny product images, embossed brand logos, and metallic or foil details. Cartoon characters were present on 3% of front of packs (all Vampire Vapes and Button Junkie e-liquid logos), with almost one fifth (19%) prominently displaying cartoonish script or crayoned font (all e-liquids and disposables).

Concept descriptors go beyond the flavour

Flavour descriptor text, as another component of the pack graphics, was present on all disposables, e-liquids and refill pods. Most of these descriptors (63%) referred to flavour blends, with ‘concept’ descriptors (such as Energy or Tropical Tsunami) used on 1 in 9 packs overall, and approximately 1 in 4 packs of e-liquids and tanks and cartomisers; concept descriptors do not specify a recognisable flavour but may signify a taste, aroma or sensation (Kreslake et al., 2023). Concept descriptors are often used on capsule cigarettes (Cohen et al., 2021; Kyriakos et al., 2023), which are products with a capsule in the filter that can be burst to change the flavour. Qualitative research with people who smoke in Scotland found that capsule cigarettes were likened to e-cigarettes because of the different flavour options (Moodie et al., 2018), with both products allowing consumers to customise the taste. One possibility is that because flavoured cigarettes are now banned in the UK, since 2020, e-cigarette manufacturers may be attempting to capitalise on this. In terms of flavour blends, three broad categories were observed (Fruit, Ice, Other), with fruit blends most prevalent (39%).

Common informational symbols included product/pack disposal, age restrictions and hazard pictograms

We also explored the presence of informational items on packs. Most packs (84%) had environmental packaging/product disposal symbols (e.g., recycling symbol), with 9% having environmental pack source materials symbols (e.g., FSC®, Green Dot). Almost all packs (96%) displayed age restriction symbols (e.g., crossed-out 18 in circle), and three-fifths (59%) carried ‘not for consumption while pregnant’ symbols (e.g., crossed-out pregnant woman in circle). Most packs (90%) had GB classification, labelling and packaging (CLP) hazard pictograms (e.g., exclamation mark) to indicate the presence of a hazardous chemical, with three-quarters (76%) carrying a tactile CLP hazard warning (i.e., raised triangle), and two-thirds (67%) displaying authenticity and safety standards symbols (e.g., CE, UKCA). Holograms were present on 30% of packs, used most often on disposables (63%) and tanks and cartomisers (67%). Holograms can be used as security features on packs or for promotional purposes (Bullen, 2017). Most packs (89%) included a website address for their company/brand, typically displaying a company/brand website only or a combination of company/brand website and social media channels.

General adherence to TRPR packaging requirements

The pack content analysis highlighted some ambiguities with TRPR wording and the related GB guidance and incongruous elements for making definitive assessments on some items. This was to be expected from previous experience assessing advertising using similar methods (Stead et al., 2021). Our findings for the three sections are discussed below.

TRPR Section 36 (Product requirements)

- All packs in all five categories were judged as tamper-evident and assessed as providing reasonable protection, for the e-cigarette or e-liquid inside, from breakage and leakage.
- For all products, except e-liquids, we judged that the packaging would not deter a child opening it, but it was unclear whether that would breach the Regulation. All layers of packaging (external and internal) for all products were assessed for whether they were child-resistant or not. Only e-liquids were child-resistant. We found the TRPR text ambiguous on whether the packaging should be child-resistant or the pack contents (i.e., the product) too. The Regulations text, “An electronic cigarette or refill container

must be…" could be misinterpreted as an "electronic cigarette container" or a "refill container". It was beyond the scope of the project to test all e-cigarettes, refill pods, and tanks and cartomisers for child-resistance.

TRPR Section 37 (Product information and labelling requirements)

- Most products (87%) had information leaflets. There was a lack of consistency within brands and product types as to whether they contained a leaflet. For example, for a disposable brand, some brand variants contained leaflets in the pack while another brand variant did not.
- Most of the assessed packs appeared to meet the requirements by including: the list of ingredients (89%), the batch number (81%), an indication of the nicotine content of the product (90%), and an indication of nicotine dose of the product (90%), with a few exceptions.
- We were generous in our judgements of an indication of nicotine delivery dose being present. We coded an indication being present where it was displayed as per puff (inhalation) or per pack; where the manufacturer used the word 'dose'; or where the nicotine level (i.e., the amount of nicotine contained in 1ml of liquid) was displayed. As indicated by others (including Francis, 2022), at the time of data collection there was no definition in the Regulations or MHRA Guidance for how a delivery dose should be indicated, and there has been disagreement between some e-cigarette manufacturers and those trying to enforce Regulations (Francis, 2022).
- The TRPR text and related MHRA guidance was unclear on the acceptable format of the recommendation to keep the product out of reach of children (text and/or symbols). We accepted both text and symbols, however one in ten products (10%) had neither on the external packaging, including a substantial portion (10%) of E-liquids.
- Given that some E-liquids only come in a bottle this may present a challenge for the positioning of the health warning, for instance, should it appear on the front and back?
- All but one pack had the Regulation health warning. Most displayed the required wording but two had the longer alternative allowed in the European Union by the TPD and three had non-compliant wording. Across product types, positioning was almost perfect however warning size as a proportion of the pack and placement on both the front and back surfaces did not always meet requirements.
- Across the product categories, examples of incorrect warning typography (17%) included not using the Helvetica font or bold format or compressing the spacing between letters. It was unclear from the Guidance whether upper case was permitted, and these cases were coded as incorrect.
- Tanks and cartomisers proved at times to be a difficult/ambiguous category to assess, with the results contradictory. Nearly all (11 of 12) met the warning requirements, leading to the expectation that all other labelling requirements would be met. However, more than half did not contain an information leaflet. While none of those without a leaflet contained an e-liquid, there were instances of other brands that did contain an information leaflet despite not containing an e-liquid.

Section 38 (Product presentation requirement)

- Almost 3 in 5 disposables (58%) were coded as 'Unclear' as to whether the pack suggested that the product may have energising or health properties. Many of these related to five disposables brands listing 'natural flavourings' in their on-pack ingredients list. The Guidelines stated that "any description of an ingredient as of 'natural' origin … would be similarly prohibited" (MHRA 2022b). Packs that were judged to suggest that the contents had vitalising, energising, healing, rejuvenating, natural or organic properties included a small proportion of disposables, e-liquids and refill pods with flavour descriptors and promotional language suggesting effects on energy or health.

- The MHRA Guidance (2022b) was used to assess the ban on any reference to the "product being eco-friendly, environmentally 'green' or similar as well as any comparative biodegradability or environmental claims versus other e-cigarette products. This would also include any such references in the name of the product". Fourteen packs appeared to have pack elements or features suggesting environmental advantages. This raises the question of whether the balance is right in terms of encouraging or discouraging the use of environmental terms. For example, whether it is desirable or not for companies to promote their disposables' recycling schemes, or whether these references become selling propositions and a means to improve the brand's image.
- Disposables were the most problematic category for Section 38 of the Regulations. In addition to aforementioned examples, the only packs that may have contained an element against the Regulations for resembling a food or cosmetic product were three disposable packs, judged as potentially resembling a lipstick or perfume atomiser. Four disposables, all one brand, had stickers for a $250,000 cash-prize, judged as suggesting an economic advantage over other products and against the Regulations. This also highlighted that disposables that do not appear to be intended for UK market ($ currency) were available for sale.
- Ten packs were judged to create an erroneous impression about the products' characteristics, health effects, risks or emissions. Of the six packs that appeared to suggest that the use of the product conferred social status or sexual benefits, this assessment mostly related to flavour descriptors (e.g., sophisticated, Millionaire's, Slow Blow). Only two packs were assessed as appearing to have elements or features of the pack, excluding flavourings, that referred to taste, smell or other additives. Only one pack appeared to suggest the contents were less harmful than other e-cigarette or refill products. While the above issues were observed in small numbers in this sample of products, it is important to remain vigilant with respect to packaging.

Work package 2 (focus groups)

Disposables distinguished from e-cigarettes to aid quitting

Participants generally drew a distinction between packs and products designed to appeal to those who formerly smoked or who currently smoke and seek to reduce tobacco consumption, quit or avoid relapse, and packs and products, namely disposables, that they view as designed to attract children and young people and people who have never smoked. Participants were familiar with disposables, often considering these brightly coloured packs as designed for, and targeted to, children and young people. Previous research has found that brighter coloured cigarette packs generated strong positive user imagery and were associated with young, attractive and happy people (Ford, Moodie et al., 2013). Concerns have been raised about the appeal of disposable e-cigarettes to younger people, among whom these products have become much more popular (Wang et al., 2021; Smith et al., 2023; Tattan-Birch et al., 2023). The disposable e-cigarette category has grown in the UK (ASH UK, 2022), as it has elsewhere, with disposables accounting for 23% of global vaping device market share in 2021 (Tobacco Asia, 2022a), with market size valued at over $6.3 billion in 2022 (Rossel, 2022). In terms of their appeal to young people, participants in this study suggested this was related to high visibility in stores, small size (and therefore convenience and discretion), low price, simplicity of use, and lack of long-lasting odour. Highlighting the growing concern with disposables, supermarket chain Waitrose stopped selling these products at the end of 2022 to better protect young people and because of their environmental impact (Tobacco Asia, 2023).

High exposure to e-cigarette packaging

Participants reported high exposure to e-cigarette packaging, most commonly in stores, schools (for young people), various social media platforms, and as detritus, with it suggested that the presence of e-cigarette packaging had increased over time. It is now commonplace for e-cigarette displays to be prominently displayed at the point-of-sale (POS), for example in a study caried out in supermarkets and convenience stores in Bristol and Cambridge these displays were present in almost all (96%) sampled locations and reported to be highly visible (Brocklebank et al., 2022). The ubiquity of e-cigarette packaging was viewed as having a normalising effect.

Colour seen as most important element of e-cigarette pack design

As with tobacco (Moodie & Hastings, 2010) and alcohol packaging (Jones et al., 2022), e-cigarette packaging is a form of promotion. Pack colour, often seen as the most important element of pack design (Ford et al., 2012), was most frequently mentioned and discussed by participants. Similar to qualitative and quantitative research in the US, e-cigarette pack colour influenced product appeal (Katz et al., 2019; Cohn et al., 2021). Pack colour also signalled product type, with brightly coloured packaging, for instance, linked to disposables. Pack graphics, including cartoon writing and imagery as well as brand names (e.g., Elf Bars or Geek Bars), were also thought to contribute to youth appeal. Participants also described pack structure, specifically small pack sizes (for disposables) as reminiscent of other products that appeal to young people, e.g., lipsticks or make-up for girls. Research has similarly found that 'lipstick' style cigarette packs, now banned in the UK and EU, were viewed favourably by children (Ford, Mackintosh et al., 2013; Ford et al., 2016; Hammond et al., 2014).

The range of e-cigarette flavours, and flavour descriptors, perceived as appealing to young people

There are reported to be almost 16,000 flavours available for e-cigarettes (Basham, 2023). Participants viewed flavours as having an important role in attracting young people to e-cigarettes, often referring to fruit flavours (which the pack content analysis showed to be most common) and flavours related to confectionery and soft drinks. The range of flavours was felt by some to encourage young people to try these, as they would with other products such as sugar-sweetened beverages. The findings echo research from elsewhere (Cohn et al., 2021). For instance, 14-16 year-olds in Britain considered flavour an important driver of e-cigarette use (Moore et al., 2020), and the Canadian Tobacco and Nicotine Survey found that among those aged 15 and older who had used a vape in the past 30 days, 45% reported using a fruit flavour most often, with use of fruit flavours decreasing by age group (Health Canada, 2022). Similarly, data from the Population Assessment of Tobacco and Health study in the US shows that among past 30-day youth and adult e-cigarette users, for those that reported using only one flavour category fruit was more popular among youth (53% youth, 31% adults), with adults much more likely to report using only tobacco flavour (Schneller et al., 2019).

Some participants mentioned banning e-cigarette flavours, predominantly as they were viewed as appealing to youth, while others were opposed. Seven EU countries (Denmark, Estonia, Finland, Hungary, Ukraine, Lithuania and the Netherlands) have banned non-tobacco flavours in e-cigarettes (Tobacco Asia, 2022b), but the impact is not clear. While potentially reducing the appeal to younger people, such a ban may also reduce the appeal and acceptability of e-cigarettes to adults who smoke who currently use or may use flavoured e-cigarettes to stop using tobacco products.

Health messaging on packs criticised

The health-related information used on e-cigarette packaging, including the nicotine addiction warning, was generally seen as failing to capture attention because of the design (text only, small size and font, and often only displayed on pack reverse). Participants expressed criticism of the design of the messages included, viewed as an afterthought or a tick box exercise, included by commercial entities only to meet legal requirements or for liability reasons. Relatedly, tobacco industry journals note a similar situation when warnings were first included on cigarette packs. While non-rotating (i.e. the same messaging used all the time), text-only and occupying a small proportion of the total surface area, they became a bulletproof defence against attempts to sue tobacco companies (Tobacco Asia, 2020).

Misunderstanding of the harms of nicotine

While several participants felt that presenting information about nicotine being addictive was necessary, it was not perceived as a deterrent. That nicotine is the addictive ingredient in e-cigarettes was seen as common knowledge for some, but overall there was considerable misunderstanding of nicotine being harmful. This is consistent with a recent review, which found that only 34% of adults who smoke accurately believed that vaping was less harmful than smoking (McNeill et al., 2022). While the Tobacco Control Plan 2017-2022 describes programmes and activities to provide those who smoke and the public with clear, evidence-based and accurate information on the relative harm of nicotine and e-cigarettes to enable informed decision-making (Department of Health, 2017), the findings suggest that misunderstanding of the harms of nicotine and e-cigarettes persists.

Concerns about the risks of vaping

With respect to the relative risk messages participants were shown, perceptions were mixed. A few participants viewed them as potentially helpful for people who smoke, consistent with findings from a systematic review (Erku et al., 2021). However, many participants did not share this view, arguing that there is no proof at all or no longer-term proof that e-cigarettes are safe, that the messages do not advise people to use neither product, and expressing concern about the potential impact in encouraging youth or those who do not smoke to use e-cigarettes.

Options for strengthening pack regulations

While the long-term effects of use of e-cigarettes are unknown, the dangers associated with smoking combustible tobacco products are well established. Regulation is needed to protect young people who do not smoke from starting to use e-cigarettes while supporting the use of e-cigarettes to help those already smoking to quit. Participants were asked about possible ways in which the packaging of e-cigarette products could be changed to make them less appealing to people who do not smoke. They were also asked about making them more appealing to people who do smoke. Participants appeared to be influenced by the appearance of cigarette packaging in their responses, with larger warnings and unappealing packaging suggested. For the latter, participants did not use the terms 'plain' or 'standardised' packaging but instead referred to cigarette packs or used terms such as monotone, generic, dull or dark. Even prior to being asked, participants often alluded to cigarette packs and the fact that they send a very different risk signal than e-cigarette packs.

The impact, if any, of standardised e-cigarette packaging on consumer behaviour is not well understood due to the lack of exploratory research on perceptions of standardised e-cigarette packaging (Taylor et al., 2023) and absence of evaluative research in markets where this is required. In the UK, where e-cigarette products have been regarded as a means of helping people to quit smoking, there is also a potential tension between the goal of standardised packaging (i.e., to deter product use) and the harm reduction goal of promoting e-cigarettes to those who smoke as a potential cessation aid. While Taylor et al (2023) recently explored the potential benefits of white or green standardised e-cigarette packaging in the UK with youth and adults, more quantitative, qualitative and naturalistic research is needed to understand the possible public health advantages and disadvantages of standardised e-cigarette packaging.

Banning e-cigarette displays in shops

Participants also raised the possibility of banning the display of e-cigarettes in stores that sell these products, thus reducing exposure to the packaging, which participants described as highly visible in stores. Research has found that e-cigarette displays at the point-of-sale were prominent in 96% of supermarkets and convenience stores in two cities in England (Brocklebank et al., 2022). The Netherlands is reported to have banned the open display of e-cigarette products in shops (Buckley, 2021), but we are unaware of any research exploring the impacts of doing so. Unlike similar bans on tobacco, for governments that embrace e-cigarettes as part of a harm-reduction strategy, as is the case in the UK, it is unclear whether they would choose to pursue such a ban. It is clear that there is greater complexity for e-cigarettes when it comes to the types of regulatory measures that many countries have adopted for cigarettes, such as a display ban, standardised packaging and flavour restrictions. As all three measures were spontaneously proposed by participants, this study suggests that these would be considered appropriate by at least some of our sample. Participants generally felt that these measures would reduce the appeal of e-cigarettes to adults who do not smoke and young people. However, we did not explore these ideas with them in depth, which they may have proposed in part because of existing legislation for cigarette and tobacco products. This is a possible avenue for future research.

Study Strengths and Limitations

Strengths

For Work Package 1, the pack analysis involved collecting and systematically documenting a wide selection of e-cigarette and refill packaging in the UK. A wide-ranging scoping exercise identified, as far as possible, the range of e-cigarette products, brands and variants available in the UK to generate a comprehensive list of products to draw the random sample from. The final sample of 156 products was diverse and included disposable vapes, e-liquids, refill pods (all of varying nicotine strengths), tanks and cartomisers, and vapekits. The codebook for the pack content analysis was informed by official guidance and previous academic research and was tested and refined multiple times before data collection. A random sample of the completed coding was double-coded and data were checked for accurate input. For Work Package 2, sixteen focus groups provided in-depth qualitative insight from 70 participants with a range of different characteristics and backgrounds from the UK. The groups with young people aged 11-17 years and adults (who do not smoke, who smoke but do not use e-cigarettes, and who smoke and use e-cigarettes) were conducted in person and were segmented by age, gender, nicotine use and country. The initial coding framework was devised by two researchers working independently on a sample of transcripts before discussing the final coding frame. The qualitative data allowed a thematic analysis of perceptions of the promotional role of e-cigarette packaging, which has been largely overlooked in the literature, and of current and relative risk messaging, knowledge of which is primarily driven by quantitative research.

Limitations

For Work package 1, while a large sample and broad range of products was assessed in considerable detail, only the external packaging was assessed and coded (i.e., not internal layers of packaging). We focused on the external packaging as this is typically seen by consumers before purchase in-store, from the shelf or at the POS, but online stores are likely to present more information at POS. We also restricted the list of TRPR codes to those most relevant to the packaging. We assessed two codes, 1) child resistant and tamper-proof packaging, and 2) presence of a leaflet, by looking inside the pack, but excluded labelling information and specific leaflet items. Packs were coded using the UK Government's interpretation/guidance of the TPD, so while appropriate for this study this will not necessarily reflect how other EU countries interpret it. Packs were categorised and analysed by five broad product types, using the website retailers' listings rather than the nine product types used by manufacturers and importers of electronic cigarettes to notify the MHRA that they intend to market in the UK (MHRA, 2022c). Another potential limitation is that only the fronts of packs were coded for most of the general promotional pack elements. In addition, there were some subjective codes (e.g., with respect to cartoon-style writing and predominant colour scheme), but these were agreed by consensus and with sight of the whole sample of packs. Further, most (80%) of the sample was single-coded. Finally, given the e-cigarette market is highly dynamic we are only able to provide a snapshot of some of the products currently available, with a need for market developments to be monitored.

For Work package 2, the findings may not be generalisable because while we intentionally included youth and adults who do not smoke, adults who smoke and vape, and adults who smoke but do not vape in order to gain insight from a range of relevant populations, this resulted in a small number of groups for each population; there were also small sample sizes within some groups. This approach also meant that we had to use broad age ranges (18-39 years; 40+) for some groups. This was for practical reasons, as further segmentation would have increased the number of groups, but broad age ranges may have potentially hampered discussion as some of the youngest adults, in particular, may have been more reluctant to express their views in front of older participants. It is possible that the findings were influenced by socially desirable responding. The novelty of the products, and alternative warnings, shown to participants may have influenced their responses. Alternative warnings were not co-produced with e-cigarette users. Additionally, as we only provide insight into relative risk messages, research exploring a broader range of appropriate messages is warranted (Brewer et al., 2019; Wackowski et al., 2019), particularly as we know from the tobacco and wider warnings literature that consumers become desensitised to warnings over time (Argo & Main, 2004; Li et al., 2015; Woelbert & d'Hombres, 2019).

Future Research

As the pack analysis was exploratory, future studies could be designed to include input from experts involved in interpreting the legislation, including trading standards, the MHRA, and from retailers and distributors of e-cigarettes and refills. There is a need to expand the evidence base with respect to the promotional role and impact of e-cigarette packaging and how current health messaging could be improved to better inform those who smoke and to safeguard children. Given the dearth of research there are multiple opportunities to do so. Building directly on this work, cross-sectional online surveys with embedded discrete-choice experiments (DCE) could be conducted with young people (11-17 years) and adults to explore the independent effects of different e-cigarette pack characteristics, such as Branding, Descriptors, and Warning theme. Past research has used DCEs to explore characteristics of cigarette packaging (Barrientos-Gutierrez et al., 2021). Further qualitative research with young people who vape would be of value to understand motivators of e-cigarette use, and the role, if any, of packaging and product type, flavours, and POS displays in their uptake and continued use. Naturalistic research, where adult e-cigarette users carry and use modified e-cigarette packaging for a defined period of time to explore their response to these would be another avenue for future research. This approach has been previously used to explore the real-world impact of plain cigarette packaging (Moodie et al., 2011) and pictorial warnings on cigarette packs (Hall et al., 2015), prior to these measures being introduced in a particular jurisdiction. Research with a range of stakeholders (e-cigarette users, those who do not smoke, young people, researchers, policy makers, etc) to explore policy options to reduce the appeal of e-cigarette products and packaging to people who do not smoke and young people, while attempting not to disincentivise people who smoke from switching to these products, may be fruitful.

Conclusions

The pack content analysis showed that across and within the different product types manufacturers are using a range of pack structures, graphics (e.g., colours, fonts, logos and imagery), and other elements of pack design (e.g., cellophane). While these will have a functional role, they also provide an opportunity for product and brand differentiation and a means of communicating brand qualities and identity. The pack content analysis showed limited instances of packs not meeting the regulations. However, this exercise raised some issues with the TRPR codes and accompanying guidance, which may be problematic in terms of the on-pack display of nicotine descriptors, environmental aspects of packaging, and language within flavour descriptors. The focus groups suggest that e-cigarette packaging is an important promotional tool. Disposables, in particular, generated a lot of discussion within the groups, with the appearance of the pack and product generally viewed as targeted at, and appealing to, young people. Packaging for products that are addictive and not risk free can also be used to convey product and health-related messages. However, we found that the messaging used on e-cigarette packs was perceived as neither salient nor informative. The pack content analysis showed that while most packs displayed the nicotine addiction warning, some packs did not cover the required proportion of the surface area, use the correct font or occupy the available space. The more significant issue concerns the requirement for a single text-only warning displaying a message that does not seem to resonate with people, and which covers a small proportion of the pack and is sometimes only displayed on the pack reverse. It would appear most beneficial for e-cigarette packaging and labelling requirements to simultaneously meet the needs of young people who have never smoked and those who may use these products to stop smoking.

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Appendix 1

Full methods for Work Package 1

Pack analysis

The pack analysis methods were informed by a previous content analysis of e-cigarette marketing (Stead, Ford et al., 2021; Stead, Hitchman, et al., 2021) and content analyses of gambling marketing conducted by the research team (Stead et al., 2016; Critchlow et al., 2020).

Sampling method

We sought a representative sample of e-cigarette products and their packaging and thus required a sampling frame from which products could be randomly selected. We first undertook a scoping exercise to identify, as far as possible, the range of e-cigarette products, brands and variants available in the UK (AMM). This generated as comprehensive as possible a list of products, which informed the development of the sampling frame.

The development of the sampling frame comprised four key steps:

1. Searching for online vape retailers in the UK and scanning their websites for the range of products, brands and variants available.
2. Identifying a website from one of the online retailers which was most suited, in terms of product coverage, to informing the sampling frame (see below).
3. Cross-referencing data obtained from step 2 against data from websites of the main supermarkets in the UK (Asda, Tesco, Sainsbury's and Morrisons) to check for any missing brands or products.
4. Supplementing data obtained from steps 2 and 3 with our existing knowledge of the e-cigarette market gained through vigilance around e-cigarette products, brands and variants available locally and concurrent ongoing qualitative research by research team members for a separate study.

In total, 26 websites were identified and scanned, including online only retailers and specialist vape stores that also had a land-based store. This process suggested that one particular website, electrictobacconist.co.uk (ET), was suited to being the key source for informing development of the sampling frame. ET not only had a particularly comprehensive list of products, brands and variants, relative to other websites, but it also had products categorised in a form that was particularly helpful for the sampling stratification process required. ET was therefore selected as the key source of product information and was supplemented by data from other websites and sources as required (Steps 3 and 4). All the product details, for the five product categories in ET, were copied into excel files to facilitate the sampling process.

During the scoping exercise we identified five categories of product type of interest: E-liquids; Disposable Vapes; Refill Pods; Tanks and Cartomisers; and Vapekits.[1] The sampling frame was designed to incorporate each of these product categories. In advance of the study the decision had been taken to focus on e-cigarette devices and refill packs and exclude certain product categories such as coils, batteries and other replacement accessories which would likely be less relevant to non-vapers and hence less meaningful with respect to WP2. Nicotine free versions of products were also excluded from the sampling frame as these are out of scope of the TRPR. For product categories where items were available in different strengths of nicotine (E-liquids, Disposable Vapes and Refill Pods) products were split by their nicotine strength to enable stratification by product strength.

Due to the rapid expansion of the disposable vape market, even during the course of the study, the sampling frame for this product category was checked alongside another three websites (alectrofag.co.uk; ukvapeking.com; vapoholic.co.uk) for newly emerging brands or brands which might be missing from ET. Any disposable vapes which did not appear on the ET website but appeared on these three supplementary websites were incorporated into the sampling frame for the disposable vapes.

Decisions on how many of each product category to select were informed by the number of products in each category and the length of the codebook, balanced against maintaining a number that could be coded to the level of detail required. A total of 156 products were selected. Where product categories comprised products of different nicotine strength these were grouped by strength. A minimum of 12 items in each product category and strength category were selected. This provided a sufficient but manageable range of items within each category. Table 1 details the different product categories and product category x nicotine strength, alongside the total number in the sampling frame and the number of items selected for coding. To allow for instances where selected products would be unavailable for purchase, a minimum of three spare items were sought within each product category and product x strength category. These were randomly selected from items remaining on the sampling frame. These were selected in order of 1st spare, 2nd spare and 3rd spare to ensure random replacement of unavailable items.

Due to the vast number of E-liquids available (2,907) across a range of strengths, these were sub-categorised into four strengths:1-5mg; 6-10mg; 11-15mg; and 16-20mg. Disposable vapes and refill pods appeared in smaller numbers, with the lowest nicotine strengths least prevalent. As a result, the lower/lowest strength category was collapsed for each product category and only two strength categories were used for disposable vapes (1-18mg and 20mg) and three strength categories used for refill pods (1-10mg; 11-15mg and 16-20mg). Due to the rapid rate of development of the disposable vape market and the tendency for these products to be sold at the maximum 20mg strength a total of 48 items (and a corresponding number of spares) were sought from the disposable vape category. Twelve of these were for the 1-18mg strength and 36 were for the 20mg strength. For refill pods, 12 items were selected within each strength category (total 36), while we sought a total of 12 items for Tanks & Cartomisers and for Vapekits, as these are not subdivided by strength category.

A list was drawn up of all the items to be purchased and links provided to the relevant websites from which they could be obtained (AMM). Given that very specific items were selected in terms of strength and flavour these products were sourced through the websites as it would not have been feasible to source so many specific items from a land-based store. In instances where the flavour was not identified in the product selection and a decision had to be made at time of purchase, this also followed a random selection procedure. A number was allocated to each flavour available and, using a random number generator, a flavour was selected for purchase.

Table 1: Product sampling

Product Category	Strength	Number selected	Spares selected	Number of products in sampling frame
E-liquid				
	1-5 mg	12	3	497
	6-10 mg	12	3	932
	11-15 mg	12	3	582
	16-20 mg	12	3	896
	Total	**48**	**12**	**2,907**
Disposable vapes				
	1-18 mg	12	3	55
	20 mg	36	9	313
	Total	**48**	**12**	**368**
Refill Pods				
	1-10 mg	12	3	74
	11-15 mg	12	3	52
	16-20 mg	12	3	140
	Total	**36**	**9**	**266**
Tanks and Cartomisers	**n/a**	**12**	**3**	**89**
Vapekits	**n/a/**	**12**	**3**	**91**
Total – all products		**156**	**39**	**3,721**

Sampling for initial testing of the codebook

In order to aid with development and testing of an initial draft of the codebook, a random sample of five products (one from each product category) was drawn from the remaining sampling frame (i.e. items that remained after the main selection and selection of spares had been undertaken). Three coders (KA, DJ and AF) tested the preliminary codebook.

Sampling for piloting of the codebook

Following the completion of the codebook development, a further three pilot samples of five items (one from each product category) were drawn to refine the codebook and the coding process. In the first pilot all three coders (KA, DJ and AF) undertook the coding; the second and third pilots were undertaken by two coders (KA and DJ). At each pilot stage all coders were allocated the same five products to code. For each pilot, items were selected in two stages. The initial selection stage involved identifying which product strength to choose (where applicable) and thereafter the product was randomly selected from items of that strength.

Allocation of the main sample to coders

After completion of the piloting stage and consistency checks, the remaining sample (141 items) was randomly allocated, with stratification by product category, to two coders (DJ – 71 items; KA − 70 items).

Development of the codebook

Apart from basic administration and product information codes, there were two main parts of the codebook to systematically document the packaging of the sample of UK e-cigarette products: i) meeting the packaging requirements specified by the TRPR (mostly under Regulations 36 to 38; UK Government, 2016); and ii) key packaging design and promotional features of e-cigarettes and refills.

Meeting the pack requirements of the TRPR

Each element of TRPR regulations **4, 16, 31** (excerpts), **36, 37** and **38** (in full, including 31st December 2020 revisions) was tabulated (n=56 elements) and categorised as either regulating manufacturer/supplier compliance, packaging, product design or product information by one researcher initially (KA). The academic literature and the available online guidance in the UK for meeting the pack requirements of TPD and TRPR was reviewed. The Medicines and Healthcare products Regulatory Agency (MHRA) published full guidance in March 2022 on how they were interpreting the translation of TPD into the TRPR, as part of their notification process for e-cigarette manufacturers and retailers (MHRA, 2022a). A study in nine European Member States coded the TPD parameters and EU technical requirements (COM2016/586) for e-cigarettes refills' external packaging, leaflets and vials (Girvalaki et al., 2020). They did not assess TPD Regulation 38 Product presentation requirements but provided guidance for compliance with Regulations 36 and 37. Other sources to interpret the legislation included Trading Standards (Francis, 2022) and the UK Vaping Industry Association (2021). All relevant guidance was added to the table.

Three researchers (AF, KA and DJ) reviewed the tabulated categories of regulations and assessed which of the elements of the TRPR were focused on packaging and not, for example, product design. For instance, a regulation stipulates the exact measurements of a refill nozzle (TRPR sub-paragraph 36(10a)i); another, that contraindications must be written on the information leaflet in the pack (TRPR paragraph 37(2b)). The former was excluded as product design, and the latter simplified to code if there was a leaflet or not (or peelable label on refills).

Twenty-five items in the final codebook covered the packaging requirements of the TRPR. Most were binary options, indicating the absence or presence of a pack feature. Others could be answered 'Yes', 'No', or 'Not sure', the latter when (when it was difficult to clearly judge if regulation was met). In all but three codes, whether or not packs met the pack requirements of the TRPR was assessed by viewing the external packaging. Assessment of three codes required the researcher to look inside the pack (three codes for TRPR paragraphs 36(7a) and 37(5a)). Text boxes for coders' notes were added to some items, particularly for TRPR Section 38, due to the more subjective nature of assessments.

Main packaging design and promotional features

This section of the codebook was for the pack design and promotional elements not explicitly covered by the TRPR or that we wished to look at in more detail.

The academic literature was reviewed in May 2022 for other e-cigarette and refills content analysis studies. The codebook was informed by a US e-liquid study (Seitz et al., 2020). Other studies were judged to be less relevant to the current UK market and focused on older generation kits and batteries, regulations, warnings and claims specific to the USA. The literature search was widened, and content analyses of food packaging (Festila & Chrysochou, 2017; Elliott & Truman, 2020), cigar packaging (Giovenco et al., 2022) and the terminology for 'fancy features' of the pack from the Tobacco Pack Surveillance System (TPackSS, 2017) study informed this section of the codebook.

The codebook was designed to assess the presence on packs of:
1) informational items (text and symbols) that explicitly communicated information to the consumer and were not covered by the TRPR;
2) graphic elements printed on the pack (colours, typeface and imagery) giving it a visual identity; and
3) structural elements, the functional parts (shape and materials) that implicitly communicate information to the consumer.

Two researchers (AF and KA) reviewed and refined this section of the codebook and received comment from a third (CM) before piloting (see 'Sampling for piloting of the codebook' section, above). The pilot tests demonstrated it was impossible to pre-populate a list of all possible health and consumer warnings and information. These were thus transcribed verbatim from the pack for later qualitative analysis. Similarly, flavour descriptors were collected verbatim from the packs. Twenty-nine items in the final codebook were required for packaging design and promotional features. Most items had a predefined list of answers with an 'Other' or 'Not sure' option to add free text.

Coding

A database was created in SPSS using all the items from the codebook allowing predefined (dropdown) and free text coding responses (KA). One researcher (DJ) purchased, stored and distributed the selected sample of packs and three researchers coded packs. A proportion of the packs were double- or triple-coded (10%, KA, DJ and AF) with the remainder halved and single-coded by two researchers (KA, DJ; see Sampling Method, above). Where the codebook had been amended at the piloting stages, updates were made to the already-coded pilot pack coding as necessary. Half of the single coding was unblinded as one researcher (DJ) could view the other researcher's (KA) completed coding. Magnifying camera apps were used to carefully view and check elements on packs. On completion of all coding, all coding files were merged into one. The data file was viewed by the coders together, sorted by different codes at a time (including, for example, product type, brand, or packaging material) to identify unexpected divergences in coding within the categories that were then re-checked against the physical packs. The third researcher (AF) checked (unblinded) a random 10% of each coders' single-coded packs (seven items from each, from all five categories) against their completed coding. A wider group from the project team (KA, DJ, AF, AMM, KH) met to review the results, resolve any discrepancies in coding through discussion, and agree the final dataset for analysis. All changes to the merged file were recorded and the reason for reaching the final coding decision through discussion noted.

Analysis

Data were analysed using SPSS Version 28. Descriptive statistics were computed for key packaging features (e.g. structure/materials) and packaging-relevant TRPR variables by category of e-cigarette product (DJ). Open-ended text responses were uploaded to NVivo for coding and analysis (KA, AF). Frequencies and proportions (%) are presented for how often items in the codebook appeared on packs. E-cigarette and refill brands are named as illustrative examples of coded items.

Appendix 2

WP1 Pack Analysis Supplementary Tables

Table S1: Key packaging features: Does the product have a tear-off layer of cellophane?

	Total		Disposables		E-liquids		Refill Pods		Tanks & cartomisers		Vapekits	
	N=156		*N=48*		*N=48*		*N=36*		*N=12*		*N=12*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Yes, plain/clear	*6*	*3.8*	*0*	*0*	*0*	*0*	*1*	*2.8*	*0*	*0*	*5*	*[41.7]*
Yes, printed or colour	*8*	*5.1*	*4*	*8.3*	*0*	*0*	*0*	*0*	*1*	*[8.3]*	*3*	*[25.0]*
No	*142*	*91.0*	*44*	*91.7*	*98*	*100*	*35*	*97.2*	*11*	*[91.7]*	*4*	*[33.3]*

[%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

Table S2: Key packaging features: Is there a view of or an image of the product/pack contents anywhere on the packaging?

	Total		Disposables		E-liquids		Refill Pods		Tanks & cartomisers		Vapekits	
	N=156		*N=48*		*N=48*		*N=36*		*N=12*		*N=12*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Yes, image	*101*	*64.7*	*39*	*81.3*	*2*	*4.2*	*36*	*100*	*12*	*[100]*	*12*	*[100]*
Yes, contents visible	*13*	*8.3*	*0*	*0*	*13*	*27.1*	*0*	*0*	*0*	*0*	*0*	*0*
No	*42*	*26.9*	*9*	*18.8*	*33*	*68.8*	*0*	*0*	*0*	*0*	*0*	*0*

[%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

Table S3: Key packaging features: Are there website or social media account links or icons anywhere on the packaging?

	Total		Disposables		E-liquids		Refill Pods		Tanks & cartomisers		Vapekits	
	N=156		*N=48*		*N=48*		*N=36*		*N=12*		*N=12*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Yes company/ brand website	*93*	*59.6*	*22*	*45.8*	*22*	*45.8*	*31*	*86.1*	*10*	*[83.3]*	*8*	*[66.7]*
Yes, social media channels only	*2*	*1.3*	*0*	*0*	*2*	*4.2*	*0*	*0*	*0*	*0*	*0*	*0*
Yes, website and social media channels	*43*	*27.6*	*25*	*52.1*	*10*	*20.8*	*4*	*11.1*	*1*	*[8.3]*	*3*	*[25.0]*
No	*18*	*11.5*	*1*	*2.1*	*14*	*29.2*	*1*	*2.8*	*1*	*[8.3]*	*1*	*[8.3]*

[%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

Table S4: Packaging-related TRPR 37 provisions: product information and labelling requirements

TRPR 37.(2) Does the pack include an information leaflet"?												
	Total		**Disposables**		**E-liquids**		**Refill Pods**		**Tanks & cartomisers**		**Vapekits**	
	N=156		*N=48*		*N=48*		*N=36*		*N=12*		*N=12*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Absent	*15*	*9.6*	*5*	*10.4*	*0*	*0*	*3*	*8.3*	*7*	*[58.3]*	*0*	*0*
Present, loose in pack	*106*	*67.9*	*39*	*81.3*	*17*	*35.4*	*33*	*91.7*	*5*	*[41.7]*	*12*	*[100]*
Present, printed on packet	*3*	*1.9*	*2*	*4.2*	*1*	*2.1*	*0*	*0*	*0*	*0*	*0*	*0*
Present, printed on peel-back (tag) label	*26*	*16.7*	*0*	*0*	*26*	*54.2*	*0*	*0*	*0*	*0*	*0*	*0*
Other	*6*	*3.8*	*2*	*4.2*	*4*	*8.3*	*0*	*0*	*0*	*0*	*0*	*0*

[%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

Table S5: Packaging-related TRPR 37 provisions: product information and labelling requirements

TRPR 37.(4) Presence or absence of a health warning consisting of the text: "This product contains nicotine which is a highly addictive substance"?												
	Total		**Disposables**		**E-liquids**		**Refill Pods**		**Tanks & cartomisers**		**Vapekits**	
	N=156		*N=48*		*N=48*		*N=36*		*N=12*		*N=12*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Absent	*1*	*0.6*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*[8.3]*	*0*	*0*
Present, correct TRPR wording	*150*	*96.2*	*46*	*95.8*	*48*	*100*	*34*	*94.4*	*11*	*[91.7]*	*11*	*[91.7]*
Present, alternative TPD wording	*2*	*1.3*	*0*	*0*	*0*	*0*	*2*	*5.6*	*0*	*0*	*0*	*0*
Present, non-compliant wording	*3*	*1.9*	*2*	*4.2*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*[8.3]*

[%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

Table S6: Packaging-related TRPR 37 provisions: product information and labelling requirements

TRPR 37.(5a) Does the health warning appear on both the front and back surfaces of the pack?												
	Total		**Disposables**		**E-liquids**		**Refill Pods**		**Tanks & cartomisers**		**Vapekits**	
	N=156		*N=48*		*N=48*		*N=36*		*N=12*		*N=12*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Absent	*1*	*0.6*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*[8.3]*	*0*	*0*
Present, front and back	*142*	*91.0*	*48*	*100*	*35*	*72.9*	*36*	*100*	*11*	*[91.7]*	*12*	*[100]*
Present, front only	*9*	*5.8*	*0*	*0*	*9*	*18.8*	*0*	*0*	*0*	*0*	*0*	*0*

Present, other surface	*4*	*2.6*	*0*	*0*	*4*	*8.3*	*0*	*0*	*0*	*0*	*0*	*0*

[%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

Table S7: Packaging-related TRPR 37 provisions: product information and labelling requirements

TRPR 37.(5b) **Does the health warning cover 30% of the area of each of the front and back surfaces of the pack?**												
	Total		**Disposables**		**E-liquids**		**Refill Pods**		**Tanks & cartomisers**		**Vapekits**	
	N=156		*N=48*		*N=48*		*N=36*		*N=12*		*N=12*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Absent	*1*	*0.6*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*[8.3]*	*0*	*0*
Present, 30%	*134*	*85.9*	*32*	*66.7*	*35*	*72.9*	*35*	*97.2*	*11*	*[91.7]*	*10*	*[83.3]*
Present, greater than 30%	*10*	*6.4*	*7*	*14.6*	*2*	*4.2*	*0*	*0*	*0*	*0*	*1*	*[8.3]*
Present, less than 30%	*11*	*7.1*	*9*	*18.8*	*0*	*0*	*1*	*2.8*	*0*	*0*	*1*	*[8.3]*
Unclear (not on both front and back of pack)	*0*	*0*	*0*	*0*	*13*	*27.1*	*0*	*0*	*0*	*0*	*0*	*0*

[%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

Table S8: Packaging-related TRPR 37 provisions: product information and labelling requirements

TRPR 37.(5c) **Is the health warning in black Helvetica bold type on a white background?**												
	Total		**Disposables**		**E-liquids**		**Refill Pods**		**Tanks & cartomisers**		**Vapekits**	
	N=156		*N=48*		*N=48*		*N=36*		*N=12*		*N=12*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Absent	*1*	*0.6*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*[8.3]*	*0*	*0*
Present, complies	*128*	*82.1*	*39*	*81.3*	*38*	*79.2*	*34*	*94.4*	*8*	*[66.7]*	*9*	*[75.0]*
Present, wrong font	*27*	*17.3*	*9*	*18.8*	*10*	*20.8*	*2*	*5.6*	*3*	*[25.0]*	*3*	*[25.0]*

[%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]

Table S9: Packaging-related TRPR 37 provisions: product information and labelling requirements

TRPR 37.(5d) Is the health warning in a font size which ensures that the text occupies the greatest possible proportion of the surface area reserved for it?												
	Total		**Disposables**		**E-liquids**		**Refill Pods**		**Tanks & cartomisers**		**Vapekits**	
	N=156		*N=48*		*N=48*		*N=36*		*N=12*		*N=12*	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Absent	*1*	*0.6*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*[8.3]*	*0*	*0*
Present, complies	*119*	*76.3*	*35*	*72.9*	*40*	*83.3*	*33*	*91.7*	*5*	*[41.7]*	*6*	*[50.0]*
Present, too small	*35*	*22.4*	*13*	*27.1*	*8*	*16.7*	*3*	*8.3*	*6*	*[50.0]*	*5*	*[41.7]*
Present, words broken over lines or hyphenated	*1*	*0.6*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*[8.3]*

[%'s are based on very small base size and are provided only for consistency with other product categories. Results for small base sizes should be interpreted using actual number of responses (n)]