

5. Asserts a ‘gateway effect’ but there is more likely to be a diversion away from smoking

The justification draws falsely on an unproven gateway effect. The justification for the flavour ban suggests, albeit tentatively, that e-cigarettes may provide a gateway to smoking. In doing so, it implicitly attributes the risk of smoking to the much safer vaping products. There is no basis for this.

In addition to the fact that young people may become addicted to nicotine and exposed to harmful substances through the use of e-cigarettes, young people who use e-cigarettes are more likely to smoke tobacco cigarettes and vice versa. It is difficult to determine whether young people started smoking because of e-cigarettes or whether common underlying factors increase the risk of vaping and smoking. However, recent insights increasingly suggest that e-cigarettes may be a stepping-stone to tobacco smoking

No support for a gateway effect, and common liability is more likely. There is so far no compelling evidence of a gateway effect.¹ Detailed examination of the studies claiming to have found a gateway effect showed that all had fundamental weaknesses, primarily uncorrected confounding.^{2 3} Confounding is probably an insurmountable challenge for any standard observational study.

The alternative explanation for the observed associations between e-cigarette use and smoking relates to characteristics of the individual and their circumstances that incline them to both vaping and smoking. Given the similarities between the two habits (albeit with radically different risk to health), it is not at all surprising that whatever reasons people have to smoke are also reasons to vape. These common characteristics – genetics, mental health, family, community, delinquency, etc.) are sometimes known as common liabilities, common risk factors or confounders. These provide a more credible explanation for at least part of the observed associations between smoking and vaping.^{4 5}

¹ Etter J-F. Gateway effects and electronic cigarettes. *Addiction* [Internet] 2017. [\[link\]](#)

² Chan GCK, Stjepanović D, Lim C, et al. Gateway or common liability? A systematic review and meta-analysis of studies of adolescent e-cigarette use and future smoking initiation [Internet]. *Addiction*. 2020 [cited 2020 Dec 4];add.15246. [\[link\]](#)

³ Lee PN, Coombs KJ, Afolalu EF. Considerations related to vaping as a possible gateway into cigarette smoking: An analytical review. *F1000Research* 2019; [\[link\]](#)

⁴ Vanyukov MM, Tarter RE, Kirillova GP, et al. Common liability to addiction and “gateway hypothesis”: Theoretical, empirical and evolutionary perspective. *Drug Alcohol Depend* [Internet] 2012;123:S3–S17. [\[link\]](#)

⁵ Phillips C V. Gateway effects: Why the cited evidence does not support their existence for low-risk tobacco products (and what evidence would). *Int J Environ Res Public Health* 2015; [\[link\]](#)

The common liability explanation is backed up by population trends. There has been a sharp rise in adolescent vaping in the United States since 2014, but it has not generated a surge in smoking. There has also been an *accelerated* decline in youth smoking coinciding with the rise in youth vaping.⁶

There was a substantial increase in youth vaping prevalence beginning in about 2014. Time trend analyses showed that the decline in past 30-day smoking prevalence accelerated by two to four times after 2014.

Recent time-series analysis has found that a diversion effect (i.e. a gateway out of smoking) was more likely to be the explanation.⁷

A simulation model shows that a substantial diversion effect is needed to explain observed nicotine use trends among US adolescents, and it must be larger than any possible opposing catalyst effect, if present.

Likewise, an analysis of US data using propensity score matching found that initial e-cigarette users were *less* likely than others with similar propensity to initiate smoking.⁸ The study concluded:

Less than 1% of US adolescents who use e-cigarettes first were established cigarette smokers. They were less likely to be smokers than adolescents who tried other combustible or non-combustible tobacco products first and propensity score matched adolescents without initial e-cigarette use.

These studies are all consistent with vaping being a gateway ‘exit’ and that the strong associations between vaping and smoking are more likely to arise from common liabilities. As no individual study design can establish causality definitively, and while we wait for triangulation of methodological approaches to provide a more complete picture, it would be premature to assume strong effects in either direction. Nonetheless, recent data at the population-level are more consistent with the prospect that the observed associations between smoking and vaping benefit adolescent health rather than cause harm. Reassuringly, even if there were a strong gateway effect into smoking, this is mostly of theoretical concern as regular use of e-cigarettes among tobacco-naïve adolescents is exceedingly rare.^{9 10}

⁶ Levy DT, Warner KE, Michael Cummings K, et al. Examining the relationship of vaping to smoking initiation among US youth and young adults: A reality check. *Tob Control* 2019; [\[link\]](#)

⁷ Selya AS, Foxon F. Trends in Electronic Cigarette Use and Conventional Smoking: Quantifying a Possible “Diversion” Effect among U.S. Adolescents. *Addiction* [Internet] 2021 Jan 11;add.15385. [\[link\]](#)

⁸ Shahab L, Beard E, Brown J. Association of initial e-cigarette and other tobacco product use with subsequent cigarette smoking in adolescents: a cross-sectional, matched control study. *Tob Control* 2020 0:tobaccocontrol-2019-055283. [\[link\]](#)

⁹ Action on Smoking and Health (UK) and YouGov. Use of e-cigarettes among young people in Great Britain,. June 2019. [\[link\]](#)

¹⁰ Jarvis M, Jackson S, West R, Brown J. Epidemic of youth nicotine addiction? What does the National Youth Tobacco Survey 2017-2019 reveal about high school e-cigarette use in the USA? *Qeios* [745076.5] 2020 [\[link\]](#)

Weak assumptions about gateway effects are not somehow “precautionary” but cause harm. The problem is that perverse consequences arise from assuming a gateway effect when there is not. If, on the contrary, there is a diversion effect, it not cost-free or somehow ‘precautionary’ to block this pathway to smoking cessation with excessive regulation. For this reason, the following statement in the memorandum provides an inappropriate foundation for policy:

However, recent insights increasingly suggest that e-cigarettes may be a stepping stone to tobacco smoking. [...] It was therefore decided in the Prevention Agreement that a smoke-free and tobacco-free environment also means that children must not come into contact with novel types of tobacco products and e-cigarettes, with and without nicotine

There are harmful consequences for being wrong about gateway effects, given there is no doubt about the risk of smoking. It would mean that policies built on this assumption will cause harm if they work as intended. If e-cigarettes are an alternative to smoking and much less harmful, then basing policy on an assumption of a gateway effect, such as banning flavours, will degrade a beneficial pathway out of smoking and support the cigarette trade prolong smoking, and cause harm. This is exactly the position in the Prevention Agreement, and it does not withstand scrutiny.