

Premarket Assessment of Perceptions and Intentions to Use the RELX Infinity ENDS and RELX PRO E-Liquid Pods Among Adult Tobacco Users and Non-Users in the United States

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AUDIO COMMENTARY:

Hello, my name is Dr Christopher Russell. In this presentation, I'll summarise the design and key findings of a premarket assessment of intentions to use the RELX Infinity ENDS and RELX PRO e-liquid pods among legal age adult tobacco users and non-users in the United States.

Disclosure

Funding for the study described in this presentation was provided by Cheerain HK Limited, manufacturer of the RELX Infinity ENDS and RELX PRO e-liquid pods.

Cheerain HK Limited had no input to or control over the study design or conduct, data analysis, interpretation, or the reporting of findings. The presenter alone is responsible for the content of this presentation.

Cheerain HK Limited has authorized the sharing of the contents of this presentation.

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AUDIO COMMENTARY:

I'd like to begin by disclosing that funding for the study described in this presentation was provided by Cheerain HK Limited, a company that manufactures the RELX Infinity ENDS and RELX PRO e-liquid pods.

I confirm that this study was designed, conducted, and reported by myself and colleagues entirely independently from the study sponsor, and that I alone am responsible for the content of this presentation.

Tobacco Product Perceptions and Intentions

Tobacco product risk perceptions (RP) – thoughts, feelings, and judgements about the potential for a tobacco product to cause harm to health – can play an important role in individuals’ decisions to experiment with initiate use of tobacco products, stop using tobacco products, and switch from one tobacco product to another.

Behavioral intentions (BI), such as intentions to trial and purchase tobacco products, are also considered proximal predictors of future tobacco use behavior.

RP and BI data can inform FDA’s evaluation of the likelihood that a new tobacco product will be used by different population subgroups if marketing is authorized.

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AUDIO COMMENTARY:

Tobacco product risk perceptions are thoughts, feelings, and judgements about the potential for a tobacco product to cause harm to health.

These perceptions can play an important role in individuals’ decisions to experiment with initiate use of tobacco products, stop using tobacco products, and switch from one tobacco product to another.

Behavioral intentions, such as intentions to trial and regularly use tobacco products, are also considered proximal predictors of future tobacco use behavior.

Collecting data on a number of tobacco product risk perceptions and use intentions can inform FDA’s evaluation of the effects of a new ENDS on the likelihood of:

1. Initiation among never-users and nonusers of tobacco products
2. Re-initiation among former users of tobacco products; and
3. Cessation, product switching, and dual use among current users of tobacco products

The RELX Infinity ENDS

- Cheerain HK Limited
- RELX Infinity ENDS
- RELX PRO e-liquid pods
 - Tobacco flavor
 - Menthol flavor
 - Nicotine salt formulation
 - 46.4 mg nicotine/ml



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AUDIO COMMENTARY:

Cheerain HK Limited is a Hong Kong-based company that is developing a range of ENDS products that have potential to reduce harm or the risk of disease associated with smoking conventional tobacco cigarettes.

In this range of products is “The RELX Infinity”, which is an e-cigarette that consists of two parts: a disposable e-liquid pod that clicks into a small battery.

The RELX Infinity is intended for existing adult smokers and vapers, and is only intended to be used as an e-cigarette for vaping certain disposable nicotine salt e-liquid pods called “RELX PRO e-liquid pods”. Each RELX PRO pod contains 1.9ml of e-liquid, which is made with propylene glycol, glycerin, nicotine, benzoic acid, and a mixture of flavorings.

RELX PRO e-liquid pods come in a tobacco flavor and a menthol flavor, and each flavor comes in a single nicotine strength, which is 46.4 mg nicotine/ml.

Study Background

Russell Burnett Research and Consultancy Ltd (RBRC) designed and conducted a study to obtain quantitative data that characterize U.S. legal age adults' risk perceptions of, and intentions to use, the RELX Infinity ENDS and RELX PRO e-liquid pods.

AUDIO COMMENTARY:

To assist the FDA to determine whether permitting the RELX Infinity ENDS and RELX PRO e-liquid pods to be marketed in the United States may be appropriate for the protection of the public health, my colleagues and I designed and conducted a study to obtain quantitative data that characterize risk perceptions and intentions to use the RELX Infinity among legal age adult tobacco users and non-users in the United States.

Objectives

Domain	Objective: To characterize legal age adults':
Intentions to Use	<ol style="list-style-type: none">1. Intentions to try the RELX Infinity ENDS at least once2. Intentions to use the RELX Infinity ENDS to:<ol style="list-style-type: none">i. Quit smoking cigarettes completelyii. Cut down the number of cigarettes they smokeiii. Reduce their health risks
Conditional Risk Perceptions	<ol style="list-style-type: none">3. Perceptions of their likelihood of personally experiencing long-term tobacco-related health risks under different hypothetical scenarios of tobacco product initiation, continued use, and cessation

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AUDIO COMMENTARY:

This study had seven objectives. In this presentation, I'll describe results that address study objectives 1, 2, 3, and 4, which were to characterise legal age adults':

1. Intentions to try the RELX Infinity at least once
2. Their intentions to try RELX PRO pods containing tobacco and menthol flavored e-liquid
3. Intentions to use the RELX Infinity to:
 - To quit smoking cigarettes completely.
 - To cut down the number of cigarettes they smoke,
 - And to reduce their health risks

Objectives

Domain	Objective: To characterize legal age adults':
Intentions to Try Flavors	4. Intentions to try vaping tobacco & menthol flavored RELX PRO e-liquid pods
Intentions to Purchase	5. Intentions to purchase the RELX Infinity ENDS when presented with different hypothetical prices of the RELX Infinity ENDS and a 2-pack of RELX PRO e-liquid pods.
Unconditional Risk Perceptions	6. Perceptions of the general harmfulness and addictiveness of the RELX Infinity ENDS, alone and in comparison to other tobacco and nicotine products
Label Comprehension	7. Understanding of the nicotine warning and intended user statements presented on the packaging box in which RELX PRO e-liquid pods would be marketed in the United States

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AUDIO COMMENTARY:

We also collected data on legal age adults' intentions to purchase the RELX Infinity, their unconditional risk perceptions of the RELX Infinity, and their understanding of information presented on the labels of RELX products, however these data aren't discussed in this presentation.

Study Design

Cross-sectional, internet-based survey study of national random probability samples of Non-Smokers, Established Current Smokers, and Established Former Smokers aged 21 years and older in the United States

This study was approved by Advarra Institutional Review Board (AIRB) on 30 October 2020 (Protocol Number 00046732)

Data collection occurred between 5-30 November 2020

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AUDIO COMMENTARY:

This was a cross-sectional study that involved administration of a single, self-complete, internet-based questionnaire to national random probability samples of Non-Smokers, Established Current Smokers, and Established Former Smokers aged 21 years and older in the United States.

The definitions of a 'Non-Smoker', 'Established Current Smoker', and 'Established Former Smoker' used in this study very closely approximated the definitions used in the CDC's 2019 National Health Interview Survey.

Study Procedures

AUDIO COMMENTARY:

All study procedures took place on the internet.

Study Procedures

Recruitment

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AUDIO COMMENTARY:

Subjects were recruited from Ipsos-Insight's KnowledgePanel®, which is the largest probability-based online research panel in the United States that is designed to be representative of the non-institutionalized U.S. population aged 18 years and older.

Target quotas were set with the intention of recruiting 2,000 Non-Smokers, 2,000 Established Current Smokers, and 2,000 Established Former Smokers.

Ipsos managed subject recruitment to this study by sending email invitations to potentially eligible KnowledgePanel® members to inform them of a new online survey participation opportunity.

Study Procedures



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AUDIO COMMENTARY:

Clicking the web-link in the study email invitation directed KnowledgePanel® members to a webpage that displayed the study information and consent page.

Study Procedures



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AUDIO COMMENTARY:

Subjects who gave their informed consent to participate in this study were routed to an eligibility screener that consisted of six questions.

Study Procedures



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AUDIO COMMENTARY:

Subjects who satisfied the study eligibility criteria were routed to the start of the study questionnaire.

The questionnaire first collected data on subjects' current and past use of conventional cigarettes and e-cigarettes.

Subjects were then presented with information about, and multiple images of, the RELX Infinity, RELX PRO e-liquid pods, and the packaging boxes in which these products may be marketed.

Based on the information and images provided for these products, subjects were then asked a series of questions about their intentions to use the RELX Infinity and RELX PRO e-liquid pods in tobacco and menthol flavors.

Study Procedures



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AUDIO COMMENTARY:

Upon submission of their answers to the questionnaire, subjects were routed to a webpage that displayed a debriefing script, the purpose of which was to correct any misperceptions of the safety of the RELX Infinity and other tobacco and nicotine products, that may have arisen during subjects' completion of the questionnaire.

Data Weighting

Study-specific post-stratification weights were calculated separately for the final samples of Non-Smokers, Established Current Smokers, and Established Former Smokers using data obtained from the 2019 National Health Interview Survey.

Data were weighted to ensure the final samples of Non-Smokers, Established Current Smokers, and Established Former Smokers were representative of the corresponding cigarette smoking group in the non-institutionalized U.S. population aged 21 years and older on five demographic variables (Age; Sex; Race-Ethnicity; U.S. Census Division; and Education Level).

AUDIO COMMENTARY:

Prior to analysis, data were weighted to ensure the final samples of Non-Smokers, Established Current Smokers, and Established Former Smokers in this study were representative of the corresponding cigarette smoking group in the U.S. population aged 21 years and older on key demographic variables.

Results

Final Samples:

1. Non-Smokers (N = 2,123)
2. Established Current Smokers (N = 2,014)
3. Established Former Smokers (N = 2,089)

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Results are based on final samples of:

1. 2123 Non-Smokers
2. 2014 Established Current Smokers
3. and 2089 Established Former Smokers

"Do you think you would try using the RELX Infinity at least once?"

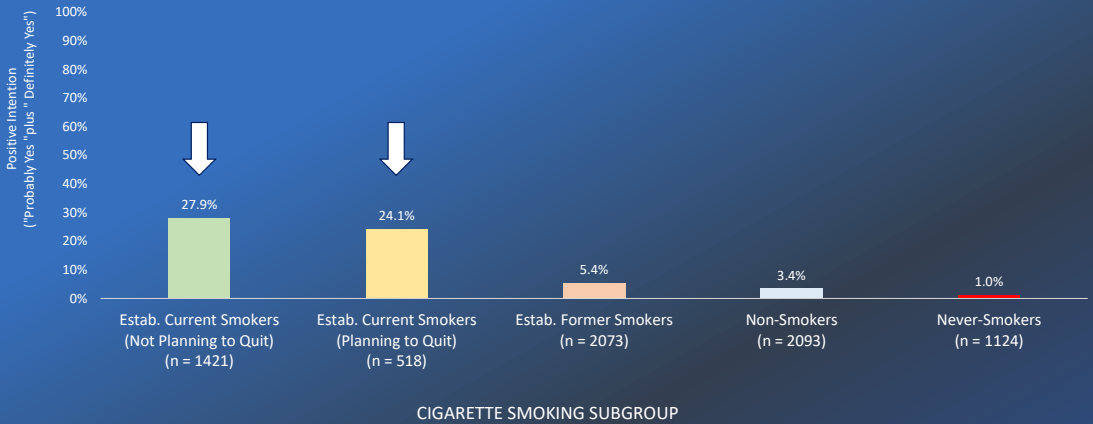


Figure 1. Positive intention to try the RELX Infinity ENDS at least once, by Cigarette Smoking Subgroup.

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AUDIO COMMENTARY:

Figure 1 shows the levels of positive intention to try using the RELX Infinity **at least once** according to subjects' cigarette smoking status.

A positive intention to try the RELX Infinity at least once was reported by approximately 28% of Established Current Smokers who did not plan to quit smoking within the next six months, and by approximately 24% of Established Current Smokers who did plan to quit smoking within the next six months.

"Do you think you would try using the RELX Infinity at least once?"

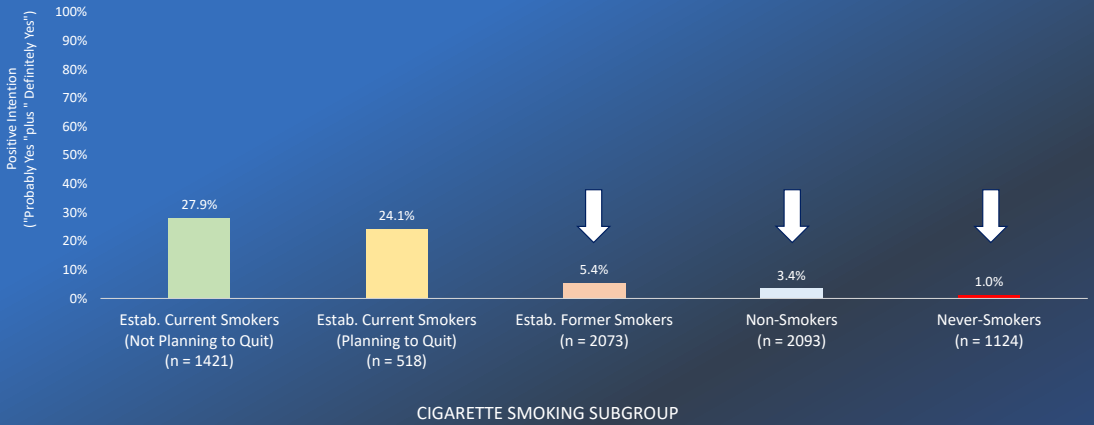


Figure 1. Positive intention to try the RELX Infinity ENDS at least once, by Cigarette Smoking Subgroup.

AUDIO COMMENTARY:

In contrast, a positive intention to try the RELX Infinity at least once was reported by 5.4% of Established Former Smokers, by 3.4% of Non-Smokers, and by 1.0% of Never-Smokers.

"Do you think you would try using the RELX Infinity at least once?"

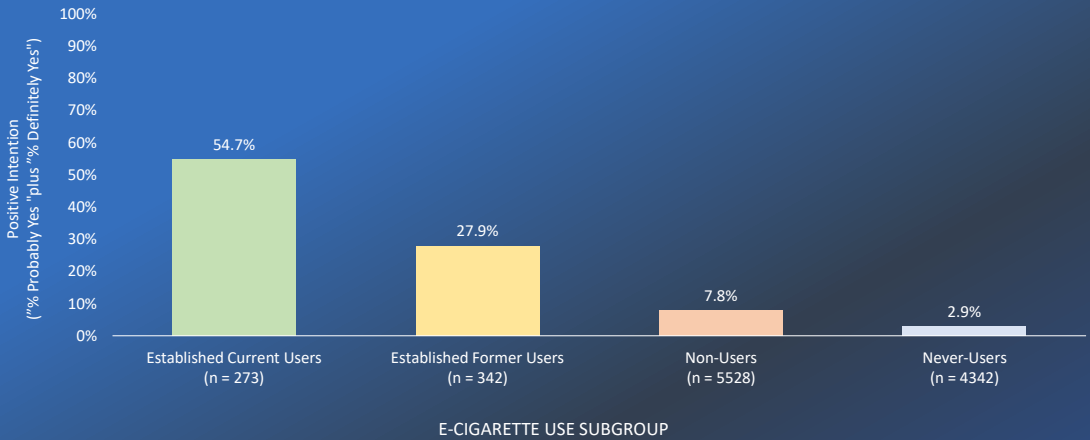


Figure 2. Positive intention to try the RELX Infinity ENDS at least once, by E-Cigarette Use Subgroup.

AUDIO COMMENTARY:

Figure 2 shows the levels of positive intention to try using the RELX Infinity **at least once** according to subjects' e-cigarette use status.

A positive intention to try the RELX Infinity at least once was reported by over half of Established Current E-Cigarette Users, by 27.9% of Established Former E-Cigarette Users, by 7.8% of Non-Users of e-cigarettes, and by 2.9% of subjects who had never used an e-cigarette in their lifetime.

Table 2. Unweighted logistic regression model of factors associated with a positive intention to try the RELX Infinity ENDS at least once.

Predictor Variable	Positive Intention to Try the RIE at Least Once
	Unweighted Model ^a aOR (95% CI)
Cigarette Smoking Subgroup	
Non-Smokers	Ref.
Established Current Smokers	9.95 (7.25-13.66) ***
Established Former Smokers	1.54 (1.06-2.22) *
E-Cigarette Use Subgroup	
Non-Users	Ref.
Established Current Users	11.87 (8.62-16.35) ***
Established Former Users	2.44 (1.83-3.26) ***

Note: Odds Ratios are adjusted for the effects of age, sex, race-ethnicity, region, and education level.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

AUDIO COMMENTARY:

Table 2 shows the results of a logistic regression analyses of the associations between cigarette smoking status, e-cigarette use status, and a positive intention to try the RELX Infinity at least once.

This analysis showed that, when adjusted for the effects of age, sex, race-ethnicity, census region, education level, and e-cigarette use status, Established Current Smokers were approximately 10 times more likely than Non-Smokers to report a positive intention to try using the RELX Infinity at least once.

Similarly, when adjusted for covariates, Established Current E-Cigarette Users were approximately 12 times more likely than Non-Users of e-cigarettes to report a positive intention to try using the RELX Infinity at least once.

"Do you think you would use the RELX Infinity for any of the following reasons?"

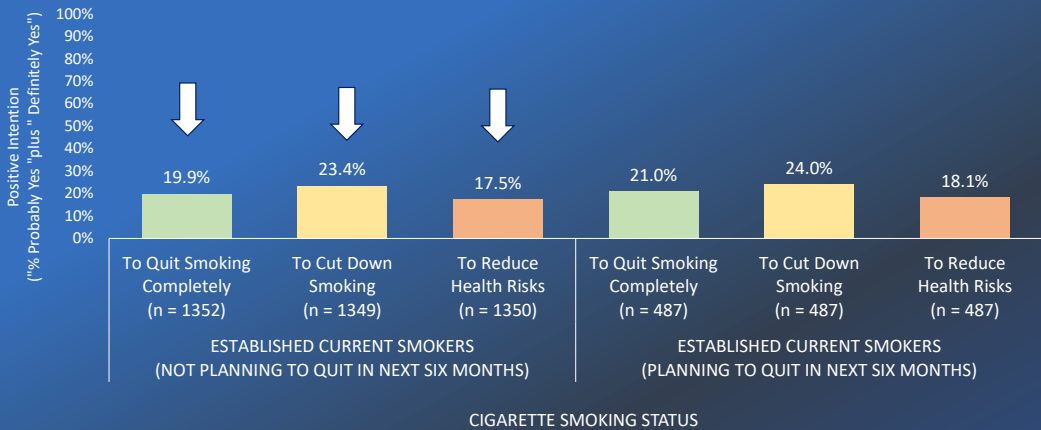


Figure 3. Positive intention to use the RELX Infinity ENDS to reduce health risks, cut down smoking, and quit smoking completely, by Cigarette Smoking Subgroup.

AUDIO COMMENTARY:

Figure 3 shows Established Current Smokers’ endorsement of three reasons for intending to use the RELX Infinity.

Approximately 20% of those who did not plan to quit smoking within the next six months reported a positive intention to use the RELX Infinity to quit smoking completely.

Close to one-quarter of Established Current Smokers with no plan to quit reported a positive intention to use the RELX Infinity to cut down the number of cigarettes they smoke, and approximately 17.5% reported a positive intention to the RELX Infinity to reduce their health risks.

Established Current Smokers who did plan to quit smoking within the next six months reported similar levels of intention to use the RELX Infinity for each of these three reasons.

Conclusions About Use Intentions

Exposure to the RELX Infinity ENDS generated high levels of positive intention to trial the RELX Infinity ENDS among legal age adults who are Established Current Smokers and/or Established Current Users of e-cigarettes – people who are the intended users of the RELX products.

Exposure to the RELX Infinity ENDS simultaneously generated low levels of positive intention to trial the RELX Infinity ENDS among legal age adults who have never used, have never regularly used, or do not currently use conventional cigarettes and/or e-cigarettes.

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AUDIO COMMENTARY:

In conclusion, exposure to the RELX Infinity in this study generated high levels of positive intention to trial the RELX Infinity among legal age adults who are Established Current Smokers and/or Established Current Users of e-cigarettes – people who are the intended users of RELX products – while simultaneously generating low levels of positive intention to trial the RELX Infinity among legal age adults who have never used, have never regularly used, or do not currently use conventional cigarettes and/or e-cigarettes.

Results: Conditional Risk Perceptions

Subjects estimated the probability that they would personally experience five long-term tobacco-related health outcomes at some point in their lifetime in each of a series of hypothetical scenarios of tobacco product use.

Five health outcomes:

1. Lung cancer
2. Lung disease other than lung cancer (e.g., COPD, emphysema)
3. Heart disease
4. Early/premature death
5. Feeling addicted to [product]

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AUDIO COMMENTARY:

The next set of results describe subjects' conditional risk perceptions of different tobacco products, including the RELX Infinity.

Subjects perceptions of the health and addiction risks of using different tobacco products were measured through Conditional Risk Assessments, a type of assessment that requires individuals to evaluate the probability of specific risks occurring under specific hypothetical scenarios of product use behavior.

The conditional risk assessment in this study involved asking subjects to estimate the probability that they would personally experience five long-term tobacco-related health risks at some point in their lifetime in each of a series of hypothetical scenarios in which they were asked to imagine they had started, stopped, reduced, or continued to smoke cigarettes, use e-cigarettes, use the RELX Infinity ENDS, and/or use nicotine replacement therapy products (NRTs).

After carefully reading each conditional scenario, subjects were asked to estimate – on a 0 to 100% scale – what they believed was the likelihood that they would personally experience each of five health outcomes at some time in their life.

The five health outcomes were: (i) lung cancer; (ii) lung disease other than lung cancer (e.g., COPD, emphysema); (iii) heart disease; (iv) early/premature death; and (v) feeling addicted to the product in question.

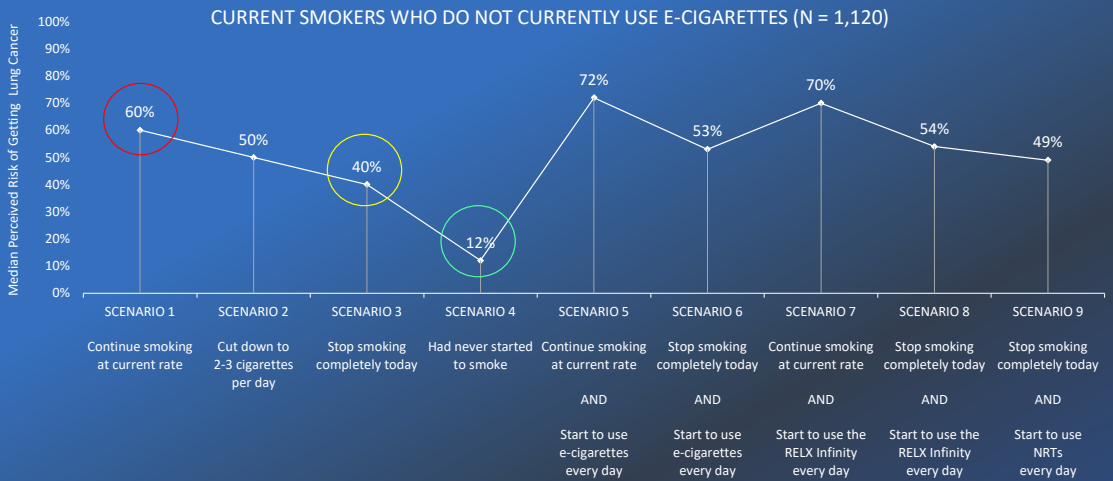


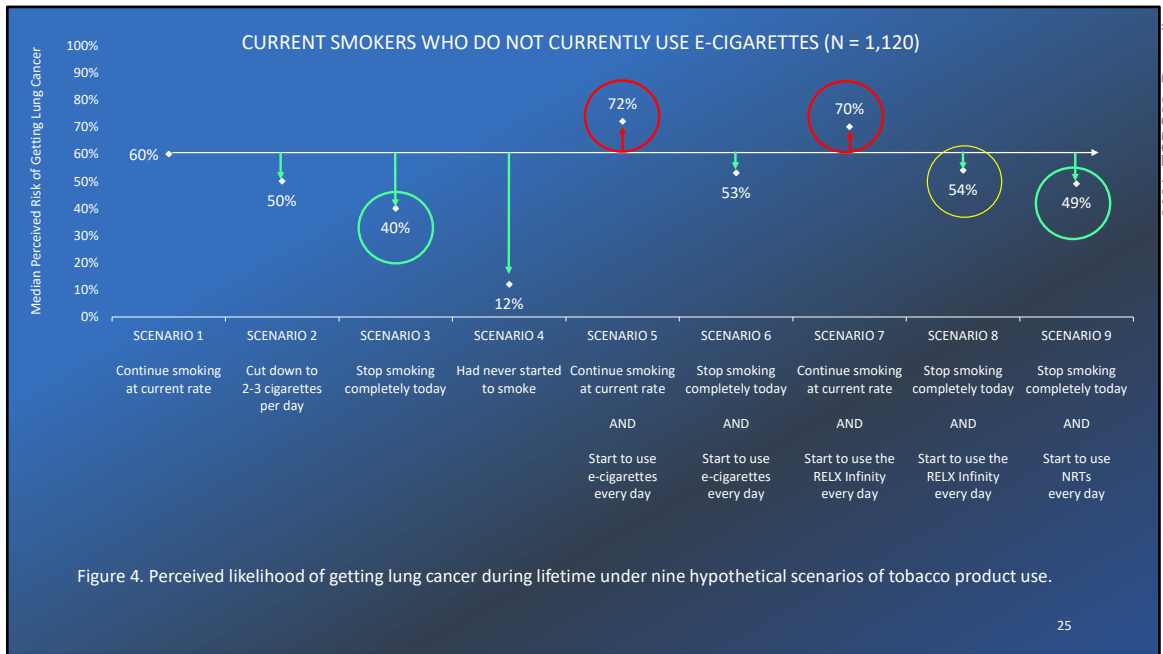
Figure 4. Perceived likelihood of getting lung cancer during lifetime under nine hypothetical scenarios of tobacco product use.

AUDIO COMMENTARY:

The first results describe the conditional lung cancer risk perceptions held by Established Current Smokers of 5 or more cigarettes per day who do not currently use e-cigarettes.

Figure 4 shows that Current Smokers believed that:

- Continuing to smoke cigarettes at their current rate would carry the greatest risk of getting lung cancer in their lifetime.
- That never having started to smoke cigarettes would have presented the lowest risk of getting lung cancer
- And that completely stopping smoking cigarettes today represents the best action they can take now to reduce their risk for getting lung cancer.



AUDIO COMMENTARY:

Current Smokers believed that starting to use e-cigarettes in general and the RELX Infinity in particular while continuing to smoke cigarettes at their current rate would increase their risk for getting lung cancer.

Current Smokers also believed that completely switching from smoking cigarettes to using the RELX Infinity could reduce *some* of the lung cancer risk that *would be* accumulated if they continue to smoke cigarettes at their current rate, *but* that completely switching to nicotine replacement therapy products, or stopping use of cigarettes today without substituting in any alternative nicotine-containing products, could reduce their lung cancer risk by a substantially greater proportion.

That is, Current Smokers perceived switching from cigarettes to the RELX Infinity as a course of action that is likely to pose a lower risk for lung cancer compared to continuing to smoke cigarettes, but also as a course of action that is likely to pose a higher risk for lung cancer compared to switching to NRTs and compared to ceasing all tobacco and nicotine use.

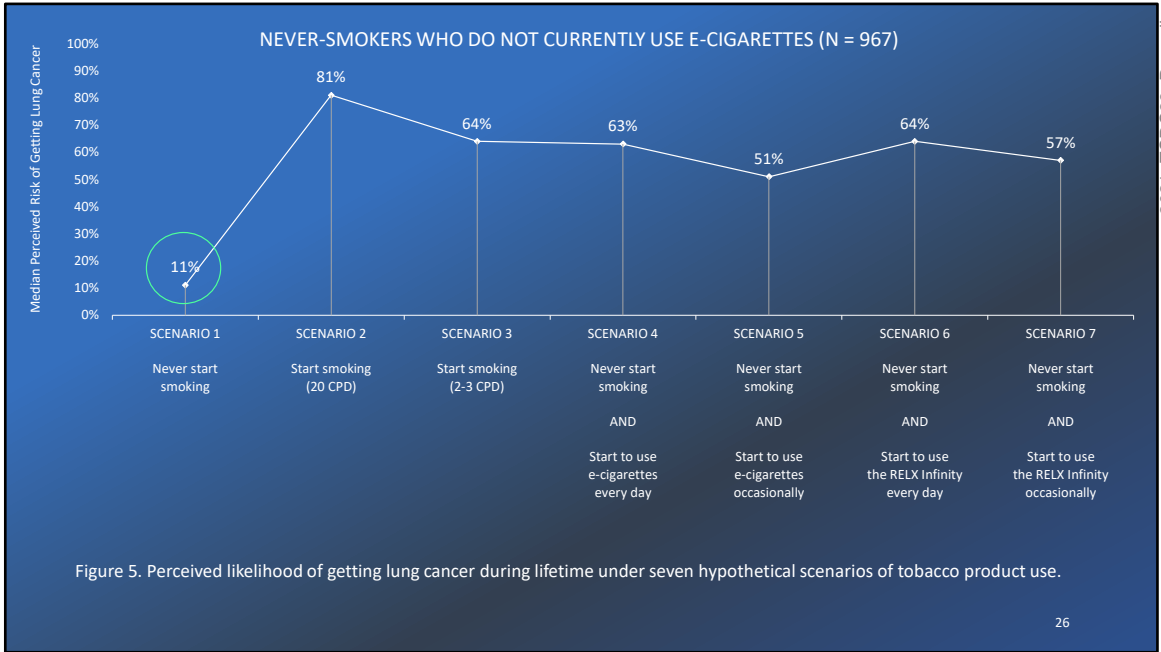


Figure 5. Perceived likelihood of getting lung cancer during lifetime under seven hypothetical scenarios of tobacco product use.

AUDIO COMMENTARY:

Figure 5 shows that Never-Smoking Non-Current E-Cigarette Users acknowledged the best action they can take in their lives to reduce their lifetime risk for getting lung cancer is to never start smoking cigarettes and to never start or restart using e-cigarettes.

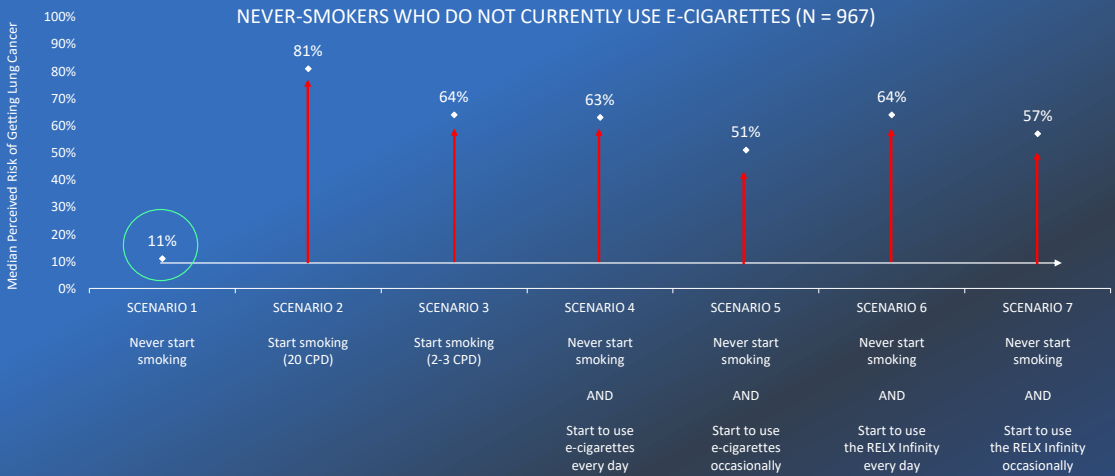


Figure 5. Perceived likelihood of getting lung cancer during lifetime under seven hypothetical scenarios of tobacco product use.

AUDIO COMMENTARY:

Most importantly, Never-Smoking Non-Current E-Cigarette Users indicated a belief that starting to use any tobacco product in the future, even occasionally, whether the product is cigarettes, e-cigarettes in general, or the RELX Infinity in particular, would substantially increase their lifetime risk for getting lung cancer.

Conclusions About Conditional Risk Perceptions

Established Current Smokers who do not currently use e-cigarettes believed that completely switching from smoking cigarettes to using the RELX Infinity ENDS would reduce their lifetime lung cancer risk compared to a scenario in which they continue to smoke.

However, Established Current Smokers also believed that switching to nicotine replacement therapy products or completely stopping cigarette smoking without switching to any other tobacco or nicotine product would represent substantially better options for their health than would switching to the RELX Infinity or to any other brand of e-cigarette.

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AUDIO COMMENTARY:

Overall, results from the conditional risk assessment in this study indicated that legal age adults do not believe that tobacco products are uniformly or unconditionally risky, but rather, believe that different tobacco products would pose different levels of risk to their health under different conditions of product exposure.

From a tobacco harm reduction perspective, Established Current Smokers who do not currently use e-cigarettes believed that completely switching from smoking cigarettes to using the RELX Infinity would reduce their lifetime lung cancer risk compared to a scenario in which they continue to smoke.

However, Established Current Smokers also believed that switching to nicotine replacement therapy products or completely stopping cigarette smoking without switching to any other tobacco or nicotine product would represent better options for their health than would switching to the RELX Infinity or to any other brand of e-cigarette.

That Established Current Smokers perceive a switch from smoking cigarettes to using the RELX Infinity as likely to be less risky than continuing to smoke but more risky than completely switching to NRTs and much more risky than ceasing smoking without substituting in another tobacco or nicotine product suggests that Established Current Smokers who are motivated to quit cigarette smoking out of concern for their future health may therefore be more likely to try to completely switch to the RELX Infinity or another brand of e-cigarette *only after* they have attempted to switch to NRTs or to quit tobacco and nicotine use altogether.

Conclusions About Conditional Risk Perceptions

Legal age adults who do not currently smoke cigarettes or use e-cigarettes generally understood that the best action they can take now to protect and improve their long-term health would be to never start or restart using any tobacco product, including the RELX Infinity ENDS.

These tobacco non-users believed that starting to use the RELX Infinity ENDS, even occasionally, would increase their lifetime risk for getting lung cancer.

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AUDIO COMMENTARY:

Legal age adults who do not currently smoke cigarettes or use e-cigarettes generally understood that the best action they can take now to protect and improve their long-term health would be to never start or restart using any tobacco product, including the RELX Infinity ENDS.

That is, these individuals believed that starting to use the RELX Infinity ENDS, even occasionally, would increase their lifetime risk for getting lung cancer.

From a tobacco harm prevention perspective, therefore, these results give confidence for predicting that marketing the RELX Infinity in the United States would not be likely to generate a perception among former users, non-users, and never-users of tobacco products that using the RELX Infinity would be 'risk-free' or even 'low-risk', but rather, would be more likely to generate a perception of the RELX Infinity as a product that would substantially increase risks to the health of tobacco non-users.

Overall Conclusion

This study provides estimates of the probabilities that legal age adults will use the RELX Infinity ENDS if marketed in the United States.

This study also provides data that characterize how legal age adults perceive the health and addiction risks of starting to use the RELX Infinity in addition to, in place of, and instead of other tobacco products, and compared to ceasing/not starting to use tobacco products.

The results of this study can inform an evaluation of whether issuing Marketing Granted orders for the RELX Infinity and RELX PRO e-liquid pods in tobacco and menthol flavor would be appropriate for the protection of the public health under section 910 of the FD&C Act (21 U.S.C. 387j).

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AUDIO COMMENTARY:

In conclusion, this study provides premarket estimates of the probabilities that legal age adult Non-Smokers, Established Current Smokers, and Established Former Smokers would use the RELX Infinity if it were to be marketed in the United States.

This study also provides data that characterize how adults perceive the health and addiction risks of starting to use the RELX Infinity ENDS in addition to, in place of, or instead of other tobacco products, and compared to ceasing or not starting to use other tobacco products.

As part of a broader package of research information about the potential health impact of the RELX Infinity on individual users and the population as a whole, the results of this study can inform an evaluation of whether authorizing marketing of the RELX Infinity and RELX PRO e-liquid pods in the United States would be appropriate for the protection of the public health.

Thank You for Listening

Questions?

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Director, Russell Burnett Research and Consultancy Ltd

Email: russellburnettrc@gmail.com

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AUDIO COMMENTARY:

Thank you very much for listening, I'm more than happy to answer any questions you may have now, or later by email.