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SURVEY REPORT

Consumption Behaviour of Cigarette Smokers in Pakistan

Social Policy and Development Centre

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The University of Illinois Chicago's (UIC) Institute for Health Research and Policy is funding a group of economists to develop evidence-based policy support for effective tobacco tax policies in low- and middle-income countries with the highest rates of tobacco consumption. The global collaboration on the economics of tobacco is facilitated through Tobacconomics, a web-based platform. UIC is a partner of the Bloomberg Initiative to Reduce Tobacco Use.

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Acronyms

CGE	Computable General Equilibrium
FBR	Federal Board of Revenue
FED	Federal Excise Duty
GATS	Global Adults Tobacco Survey
ISDIs	Inequality-adjusted Socioeconomic Development Indices
KPK	Khyber Pakhtunkhwa
PBS	Pakistan Bureau of Statistics
PKR	Pak Rupees
PPS	Probability Proportional to Size
PSLM	Pakistan Social and Living-Standard Measurement
PSUs	Primary Sample Units
SPDC	Social Policy and Development Centre
TSU	Tertiary Sampling Units

Executive Summary

Cigarette taxation is a crucial element of tobacco control policy in Pakistan. During the past few years, the government introduced several reforms in cigarette tax policy related to changes in the rate and structure of federal excise duty on cigarettes. The tax policy measures also caused changes in cigarette prices. While some evidence is available on the link between the domestic production of cigarettes and changes in the tax rates, the effects of such changes on the pattern of cigarette consumption remain a research niche.

The main objective of this research is to study the consumption patterns of cigarette smokers. The survey provides information on the price and non-price drivers of cigarette consumption behaviour and explores the impact of price changes on consumption. The study is based on a survey of households where more than 7,500 current and past smokers were interviewed.

The key findings of the survey are the following:

The Market

- The cigarette market is relatively concentrated, where 82.3 percent of current smokers consume the top six brands. Only two brands, Capstan and Gold Leaf, capture almost half of the market with their respective shares of 33.3 percent and 15.8 percent, respectively.
- Based on the brands used by smokers, major cigarette manufacturers were Pakistan Tobacco Company, Philip Morris International–Pakistan, and Khyber Tobacco Company, with market shares of 60.3 percent, 22.6 percent, and 4.9 percent, respectively. All other firms constituted 12.2 percent of the market.

Smokers

- On average, smoking intensity among the respondents was reportedly 13 cigarettes per day.
- The average expenditure on cigarettes as percent of the total expenditure of smokers was 5.7. The share of cigarette expenditure is higher in the low-income category and vice versa.
- While the law prohibits the sale of loose cigarettes, 30.2 percent of smokers reported buying loose cigarettes; the ratio is 34.5 percent in urban and 27.5 in rural areas.
- The purchase of loose cigarettes is most common among youth, as reported by 46.1 percent of smokers aged 15–24 years.

- The minimum cigarette pack price notified by the Federal Board of Revenue at the time of the survey was PKR 63 per pack of 20 cigarettes. The results reveal that 17.5 percent of the brands were sold below the minimum price. The average price of the 6th most popular brand was PKR 35, while the minimum excise tax per pack was PKR 33.
- Over 24 percent of the regular smokers also used other tobacco products, which mainly include naswar, hooka, and paan with tobacco.
- Overall, 83.2 percent and 75.0 percent of smokers affirmed having seen pictorial health warnings and written warnings printed on packs. However, considerable inter-regional differences exist as about 90 percent of the urban respondents had seen graphic warnings compared to 79 percent of smokers living in rural areas.
- 9.3 percent of the smokers reported having shifted to other brands. Brand switching is more prominent in rural areas. Price and taste concerns were the major reasons for switching brands. Among the smokers who switched to other brands, 37.6 percent and 36.5 percent stated price and taste concerns as the primary reasons for switching, respectively. Health concern as a primary reason for switching brands was referred to by a small proportion (4.4 percent) of smokers.
- Among the respondents who affirmed an increase in cigarette prices during COVID-19, about 66 percent stated that they smoked fewer cigarettes during the pandemic. Over 24 percent of smokers either made an attempt to quit smoking or seriously thought about quitting.
- Due to an increase in cigarette prices in July 2019 (when the excise tax rate was enhanced), 29 percent of the total smokers smoked fewer cigarettes. Altogether, 12.8 smokers attempted either quitting or seriously thought about quitting after the price increase. On the contrary, after a decrease in cigarette prices in July 2017 due to reduced tax rates, over 17 percent of smokers consumed more cigarettes.
- In response to a hypothetical increase in cigarette prices, the most cited response of smokers (53.3 percent) was the consumption of fewer cigarettes. Around 40 percent stated that they would attempt quitting or seriously think about it. In addition, 32.5 percent of smokers said they would purchase more single sticks.
- Overall, 56 percent of past smokers quit due to health concerns, while around 36 percent stated that they abandoned smoking because a family member or friend wanted them to stop smoking.

1 Introduction

Tobacco users comprise a large proportion of the population in Pakistan, with an estimated 31 million adults currently using tobacco in any form: about 17 million smoke cigarettes.[1] Increasing the price of tobacco products through higher taxation is globally acknowledged as the most effective way to reduce tobacco consumption. As such, tobacco taxation is the primary tool of tobacco control policy in Pakistan.

During the last few years, the Government of Pakistan introduced several changes in the rate and structure of federal excise duty (FED) on cigarettes, which has led to corresponding changes in the price of cigarettes. Macro-level data on cigarette manufacturing indicates that local production is somewhat associated with changes in the tax rates and, therefore, with the final consumer price.[2] However, studying the effects of changes in prices on the pattern of cigarette consumption remains an under-researched area in Pakistan. Higher cigarette prices result in decreased cigarette consumption, but price-sensitive smokers may seek low-priced or 'tax-free' sources, especially if they are readily available.

The main objective of this research is to study the consumption patterns of cigarette smokers. The survey provides information on the price and non-price drivers of cigarette consumption behaviour and explores the impact of price changes on consumption. In addition, the information collected about current consumption would also help estimate the extent of the use of illicit brands of cigarettes. The study is based on a country-wide survey of households where more than 7,500 current and past smokers were interviewed. This report presents key findings of the survey about the various aspects of the smoking behaviour of the respondents, particularly how they respond to a change in the price of cigarettes. The report consists of four sections. Section 2 summarizes the data collection methodology, while Section 3 presents the survey's key findings. Policy implications are outlined in Section 4.

[1] SPDC estimates based on Global Adults Tobacco Survey (GATS) 2014 and population projection for 2022. According to GATS 2014, prevalence rate of tobacco use and cigarette smoking was 19.1 percent and 10.5 percent, respectively.

[2] Sabir M., Wasim S., M. A. Iqbal., & Naveed A. (2021). Economic implications of cigarette taxation in Pakistan: An exploration through a CGE model. Research Report. Social Policy and Development Centre (SPDC).

2 Methodology of Data Collection

The survey was undertaken using a nationally representative sample of households to collect information on smoking habits in adults. It also collected data on their income, expenditure on cigarettes, and response to changes in the price of cigarettes. The target population included male and female smokers aged 15 years and above. The primary data collection was carried out from December 2021 to March 2022.

Altogether, 8,964 households were contacted in 498 locations (Primary Sample Units–PSUs) across 15 districts in four provinces and the Federal Capital. Random selection of PSUs for the proposed districts was conducted by the Pakistan Bureau of Statistics (PBS) by using its national sample framework. PBS also provided statistical weights for the selected PSUs. Within each PSU, 18 households were contacted. One smoker from a household was interviewed after screening the presence of an adult smoker (current or past). Given the objective of the survey, the sample is representative of Pakistan at national and regional (urban/rural) levels. Further details of the sampling methodology are provided in Appendix-A .

Table 1: Distribution of sample households accessed for screening
[Percentage after applying statistical weights]

		Rural	Urban	Overall
Pakistan		65.2	34.8	100.0
Province	Punjab	36.3	17.5	53.8
	Sindh	9.1	11.8	20.9
	Khyber Pakhtunkhwa (KPK)	15.8	3.8	19.6
	Balochistan	3.5	1.3	4.8
	Islamabad	0.5	0.5	1.0

After cleaning the survey data for incomplete and inconsistent values, information on 8,514 households was used for the analysis, which includes 5,943 urban and 2,571 rural households. The distribution of the total sample by province and region is presented in Table 1. The sample shares more or less coincide with the population shares of the provinces.[3] Out of the total households surveyed (8,514), 960 households were excluded from the analysis since no smoker was reported in these households. As per the sample distribution by category of smokers (Table 2), the total number of respondents is 7,554, including 6,283 current and 1,271

[3] According to Population Census 2017, shares of Punjab, Sindh, Khyber Pakhtunkhwa, Balochistan and Islamabad (federal capital) were 53 percent, 23 percent, 17 percent, 6 percent and 1 percent respectively. [Source: https://www.pbs.gov.pk/content/final-results-census-2017]

past smokers. The survey results are obtained by applying the statistical weights provided by PBS.

Table 2: Sample by category of respondents
[Unweighted numbers and weighted row percentages]

	Current Smokers		Past Smokers	
	Number	%	Number	%
Pakistan	**6,283**	**81.5**	**1,271**	**18.5**
Punjab	2,992	81.4	659	18.6
Sindh	1,531	91.4	166	8.6
KPK	929	69.0	310	31.0
Balochistan	492	95.5	42	4.5
Islamabad	339	79.3	94	20.7

3 Key Findings

The findings of the survey are grouped into three categories: a) smoking practices of current smokers, b) the effect of price changes on the consumption behaviour of current smokers and c) reasons for quitting smoking and use of other tobacco products by past smokers.

Current Regular Smokers of Cigarettes

The respondents who smoke cigarettes daily or nearly every day are termed regular smokers. The specific question asked was: "For how many years have you been smoking regularly (daily)?" Those respondents were dropped who confirmed that they never smoked cigarettes on a daily or nearly daily basis. The findings concerning smokers' socioeconomic and demographic characteristics, their smoking and purchasing habits, brand loyalty, brand switching, and awareness about warnings on cigarette packs are summarized below.

Demographic and socioeconomic characteristics

Table 3 presents the demographic and socioeconomic characteristics. Overall, the period of regular smoking is 13 years. A smoking period of 5–10 years was reported by the majority (31 percent) of current smokers. However, the proportion of people who started smoking recently (less than five years ago) is also substantial, i.e., 17 percent. The urban-rural differences are noticeable in the two groups. Recent smokers account for 20 percent of the respondents in urban areas compared to 15.9 percent in rural areas. On the other hand, the percentage of smokers who have been smoking for more than 20 years is relatively higher in rural areas. As far as the gender of individuals is concerned, the number of female smokers was found to be close to one percent of the total smokers (0.7 percent urban and 1.0 percent rural).

On average, the age of the sample smokers was 41 years. Almost half of the current smokers were in the age cohort of 25–44 years, while 8.8 percent were young smokers (aged 15–24 years). There are no significant differences in urban-rural locations, barring the youth group. The proportion of young smokers was 11.4 percent and 7.2 percent in urban and rural areas, respectively.

Current smokers' education profile corresponds with the country's low literacy and educational attainment levels, as 50.7 percent of the smokers either have no formal education or have less than primary education.[4]

[4] According to Population Census 2017, 45 percent of adults (aged 15 years and above) are either illiterate or have no formal education.

Regarding employment and earning status, close to 84 percent of smokers were employed in the labour force (work for pay). Among these, nearly half of the smokers reported working as paid employees (25 percent) or self-employed (22 percent), whereas 17 percent were daily wagers. About 19 percent of smokers were in the agriculture and livestock sectors.

Table 3: Demographic and socioeconomic characteristics of cigarette smokers

		Pakistan	Urban	Rural
Sample smokers		**6,283**	**4,368**	**1,915**
Years of regular smoking	Mean years	13	13	14
Distribution (%)	Less than 5 years	17.4	20.0	15.9
	5-10 years	30.5	30.5	30.5
	11-20 years	23.0	21.6	23.9
	More than 20 years	17.5	15.1	18.9
	Do not remember	11.6	12.8	10.9
		100.0	**100.0**	**100.0**
Age of smoker	Mean years	41	40	42
Distribution (%)	15-24 years	8.8	11.4	7.2
	25-44 years	49.4	49.4	49.4
	45-64 years	36.8	34.4	38.3
	65 years and above	5.1	4.8	5.2
		100.0	**100.0**	**100.0**
Female smokers		**0.9**	**0.7**	**1.0**
Currently married smokers		**81.9**	**80.0**	**83.1**
Educational attainment (%)	No Formal Education	24.9	19.1	28.4
	Primary or less	25.8	24.1	26.9
	Matric	20.9	22.8	19.8
	Intermediate	12.4	15.4	10.6
	Graduate or above	15.9	18.5	14.3
		100.0	**100.0**	**100.0**
Smokers currently studying		**3.0**	**3.2**	**2.9**
Smokers working for pay		**83.5**	**84.7**	**82.7**
Employment Status	Paid employee	25.1	32.5	20.5
	Self-employed	21.9	26.7	18.9
	Daily wager	16.6	14.5	18.0
	Owner cultivator	10.3	4.2	14.1
	Sharecropper	4.2	1.7	5.7
	Contract cultivator	2.8	2.4	3.0
	Livestock (only)	1.5	0.4	2.1
	Employer	1.1	2.2	0.4
	Unpaid family worker	0.0	0.1	0.0

In terms of income, the respondents are divided relatively into three groups (33 percent each): low-income (1st tercile), middle-income (2nd tercile) and high-income (3rd tercile). As

shown in Table 4, most (46 percent) of the smokers belong to the middle-income group. The proportion of low and middle-income smokers is higher in rural areas.

On average, cigarette expenses constituted 5.7 percent of the total expenditure of smokers. The share of cigarettes in total expenditure declines with a move from low to higher income group. Some earlier research in Pakistan has also shown that poor households spend a larger proportion of their income on cigarettes than richer ones.[5]

Table 4: Income and expenditure reported by smokers

	Pakistan	Urban	Rural
Sample	**5,078**	**3,530**	**1,548**
Categories of annual income (%)			
Low-income (1st tercile)	16.2	12.2	18.8
Middle-income (2nd tercile)	46.1	43.1	48.1
High-income (3rd tercile)	37.7	44.7	33.1
Average annual income (PKR)	413,502	455,180	386,484
Average annual expenditure (PKR)	383,974	413,207	364,719
Average monthly expenditure on cigarettes (PKR)	1,815	2,082	1,654
Average expenditure on cigarettes as percent of total expenditure (%)			
Overall	5.7	6.0	5.4
Low-income (1st tercile)	8.9	9.1	8.8
Middle-income (2nd tercile)	6.7	6.9	6.5
High-income (3rd tercile)	4.5	5.2	3.9

Besides a regular source of income of the smokers who work for pay, other secondary sources were also probed. As shown in Table 5, about 90 percent of smokers did not report any secondary source of income. Few smokers, however, reported income from property (4.4 percent), pension (1.8 percent), overseas remittances (1.6 percent) and profit from saving (1.4 percent) as their secondary sources of income.

The primary income sources of respondents who were not participating in the labour force and did not work for pay at the time of the survey included pocket money[6] (54.1 percent), property income (17.1 percent) and pension (12.0 percent).

[5] See, for example: Tobacco expenditure leads to reduced spending on basic needs among poor households, Policy Brief, Social Policy and Development Centre (SPDC), May 2020.

[6] In the context of Pakistani society, pocket money refers to a small amount (allowance) of money given to children who may be adults but are not working for wage (may be studying or not working due to some other reasons). This also refers to money given to old parents by their children on a regular basis to meet minor expenses.

Table 5: Other sources of income			
	Pakistan	Urban	Rural
Smokers who reported working for pay			
Sample	**5,235**	**3,637**	**1,598**
No other sources of income	89.8	89.8	89.7
Income from property	4.4	3.4	5.1
Pension	1.8	2.7	1.2
Remittances	1.6	0.8	2.1
Profit from saving	1.4	2.1	1.0
Other sources	1.0	1.2	0.8
Smokers not in labor force			
Sample	**931**	**658**	**273**
Pocket money	51.4	51.6	51.3
Income from property	17.1	13.9	19.0
Pension	12.0	16.4	9.4
Remittances	9.3	9.0	9.5
Profit from saving	4.4	4.4	4.5
Assistance from government	3.4	1.4	4.7
Other sources	2.3	3.4	1.7

Smoking practices

This section provides findings about smoking brands and practices (smoking days, daily usage and purchasing). The reference period of this information is the 'last 30 days'.

The structure of the cigarette market in terms of brand shares is presented in Table 6. The market appears to be relatively concentrated, with the top six brands capturing 82.3 percent of the total market; only two brands, Capstan and Gold Leaf, enjoy a share of 49.1 percent. Some regional variations are also evident. For instance, Gold Leaf, a relatively high-priced brand, is more prevalent in urban areas (with a share of 20.2 percent) than in rural areas (13.1 percent). On the other hand, some low-priced brands are more popular in the rural population. The combined share of three brands (Gold Flake, Red & White and Kissan) is 21.4 percent and 14.3 percent in rural and urban areas, respectively.

Based on the brands used by smokers, major cigarette manufacturers were Pakistan Tobacco Company, Philip Morris International–Pakistan, and Khyber Tobacco Company, with market shares of 60.3 percent, 22.6 percent, and 4.9 percent, respectively. All other firms constituted 12.2 percent of the market (Table 7).

Table 6: Cigarette brands used by smokers			
	Pakistan	Urban	Rural
Sample	**6,283**	**4,368**	**1,915**
Weighted shares (%)			
Capstan	33.3	35.9	31.7
Gold Leaf	15.8	20.2	13.1
Morven	14.4	14.2	14.6
Gold Flake	7.5	6.3	8.2
Red & White	6.4	4.5	7.6
Others	5.4	3.6	6.5
Kissan	4.9	3.5	5.6
Dunhill	2.6	4.0	1.8
Cafe	1.4	0.6	1.9
Hiway	1.1	0.1	1.6
Canton	1.0	1.4	0.8
Marlboro	0.9	1.3	0.7
K-2	0.9	0.7	1.0
Pine	0.7	0.7	0.8
Press	0.7	0.2	1.0
Classic	0.6	0.4	0.7
Captan	0.6	0.6	0.6
Embassy	0.6	0.6	0.6
Benson & Hedges	0.5	0.7	0.4
Milano	0.3	0.3	0.3
Gold street	0.3	0.2	0.4
Note: Brands with the incidence of less than 0.3% are merged in the other category			

Table 7: Market shares of cigarette manufacturers (%)		
Pakistan Tobacco Company	Capstan	33.3
	Gold Leaf	15.8
	Gold Flake	7.5
	Dunhill	2.6
	Embassy	0.6
	Benson & Hedges	0.5
	Total	**60.3**
Philip Morris International–Pakistan	Morven	14.4
	Red & White	6.4
	Marlboro	0.9
	K-2	0.9
	Total	**22.6**
Khyber Tobacco Company	Kissan	**4.9**
Others		**12.2**

Information on the number of days of smoking and the average number of cigarettes consumed per day (intensity) is in Table 8. The average number of smoking days was 28 while smoking intensity was reportedly 13. There are no significant urban-rural differences in both indicators.

Table 8: Smoking intensity - last 30 days

		Pakistan	Urban	Rural	Daily smokers	Non-daily smokers
	Sample Count	**6,283**	**4,368**	**1,915**	**5,727**	**556**
Smoking days (numbers)	Mean	28	29	28	30	16
	STD	4.9	4.3	5.2	0	5.9
Cigarettes smoked daily (numbers)	Mean	13	13	13	14	5
	STD	10.3	9.3	10.9	10.2	7.6

Purchasing habits and prices paid

While the law prohibits the sale of loose cigarettes, 30.2 percent of smokers reported buying loose cigarettes (Table 9); the ratio is 34.5 percent in urban and 27.5 in rural areas.

Table 9: Cigarette purchasing habit - last purchase

	Overall	Urban	Rural
Type of purchase			
Sample Count	**6,236**	**4,340**	**1,896**
Loose cigarette	30.2	34.5	27.5
Cigarette pack (20 cigarettes)	69.0	64.8	71.6
Cigarette carton (10 packs)	0.8	0.7	0.9

Purchasing habits are also linked with the age and income of smokers (Table 10). Purchase of loose cigarettes is most common in youth, as reported by 46.1 percent of smokers of age 15–24 years. This ratio declines as we move to older age groups. However, no such pattern was observed in the income groups: 30.4 percent of the smokers in 1st tercile purchased loose cigarettes compared to 33.1 percent and 26.9 percent in 2nd and 3rd tercile, respectively.

As shown in Table 11, on average, smokers purchased six loose cigarettes per day with an expenditure of PKR 37. In this way, the average equivalent price per pack was PKR 123. In contrast, the average price for smokers who purchased a pack was PKR 109. Thus, buyers of loose sticks paid a 13.1 percent higher price. This ratio is 16.1 percent and 11.1 percent in urban and rural areas.

Table 10: Purchasing habits by age and income groups – last purchase			
	Loose cigarette	Cigarette pack	Total
Age group			
15–24 years	46.1	69.8	100.0
25–44 years	34.4	53.9	100.0
45–64 years	23.0	65.6	100.0
65 years and above	13.1	77.0	100.0
Income group			
Low-income (1st tercile)	30.4	69.6	100.0
Middle-income (2nd tercile)	33.1	66.9	100.0
High-income (3rd tercile)	26.9	73.1	100.0

Table 11: Average number of packs and loose cigarettes purchased				
		Overall	Urban	Rural
Purchase of packs				
Sample		**4,233**	**2,922**	**1311**
Number of packs purchased	Mean	1	1	1
Expenditure on last purchase (PKR)	Mean	109	112	108
Purchase of loose cigarettes				
Sample		**1,998**	**1,415**	**583**
Number of sticks purchased	Mean	6	6	6
Expenditure on last purchase (PKR)	Mean	37	39	36
Additional price paid for loose cigarettes (%)	Mean	13.1	16.1	11.1

Average prices paid by the consumers for various cigarette brands are in Table 12. The price per pack of premium brands was in the range of PKR 179–214. However, a significant price variation was observed in the economy brands: PKR 33 to PKR 94. Urban-rural variations exist in most cases.

It is important to note that the minimum cigarette pack price notified by the Federal Board of Revenue (FBR) at the time of the survey was PKR 63. Also, the minimum excise tax per pack was PKR 33. Therefore, a sale price below PKR 63 per pack can be considered illicit. The analysis reveals that 17.5 percent of the brands were sold below the minimum price. It is also worth mentioning that the average price of the 6th most popular brand, Kissan, was PKR 35.

Table 12: Average prices of cigarettes brands paid by the smokers – last purchase
(Based on weighted percentages of respondents)

	Overall	Urban	Rural
Dunhill	214	224	196
Gold Leaf	181	181	180
Marlboro	179	158	214
Red & White	94	90	96
Morven	84	83	85
Capstan	83	83	84
Gold Flake	82	83	81
Pine	82	87	80
K-2	75	67	80
Milano	75	70	78
Embassy	61	80	48
Classic	49	51	48
Captan	49	44	53
Others	49	58	47
Canton	45	48	42
Cafe	41	43	40
Kissan	35	34	35
Champion	35	32	37
Hiway	33	34	33
The proportion of brands with a price below PKR 63 per pack			**17.5%**

Use of Other Tobacco Products

Current smokers were also asked about their usage of other tobacco products. It was not an open-ended question, and the use of eight tobacco products was explicitly explored. Responses of smokers are collated in Table 13. Overall, 24.4 percent of the smokers were also using other tobacco products. The most used product among smokers was naswar[7] (11.8 percent), followed by hooka/shisha (9.1 percent) and paan with tobacco (2.5 percent). While no significant urban-rural difference was observed in the use of naswar, hooka and pan (with tobacco) appeared more prevalent in rural and urban areas, respectively.

Regarding smokers using brands of various price tiers, the use of other tobacco products is less common in people using high-priced brands (3.1 percent) compared to low-priced brands (19.6 percent). The price tiers formulated for the analysis correspond to the tier-wise rate of Federal Excise Duty (FED) applicable at the time of the survey. Accordingly, cigarette

[7] Naswar is a smokeless tobacco usually containing powdered tobacco, slaked lime and indigo. It is used by sniffing (nasally) or 'dipping' (placing a pinch under the tongue or in the cheek where it is stored). Source: Basharat. S, S. Kassim and R.E. Croucher (2012), Availability and use of Naswar: an exploratory study, Journal of Public Health, Volume 34, Issue 1, March 2012, Pages 60–64.

brands with a consumer price above PKR 119 per pack are considered high-priced, while others are low-priced. For the sake of analysis, low-priced brands were further divided into two categories, separating the brands with a price below PKR 63 per pack. Other tobacco products were most commonly consumed by smokers who use cigarette brands with an average price of PKR 64–119 per pack (15.9 percent).

Table 13: Use of other tobacco products by current smokers

	Pakistan	Urban	Rural
Sample Count	**1,291**	**883**	**408**
Smokers reported use of other tobacco products (%)	**24.4**	**24.8**	**24.1**
Naswar	11.8	12.0	11.6
Hookah/Shisha sessions	9.1	6.7	10.5
Pan with tobacco	2.5	4.7	1.1
Bidis	0.4	0.4	0.3
e-cigarettes	0.3	0.5	0.1
Tobacco pipes	0.2	0.3	0.2
Cigars	0.1	0.2	0.1
Hand-rolled cigarettes	0.1	0.1	0.1
Use of other tobacco products by cigarette price tiers – *(of users), %*			
Sample Count	**775**	**536**	**239**
Price of cigarette pack used: above PKR 119	3.1	6.0	1.5
Price of cigarette pack used: PKR 64–119	15.9	14.7	16.6
Price of cigarette pack used: less than PKR 63	3.7	2.6	4.2

Awareness about warnings on cigarette packs

Current smokers were probed about the warnings printed on cigarette packs. Overall, 83.2 percent and 75.0 percent of smokers affirmed having seen pictorial health warnings and written warnings in Urdu, respectively. However, noticeable inter-regional differences are evident where about 90 percent of the urban respondents had seen pictorial warnings compared to 79 percent of smokers living in rural areas (Table 14).

This information is also tabulated in terms of brand-price categories. A declining trend in the proportion of warnings observed is evident. For instance, 91.1 percent of smokers in the category of high-price brands affirmed having seen pictorial health warnings on cigarette packs. In comparison, it is 89.3 percent and 81.8 percent in the other two categories. A similar pattern was observed in the case of written warnings.

Table 14: Awareness about warnings on cigarette packs - Last 30 days *(Weighted percentages)*	Overall	Urban	Rural
Have seen pictorial and written warnings			
Sample	**5,329**	**3,794**	**1,535**
Respondent noticed pictorial health warnings	83.2	89.5	79.4
Respondent noticed written health warnings in Urdu	75.0	82.4	70.5
Have seen pictorial warnings			
Sample	**3,721**	**2,616**	**1,105**
Price above PKR 119	91.1	93.2	88.8
Price PKR 64–119	89.3	93.7	87.1
Price less than PKR 63	81.8	87.2	80.2
Have seen written warning in Urdu			
Sample	**3,311**	**2,363**	**948**
Price above PKR 119	88.1	90.2	85.6
Price PKR 64–119	79.6	85.3	76.6
Price less than PKR 63	63.2	71.1	60.7

Brand loyalty and switching

Tables 15 and 16 present the extent and reason for brand switching. The question was asked whether they had switched their brand during the last five years. Overall, 9.3 percent of smokers reported having shifted to other brands. Brand switching was more prominent in rural areas.

Price and taste concerns were the major reasons for switching brands. Among the smokers who switched their brands, 37.6 percent and 36.5 percent stated price and taste concerns as the primary reasons for switching, respectively. Notable variations exist in the responses by urban and rural smokers. Taste concern was the most cited reason (41.4 percent) in urban areas, whereas price concern appeared to be the major reason (41.3 percent) in rural areas. Health concern was referred to by a small proportion (4.4 percent) of smokers—6.9 percent of urban and 3.5 percent of rural smokers.

Interesting observations emerge from the analysis of reasons in relation to brand-price categories. In the high-priced brand category, taste concern was the primary reason (60.4 percent), followed by health concern (26.7 percent). On the other hand, price concern was the most cited reason among smokers using low-priced brands. Health concerns appeared to be the lowest priority among smokers of low-priced brands. Furthermore, the share of the "experimental' reason was higher in smokers of low-priced brands.

Table 15: Brand loyalty and switching			
	Overall	Urban	Rural
Change of regular brand during last five years *(Percentage of smokers who switched their regular brand)*			
Sample	**6,181**	**4,299**	**1,882**
Use other brands	9.3	6.7	10.9
Never change regular brand	90.7	93.3	89.1
Reasons for switching brand *(Percentage of smokers who switched their regular brand)*			
Sample	**384**	**256**	**128**
Price concern	37.6	26.3	41.3
Taste concern	36.5	41.4	34.8
Experimental	13.0	16.6	11.8
Non-availability of own brand	8.6	8.8	8.5
Health concern	4.4	6.9	3.5

Table 16: Reasons for brand switching by brand price categories *(Percentage of smokers who switched their regular brand)*		
	Sample	**384**
Prices above PKR 119	Price concern	4.4
	Health concern	26.7
	Taste concern	60.4
	Non-availability of own brand	4.4
	Experimental	4.0
Price PKR 64–119	Price concern	43.3
	Health concern	3.2
	Taste concern	37.8
	Non-availability of own brand	3.3
	Experimental	12.5
Price less than PKR 63	Price concern	63.0
	Health concern	5.6
	Taste concern	9.8
	Non-availability of own brand	11.5
	Experimental	10.1

Effects of changes in cigarette prices on smoking practices

This section explores the response of smokers to changes in cigarette prices from two perspectives. The first was obtaining smokers' responses on a recall basis against the changes in prices in the recent past: during COVID-19[8] (in July 2019 and July 2017). The last two dates correspond to the changes in FED rates, which led to changes in cigarette prices. The rates of FED on cigarettes were reduced in July 2017 and increased in July 2019, whereas cigarette prices declined and increased, respectively.

[8] First two cases of COVID-19 in Pakistan were reported 26th February 2020. Complete lockdown was imposed from 24th March 2020. After 9th May 2020, lockdown rules were relaxed.

The second perspective was an exercise of acquiring their response to a hypothetical change in the price of cigarettes. The amount of price change was related to the prices of their respective brands.

The amount of hypothetical change was set as follows, considering popular brands' market prices:

1. Increase of PKR 10 if the pack price was up to PKR 50
2. Increase of PKR 20 if the pack price was PKR 51–100
3. Increase of PKR 50 if the pack price was PKR 101–200
4. Increase of PKR 100 if the pack price was above PKR 200

Questions were asked about hypothetical increase and decrease in cigarette prices.

Historical reference to changes in cigarette price

Interviewees were asked whether, during the first wave of COVID-19 in March 2022, they observed any change in the price of the cigarette brand they smoke. Most respondents (over 60 percent) said they either did not remember or there was no change. Altogether, 1,980 smokers affirmed an increase in cigarette prices. As presented in Table 17, about 66 percent of these smokers stated that they smoked fewer cigarettes during the COVID-19 pandemic due to the price increase. Further, over 24 percent of smokers either affirmed attempting to quit smoking or seriously thought about quitting. Other notable responses include switching to cheaper brands (4.6 percent) and buying loose sticks (3.5 percent).

Table 17: Response to price change during COVID-19
(Weighted percentages of respondents)

	Overall	Urban	Rural
Respondents who affirmed an increase in prices			
Sample	**1,980**	**1,436**	**544**
Attempted to quit smoking	14.2	19.3	11.0
Seriously thought about quitting	9.9	9.2	10.3
Smoked fewer cigarettes	65.9	60.6	69.2
Switched to a cheaper brand	4.6	4.5	4.7
Smoked more pipes or cigars	1.0		1.6
Used chewing tobacco	.3	.3	.2
Switched to Smuggled cigarettes	.7	1.3	.4
Bought more single cigarettes	3.5	4.8	2.7
Respondents who affirmed a decrease in prices			
Sample	**283**	**216**	**67**
Smoked more Cigarettes	25.8	21.4	30.6
Stop thinking about quitting	9.2	2.2	17.1
Switched to expensive brands	1.2	1.1	1.3
Bought more packs of cigarettes	1.1	2.1	
No change	56.9	68.6	43.8
Not remember	5.9	4.6	7.2

On the other hand, a small number of respondents stated that the price declined during COVID-19. Among them, the majority (about 57 percent) declared no change in their consumption of cigarettes, while 26 percent acknowledged that they smoked more cigarettes during this period.

For the recall-based questions, as expected, many respondents did not remember the price changes—45 percent for 2019 and 58 percent for 2017. However, the number of respondents who recalled the price changes was still enough for the analysis.

The most prominent response in both cases was the change in smoking intensity due to price increases. For July 2019, over 29 percent of the total smokers smoked fewer cigarettes in response to the rise in price. Similarly, after July 2017, more than 17 percent of smokers consumed more cigarettes due to price fall.

The next prominent response was about quitting. Altogether, 12.8 smokers attempted either quitting or seriously thought about quitting after the price increase in July 2019. On the contrary, 7.5 percent of smokers stopped thinking about quitting after the price decrease in July 2017.

Table 18: Response to change in cigarette prices
(Weighted percentages of respondents)

	Overall	Urban	Rural
Response to an increase in cigarette prices in July 2019			
Sample	**6,283**	**4,368**	**1,915**
Not remember	44.9	42.0	46.6
Smoked fewer cigarettes	29.3	29.5	29.2
Attempted to quit smoking	8.3	8.9	7.9
No change	6.3	6.5	6.1
Seriously thought about quitting	4.5	6.8	3.1
Bought more single cigarettes	3.1	3.4	2.9
Switched to a cheaper brand	2.3	1.7	2.6
Not a smoker at that time	0.6	0.6	0.6
Switched to smuggled cigarettes	0.6	0.3	0.8
Smoked more pipes or cigars	0.2	0.1	0.2
Used chewing tobacco	0.1	0.2	0.0
Response to a decrease in cigarette prices in July 2017			
Sample Count	**6,283**	**4,368**	**1,915**
Not remember	57.8	54.5	59.8
Smoked more cigarettes	17.3	19.1	16.2
No change	8.3	10.0	7.2
Stop thinking about quitting	7.5	7.8	7.2
Bought more packs of cigarettes	4.8	4.7	4.9
Switched to expensive brands	3.4	3.0	3.6
Not a smoker that time	1.0	0.8	1.1

Responses of smokers against hypothetical changes in prices

Table 19 presents the responses of smokers who affirmed various statements concerning hypothetical changes in cigarette prices. The most popular response (53.3 percent) was that they would smoke fewer cigarettes. Around 40 percent of the respondents agreed with both statements about attempting to quit and seriously thinking about quitting. In addition, 32.5 percent of smokers stated that they would purchase more single sticks.

In response to a hypothetical decrease in cigarette prices, about 38 percent of smokers affirmed that they would smoke more cigarettes. However, over 33 percent of the respondents declared that they would save money for other items.

Table 19: Response to hypothetical change in cigarette prices
[Percentage of smokers who affirmed the statement]

	Quoted change				Overall average
	PKR 10	PKR 20	PKR 50	PKR 100	
Response to hypothetical increase in cigarette prices					
Sample	**592**	**3,937**	**1,514**	**136**	**6,179**
Will smoke fewer cigarettes	59.7	53.7	47.5	52.8	53.3
Will seriously think about quitting	37.7	43.4	38.9	36.1	41.6
Will attempt to quit smoking	36.9	41.9	33.7	35.1	39.4
Will purchase more single cigarettes	37.9	32.3	29.3	28.7	32.5
Will search for a cheaper alternative	27.7	13.8	12.7	14.7	15.6
Will switch to a cheaper brand	23.1	13.2	11.9	7.2	14.3
Will start using smuggled cigarettes	9.9	11.4	19.8	15.6	12.9
Response to hypothetical decrease in cigarette prices					
Sample	**592**	**3,938**	**1,514**	**136**	**6,180**
Will smoke more cigarettes	48.1	38.8	29.3	42.4	37.9
Will save for other items	37.4	34	30.1	32.7	33.4
Will buy more packs of cigarettes	33.8	25.2	23.1	30.8	25.8
Will stop thinking about quitting	18.9	19.1	16.3	15.1	18.2
Will switch to expensive brands	10.1	9.3	15.6	11.1	10.6

Note: For each statement, the remaining percentage encompasses smokers who were either 'Disagree' with the statement or were indifferent 'Not Sure'.

Past Smokers of Cigarettes

This section presents findings about the responses of smokers who used to be regular smokers and had quit smoking. As shown in Table 20, health concerns and family/peer pressure were the most cited reasons for quitting smoking. Overall, 56 percent of past smokers abandoned due to health concerns, while around 36 percent stated that they quit because a family member or friend wanted them to stop smoking.

Table 20: Primary reason for quitting smoking
(Weighted percentage of respondents)

		Overall	Urban	Rural
	Sample Count	**1,271**	**882**	**389**
How long has it been since you stopped smoking?	Average years	6	6	6
	0 to 2 years	28.9	28.3	29.2
	2 to 5 Years	23.1	24.1	22.6
	More than 5 Years	48.0	47.6	48.2
What was the primary reason for quitting cigarette smoking?	Health concerns	56.0	56.2	55.9
	Family or friends wanted me to quit	35.9	33.5	37.1
	Religious reasons	3.4	5.5	2.4
	Increased cigarettes prices	2.4	1.3	3.0
	Written health warnings on the pack	1.6	2.2	1.3
	Pictorial health warnings on the pack	.6	1.3	.3

4 Conclusion and Policy Implications

This research provides valuable insights into cigarette consumers' behaviour concerning the changes in cigarette prices. The policymakers can effectively use the analyses presented in the report to reform cigarette tax policy to reduce cigarette consumption in the country.

The findings indicate the potential of cigarette taxation to discourage smoking. During the pandemic, 66 percent of smokers reported reducing consumption due to a price increase. Similarly, in July 2019, cigarette prices increased as a result of the excise tax increase, which led 29 percent of smokers to smoke fewer cigarettes. Moreover, 53.3 percent of smokers stated that they would reduce consumption if the price was increased, while 40 percent would attempt quitting. Therefore, the potential of cigarette taxation should be exploited to achieve Pakistan's tobacco control policy objectives.

In Pakistan, the average excise tax share in the retail price of cigarettes is around 41 percent, which is well below the widely-accepted share of 70 percent. There is a need to make substantial enhancements in the excise tax rates.

A substantive gap exists between tax rates applied to low-priced and high-priced brands. Moving towards a uniform FED rate for all cigarette brands is recommended.

There are significant variations in the prices of cigarette brands. One of the primary reasons for this variation is a substantive gap between tax rates applied to low-priced and high-priced brands. Therefore, moving towards a uniform tax rate for all cigarette brands would help reduce the price gap.

Tax administration is another critical area to be focused on for enhancing the effectiveness of tobacco control policies. The incidence of purchasing loose cigarettes (over 30 percent) is alarming. This practice is widespread among youth (46 percent). Similarly, 17.5 percent of smokers bought cigarette packs below the minimum price. Therefore, tax administration needs to be improved to curb the illicit trade of cigarettes. FBR has recently initiated the Track and Trace System, which is a major step in the right direction and can help curb illicit trade. Moreover, provincial governments also have the power to enforce anti-smoking laws. Therefore, strong coordination among federal and provincial governments can play an important role in enhancing the implementation of these laws at the local level.

Appendix A: Survey Methodology

Statistically Desirable Sample Size

Two important parameters are vital for deciding the optimal size, viz., the confidence level (Z) and sampling error (e). The confidence level is expressed as a percentage and represents how often the true percentage of the population lies within the confidence level. On the other hand, all samples are subject to sampling error, which is the difference between the results obtained from the survey sample and those that would have been obtained had the entire area surveyed. For populations that are large, Cochran[9] developed the following formulae to yield a representative sample for proportions.

$$n = \frac{Z^2 * P(1-P)}{e^2}$$

where;

n = Optimal sample size

Z = Prescribed Reliability (Normal Variable Z=1.96 for 95% confidence level)

P = Estimated Probability (50% Theoretical Maximum)

e = Maximum error deemed acceptable

In most household surveys, a tolerated sampling error of 5 percent with 95 percent confidence level is generally considered acceptable. According to the above formula, a sample of 400 (384 to be exact) is yielded using the above values of sampling error and confidence level. This sample is optimal for a fairly homogenous population.

Mainly due to cost consideration, it was decided to survey 16 clusters (districts) for this study with a total sample of 8,964. The names of selected districts with the level of development are furnished in the Table–A1.

The Stratification Procedure

Respondents for the smokers' survey were selected by using a multi-stage stratified random sampling procedure based on the following stages:

[9] Cochran, W. G. 1963. *Sampling Techniques*, 2nd Edition, New York: John Wiley and Sons, Inc.

Stage 1:	Selection of the districts,
Stage 2:	Selection of the enumeration blocks or Primary Sampling Units (PSUs),
Stage 3:	Selection of the households,
Stage 4:	Selection of the current or past smokers within selected households.

Selection of Districts

For the selection of districts, a composite index based on multi-dimensional development indicators namely referred to as "Inequality-adjusted Socioeconomic Development Indices (ISDIs)" was used[10]. Development indicators that have been included in this research relate to human development and standards of living. This is a set of seventeen indicators developed from the district representative household data of the Pakistan Social and Living-Standard Measurement (PSLM) Survey for the year 2012-13. The study also provided a provincial and national ranking of districts according to the magnitude of ISDIs which represent the level of socioeconomic development.

Following criteria was used for district selection for the household survey of smokers:

1. For each province, except Punjab, three districts were selected: one district from each category – high, medium, and low levels of development.
2. Since Punjab is the largest province in terms of population (having a share of close to 52% of the total population of Pakistan), six districts were selected from this province – two from each category – considering heterogeneity and wide geographical coverage.
3. The districts of all provincial capitals were selected. In this way, the districts selected in the category of the high level of development in the three provinces (except Punjab) are provincial capitals.
4. In addition, the national capital, Islamabad, is also considered as a separate stratum.

Selection of Primary Sampling Units

The list of selected districts was sent to Pakistan Burau of Statistics (PBS) for the technical review and to randomly draw appropriate number of PSUs for the survey. Allocation of PSUs among proposed districts was finalized by PBS, considering the population weights. PSUs were randomly selected from PBS sampling framework used for national surveys. It consists

[10] Jamal (2016) developed ISDI indices for all districts of Pakistan. See *"Spatial Disparities in Socioeconomic Development: The Case of Pakistan," The Pakistan Development Review*, Pakistan Institute of Development Economics, vol. 55(4), 2016, pages 421-435.

of villages (rural) and circles (urban). The selection of PSUs was based on the Probability Proportional to Size (PPS) method where the number of households in each PSU was used as a measure of size. PBS also provided the maps and other demarcation information of the selected blocks (PSUs).

Table– A1.1: Number of PSUs for Household Survey

		Level of Development	Number of Survey Blocks (PSUs – Villages and Urban Circles)		
			Urban	Rural	Total
Punjab	Lodhran	Low	10	7	17
	Rajanpur	Low	10	6	16
	Sargodha	Medium	22	16	38
	T.T. Singh	Medium	12	10	22
	Gujrat	High	16	12	28
	Lahore	High	112	0	112
		Total – Punjab	**182**	**51**	**233**
Sindh	Shikarpur	Low	5	9	14
	Sanghar	Medium	7	13	20
	Karachi	High	76	19	95
		Total – Sindh	**88**	**41**	**129**
Khyber Pakhtunkhwa	D.I. Khan	Low	10	8	18
	Lower Dir	Medium	8	6	14
	Peshawar	High	25	19	44
		Total – KPK	**43**	**33**	**76**
Balochistan	Kachhi (Bolan)	Low	3	2	5
	Kech Turbat	Medium	5	4	9
	Quetta	High	10	6	16
		Total – Balochistan	**18**	**12**	**30**
Islamabad			**17**	**13**	30
	Total Primary Sample Locations		**348**	**150**	**498**

PBS initially proposed 472 PSUs for the survey in selected districts. Given the fact that Karachi consists of six city districts, SPDC proposed to PBS that Karachi be oversampled by 30 PSUs to capture the diversity. PBS agreed to the suggestion and revised the list of selected PSUs accordingly. However, four PSUs have been dropped (2 from Karachi division and one each from Rajanpur and D. I. Khan districts) due to logistic and law-and-order problems. Thus, finally 498 PSUs were covered for the household survey of smokers.

After the completion of household survey, block-wise sample population was provided to PBS for the estimation of first-stage weights for each block (PSU). These weights were used in analyzing survey results which are representative at national and regional (urban/Rural) levels.

Selection of Sample Households

Ideally, households should be selected randomly from the household sample frame within the PSU (cluster). However, this procedure requires a pre-enumeration exercise of collecting basic household information which affects costs and time for the survey. This study followed an alternative systematic random sampling procedure for the selection of sample households.

With the help of PBS-provided sketch map, blocks were divided into four hypothetical quarters. Enumeration teams were entered in each quarter from two different starting points and selected households by systematic sampling procedure with a random start. Enumerators followed the right-hand rule for selection of households. Every 6^{th} household was selected with a skipping of five made after one successful interview. A total eighteen households were selected from each block.

Selection of Respondents (Current or Past smoker)

At the final stage of selection, individuals aged 15 years and above were treated as Tertiary Sampling Units (TSUs). A household having at least one smoker (current or past) was treated as an eligible household. In case of more than one smoker in a household, one eligible household member was randomly chosen using Kish-Grid method for enumeration.

A structured face-to-face questionnaire interview was administered by trained interviewers. Information collected included the following: demographic and socioeconomic (the highest educational attainment, personal income, and occupation) characteristics; Cigarettes smoking behavior; smoking habits; regular smoking brands; behavioral response of changes in cigarette prices, reasons for quitting smoking etc.

Distribution of Sample Across Districts and Categories of Smokers

Table-A2.1: Number of Households Contacted (Accessed) for Cigarette Smoking Survey

	Unweighted Numbers			Weighted Numbers		
	Rural	Urban	Overall	Rural	Urban	Overall
Pakistan	**2,571**	**5,943**	**8,514**	**1,639,565**	**875,754**	**2,515,319**
Punjab	896	3,135	4,031	913,284	440,111	1,353,395
Sindh	679	1439	2,118	227,786	295,955	523,741
KPK	560	759	1,319	398,369	95,534	493,903
Balochistan	214	321	535	87,200	31,534	118,734
Islamabad	222	289	511	12,926	12,620	25,545
Lower Dir	107	127	234	232,225	4,329	236,554
Peshawar	315	458	773	50,902	53,014	103,916
Dera Ismail Khan	138	174	312	115,242	38,191	153,433
Sargodha	284	387	671	210,422	59,824	270,246
T. T Singh	176	209	385	195,584	46,371	241,955
Gujrat	214	283	497	183,912	67,317	251,229
Lahore		1,908	1,908		181,013	181,013
Lodhran	123	171	294	168,084	49,713	217,797
Rajanpur	99	176	275	155,282	35,647	190,929
Shikarpur	141	78	219	127,075	45,430	172,505
Karachi West	88	291	379	6,461	39,927	46,389
Malir	260	88	348	12,491	15,605	28,096
Karachi South		176	176		36,599	36,599
Karachi East		214	214		38,677	38,677
Karachi Central		296	296		56,178	56,178
Korangi		200	200		21,460	21,460
Sanghar	190	97	287	81,759	42,304	124,063
Quetta	107	178	285	10,944	19,565	30,509
Kachhi	36	54	90	59,953	4,863	64,816
Kech	71	89	160	16,303	7,105	23,408

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