UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

REEP
Research Unit on the Economics of Excisable Products

Cigarette Prices and Smoking Among Adults in Eight Sub-Saharan African Countries:

Evidence from the Global Adult Tobacco Survey

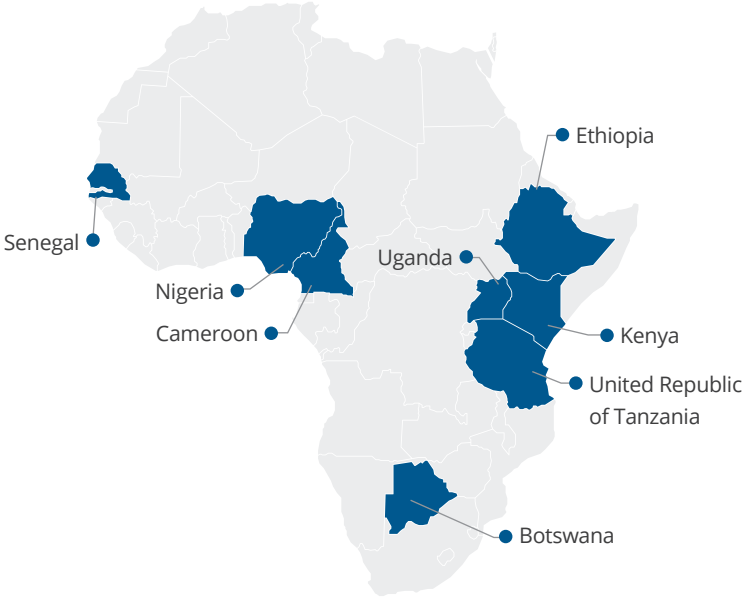
AUTHOR: SAMANTHA FILBY

BACKGROUND

Increasing the excise tax on tobacco products is important for reducing demand [1, 2]. The Article 6 Guidelines of the World Health Organization Framework Convention on Tobacco Control encourages Parties to consistently raise taxes on tobacco products to render them less affordable over time [3].

Despite growing concern over tobacco use in sub-Saharan Africa, the countries on the continent have the lowest tobacco tax rates in the world [4]. Although comprehensive international literature reviews show that tax-induced cigarette price increases reduce cigarette consumption and increase government revenues [1, 2], policymakers still demand local evidence before implementing policy changes. In sub-Saharan Africa, evidence on the association between cigarette prices and adult smoking behaviour is limited.

The countries included in the analysis:



REFERENCES:

[1] International Agency for Research on Cancer. Effectiveness of Tax and Price Policies for Tobacco Control IARC Handbooks of Cancer Prevention Volume 14. 2011.

[2] National Cancer Institute and World Health Organization. The Economics of Tobacco and Tobacco Control. NCI Tobacco Control Monograph Series No. 21. 2016.

[3] World Health Organization. World Health Organization Framework Convention on Tobacco Control. Available: https://fctc.who.int/publications/i/item/9241591013. 2003.

[4] World Health Organization. WHO report on the global tobacco epidemic 2021: addressing new and emerging products. Available: https://www.who.int/publications/i/item/9789240032095. 2021.

STUDY OBJECTIVE

This study aimed to use individual-level data from the Global Adult Tobacco Survey (GATS) to provide new evidence on the association between cigarette prices, smoking prevalence (i.e., smoking participation) and conditional cigarette demand (i.e., intensity) among adults from eight sub-Saharan African countries.

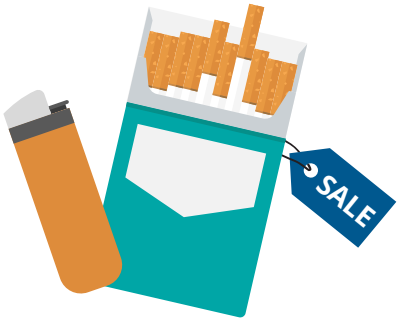
DATA

This study was based on the publicly available, individual-level data on smoking behaviour, environments and attitudes from GATS in eight sub-Saharan African countries. The countries included in the analysis were Botswana, Cameroon, Ethiopia, Kenya, Nigeria, Senegal, the United Republic of Tanzania and Uganda.

Model one:

Gain insight into factors that influence a person's decision to smoke

Model two:



Gain insight into factors that influence number of cigarettes smoked

METHODS

The study employed a two-part model of cigarette demand. The first part of the model was used to gain insight into the factors that influence an individual's decision to smoke cigarettes (model of smoking prevalence).

The second part of the model was used to gain insight into the factors that influence the number of cigarettes smoked (model of conditional cigarette demand).

The model of smoking prevalence includes both adults who smoked and did not smoke and controls for a range of demographic and socioeconomic factors, as well as factors that can be influenced by tobacco-control policies such as cigarette prices, the rate of advertising exposure, the exposure rate to antitobacco messaging, the percentage of the population that is misinformed about the harms of tobacco use and the POWE components of the MPOWER[1] Score. The model also controls for macroeconomic factors such as the proportion of the population living below the poverty line.

The model of conditional cigarette demand included only those adults who were currently smoking cigarettes. It controlled for the same factors as the model of smoking prevalence as well as one additional control − the number of years that a person had smoked.

1. In 2008, the World Health Organization introduced a measure to assess countries' implementation of the key demand-reduction measures recommended by the Framework Convention on Tobacco Control. This measure is called the MPOWER score. The MPOWER score assigns points to countries in each of the following areas: "Monitor tobacco use"; "Protect people from tobacco smoke"; "Offer help to quit tobacco use"; "Warn about the dangers of tobacco"; "Enforce bans on tobacco advertising, promotion and sponsorship"; and "Raise taxes on tobacco products".

RESULTS

- Of all the factors included in the models that can be directly influenced by tobacco-control policy, cigarette price is the only statistically significant predictor of both smoking prevalence and smoking intensity.
- Higher cigarette prices are associated with reductions in smoking prevalence and smoking intensity among adults in the eight sub-Saharan African countries.
- The price elasticity of smoking participation is −0.362. This means that a 10% increase in the price of cigarettes will lead to a 3.62% reduction in smoking prevalence.
- The price elasticity of smoking intensity for those people who have been smoking for less than one year is –0.133. This means that a 10% increase in the price of cigarettes will lead to a 1.33% reduction in the number of cigarettes smoked by these adults.
- The absolute value of the price elasticity of conditional demand becomes smaller (less elastic) for each additional year that a person has smoked. For those with the average duration of smoking (18.07 years), the price elasticity of smoking intensity is −0.06, meaning that a 10% increase in the price of cigarettes will lead to a 0.6% reduction in the number of cigarettes smoked by these adults.
- The total price elasticity of demand for cigarettes is calculated as the sum of the price elasticity of smoking participation and the price elasticity of conditional demand, which varies by smoking duration. The total price elasticity of demand for the average smoker, with a smoking duration of around 18 years, is –0.422. This means that a 10% increase in cigarette prices will reduce cigarette consumption by 4.22%.

With a 10% increase in price, there will be a ...

... 1.33% reduction in adults who smoked less than one year

... 4.22% reduction for adults who smoked

POLICY IMPLICATIONS

The full paper:

- The estimated price elasticities for these eight African countries are in line with those of most other African countries [5-8] and low- and middle-income countries more broadly [1, 2].
- Price-led decreases in the demand for cigarettes result in a larger decrease in smoking prevalence, and less of a decrease in smoking intensity.
- Research indicates that a person who smokes will realise much greater health benefits if they quit smoking rather than simply reducing the number of cigarettes smoked [9]. This research suggests that excise tax increases could be a potential tool to improve public health in the eight sub-Saharan African countries.

Funding: This research product was created through a research partnership funded by the *Bloomberg Initiative to Reduce Tobacco Use* through the CDC Foundation with a grant from Bloomberg Philanthropies. The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official position of the CDC Foundation.

Acknowledgment: I would like to sincerely thank Carrie Whitney, Corne van Walbeek and three anonymous reviewers for their comments on an earlier draft of this paper. I would also like to thank Deliana Kostova for her guidance at the start of this research project.

[5] Adeniji F. Consumption function and price elasticity of tobacco demand in Nigeria. *Tob Prev Cessat* 2019;2019(8).

[6] Chelwa G, van Walbeek C. Does cigarette demand respond to price increases in Uganda? Price elasticity estimates using the Uganda National Panel Survey and Deaton's method. *BMJ Open* 2019;9(3):e026150.

[7] Dare C, Boachie MK, Tingum EN, *et al*. Estimating the price elasticity of demand for cigarettes in South Africa using the Deaton approach. BMJ open 2021;11(12):e046279-e046279.

[8] Stoklosa M, Goma F, Nargis N, et al. Price, tax and tobacco product substitution in Zambia: findings from the ITC Zambia Surveys. *Tob Control* 2019;28(Suppl 1):s45-s52.

[9] Chang JT, Anic GM, Rostron BL, et al. Cigarette Smoking Reduction and Health Risks: A Systematic Review and Meta-analysis. *Nicotine & Tobacco Research* 2020;23(4):635-642.