

Modelling the Impacts of Tobacco Tax Increases in Slovakia: A simulation model

Report

Martin Hudcovský & Karol Morvay

Bratislava, Slovakia

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Introduction

Tobacco taxation is a crucial policy tool for curbing smoking rates, mitigating associated health risks, and enhancing fiscal revenues, making it an essential focus for both economic and public health strategies. This report highlights Slovakia's clear progress in tobacco taxation in recent years, resulting in increased public revenue and expected better public health outcomes; however, the study also identifies areas where further improvement is possible.

This research is motivated by New Zealand's success in using sustained tobacco excise tax increases to reduce smoking prevalence. As a case study, it shows how regular, substantial tax hikes can make tobacco less affordable and drive down smoking rates across populations, especially among the young (Gendall et al., 2024).

Specifically, in combination with the continuation of its other major tobacco control policies, New Zealand implemented significant annual increases in tobacco excise taxes beginning in 2010, which led to continuous and marked reductions in smoking rates. The adult daily smoking rate dropped from 16.4 percent in 2011/2012 to 6.8 percent in 2022/2023 (ASH, 2022). This decline was even more striking among youth, with smoking prevalence among those aged 14 to 15 plummeting from 15.1 percent in 2000 to just 1.2 percent in 2023 (ASH, 2023). The success of New Zealand's approach offers a compelling model for similar initiatives in other countries, highlighting the powerful impact that excise taxation can have on reducing smoking prevalence and mitigating its health risks.

Effective lowering of New Zealand's smoking rates was achieved by its tobacco taxation strategy that significantly raised prices, thus lowering the affordability of cigarettes. By persistently raising prices, the government has rendered smoking an increasingly costly habit, particularly for low-income groups and young people, contributing to the overall decline in tobacco consumption. The evidence from New Zealand emphasizes the critical role of robust tobacco taxation policies as a foundational component of public health strategies aimed at reducing smoking and its associated harms.

Inspired by New Zealand's success, this study evaluates two tobacco taxation approaches in Slovakia: the existing biennial excise tax increase system and our newly proposed, more ambitious annual increase system. Each approach has unique implications for state budget revenues and public health outcomes. By estimating state budget revenues and analyzing public health impacts under both systems, this study offers a comprehensive evaluation of each alternative. Key factors considered include changes in excise tax revenue, reduced tobacco consumption leading to lower smoking prevalence, and lives saved.

The report evaluates the differences between these two approaches, providing nuanced insights into the trade-offs and benefits of each taxation strategy. Ultimately, this study seeks to inform policy makers and stakeholders about the most effective strategy to advance Slovakia's objectives in tobacco control, ensuring that the current approach may be upgraded appropriately and successfully balance fiscal goals with the imperative to reduce smoking rates and enhance public health.

The Tobacco Market in Slovakia: Background data

In recent years, the tobacco market in Slovakia has undergone significant changes. Following a marked increase in the affordability of cigarettes towards the end of the last decade, the government seized the opportunity to raise excise taxes on tobacco, aiming to address the delayed increasing trend in taxation. Currently, the Act on Excise Duty on Tobacco features an excise calendar, with a tax increase already implemented in 2024 and additional hikes scheduled for 2026 and 2028.

The model employed in this study examines the impact of these tax changes in two key areas: government revenues and public health. To provide a more accurate understanding of the Slovak tobacco market, the simulation focuses on different cigarette market segments— premium, mid-price, and economy—as there has been a significant shift in the market shares of these segments over the past decade. The subsequent sections outline the input data and assumptions (Table 1) used in the model, which offers projections extending through the end of 2028.

| Indicator | Assumption | Source |
|---|--|--|
| Tax burden | Baseline value is based on the 2023 tax structure | Ministry of Finance Slovak Republic (SR) |
| Value-added tax (VAT) | 20% share in retail price for years 2023 and 2024. From 2025 onwards, 23% share in retail price. | Ministry of Finance SR |
| Point elasticity of price | Used for calculating quantities after a tax and price change | Lichner & Ostrihoň, 2025 |
| Cross-price elasticities by segments (switching between brands) | Calculated according to the available literature due to unavailability of these estimates for Slovakia | Tauras et al., 2006; Delipalla et al., 2022 |
| Size of illicit market | Constant in observed period | Authors' assumption |
| Excise tax | Consists of a specific tax and an ad valorem tax | Ministry of Finance SR |
| Net of tax (NOT) | No-policy-change (NPC) years: Increases by 5.31 percent for all market segments to account for the full pass-through effect (the increase in industry costs); Policy-change (PC) years: Increases by 6.87 percent for all market segments if policy change occurred; values are an estimated averages of NOT growth within period 2012–2023 | Authors' assumption based on estimates of Lichner & Ostrihoň, 2025 |
| Nominal | 2024: 2.9%; 2025: 2.1%; | Ministry of Finance SR, |
| nousehold expenditure growth | 2026: 2.4%; 2027: 2.5%; 2028: 2.2% | (June 2024) |
| Market segment | Estimates from Euromonitor (2023) | Euromonitor (2023) |
| shares | due to lack of data for Slovakia | |

Table 1. Assumptions used in the simulation models for Slovakia

Input data include:

- weighted average price of cigarettes (WAPC) for 2023;
- volume of cigarettes consumption;
- tax revenues;
- own-price elasticity, income elasticity, and cross-price elasticity;
- net-of-tax price;
- excise tax rates—specific and ad valorem; and

• value-added tax (VAT).

In Slovakia, there is no government tobacco agency, so the data on cigarette consumption are derived from Tax Declarations, which are available monthly from the Ministry of Finance SR. The Statistical Office of the Slovak Republic monitors selected cigarette prices as part of the consumption basket used for inflation measurement, while the overall weighted average price of cigarettes is published by the Financial Authority of the Slovak Republic. Due to the lack of official data on market segments, Euromonitor data are utilized for this purpose.

For the simulations in this study, 2023 serves as the baseline year, with data on consumption and prices from that year forming the foundation. Projections are then made for the period from 2024 to 2028. Input data related to the cigarette price structure, including the average retail price per pack and market segment sizes, are based on the price of representative goods in the consumption basket, weighted average price of cigarettes (WAPC), and estimates of market segment sizes. Information on excise taxes, VAT, and excise revenues come from the Tax Declarations provided by the Ministry of Finance SR, while projections for nominal household expenditure growth rates are drawn from the Ministry of Finance SR Macroeconomic Forecast (June 2024).

The model operates with various parameters including smoking prevalence, which focuses solely on the consumption of conventional tobacco cigarettes, with data sourced from a 2022 survey by the Public Health Authority of the Slovak Republic. In addition, it incorporates elasticities related to price, income, and cross-price effects, derived from both the authors' previous research and existing literature.

In 2023 (baseline year), the average retail price per pack was 4.6 \in , and the specific excise tax was 84.6 \in per 1,000 cigarettes, with a VAT rate of 20 percent. The excise tax increased according to the abovementioned excise tax calendar: 91.3 \in per 1,000 cigarettes starting in February 2024, 102.5 \in in February 2026, and 113.5 \in in February 2028. This increase totals an additional 28.9 \in per 1,000 cigarettes over the period from 2023 to 2028. Aside from the initial increase in 2024, which raises the ad valorem rate from 23 percent to 25 percent, the rate is assumed to remain constant at 25 percent as per the current excise calendar. The VAT rate used for estimating the years 2023 and 2024 is 20 percent. However, as part of fiscal consolidation starting in 2025 and onward, a VAT rate of 23 percent is adopted.

The principle of the assumed and accelerated excise calendar in our research is based on an expedited version of the current excise calendar, detailed in Table 2. It continues to rely on the pace of increases set in the current excise calendar, but instead of using a timeframe of six

years to get from 84.6 € per 1,000 cigarettes to $113.5 \in$, the accelerated version would achieve such an increase within a four-year period. Even after these increases, it continues to rise based on the average growth rate of the specific excise from previous years. That results in ongoing growth of the specific excise, reaching the level of $138.1 \in$ per 1,000 cigarettes in 2028. The total increase in the specific part of the excise tax over the period 2023–2028 is 53.5 € per 1,000 cigarettes.

| Current (biennial) excise calendar | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|-------|-------|-------|-------|-------|-------|
| Specific excise tax per pack | 1.69 | 1.83 | 1.83 | 2.05 | 2.05 | 2.27 |
| Ad valorem | 23.0% | 25.0% | 25.0% | 25.0% | 25.0% | 25.0% |
| Minimum excise per pack | 2.64 | 2.96 | 2.96 | 3.32 | 3.32 | 3.68 |
| VAT | 20% | 20% | 23% | 23% | 23% | 23% |
| Accelerated (annual) excise calendar | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
| Specific excise tax per pack | 1.69 | 1.83 | 2.05 | 2.27 | 2.50 | 2.76 |
| Ad valorem | 23.0% | 25.0% | 25.0% | 25.0% | 25.0% | 25.0% |
| Minimum excise per pack | 2.64 | 2.96 | 3.32 | 3.68 | 4.11 | 4.59 |
| VAT | 20% | 20% | 23% | 23% | 23% | 23% |

Table 2. Tobacco taxes planned increases over 2023–2028 (in €)

Source: Authors' calculations based on Tobacco Act 106/2004 Coll.

Price and income elasticities by market segments used in the model are based on available literature. The research by Lichner and Ostrihoň (2025) provides estimates for total unconditional elasticities for Slovakia, with a price elasticity of -0.760 and an income elasticity of 1.329. Empirical evidence suggests that the demand for premium brands is less sensitive to price changes compared to mid- and economy-price brands. For instance, estimates indicate that the demand in the economy segment is three times more responsive to price changes than in the premium segment (Tauras et al., 2006). Similar findings have been observed in studies from the Gulf Cooperation Council countries (Delipalla et al., 2022), where the economy segment is twice as responsive to price changes as the premium segment. To account for these differences, a sensitivity analysis is conducted with varying assumptions about own-price elasticities across different market segments. However, the results are

presented only for Scenario I, as the outcomes in Scenario II are nearly identical, with only minor differences that fall within the margin of statistical error.

The estimates presented in Table 3 are based on the findings from Lichner and Ostrihoň's 2025 research on unconditional elasticity in the Slovak tobacco market, which identified a price elasticity of -0.760. This value is applied to the mid-price segment, with adjustments made for the premium and economy segments using the ratio of own-price elasticities as outlined by Delipalla et al. (2022).

| Market segments | Scenario I | Scenario II |
|----------------------------------|------------|-------------|
| Own-price elasticity – premium | -0.42 | -0.49 |
| Own-price elasticity – mid-price | -0.76 | -0.76 |
| Own-price elasticity – economy | -1.05 | -0.95 |

Table 3. Different scenarios of own-price elasticities by market segments

Source: Authors' calculations based on Tauras et al., 2006; Delipalla et al., 2022; Lichner & Ostrihoň, 2025

To achieve more precise results for shifts between market segments, the model incorporates cross-price elasticities, which measure the change in demand for one segment when the price of another segment changes. This elasticity is crucial as it captures the substitution effect between brands, influencing government revenues as smokers potentially switch to cheaper alternatives. Since cross-price elasticity estimates specific to Slovakia are unavailable, the model relies on assumed values based on existing empirical evidence from the United States (Tauras et al., 2006), the Middle East countries (Delipalla et al., 2022), and Montenegro (Mugoša et al., 2023) to estimate this shift.

As illustrated in Table 4, the model assumes a cross-price elasticity of 0.8 for the mid-price segment relative to the premium segment. This implies that a 10-percent increase in the price of premium brands would lead to an approximately eight-percent rise in the consumption of mid-price brands. Similarly, the cross-price elasticity for the economy-price segment relative to the mid-price segment is assumed to be 0.25, indicating that a 10-percent increase in the price of mid-price cigarettes would result in a 2.5-percent increase in the consumption of economy-price cigarettes. The model assumes a constant illicit market share throughout the simulation period.

| Market segments | Premium | Mid-price | Economy |
|------------------------------------|---------|-----------|---------|
| Cross-price elasticity – premium | - | 0.80 | 0.30 |
| Cross-price elasticity – mid-price | 0.45 | - | 0.25 |
| Cross-price elasticity – economy | 0.10 | 0.20 | - |

Table 4. Cross-price elasticities by market segments

Source: Authors' calculations based on Tauras et al., 2006; Delipalla et al., 2022; Mugoša et al., 2023

Given the characteristics of the Slovak tobacco market, the results section presents a simplified simulation that focuses solely on consumer transitions between cigarette brands—from premium to mid-price and from mid-price to economy. The narrow price difference between mid-price and economy brands suggests a low likelihood that a consumer would bypass the mid-price tier and switch directly from a premium to an economy brand in response to a price increase. This same logic is applied when considering cross-price effects between individual price tiers, reinforcing the assumption that consumers are more likely to shift within adjacent price bands.

The model also incorporates income elasticity, recognizing the influence of income on the affordability of tobacco products. The estimated unconditional income elasticity is 1.329 (Lichner & Ostrihoň, 2025). Similar to the approach taken with own-price elasticity (Delipalla et al., 2022), differences in consumption sensitivity due to income changes are assumed to vary across market segments, as presented in Table 5.

| Table | 5. | Different | scenarios | of | income | elasticities | bv | market | segments |
|-------|----|-----------|------------|----|--------|--------------|----|--------|----------|
| IUNIC | υ. | Different | 3001101103 | U, | moonic | Clasticities | ъy | mance | Segmento |

| Market segments | Scenario I | Scenario II |
|-------------------------------|------------|-------------|
| Income elasticity – premium | 0.73 | 0.86 |
| Income elasticity – mid-price | 1.33 | 1.33 |
| Income elasticity – economy | 1.83 | 1.67 |

Source: Authors' calculations based on Lichner & Ostrihoň, 2025; Delipalla et al., 2022; Mugoša et al., 2023

Several assumptions were made based on available literature to estimate the impact of price changes on public health benefits:

- It is assumed that 70 percent of adult quitters would avoid premature death due to the reduced risk from smoking cessation.
- Approximately 40 percent of smokers, both adult and youth, are expected to die prematurely from diseases caused by smoking.

- In the absence of specific elasticity estimates for the youth population, a higher elasticity is assumed, applying a youth elasticity multiplication factor, typically set at 2.
- The total adult population is considered constant across the years of the simulation.

The baseline scenario (Table 6) incorporates data on the population of adults (ages 15 and older) and youth (ages 0–14), adult smoking prevalence (which is also used as the expected prevalence for youth), total cigarette consumption, smoking prevalence elasticity, the youth elasticity multiplication factor, and the number of deaths associated with smoking.

Table 6. Baseline parameters (input data) for simulation of price changes on public health benefits, 2023

| Total adult population (ages 15+) | 4,634,095 |
|---|-----------|
| Total youth population (ages 0–14) | 900,731 |
| Initial smoking prevalence (%) for the adult population | 16.4% |
| Total consumption in millions of cigarette packs | 326.94 |
| Prevalence elasticity | -0.274 |

Sources: Data on total population, population 15+ and youth - Eurostat; Cigarette consumption - Ministry of Finance of Slovak Republic; Smoking prevalence - Public Health Authority of SR; Prevalence elasticity - Lichner & Ostrihoň, 2025.

Impact of Price Changes on Government Revenues

According to the given assumptions of specific excise tax changes from 2023–2028 and consequent price changes, Table 7 presents the results regarding the changes in consumption and government revenues (simplified simulation version of shifting to cheaper brands, from premium to mid-price and from mid-price to economy). The baseline is given for year 2023.

The current excise calendar outlines a biennial tax increase on tobacco, resulting in a significant impact on government revenues. By 2028, the price per pack is expected to rise by 41.8 percent, reaching $6.53 \in$. This increase is projected to enhance total excise revenue by 23.3 percent, totaling approximately 1.11 billion euros. The combination of excise and VAT revenue under this calendar is set to increase by 26.6 percent, reaching 1.46 billion euros. The market value will grow by 23.3 percent, amounting to 1.86 billion euros. The results validate the effectiveness of the current excise calendar in boosting government revenues, although the potential for even greater growth exists with an adjusted strategy.

| Year | Price / pack (€) | Quantity, packs (pieces) | Total excise revenue (€) | Excise + VAT revenue (€) | Market value (€) |
|------------------------|------------------------|--------------------------------|-----------------------------|-----------------------------|---------------------|
| 2023 | 4.60 | 326,936,094 | 899,263,752 | 1,150,052,070 | 1,504,729,913 |
| 2024 | 5.10 | 312,187,465 | 967,889,093 | 1,233,112,281 | 1,591,339,127 |
| 2025 | 5.48 | 302,245,384 | 957,828,598 | 1,267,825,929 | 1,657,811,815 |
| 2026 | 5.90 | 293,920,394 | 1,035,782,596 | 1,359,836,356 | 1,732,983,152 |
| 2027 | 6.19 | 291,396,890 | 1,034,447,296 | 1,371,906,834 | 1,804,674,920 |
| 2028 | 6.53 | 284,198,876 | 1,108,914,711 | 1,455,809,509 | 1,855,133,049 |
| % change 2028 vs. 2023 | | | | | |
| Difference | 41.8% | -13.1% | 23.3% | 26.6% | 23.3% |

Table 7. Excise tax change impacts on government revenues – simulation results, current excise calendar

Source: Authors' calculations

The accelerated excise calendar, which shifts to from biennial to annual tax increases, is expected to have a more substantial impact on government revenues, depicted in Table 8. If it were implemented on an annual basis starting in 2023, by 2028 the price per pack would rise by 60.4 percent, reaching 7.38 €, marking a significant departure from the current calendar. This approach would result in a total excise revenue increase of 30.7 percent, amounting to about 1.18 billion euros. Excise and VAT revenue is projected to rise by 32.8 percent, totaling 1.53 billion euros. The market value would also see a growth of 25.2 percent, reaching 1.88 billion euros. Therefore, regular annual increases highlight the enhanced fiscal benefits of the accelerated excise calendar, offering a more robust strategy for revenue generation.

Table 8. Excise tax change impacts on government revenues – simulation results, accelerated

 excise calendar

| Year | Price / pack (€) | Quantity, packs pcs | Total excise revenue (€) | Excise + VAT revenue (€) | Market value (€) |
|------------------------|------------------------|------------------------|-----------------------------|-----------------------------|---------------------|
| 2023 | 4.60 | 326,936,094 | 899,263,752 | 1,150,052,070 | 1,504,729,913 |
| 2024 | 5.10 | 312,187,465 | 967,889,093 | 1,233,112,281 | 1,591,339,127 |
| 2025 | 5.79 | 288,169,451 | 1,007,819,114 | 1,319,775,212 | 1,668,286,960 |
| 2026 | 6.29 | 277,026,291 | 1,064,352,543 | 1,390,094,522 | 1,742,011,450 |
| 2027 | 6.81 | 266,612,738 | 1,121,589,343 | 1,461,169,734 | 1,816,016,877 |
| 2028 | 7.38 | 255,102,059 | 1,174,970,504 | 1,527,142,527 | 1,883,354,731 |
| % change 2028 vs. 2023 | | | | | |
| Difference | 60.4% | -22.0% | 30.7% | 32.8% | 25.2% |

Source: Authors' calculations

As seen in Table 9, the differences between the current and accelerated excise calendars are notable across several key economic indicators when compared to the year 2023. The accelerated calendar results in an 18.6-percentage-point greater increase in the price per pack, rising by $2.78 \in$ compared to the $1.93 \in$ increase under the current calendar.

In terms of tobacco consumption, the accelerated calendar leads to an 8.9-percentage-point larger reduction in the volume of packs consumed, with 71.83 million fewer packs sold, compared to a reduction of 42.74 million packs under the current calendar.

From a revenue perspective, the accelerated calendar generates 66.05 million euros more in total excise revenue than the current calendar, with a 71.33-million-euro higher increase in total excise and VAT revenue. Such results underscore the greater effectiveness of the accelerated excise calendar in increasing government revenue, making it a more effective strategy in both reducing tobacco consumption and enhancing fiscal outcomes.

| Difference between 2023 and 2028 | | | | | | |
|----------------------------------|------------------------|-------------------|------------------------|----------------------|-----------------------------|-----------------------------|
| Excise calendar | Price / pack (€) | Price / pack % | Quantity, packs pcs | Quantity, packs % | Total excise revenue (€) | Excise + VAT revenue (€) |
| Current | 1.93 | 41.8% | -42,737,218 | -13.1% | 209,650,960 | 305,757,439 |
| Accelerate d | 2.78 | 60.4% | -71,834,035 | -22.0% | 275,706,752 | 377,090,456 |
| Difference | 0.86 | 18.6 pp | -29,781,317 | -8.9 pp | 66,055,792 | 71,333,017 |

Table 9. Comparison of simulation results and difference between current and accelerated

 excise calendar on government revenues

Source: Authors' calculations

Figure 1 shows the cumulative excise tax revenue from 2023 to 2028 under both approaches, along with the differences between them in absolute and percentage terms. The accelerated alternative excise calendar results in a total cumulative revenue of approximately 6.236 billion euros, which is 232 million euros higher than the current calendar's revenue of around 6.004 billion euros. This difference represents an increase of about 3.9 percent under the accelerated calendar. The changes in individual price categories' market shares and descriptive characteristics of the tobacco market categories are attached in the Appendix.

Figure 1. Cumulative excise tax revenue over 2023–2028 for current and accelerated excise calendars with differences between them (million € and %)



Source: Authors' calculations

Figure 2 illustrates the year-by-year differences in total government revenue (excise tax + VAT) between the two excise calendars from 2023 to 2028. Since both excise calendars begin with the same baseline in 2023, and the first initial increase is shared for both variants in 2024, the differences in results start to become visible from the year 2025. They clearly demonstrate that revenue is consistently higher each year under the accelerated calendar. The notable differences stem from the approach to tax increases in 2025 and 2027. In the current tax calendar, no increases are scheduled for these years, while the accelerated calendar includes continued growth during this period.

Although both calendars plan for an excise tax increase in the final year, 2028, they differ in the rate of growth. The accelerated tax calendar sustains a rapid pace of growth. In contrast, the current calendar results in a much smaller price increase per pack. As the planned increase for 2028 is expressed in absolute terms, it loses its relative significance over time, since rising prices in the preceding years reduce the percentage impact of the increase.

The revenue gain peaks in 2027, with an additional 89.3 million euros compared to the current calendar. The main driving factor behind this gain is the absence of an increase in a specific part of the excise tax in the years 2025 and 2027 under the current calendar. This consistent

annual increase shows the fiscal advantage of the accelerated calendar, as it would continuously generate more revenue than the current approach.

Figure 2. Total government revenue differences (excise tax + VAT) by year for current and accelerated excise calendars, 2023–2028 (million € and %)



Source: Authors' calculations

The benefit of the accelerated excise calendar is most visible when compared to different areas of government-funded expenditures. Figure 3 illustrates the importance of the cumulative yield from the accelerated excise calendar with expenditures in key public sectors, such as Assistance in Material Need (193 million euros), the budget for the newly established Ministry of Tourism and Sports (155 million euros), and care for children at risk, including orphanages (194 million euros). The potential additional revenue from the accelerated excise calendar exceeds the expenditures in each of these areas individually, highlighting its significant capacity to secure funds for critical social services and governmental functions as well as easily achievable funds for further fiscal consolidation.

Figure 3. Comparison of cumulative yield from accelerated excise calendar to selected areas of public expenditures in 2024 (million €)



Source: Authors' calculations; INESS (2024)

The analysis of fiscal revenues demonstrates the substantial advantages of the accelerated excise calendar over the current approach. With consistent increases in total government revenue (excise tax plus VAT) and significant cumulative gains, the accelerated calendar presents a more effective strategy for maximizing fiscal benefits. The accelerated model not only ensures a steady stream of revenue growth each year but also capitalizes on years without planned increases under the current calendar to achieve the highest gains. These fiscal benefits demonstrate the economic viability of the accelerated calendar and its potential to significantly strengthen government budgets.

However, the impact of excise tax policy extends beyond just financial gains. The primary objective of increasing tobacco taxes is to improve public health by reducing smoking prevalence and its associated risks. Therefore, it is crucial to examine the health outcomes of the accelerated excise calendar.

Impact of Price Changes on Public Health

Under the current excise calendar, there are notable improvements in public health outcomes among adults. The price increase of 41.8 percent is expected to reduce adult smoking prevalence by 11.5 percent, resulting in 87,098 fewer adult smokers. This reduction is anticipated to lead to 24,388 fewer premature deaths among adults. However, there will be

279,609 new adult deaths as a result of ongoing smoking habits. The already installed calendar has a positive impact on public health (Table 10), although further improvements could be achieved.

Table 10. Effects of excise tax increase on number of avoided premature deaths – adult simulation results, current excise calendar

| Current excise calendar (2023–2028) | | | | | |
|---------------------------------------|---------|--|--|--|--|
| Price increase | 41.8% | | | | |
| Reduction in adult smoking prevalence | -11.5% | | | | |
| Fewer adult smokers | -87,098 | | | | |
| New adult smokers | 672,893 | | | | |
| Fewer adult deaths | -24,388 | | | | |
| New adult deaths | 279,609 | | | | |

Source: Authors' calculations

The alternate, accelerated excise calendar demonstrates a more substantial impact on adult public health (Table 11). The price increase of 60.5 percent leads to a 16.4-percent reduction in adult smoking prevalence, resulting in 125,789 fewer adult smokers. This reduction could prevent 35,221 premature adult deaths in the long term, although 268,776 new adult deaths are still projected. The accelerated calendar significantly enhances public health outcomes, demonstrating its potential for greater long-term health benefits.

Table 11. Effects of excise tax increase on number of avoided premature deaths – adult simulation results, accelerated excise calendar

| Accelerated excise calendar (2023–2028) | | | | | |
|---|----------|--|--|--|--|
| Price increase | 60.4% | | | | |
| Reduction in adult smoking prevalence | -16.4% | | | | |
| Fewer adult smokers | -125,789 | | | | |
| New adult smokers | 634,202 | | | | |
| Fewer adult deaths | -35,221 | | | | |
| New adult deaths | 268,776 | | | | |

Source: Authors' calculations

The differences between the two excise calendars are significant in terms of public health outcomes for adults (Table 12). The accelerated calendar results in a 5.1-percentage-point greater reduction in adult smoking prevalence, leading to 38,691 fewer smokers compared to the current calendar. Additionally, the accelerated calendar results in 10,834 fewer premature adult deaths than the current model.

Table 12. Comparison of simulation results between current and accelerated excise calendars

 on public health – adults

| Excise calendar | Reduction in adult prevalence | Fewer adult smokers | New adult smokers | Fewer adult deaths | New adult deaths |
|--------------------|-------------------------------------|------------------------|----------------------|-----------------------|---------------------|
| Current | -11.5% | -87,098 | 672,893 | -24,388 | 279,609 |
| Accelerated | -16.6% | -125,789 | 634,202 | -35,211 | 268,776 |
| Difference | -5.1 pp | -38,691 | | -10,834 | |

Source: Authors' calculations

In terms of youth public health, the current excise calendar results in a 22.9-percent reduction in smoking prevalence, leading to 33,859 youth deterred from smoking due to the price increases (Table 13). This reduction corresponds to 13,543 premature youth deaths averted. Still, 45,544 new youth deaths are anticipated due to smoking.

Table 13. Effects of excise tax increase on number of avoided premature deaths – youth simulation results, current excise calendar

| Current excise calendar (2023–2028) | | | | | |
|---------------------------------------|---------|--|--|--|--|
| Price increase | 41.8% | | | | |
| Reduction in youth smoking prevalence | -22.9% | | | | |
| Fewer youth smokers | -33,859 | | | | |
| New youth smokers | 113,861 | | | | |
| Fewer youth deaths | -13,543 | | | | |
| New youth deaths | 45,544 | | | | |

Source: Authors' calculations

In Table 14, the accelerated excise calendar shows a greater impact on reducing youth smoking prevalence and improving health outcomes. With a 60.4-percent price increase, youth smoking prevalence is expected to decrease by 33.1 percent, resulting in 48,900 future youth smokers deterred from starting. This reduction is projected to avert 19,560 premature youth deaths, while 39,528 new youth deaths are anticipated.

Table 14. Effects of excise tax increase on number of avoided premature deaths – youth simulation results, accelerated excise calendar

| Accelerated excise calendar (2023–2028) | | | | | |
|---|---------|--|--|--|--|
| Price increase | 60.4% | | | | |
| Reduction in youth smoking prevalence | -33.1% | | | | |
| Fewer youth smokers | -48,900 | | | | |
| New youth smokers | 98,820 | | | | |
| Fewer youth deaths | -19,560 | | | | |
| New youth deaths | 39,528 | | | | |

Source: Authors' calculations

The differences between the current and accelerated excise calendars are particularly notable in terms of youth smoking and associated health outcomes (Table 15). The accelerated calendar achieves a 10.2-percentage-point greater reduction in youth smoking prevalence, resulting in 15,041 more youth deterred from smoking initiation compared to the current calendar. Furthermore, the accelerated calendar leads to 6,016 more averted premature youth deaths than the current model. These differences underscore the enhanced impact of the accelerated excise calendar on reducing youth smoking rates and preventing premature deaths.

| Excise calendar | Reduction in youth prevalence | Fewer youth smokers | New youth smokers | Fewer youth deaths | New youth deaths |
|--------------------|-------------------------------------|---------------------------|----------------------|--------------------------|---------------------|
| Current | -22.9% | -33,859 | 113,861 | -13,543 | 45,544 |
| Accelerated | -33.1% | -48,900 | 98,820 | -19,560 | 39,528 |
| Difference | -10.2 pp | -15,041 | | -6,016 | |

Table 15. Comparison of simulation results between current and accelerated excise calendars

 on public health – youth

Source: Authors' calculations

Figure 4 helps to better illustrate the importance of health outcomes by presenting the results in comparison with various population health statistics in Slovakia for 2023. The potential total prevented deaths (adults and youth) from the accelerated excise calendar, estimated at 16,800, are highlighted in relation to other key statistics: this number is almost 75-percent higher than the population of a median city in Slovakia, 24-percent higher than the total number of deaths caused by oncologic diseases, and eight times higher than the number of deaths caused by lung cancer in 2023.

Figure 4. Comparison of health benefits yield from accelerated excise calendar to selected population groups (in thousands of persons)



Source: Authors' calculations; Statistical Office of Slovak Republic

Key Messages and Recommendations

1. Increasing tobacco taxes leads to significant public health benefits.

The accelerated excise calendar, with its annual increases, is projected to have a more substantial impact on reducing smoking rates compared to the current biennial increase calendar. Specifically, the accelerated calendar is expected to prevent approximately **35,221 premature adult deaths** and **19,560 premature youth deaths**, which means **averting 10,834 more adult deaths** and **6,016 more youth deaths** compared to the current excise calendar. This demonstrates the greater efficacy of the accelerated calendar in achieving public health benefits and underscores the importance of adopting a more aggressive tax increase strategy.

2. Enhanced revenue generation supports fiscal stability.

The accelerated annual excise tax increase schedule is projected to significantly enhance government revenues compared to the current calendar. Over the entire analysis period from 2023 to 2028, the cumulative difference in total excise and VAT revenue between the accelerated and current calendars is **232 million euros**, with the accelerated calendar generating more revenue each year. On average, this translates to an additional almost **58 million euros** per year from 2025 to 2028. That additional revenue would be significant in supporting efforts to consolidate public finances while also strengthening Slovakia's fiscal position and supporting sustainable economic growth.

3. Target youth smoking to prevent long-term health risks.

Addressing youth smoking is critical to reducing long-term health risks associated with tobacco use. The accelerated excise tax calendar is particularly effective in reducing youth smoking prevalence, with an estimated **10.2-percentage-point** greater reduction than the current calendar. This highlights the importance of incorporating robust tobacco taxation policies as part of a comprehensive strategy to deter youth from starting to smoke.

4. Leverage fiscal policy to support broader public health goals.

The additional revenue generated from the accelerated excise tax increases provides a unique opportunity to fund comprehensive tobacco control initiatives, including smoking cessation programs, public awareness campaigns, and stronger enforcement of existing tobacco control laws (similar to the case of New Zealand). By reinvesting this revenue into health-promoting activities, Slovakia can further improve its public health outcomes.

5. Strengthen monitoring and evaluation of tobacco tax policy impact.

Slovakia currently lacks a dedicated tobacco authority responsible for the comprehensive monitoring and evaluation of tobacco tax policies. Establishing such an authority is crucial to systematically track changes in smoking prevalence, tobacco consumption patterns, consumption of alternative products, revenue collection, and public health outcomes. Regular and thorough evaluation would enable Slovakia to refine and optimize its tobacco taxation strategies over time, especially with the rising popularity of alternative tobacco and nicotine products.

6. Comprehensive tobacco control measures enhance progress.

Beyond taxation, Slovakia should consider implementing complementary non-price tobacco control measures. These could include expanding smoke-free zones, which is particularly important given that Slovakia is one of the few European countries that still allows smoking in pubs and, under certain conditions, in restaurants. Increasing the visibility and reach of anti-smoking campaigns, enforcing standardized packaging, and restricting tobacco marketing, especially to youth, are also crucial steps.

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Appendix





Source: Authors' calculations

Figure A2. Estimated excise tax + VAT revenue in current and accelerated excise tax calendars, 2023–2028 (million €)



Source: Authors' calculations



Figure A3. Estimated weighted average price (WAP) for a pack of cigarettes, 2023–2028 (in €)

Source: Authors' calculations





Source: Authors' calculations