IMPACTS OF TOBACCO TAX INCREASES ON TAX REVENUES AND PUBLIC HEALTH IN SERBIA

-A SIMULATION MODEL-

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ACKNOWLEDGMENTS

Belgrade, November 2023

1. BACKGROUND

According to the Survey on Tobacco Consumption in Southeastern Europe (STC-SEE) in 2019, smoking prevalence among the Serbian adult population (ages 18 and older) is high, reaching nearly 38 percent (40.1 percent for men, 35.9 percent for women). In addition, almost 48 percent of adults are exposed to tobacco smoke at home, while more than 80 percent of households with children allow smoking inside the house. Among daily cigarette smokers aged 15 and older, Serbia has one of the highest prevalence rates in Europe, at 26.2 percent in 2019, according to Eurostat, compared to 18.4 percent in the European Union (EU) (Vladisavljević et al., 2023). Smoking intensity is also at a high level in Serbia, with about 15.8 percent of the population aged 15 years and older smoking 20 or more cigarettes per day, compared to only 5.9 in the EU.

Smoking remains a concerning problem affecting income groups differently, and it is necessary to apply a variety of tobacco control measures (price and non-price) to reduce tobacco use. The implementation of advertising and promotion bans, prominent graphic warnings, smoking restrictions, consumer education campaigns, smoking cessation therapies, and mass media education campaigns can reduce the health and economic devastation caused by tobacco. However, tobacco excise taxes are considered the most effective tool for reducing tobacco use and are an important source of revenue for the government (Chaloupka, 2012).

The tobacco industry often opposes higher tobacco taxes. It claims that increases in tobacco taxes will harm government revenues from tobacco because fewer cigarette packs will be taxed because of growth of the illicit market. Another argument against excise increases is that the decrease in consumption will be substantial enough to decrease revenues (Blecher, 2018).

Smokers can react to price increases (due to increases in specific excise taxes) in different ways. They can quit or reduce smoking, or switch to another less expensive brand to maintain their smoking habits (White et al., 2013; Tsai et al., 2005). Depending on their socioeconomic status, they can be more or less sensitive to changes in cigarette prices. Smokers in poorer socioeconomic groups are typically more sensitive to price increases compared to smokers in the highest socioeconomic groups (Townsend, 1994).

This research aims to estimate the impact of an increase in tobacco excise taxes on tobacco consumption, government revenues from tobacco, premature deaths, and youth initiation in Serbia. A simulation model is developed to predict the effects of tobacco excise increases on budget revenues from tobacco as well as on public health. The baseline year in the simulation model is 2023, while the forecasting years are 2024 and 2025. The simulation assumes an annual increase in the specific excise per pack of 15 percent from its base value that leads to an increase in cigarette prices of 9.7 percent in the first year and 10.6 percent in the second year. **In brief, the simulation demonstrates that tax revenues would be higher, while the smoking prevalence would be lower.**

In addition to the research results on the impact of smoking and tax revenues, this study estimates the public health benefits, which include a reduction in the number of smokers, a reduction in future deaths caused by smoking, and a reduction in the number of future smokers deterred from smoking initiation. The results confirm that an increase in cigarette prices due to an increase in specific excise would reduce the number of smokers by 3.1 percent in 2024 and 3.4 percent in 2025, while the number of lives saved from premature deaths would be 320 and 678, respectively. Also, results on youth initiation are in line with results among other low- and middle-income countries: more than 17,000 youth younger than age 24 would be deterred from smoking or postpone initiation if the price of cigarettes increased by at least 10 percent at the time of potential smoking initiation.

2. DATA AND ASSUMPTIONS

The simulation model was created using a similar methodological approach as Mugosa et al. (2023) and Borovic et al. (2023). Changes in government revenues are estimated by cigarette market segments. The cigarette market is divided into three groups: economy, mid-price, and premium. Over time, the share of the economy market segment in Serbia has decreased (from 47.8 percent in 2007 to 24.3 percent in 2022), while the share of the mid-price segment has increased (from 29.3 percent in 2007 to 52.7 percent in 2022). The share of the premium segment remained stable over time. The structure of market segmentation is shown in Figure 1. The shift in market structure, which began in 2013, is on one hand a result of changes in the taxation system and on the other due to changes in the types of cigarettes produced by the three main manufacturers in Serbia. The changes in the tax system had an impact on reducing the difference in price between economy and mid-price brands. At the same time, manufacturers ceased production of certain local brands of cigarettes and replaced them with their original brands (BAT, PMI, and JTI).

Figure 1. Cigarette market segmentation in Serbia, 2007–2022
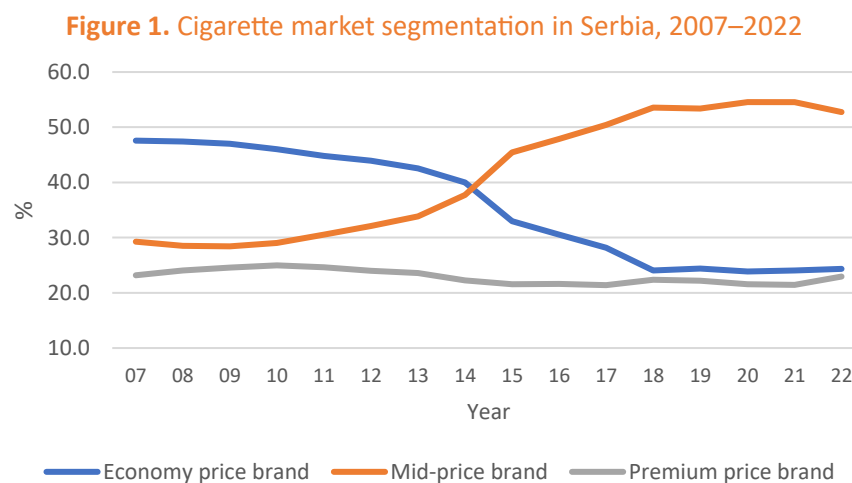
Source: Euromonitor

The simulation model estimates the impact of tax increases on government revenues and public health. The input data and assumptions are described in the following two sections.

2.1 Impacts of tobacco government revenues

The input data used to estimate the impacts of price changes on tobacco government revenues are listed in Table 1.

Table 1. Description of the data used in estimation of impacts on government revenues

Indicator	Description	Source	Indicator
Specific excise per pack	Determined according to the excise calendar.	MoF	**SEPP**
Ad valorem	Calculated as a percentage of the retail price (33 percent).	MoF	**AD**
Value-added tax	20 percent share in retail price.	MoF	**VAT**
Net-of-tax	Subtracting all taxes from the retail price gives the value of net-of-tax.	Authors' calculations	**NoT**
Retail sales price	Weighted average price.	Tobacco Administration	**RsP**
Tobacco consumption (in packs)	The volume of sales of all tobacco wholesalers to all tobacco retailers.	Tobacco Administration	**TC**
Number of packs per market segment	The number of packs per market segment considers economy, mid-price, and premium market segments.	Euromonitor, Tobacco Administration	**Qp**
Size of the illicit market	The illicit market is the part of the total market outside the legal distribution channels. A cigarette pack is considered illegal if: a) the health warning is in a foreign language or there is no health warning; b) the excise stamp is in a foreign language or there is no excise stamp; c) it was purchased at an illegal point of sale; or d) price paid for the cigarette pack is too low.	Đukić et al. (2021)	**IM**
Total prevalence	The indicator represents the number of smokers in the sample (or population) divided by the total number of people in the sample (or population).	Survey on Tobacco Consumption in Southeastern Europe (STC-SEE)	$E_{tpr, p}$
Prevalence elasticity	The indicator measures how much prevalence responds to a change in price.	Zubović et al. (2019)	$E_{prv, p}$
Price elasticity	The indicator measures how much the quantity demanded of one good responds to changes in its price.	Zubović et al. (2019)	$E^{pr}_{d,p}$
Income elasticity	The indicator measures how much the quantity demanded of one good responds to changes in income.	Zubović et al. (2019)	$E^{pr}_{d, i}$
Cross-price elasticity	The indicator measures how much the quantity demanded of one good responds to changes in the price of other goods.	Tauras et al. (2006)	$E^{pr}_{d,p2}$

The following assumptions are made regarding the first part of the analysis (Table 2).

Table 2. Indicators and assumptions in the analysis

Indicator*	Base 2023	Assumption
SEPP	82.75 RSD	15 percent annual increase
AD	33 percent of the retail price	No changes in the ad valorem rate from the base year
VAT	20 percent of the retail price	No changes in the VAT rate from the base year
NoT	87.34 RSD	The changes in NoT follow the estimated annual real GDP growth rates.
IM	2.6 percent of the total market	The share of the illicit market is constant for the forecasting years.
PRv	37.9 percent	The changes in prevalence are calculated based on changes in prices and corresponding elasticities for the forecasting years.
$E_{prv, p}$	-0.265	No changes in the prevalence elasticity from the base year

* Note: Explanation of the indicators is given in Table 1.

Since the data on elasticity by market segments are not available for Serbia, it is assumed that they correspond to those by income groups (Zubović et al., 2019). Cross-price elasticities are taken from Tauras et al. (2006).

Table 3. Price, income, and cross-price elasticities

Indicator	Market segments		
	Premium	Mid-price	Economy
Price elasticity	-0.220	-0.631	-1.076
Income elasticity	0.740	1.267	1.363
Cross-price elasticity premium		0.150	0.010
Cross-price elasticity mid-range	0.620		0.060
Cross-price elasticity economy	0.270	0.130	

The cigarette retail sale price (RsP) includes NoT, total excise per pack, and VAT. Equation 1 shows how the retail sales price is calculated.

$$RsP = SEPP + AD + VAT + NoT \qquad (1)$$

Figure 2 shows two indicators: the total tax and the net-of-tax. The retail price of cigarettes per pack refers to the weighted average price of cigarettes per pack. In the retail price of cigarettes per pack, all taxes contribute significantly more than producers' profit margin. In 2013, the total tax burden was 80 percent, while in 2021, it was 75.8 percent.

Figure 2. Real values of total tax and net-of-tax per cigarette pack in Serbia, in RSD (2013 prices)
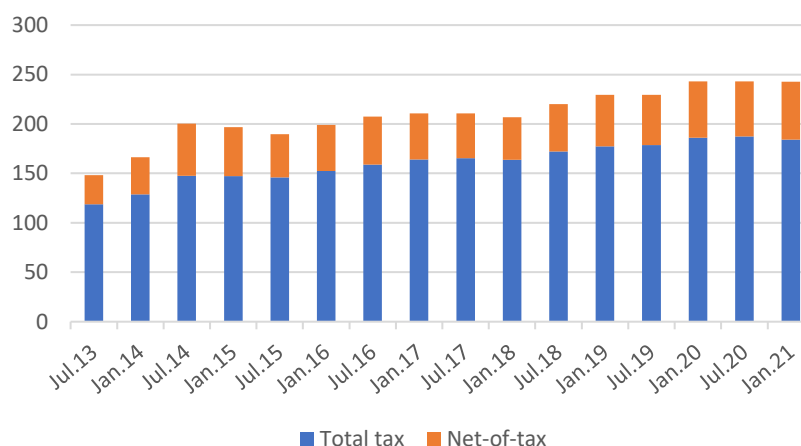
Source: Authors' calculations based on data from Tobacco Administration

2.2 Impacts on public health

The second part of this study is dedicated to estimating the benefits of cigarette price increases on public health. Higher prices can lead to a decrease in smoking prevalence as well as an increase in the number of people who avoid premature deaths because they quit smoking due to the price change. The data necessary to conduct the analysis include total consumption (number of packs) per year, total adult population, and total adult smoking prevalence. Values for the base year are given in Table 4.

Table 4. Data for the estimation of impacts on public health

Indicator	Value	Source
Total adult population (18+), in millions	5.74	SORS, 2019
Total adult prevalence rate	37.9	STC-SEE, 2019
Total consumption of packs, in millions	613.4	Tobacco Administration, 2022

The total adult prevalence (STC-SEE, 2019) includes smokers older than age 18, so the indicator of the total adult population (SROS, 2019) refers to the same age category. Since the year 2023 is used as the base, it is necessary to adjust the total adult population using IMF projections. Assuming that 5.63 million adults live in Serbia in 2023, the analysis shows that this indicator would be lower in the forecasting years compared to the base year.

Since there are no data on the percentage of quitters who avoid premature deaths, it is assumed that 70 percent of those who quit smoking would avoid premature death by quitting, based on Borovic, et al. (2023). The additional gains of increasing the specific excise and reducing the prevalence and intensity of smoking are the lives saved from premature deaths. The data necessary to calculate the number of lives saved in one year are given in Table 5.

Table 5. Data used to estimate the number of premature deaths

Indicator	Description	Value
Relative risk (RR) for Serbia	Relative risk estimates the likelihood of mortality among ever smokers versus never smokers.	1.94
Smoking-attributable fraction (SAF)	The smoking attributable fraction (SAF) is the proportion by which mortality would be reduced if the population were not exposed to smoking.	0.261
Total number of deaths from diseases related to smoking for smokers aged 35 and older[1]		62,405

Note: Relative risk for Serbia and the number of deaths related to smoking obtained from the research conducted by Zubović et al. (2022). SAF for Serbia are the authors' calculations based on the available data.

In addition to saving lives and avoiding premature death, price measures can also influence young people and discourage them from smoking initiation. Youths' response to cigarette price increases due to changes in specific excise taxes has been the subject of studies around the world. However, findings are inconsistent since the response depends on the characteristics of the youth. Data from Table 6 are used to estimate the number of young people who would not initiate in this simulation. The population in the analysis consists of youth up to age 17 (youth alive today and prevented from smoking and dying) and ages 18–24 (young adult) (Tesche et al., 2023). To the best of the authors' knowledge, this research presents the first estimates of this indicator for Serbia.

Table 6. Data used to estimate the impact on youth initiation

	Population	Prevalence	Price elasticity
Age up to 14	426,415*	11.0**	-1.44****
Age 15-17	106,919*	14.4***	-1.44****
Age 18-24	322,546*	30.4***	-0.89****

* Data about the population up to age 24 is obtained from the SORS.
** Prevalence for the population younger than 14 is estimated using GYTS SRB 2017.
*** Prevalence for the population in the age category 15–17 is estimated using the 2019 Serbian National Health Survey (EHIS).
**** Price elasticity among youth is obtained from the *IARC Handbook of Cancer Prevention*, vol 14, Chapter 6: Tax, price and tobacco use among young people.

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[1] ICD-10 codes: C00-C14, C15, C16; C32; C25; C33–C34; C53; C64–C65; C67; I00–I09, I26–I51; I20–I25; I60–I69; I70–I78; J10–J18; J40-J42, J43, J44

3. METHODOLOGY AND SIMULATION RESULTS

3.1 Impacts of government revenues

The impacts on tax collection are estimated using three main indicators: total tax revenues, total VAT revenues, and total excise revenues.

Total excise tax per pack (TeT) consists of the specific excise per pack and ad valorem excise per pack. The excise calendar already defines specific excise, while the ad valorem excise is calculated as 33 percent of the retail sales price (equation 2).

$$AD = 0.33 * RsP \hspace{5cm} (2)$$

Total tax per pack (ToT) represents the sum of specific excise, ad valorem, and VAT. It is calculated as follows:

$$ToT = SEPP + AD + VAT = SEPP + (0.33 * RsP) + VAT \hspace{2cm} (3)$$

Total excise revenues (TeR) is calculated as the sum of excise tax per pack multiplied by the number of packs per market segment. **Total tax revenues (TtR)** are calculated similarly, as the sum of taxes per pack multiplied by the number of packs per market segment. Tobacco tax revenues in nominal values in the period from 2013 to 2021 are presented in Figure 3. **Total market value (TMV)** is calculated by multiplying the number of packs by market segments with the price of cigarettes per pack.

Figure 3. Tobacco government revenues in Serbia, in millions of RSD
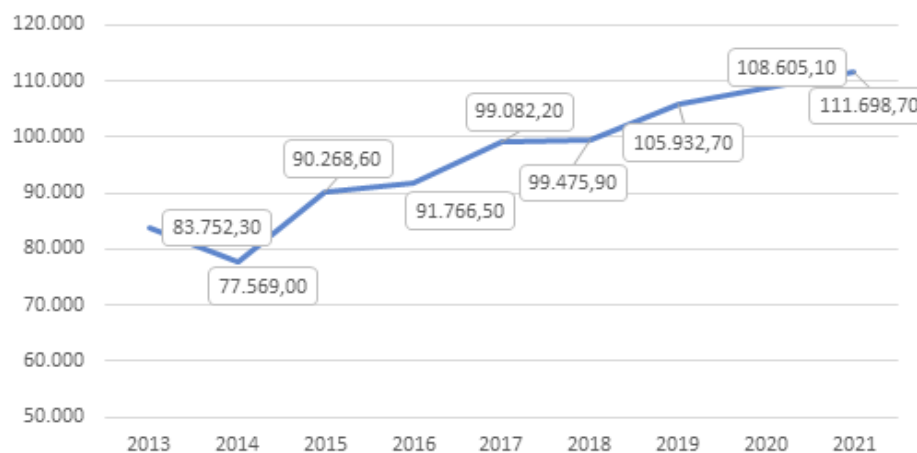
Source: Ministry of Finance, 2022.
Available at: https://www.mfin.gov.rs/aktivnosti/bilten-javnih-finansija-za-mesec-decembar-2022

Table 7. Baseline model (RSD, 2023)

Market segment	Price per pack (RSD)	Quantity of packs (in 1000s)	Market share	Total excise revenue (in 1000s)	Total tax revenue (in 1000s)	Total market value (in 1000s)
Premium	435.0	141,097	23.0%	31,930,344	42,159,906	61,377,373
Mid-price	325.0	323,297	52.7%	61,426,451	78,938,377	105,071,560
Economy	265.0	149,072	24.3%	25,372,136	31,956,171	39,504,207
Total		613,467	100.0%	118,728,931	153,054,454	205,953,141

Source: Authors' calculations

The total number of packs sold legally in Serbia was approximately 613 million packs. The largest market share is the mid-price segment, with more than half of the consumption. Price per pack by different market segments is not calculable due to the lack of official data. Instead, the Tobacco Agency provides data on the price of cigarettes by brand for 2016–2022. It is assumed that the mid-price segment mainly consists of the most-sold brands, with a price range from 290 RSD to 370 RSD. Thus, the average price per pack in the mid-price segment is 325 RSD. The economy market segment includes all brands with lower prices (average of 265 RSD), while the premium market segment includes all brands with higher prices (average of 435 RSD). To make simulations and predictions as accurate as possible, 2023 is considered the base year with the data on tobacco consumption and prices from 2022.

In the second phase of the estimation, an increase in the specific excise is simulated. If the specific excise increases by 15 percent, the retail sales price of cigarettes would also increase. The new retail sales price of cigarettes is calculated as the sum of the newly added specific excise, ad valorem excise, VAT, and net-of-tax. Using the same equation as above, after the tax increase, the new values of total excise revenues and total tax revenues are calculated. Both excise and tax revenues are calculated overall and by market segments.

3.1.1 Simulation results

Table 8 presents the findings of the assessment of the increase in specific excise by 15 percent annually. The baseline year is 2023, while the forecasting years are 2024 and 2025.

Table 8. Findings after the increase in specific excises

Indicator	2023	2024	2025
Percent change in quantity of packs		- 4.7%	- 5.3%
Quantity of packs, in 1000s	613,467	584,889	553,809
Percent change in total excise revenue		7.0%	6.9%
Total excise revenue, RSD	118,728,931	127,058,037	135,867,437
Percent change in total revenue		6.6%	6.6%
Total revenue, RSD	153,054,454	163,117,904	173,877,674
Percent change in total market value		5.1%	5.4%
Total market value, in 1000s of RSD	205,953,141	216,359,202	228,061,421
Prevalence	37.9%	36.9%	35.8%

Source: Authors' calculations

The increase in specific excise would lead to an increase in cigarette price per pack by 10.2 percent in 2024 and 11.3 percent in 2025. As a result, tobacco consumption would decrease by 4.7 percent in 2024 and 5.3 percent in 2025. The value of total excise per pack would be higher in both forecast years: 11.8 percent and 12.9 percent, respectively. Higher values per pack would increase total excise budget revenues by 7 percent in 2024 and 6.9 percent in 2025. Since total government revenues include all taxes, they would be 6.6 percent higher in both forecast years. Total market value would also increase by 5.1 percent and 5.4 percent in the respective years. Table 8 also shows that the prevalence rate of smoking among adults is projected to decrease from 37.9 percent in the base year to 35.8 percent in 2025. Considering the predictions by market segments, the trend would continue in the forecast years because the premium market share would slightly increase. In contrast, the percentage of mid-price and economy market segments would slightly decrease.

3.2 Impacts on public health

The number of smokers (in the base year, as well as the following two years) is calculated using two indicators: total adult population and total adult prevalence.

The change in specific excise leads to a change in cigarette prices, consumption, and the number of smokers. Equation 4 is used to estimate the new prevalence (PRV_1).

$$PRV_1 = PRV*(1 + pricechange * E_{prv, p}) \qquad (4)$$

PRV_1 is the new prevalence after the price increase, PRV is prevalence in the base year, and $E_{prv, p}$ is prevalence elasticity.

As one of the health benefits of a price increase is an increase in the number of quitters who avoid premature death, to estimate this effect, the following equation is used:

$$NSa = (NoS_1 - NoS) * PCA \qquad\qquad (5)$$

where:
NSa = the number of smokers who avoid premature deaths
NoS1 = the number of smokers in the base year
NoS = the number of smokers in the following year
PCA = percent chance assumption (70 percent).

Retail sales price per pack may have a significant influence on the youth population not starting to smoke. The health benefits of smoking initiation are estimated using the data presented in Table 6. The total youth population indicator is used to estimate the number of future smokers who would not start smoking at all. In other words, the young population up to 24 years old is considered future smokers who are deterred from starting smoking.

The number of future smokers is calculated by multiplying the smoking prevalence (for each age category) by the total youth population (up to 24 years). To estimate the number of future smokers who avoid death, the number of future smokers is multiplied by a percentage chance assumption. To calculate the number of future smokers who are deterred from smoking because of higher prices, equation 6 is used. This indicator is calculated for both forecast years.

$$SmoIni = \text{number of smokers in forecasting years} * \% \text{ of price change} * Y_i\text{elasticity} \qquad (6)$$

where:
SmoIni = smokers who would be deterred from smoking
$Y_i$elasticity = youth population elasticity.

3.2.1   Simulation results

Table 9a presents the simulation results for the indicator of smokers who avoid premature deaths due to the increase in specific excise in Serbia. Smoking prevalence would be lower in both forecasting years compared to the baseline year. It would decrease on average by one percentage point in 2024 and two percentage points in 2025. Similarly, smoking intensity would decrease.

Under the assumption that 70 percent of quitters would avoid premature death, a price increase of 10.2 percent would lead to lifetime reduction of premature deaths caused by smoking of 46,320. A price increase of 11.3 percent would reduce the number of people dying prematurely because of smoking by 49,054 in 2025.

Table 9a. Simulation results of public health benefits

	2023	2024	2025
Prevalence	37.90%	36.88%	35.77%
Number of smokers (in millions)	2.14	2.07	2.00
Reduction in the number of smokers (in millions)		0.066	0.070
Percent change in the number of smokers		3.1%	3.4%
Number of smokers who avoid premature death (lifetime)		**46,320**	**49,054**

Source: Authors' calculations

Table 9b. Simulation results of public health benefits

	2023	2024	2025
Smoking-attributable fraction (SAF)	0.261647	0.256514	0.250785
Total deaths from tobacco-related diseases (ages 35+)	62,405	62,405	62,405
Number of people who avoid premature death, per year		**320**	**678**

Source: Authors' calculations

Due to the decrease in smoking prevalence, the smoking-attributable fraction (SAF) would be lower in the forecast years. This means that the number of smokers who would die because of their smoking habits would be lower since the number of total deaths remains the same over the years. Comparing the values for 2024 and 2025 with the baseline, it can be concluded that the number of lives saved in those specific years from premature deaths due to smoking cessation would be 320 and 678, respectively.

Because taxation policy can influence the young population not to start smoking, the findings of this study confirm that more than 6,000 youth under age 14 would be deterred from smoking if the price of cigarettes increased by at least 10 percent due to the increase in the specific excise. In other words, this is the number of future smokers who would never start smoking if cigarette prices were higher at that time. As this research considers the youth up to 24 years old, it is worth mentioning that most young people would be discouraged from smoking in the 18 to 24 years category.

Although there are only a small number of studies that investigate the response to cigarette price increases among youth in low- and middle-income countries in terms of initiation, research results in this study are consistent with previous research (IARC, 2011). Also, results are consistent with high-income countries and confirm that young people up to 24 years in Serbia are more price-sensitive and would not initiate smoking if the cigarette prices were higher at that time.

Research results confirm that tobacco taxation policy could significantly impact society, since the public health benefits are wider. Cigarette price increases, such as from higher cigarette excise taxes, could significantly reduce cigarette youth smoking initiation in Serbia. The impact on youth must be considered by policy makers, especially in the domain of new tobacco products. New tobacco products are widespread among young people, but the taxation policy does not recognize them as an equal alternative to cigarettes or roll-your-own tobacco.

Table 10. Impact of price increases on youth initiation

	Change in population initiating use
Ages 14 years or younger	-6,544
Ages 15–17	-2,148
Ages 18–24	-8,455
Total youth	-17,147

Source: Authors' calculations

4. CONCLUSION AND RECOMMENDATION

The number of saved lives is one of the very important health benefits of tobacco control policies in Serbia. As a part of the analysis, policy makers can estimate the effects of specific excise tax increases on the number of premature deaths avoided due to smoking cessation or deterring smoking initiation. Adult smokers can react to the price increase by completely stopping smoking or reducing consumption. On the other hand, special notice is dedicated to the results of the impact of price changes on the youth population. A sufficiently high price of cigarettes can discourage them from starting to smoke, significantly improve their quality of life, and reduce exposure to mortality from tobacco-related diseases.

The findings in this study can be used as a guide for the revision of the current tobacco control policies in Serbia. The results are significant, as future tobacco control policies must be in line with EU requirements and WHO FCTC. The challenges in improving tobacco control are numerous, but there are also a lot of benefits. Some benefits for society are reduced smoking prevalence, improved health and productivity of (former) smokers, and a smoke-free environment. The findings also support specific excise growth because it increases government revenues from tobacco.

The policy recommendations from this study are as follows:

- ✓ The government should consider an increase in specific excise by at least 15 percent, because the economic effects will be positive. Higher specific excise will increase the overall tobacco excise revenues as well as total budget revenues.

- ✓ The government should consider the improvement of tobacco taxation policy beyond the economic effects since public health benefits are also very significant. Impact on smoking cessation (more) and youth smoking initiation (less) will save individuals from premature deaths and improve the quality of life in Serbia because people will be healthier and more economically productive.

5. REFERENCES

Blecher, E. (2018). *Increasing tobacco taxes significantly will increase revenues*. A Tobacconomics Policy Brief. Chicago, IL: Tobacconomics, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago.

Chaloupka, F. J., Yurekli, A., & Fong, G. T. (2012). Tobacco taxes as a tobacco control strategy. *Tobacco Control, 21*(2), 172 –80. doi: 10.1136/tobaccocontrol-2011-050417. Erratum in: *Tobacco Control, 21*(3), 329. PMID: 22345242.

IARC handbook on cancer prevention. (2011). Chapter 6. *Tax, price and tobacco use among young people*, 201–258. https://portal-uat.who.int/fctcapps/fctcapps/fctc/kh/tobacco-taxation/e-library/tax-price-and-tobacco-use-among-young-people-iarc-1

Kostova, D., Ross, H., Blecher, E., & Markowitz, S. (2011). Is youth smoking responsive to cigarette prices? Evidence for low- and middle-income countries. *Tobacco Control*, 20, 419–424.

Mugoša, A., Čizmović, M., & Kovačević, M. (2022). *Distributional impacts of the tobacco tax in Montenegro*. The Institute of Socioeconomic Analysis, Podgorica, Montenegro.

Szabó, A., Lázár, E., Burián, H., Rogers, T., Foley, K., Ábrám, Z., Meghea, C., Ciolompea, T & Chaloupka, F. J. (2016). *The economics of tobacco and tobacco taxation in Romania*. Tîrgu Mureş, Romania: University of Medicine and Pharmacy of Tîrgu Mureş, 1–56.

Tauras, J. A., Peck, R. M., & Chaloupka, F. J. (2006). The role of retail prices and promotions in determining cigarette brand market shares. *Review of Industrial Organization, 28*(3), 253–284. doi:10.1007/s11151-006-0016-6

Tesche, J., Mugosa, A., Cizmovic, M., & Vulovic, V. (2023). *Modelling the impacts of tobacco taxes*. A Tobacconomics Toolkit. Chicago, IL: Tobacconomics, Institute for Health Research and Policy, University of Illinois, Chicago.

Institute for Public Health Serbia & Statistical Office of the Republic of Serbia. (2020. *The 2019 Serbian National Health Survey*. https://www.stat.gov.rs/en-us/istrazivanja/ehis/

Townsend, J. L., Roderick, P., & Cooper, J. (1994). Cigarette smoking by socioeconomic group, sex, and age: Effects of price, income, and health publicity. *British Medical Journal*, 309, 923–926.

Tsai, Y. W., Yang, C. L., Chen, C. S., Liu, T. C., & Chen, P. F. (2005). The effect of Taiwan's tax-induced increases in cigarette prices on brand-switching and the consumption of cigarettes. *Health Economics, 14*(6), 627–641. doi:10.1002/hec.972

White, J. S., Li, J., Hu, T-W., Fong, G. T., & Jiang, Y. (2014). The effect of cigarette prices on brand-switching in China: A longitudinal analysis of data from the ITC China Survey. *Tobacco Control*, 23, i54–i60.

Zubović, J. & Vladisavljević, M. (2019). Impact of tobacco excise increases on cigarette consumption and government revenues in Southeastern Europe countries. Institute of Economic Sciences, Belgrade, Serbia.

Zubović, J., Jovanović, O & Nedeljković, B. (2022). Distributional Impacts of Tobacco Excise Taxes in Serbia. Tobacconomics Working Paper No. 22/11/1. IES.