

Tobacconomics Cigarette Tax Scorecard

Scoring Component Policy Note – Cigarette Price

Suggested citation: Chaloupka, F., Drope, J., Siu, E., Vulovic, V., Stoklosa, M., Mirza, M., Rodriguez-Iglesias, G., & Lee, H. (2021). Tobacconomics cigarette tax scorecard: Scoring component policy note – cigarette price. Chicago, IL: Health Policy Center, Institute for Health Research and Policy, University of Illinois Chicago. www.tobacconomics.org

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This Policy Note was funded by Bloomberg Philanthropies. The University of Illinois Chicago (UIC) is a partner of the Bloomberg Initiative to Reduce Tobacco Use. The views expressed in this document cannot be attributed to, nor do they represent, the views of UIC, the Institute for Health Research and Policy, or Bloomberg Philanthropies.

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The Tobacconomics Cigarette Tax Scorecard evaluates countries' cigarette tax systems based on a five-point rating system that incorporates international guidance and best practices in tobacco taxation developed by the World Health Organization (WHO), the WHO Framework Convention on Tobacco Control (FCTC), the World Bank (WB), and academics and researchers worldwide. The five-point index uses data from the World Health Organization's biennial *Report on the Global Tobacco Epidemic (RGTE)* to score countries on the following four components: cigarette price, changes in the affordability of cigarettes over time, the share of taxes in retail cigarette prices, and the structure of cigarette taxes. The total score reflects an average of the four component scores.

Why is cigarette price important?

The price of cigarettes is a key variable affecting smoking behavior. The WHO FCTC's Article 6 and its Guidelines state that increases in real prices reduce tobacco use (WHO, 2014). The *WHO Technical Manual on Tobacco Tax Administration* and the World Bank's *Tobacco Tax Reform at the Crossroads of Health and Development* report also emphasize the importance of high prices to reduce cigarette smoking (WHO, 2010; World Bank, 2017). As the price of cigarettes increases, smoking prevalence decreases because current smokers are incentivized to quit, nonsmokers are discouraged from taking up smoking, and former smokers are discouraged from restarting. Those smokers who do continue to smoke often reduce their smoking intensity (that is, the number of cigarettes smoked in a given time period) as the price increases.

While higher prices generally reduce consumption (Tauras et al., 2016), cigarettes are relatively price inelastic: an increase in price will result in a less-than-proportional decline in consumption. The estimated impact of price on tobacco consumption varies from country to country, but most studies show that consumption is more responsive to price in low- and middle-income countries (LMICs)—where elasticity estimates cluster around -0.5—than in high-income countries where it is closer to -0.4 (U.S. National Cancer Institute & World Health Organization [NCI & WHO], 2016). Therefore, a ten-percent increase in price will result in a five-percent decrease in consumption in LMICs and a four-percent decrease in high-income countries. Studies have found that about half of these declines in consumption are due to reduced smoking participation (quitting or not starting) and the remaining half come from reduced smoking intensity among smokers (Chaloupka & Wechsler, 1995; Levy et al., 2004; World Bank, 2017). Moreover, due to its addictive nature and the fact that quitting for good often requires multiple attempts, the long-term impact of price on cigarette consumption increases over time. Thus, it is estimated that the long-term impact is approximately double the short-term impact (Pacula & Chaloupka, 2001).

Studies also show that youth are two to three times more responsive to tobacco price increases than the general population, which is explained by various factors including limited income, lower addiction levels, and peer effects (Bader et al., 2011). Evidence on smokers switching to other tobacco products because of price changes in cigarettes—called substitution—is mixed. In high-income countries there is some evidence that a portion of smokers will switch to less-expensive non-cigarette products, reinforcing the recommendation that all tobacco products should be taxed similarly. In LMICs, however, these patterns are less clear (NCI & WHO, 2016).

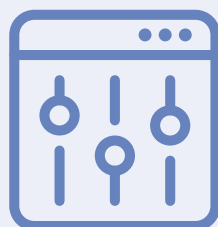
Evidence from high-income countries such as United States, United Kingdom, and Australia shows that lower socioeconomic groups are relatively more responsive to tobacco price changes than higher socioeconomic groups (Chaloupka, 1991; Colman & Remler, 2008; Farrelly et al., 2001; Siahpush et al.,

2009; Townsend et al., 1994). There is a growing body of evidence from LMICs that the poor are more responsive to tobacco price changes and, thus, benefit most from the resulting reductions in smoking (Chaloupka et al., 2012; World Bank, 2017).

For these reasons, the price of tobacco products is an important part of evaluating the performance of a country's tobacco tax system. Even in cases where the tax structure is ideal (that is, a uniform specific tax with adjustments for inflation and income growth) and the excise tax share of retail price is 70 percent or above, if the price of tobacco products is low, the tax system will not be as effective in discouraging and reducing tobacco consumption.

Scoring criteria of cigarette price in the Cigarette Tax Scorecard

The Scorecard compares cigarette tax systems in terms of the price of the most-sold brand in international dollars (Intl\$), adjusted for purchasing power parity (PPP). Based on the price of the most-sold brand in constant 2018 Intl\$ PPP, tax systems are scored using the following rubric:



Scoring – Cigarette Price:

- 5: Price \geq 10.0 Intl\$ PPP
- 4: $8.0 \leq$ price $<$ 10.0
- 3: $6.0 \leq$ price $<$ 8.0
- 2: $4.0 \leq$ price $<$ 6.0
- 1: $2.0 \leq$ price $<$ 4.0
- 0: Price $<$ 2.0 Intl\$ PPP

Strengths and weaknesses of the measure

The greatest strength of this measure is that nearly everyone understands the notion of price, setting aside the complexities of calculations in this policy note. One of the largest challenges in promoting tobacco taxation is explaining how it works, and using price as the foundation of this explanation is largely intuitive.

The Scorecard gives the highest score to a PPP-adjusted price of ten international dollars or higher in 2018 for a pack of 20 of the most-sold brand of cigarettes, and the price thresholds drop by two Intl\$ PPP units for each score. These thresholds are based on the literature highlighting the importance of sufficiently high cigarette prices to reduce consumption. The rationale for the scoring criteria is based on the roughly smooth distributions in cigarette price scores for each year, and the criteria for cigarette price scores are functioning as intended in terms of distinguishing high- and low-performing countries and identifying improvements within a country over time.

The empirical measure used here—PPP-adjusted constant international dollars of the most-sold brand—though a bit complicated at first glance, is particularly appropriate because it captures price accurately and allows for meaningful comparisons over time and across countries. Since countries often have their own popular local brands, prices of the most-sold brand are useful when comparing cigarette prices. They reflect the largest share of the country's cigarette market, even though the brands may differ by country and may even change over time in the same country. However, these prices do not reflect the variability in cigarette prices across brands within a country's cigarette market and therefore the opportunity for smokers to switch to cheaper brands as cigarette taxes and prices rise. This dynamic is partially, but not fully, captured by the tax structure component, given that the tax structures that score highest are those that reduce variability in prices across cigarette brands.

In the *RGTE*, cigarette prices are reported in current Intl\$ PPP units, which are prices adjusted for the purchasing power of each currency. Whereas current Intl\$ PPP units facilitate price comparisons in relation to other goods across countries in the same year, they could be inconsistent when assessing tax systems using the same grading scale for all years. For this reason, prices are converted into constant 2018 Intl\$ PPP based on the gross domestic product (GDP) PPP in current and constant 2018 Intl\$ PPP from the World Development Indicators.¹

There are also potential challenges with data consistency. First, the data on prices in local currency units in the *RGTE* are not collected using a consistent and comparable approach in all countries, so they should be interpreted with some caution. Second, to convert prices in local currency units to Intl\$ PPP, the *RGTE* uses the PPP conversion factor from either the International Monetary Fund or the World Bank. However, as PPP conversion factors are regularly updated with all other macroeconomic indicators, differences can be observed in prices in Intl\$ PPP between different editions of the *RGTE*.

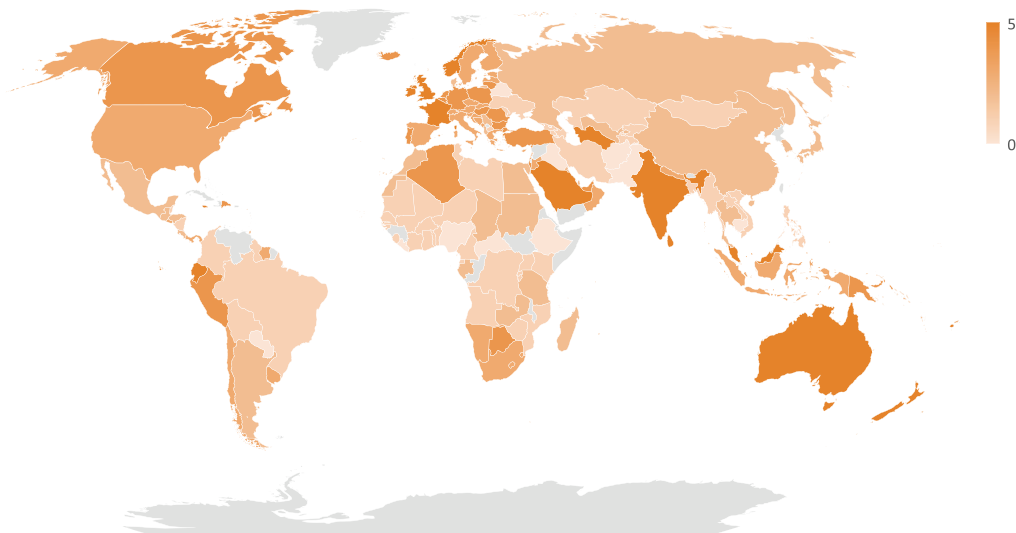
Cigarette price scores in 2018

Figure 1 shows the cigarette price scores in 2018. Sri Lanka has the highest cigarette price at 22.17 Intl\$ PPP, followed by Turkmenistan at 18.81 Intl\$ PPP, and Saudi Arabia at 17.68 Intl\$ PPP. Although prices are high in Turkmenistan, the total tax share of price is only 32.35 percent, so the tobacco industry gains the greatest benefit from high retail prices. Conversely, Saudi Arabia and Sri Lanka’s total tax shares are 60.68 and 66.17 percent of retail price, respectively, so their governments capture more revenue.

Few countries made significant progress during the period 2014-2018 in terms price increases. There was a slight decline in the number of countries with lower scores (0, 1, or 2) and a small increase in the number of countries with higher scores (4 and 5) (Figure 2).

More than two in five countries’ scores moved up by one point between 2014 and 2018, while the same proportion of countries had the same score in 2014 and 2018 (43.4 percent) (Figure 3). The largest increases—both in terms of the score and the percent increase in price—were recorded in Timor Leste

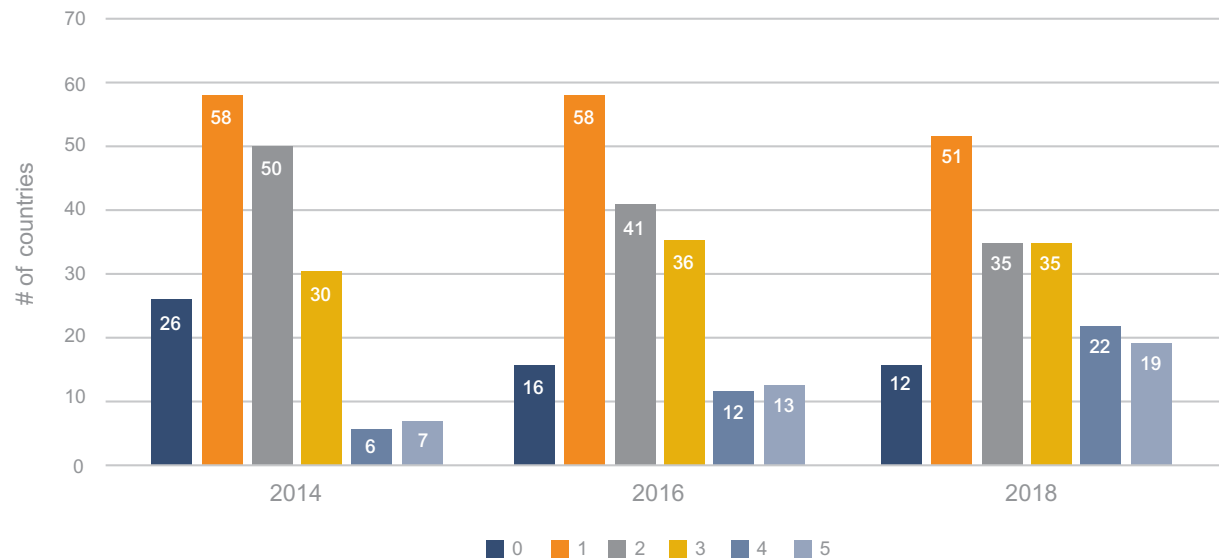
Figure 1 Cigarette price scores, 2018



¹ World Bank. (Last accessed October 16, 2020)). *World development indicators*. Available online: <https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDPMKTP.PP.CD&country=>

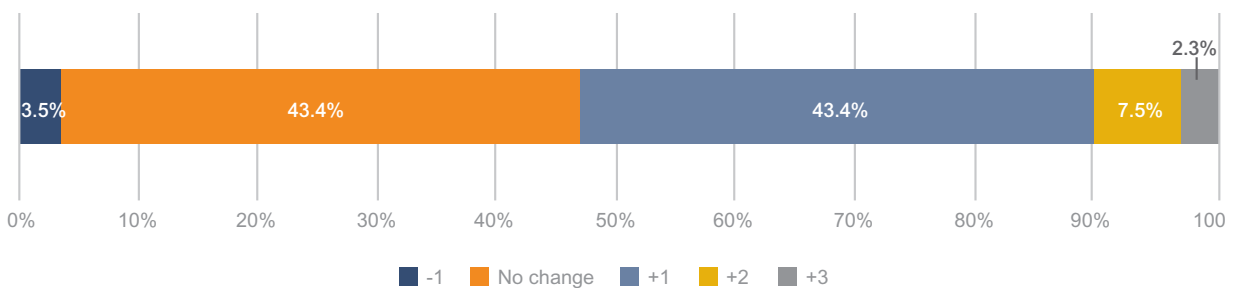
(220.0 percent, moved from 0 to 2), Saudi Arabia (173.2 percent, from 3 to 5), Peru (155.8 percent, from 1 to 4), and Tonga (139.3 percent, from 2 to 5). Bahrain and Ecuador also saw price increases by approximately 90 percent, shifting them from a score of two to five. Other countries that recorded large price increases were Bangladesh (54.0 percent in 2016 and 55.2 percent in 2018), Turkmenistan (73.8 percent in 2016 and 31.4 percent in 2018), and the Philippines (54.0 percent in 2016 and 42.2 percent in 2018). On the other hand, 3.5 percent of countries' scores moved down by one point relative to 2014.

Figure 2 Evaluated countries by cigarette price score and by year



Notes: Based on 177 countries in 2014, 176 in 2016, and 174 in 2018. For 170 countries the score was available in all three years. Source: Authors' calculations

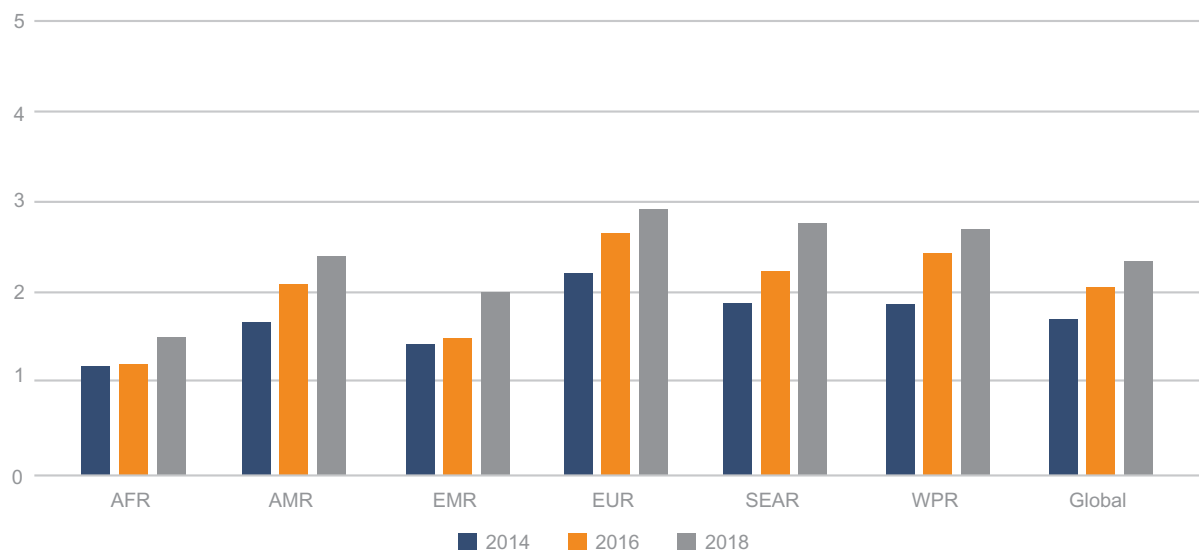
Figure 3 Percent distribution of score changes in cigarette price between 2014–2018



Notes: Based on 177 countries in 2014, 176 in 2016, and 174 in 2018. For 170 countries scores are available in all three years. Percentages are calculated based on 173 countries where scores were available for both 2014 and 2018. Source: Authors' calculations

While the average score increased over time in all WHO regions, the largest increase occurred in countries in the South-East Asian region, where the average score increased from 1.89 (2014) to 2.78 (2018) (Figure 4). Countries in the African region show the lowest increase from 1.21 (2014) to 1.49 (2018).

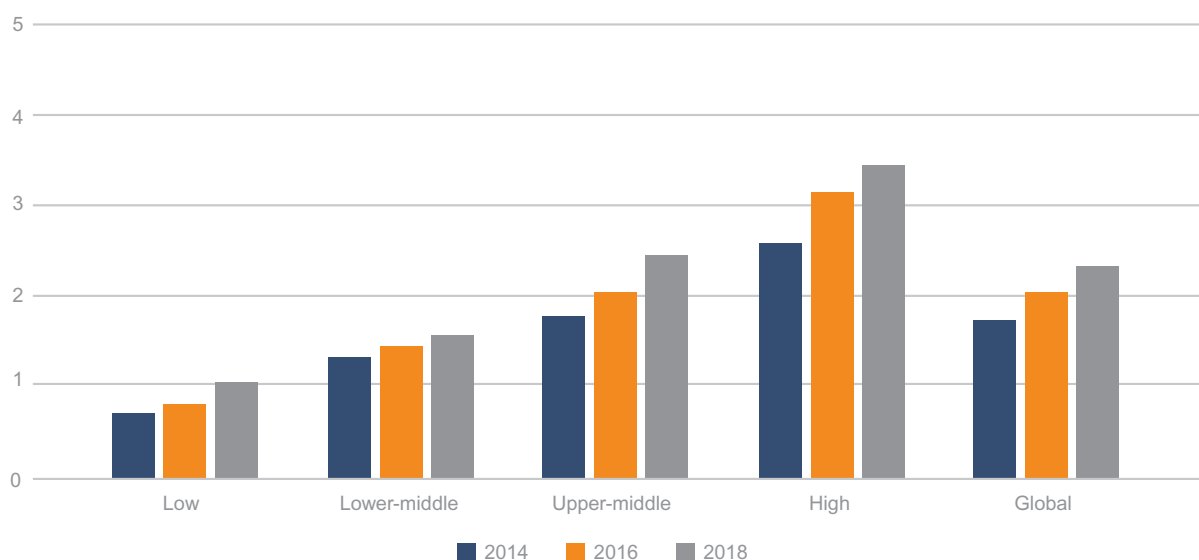
Figure 4 Average score on cigarette price, by WHO region and by year



Notes: WHO regional groupings are AFR = African Region, AMR = Region of the Americas, EMR = Eastern Mediterranean Region, EUR = European Region, SEAR = South-East Asian Region, WPR = Western Pacific Region. Based on 177 countries in 2014, 176 in 2016, and 174 in 2018. For 170 countries scores are available in all three years.
Source: Authors' calculations

Based on the World Bank country income groups, the largest increases in average scores were found in high-income countries, from 2.60 (2014) to 3.47 (2018) (Figure 5). On the other hand, the least improvement in scores was observed in lower-middle-income countries, where the score only increased from 1.32 (2014) to 1.58 (2018).

Figure 5 Average score on cigarette price, by World Bank income group and by year



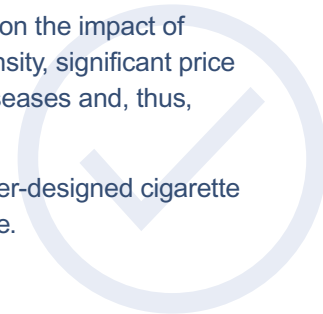
Notes: Based on 177 countries in 2014, 176 in 2016, and 174 in 2018. For 170 countries scores are available in all three years.
Source: Authors' calculations

Policy recommendations

The Scorecard results on cigarette price show that there is considerable room to raise cigarette prices. For example, nine countries scored zero for all three years and more than half of countries scored two or lower in 2018. These low scores on cigarette price provide some indication of the weaknesses in current systems that could be readily addressed by tobacco tax policy makers.

Higher tobacco prices are effective at reducing tobacco use. Based on the impact of cigarette prices on reduced smoking participation and smoking intensity, significant price increases are likely to reduce the burden of smoking-attributable diseases and, thus, improve population health.

Countries can increase cigarette prices by imposing higher and better-designed cigarette taxes, which could be sources of much-needed government revenue.



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