



Assessing the Potential Impact of E-Cigarette Policies on Smoking Prevalence: A European Union Study

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Context

- Numerous studies have delved into the connection between tobacco control policies and smoking tobacco prevalence in European Union countries¹⁻³ (references 1-3).
 - Generally, these investigations indicate a noticeable correlation between the adoption of tobacco control policies and a decrease in smoking tobacco prevalence.
- E-cigarette and tobacco control policies varies largely between countries in Europe
- Impact of e-cigarette control policy on tobacco <u>smoking tobacco prevalence</u> has not been assessed

Objectives

 Predict future smoking tobacco prevalence using e-cigarette and tobacco control policies scores and past smoking tobacco prevalence

Impact of e-cigarette control policy on tobacco smoking prevalence?





¹ Feliu A, et al., Impact of tobacco control policies on smoking prevalence and quit ratios in 27 European Union countries from 2006 to 2014. Tob Control, 2019;28:101–109. ² Flor LS et al., The effects of tobacco control policies on global smoking prevalence. Nature Medicine, 2021;27:239–243 ³ Levy et al., The Impact of Implementing Tobacco Control Policies: The 2017 Tobacco Control Policy Scorecard. Journal of Public Health Management and Practice, 2018;24:448-457

A model to predict future smoking tobacco prevalence using past smoking tobacco prevalence and e-cigarette & tobacco control policy "scores"





METHOD - Input

Prevalence of tobacco smoking

For our simulation, we used most recent data on prevalence of current cigarette smoking for EU countries from the Eurobarometers $(2017 - 2020)^3$

E-cigarette and tobacco control policies

To examine the potential impact of implementing tobacco control policies on smoking prevalence, we used the Nanny State Indexes for both tobacco (Tob-NSI) and e-cigarette (E-cig-NSI)¹.

The Tobacco Control Scale² (TCS) was not used in this study because it does not take into account the e-cigarette policies.





¹<u>https://europa.eu/eurobarometer/surveys/detail/2240</u> ²http://nannystateindex.org/analysis-2021/

³<u>https://www.tobaccocontrolscale.org/</u>



Based on available data, we propose a model **to predict 2020** tobacco smoking prevalence **from the 2017** tobacco smoking prevalence and NSI scores



A model to predict future smoking tobacco prevalence

Linear regression was applied to model the relationship between tobacco smoking prevalence and NSI scores





Tob-NSI vs E-cig NSI

There is <u>no correlation</u> between NSI for Tobacco (Tob-NSI) and NSI for ecigarette (E-cig – NSI)¹

The differences between Tob-NSI and E-cig-NSI are mainly due to views on the difference between cigarettes and e-cigarettes



Impact of E-cig control policy on smoking tobacco prevalence

2020 estimated prevalence based on 2017 Tob-NSI and tobacco prevalence



E-cigarette control policy has an impact on tobacco smoking prevalence

The greater the difference between the current and the artificial E-cig-NSI, the greater the impact on the prevalence of tobacco use

E-cig control policies impact tobacco smoking prevalence

2020 estimated prevalence based on 2017 Tob-NSI and tobacco prevalence and variable E-cig NSI



For <u>all the countries</u>, a strong e-cig control policy would increase the tobacco smoking prevalence At the opposite, a weak e-cig control policy would decrease the tobacco smoking

- With current 2017 E-cig-NSI
- With artificial 2017 E-cig-NSI

Impact of E-cig control policy on smoking tobacco prevalence

2020 estimated prevalence based on 2017 tobacco prevalence and <u>a strong Tob-NSI for all the countries (Tob-NSI = 90)</u>

and variable E-cig-NSI

If Tob-NSI (2017) = 90 E-cig-NSI (2017) = 90

If Tob-NSI (2017) = 90 E-cig-NSI (2017) = 10



E-cig and tobacco control policies have an <u>opposite</u> impact on tobacco smoking prevalence





100 points available

Sales restrictions

Limits on tank sizes, fluid strength, bottle size and several other product features, (up to 10 points) Bans on flavours (up to 10 points) Refillable e-cigarettes (5 points) Cross-border sales (5 points).

Advertising

Points are awarded according to the size and scope of advertising restrictions (up to 10 points)

<u>Tax</u>

Countries which place a specific tax on e-cigarettes score up to 20 points.

Vaping ban

Up to 40 points are awarded for bans and restrictions on e-cigarette use (vaping) in public places.

Which e-cigarette NSI category has the highest impact on tobacco smoking prevalence ?

What is the potential impact of e-cigarette control policy category on tobacco smoking prevalence ?

Elastic net regression* was applied to to model the relationship between tobacco smoking prevalence, tobacco NSI score and e-cig NSI score categories



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Which e-cigarette NSI category has the highest impact on tobacco smoking prevalence ?



The correlation plot shows that :

- The difference in smoking prevalence between 2020 and 2017 is negatively correlated to Tobacco NSI score.
 "A decrease in tobacco smoking prevalence is related to an increase in tobacco NSI score."
- The difference in smoking prevalence between 2020 and 2017 is <u>positively</u> <u>correlated</u> to E-cig Indoor Ban NSI score.
 "An increase in tobacco smoking prevalence is related to an increase in E-cig Indoor Ban NSI score."

Conclusions*

- Our estimates provide an assessment of the impact of e-cigarette control policy on tobacco smoking prevalence
- Less restrictive e-cigarette control policies (lower e-cig-NSI score) is likely to decrease the tobacco smoking prevalence
 - Conversely, increasing regulatory pressure on e-cigarette is likely to increase the tobacco smoking prevalence
 - An increase in regulatory pressure on both tobacco and e-cigarette is likely to have a deleterious impact on smoking prevalence reduction
- The difference in smoking prevalence between 2020 and 2017 is strongly correlated with the E-cig Indoor Ban NSI score.
 - > E-cig Indoor Ban is likely to increase smoking prevalence

*These conclusions apply for <u>all EU countries</u>





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THANK

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