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SURVEY REPORT

# Consumption Behaviour of Cigarette Smokers in Pakistan: The 2023 Survey

Social Policy and Development Centre

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*Survey Report*

# Consumption Behaviour of Cigarette Smokers in Pakistan

# The 2023 Survey

**Social Policy and Development Centre**

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# Acronyms

| | |
|---|---|
| FBR | Federal Board of Revenue |
| FED | Federal Excise Duty |
| GATS | Global Adults Tobacco Survey |
| GST | General Sales Tax |
| HIES | Household Integrated Economic Survey |
| ICT | Islamabad Capital Territory |
| 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 |
| SSU | Selected Sampling Unit |
| TSU | Tertiary Sampling Unit |

# Executive Summary

This report presents findings from a nationwide survey conducted in Pakistan. The survey, which was conducted between October and December 2023, is highly relevant as it assesses the impact of the cigarette tax increase in February 2023 on the consumption patterns of cigarette smokers. It covered about 9,000 households, where current, past, and non-smokers were interviewed. The report also compares the results, where applicable, with a similar survey conducted in 2021-22.

The key findings of the survey are the following:

Capstan is the leading cigarette brand in the country, capturing nearly one-third of the market. Furthermore, the overall cigarette market is largely dominated by economy brands, which account for a substantial 93.4 percent of total consumption, indicating a strong preference for affordable cigarette brands. Within economy brands, the respective shares of the upper-price brands and lower-price brands are 48 percent and 45 percent. On the other hand, the share of premium brands is 6.6 percent—the majority of consumers for premium brands are primarily located in urban areas.

Compared to the 2021-22 Survey, there has been a notable shift toward economy brands. The market share of premium brands has dropped significantly, from 20.3 percent in 2021-22 to 6.6 percent in 2023-24. Brand switching is also evident within the economy segment. While the overall share of economy brands rose from 79.7 percent to 93.4 percent, the lower-price brands saw a substantial increase—from 16.3 percent to 45 percent.

On average, smokers consume 12.3 cigarettes daily, but a significant variation exists across brand categories. Smokers of lower-priced economy brands have a higher daily intake, averaging 14.3 cigarettes, compared to those who smoke upper-priced economy brands (10.6) and premium brands (10.7), who tend to smoke less frequently.

Despite the legal prohibition, the sale of loose cigarettes remains a widespread practice in the country, as 35.3 percent of smokers purchase loose sticks. Loose stick purchase is more pervasive (56.7 percent) in young smokers aged 15-25 years. Similarly, a significant proportion of smokers (26.8 percent) reported purchasing cigarette packs at prices under the mandated minimum; the incidence was higher in rural areas (31.2 percent).

In response to the February 2023 price hike, 27.2 percent of smokers reported cutting back on their cigarette consumption, resulting in a notable 19.2 percent decline in aggregated consumption of respondents. The reduction was more substantial among lower-income groups.

When asked if they had switched cigarette brands in the last five years, 17.4 percent of smokers answered in the affirmative. Geographically, rural smokers demonstrated a greater propensity for brand switching (18.5 percent) than urban smokers (15.4 percent). Additionally, brand loyalty varied markedly by price segment, with lower-priced economy brand users exhibiting the highest switching rate (27.1 percent). Price concern was the most common reason for brand switching, cited by 78.6 percent of respondents who switched their brands.

Nine percent of the smokers also reported using other tobacco products. The most used product among smokers was Hooka/Shisha (5.0 percent), followed by Naswar (2.7 percent).

In response to a hypothetical increase in cigarette prices, 52.6 percent of smokers affirmed that they would cut back on smoking. Nearly 47 percent of the respondents stated they would either attempt to quit or seriously consider doing so.

The majority of former smokers (64.3 percent) had quit within the past five years. Of these, 23.7 percent had quit in the last 12 months, suggesting a notable number of recent quitters, likely influenced, at least in part, by the recent price increase.

The leading reasons for quitting smoking were health concerns (49.6 percent) and pressure from family or friends (20.9 percent). Price concern was the third leading reason mentioned by 18.3 percent of former smokers. Notably, the responses differ for those who quit within the past 12 months, where price concern was the primary motivation for quitting, cited by 48.5 percent of respondents.

# 1 Introduction

Tobacco use is widespread in Pakistan, affecting a significant portion of the population, with approximately 27.5 million adults aged 15 and above consuming tobacco products, including 15.1 million cigarette smokers.[1] Extensive research spanning over 100 studies shows that tobacco taxes are a highly effective instrument for curbing tobacco consumption and generating a steady stream of revenue for governments.[2] As such, tobacco taxation serves as the cornerstone of Pakistan's tobacco control strategy.

In Pakistan, domestically produced cigarettes are subject to two major indirect taxes—the Federal Excise Duty (FED) and the General Sales Tax (GST). The FED is the main tax, accounting for about 80 percent of the total tax revenue collected from the tobacco sector. The FED rate is applied in two price tiers: low-price (referred to as economy brands) and high-price (referred to as premium brands). Currently, a brand is categorized as low-priced if the on-pack printed retail price (excluding GST)[3] does not exceed Rs 9,000 per thousand cigarettes, whereas cigarettes with a retail price above this threshold are treated as high-priced brands. At present, the FED rate on economy and premium brands is Rs 5,050 and Rs 16,500 per thousand cigarettes, respectively. The tax rate gap leads to a large variation in cigarette prices.

In recent years, the Government of Pakistan has implemented various increases in FED rates. The most substantial increase, around 150 percent, was introduced in February 2023, which led to a corresponding rise in cigarette prices. Analysis of cigarette production data at the macro level suggests a link between local manufacturing and tax rate changes, which in turn affect consumer prices.[4] Nevertheless, the impact of price changes on cigarette consumption patterns in Pakistan remains a knowledge gap. Although higher prices typically lead to reduced consumption, the availability of cheaper cigarettes may tempt price-sensitive smokers, potentially undermining the intended impact of price hikes.

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[1] SPDC estimates based on Global Adults Tobacco Survey (GATS) 2014 and population of Pakistan's 2023 Census. According to GATS 2014, the overall prevalence rate of tobacco use and cigarette smoking was 19.1 percent and 10.5 percent, respectively. However, age-specific prevalence rates were used to estimate the number of tobacco users and smokers.

[2] Chaloupka FJ, Yurekli A, Fong GT. Tobacco taxes as a tobacco control strategy. Tobacco Control 2012;21:172-180.

[3] GST is applied at the rate of 18 percent.

[4] 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).

This research aims to investigate the impact of the 2023 tax increase on the consumption patterns of cigarette smokers in Pakistan, exploring how the price hike influenced their smoking behaviour. The study is based on a country-wide survey of about 9,000 households, conducted between October and December 2023, in which current, past, and non-smokers were interviewed. This report presents key findings of the survey about the various aspects of the smoking habits of the respondents. Some comparisons, where applicable, are also drawn with a similar survey that was conducted in 2021-22.[5]

The report is organized into four sections. Section 2 outlines the research methodology used to collect data, followed by a presentation of the survey's main results in Section 3. Section 4 discusses the policy implications derived from the findings.

[5] Jamal. H, M.A. Iqbal, M. Sabir M. & Naveed Aamir. 2023. Consumption behaviour of cigarette smokers in Pakistan. Survey Report. Social Policy and Development Centre (SPDC).

# 2 Methodology of Data Collection

This study replicates the sampling framework of the previous survey conducted by the Social Policy and Development Centre (SPDC) in 2021-22 (from December 2021 to March 2022). The 2021-22 survey was undertaken using a nationally representative sample of households to collect information on smokers' smoking habits and socioeconomic characteristics. The target population included male and female smokers aged 15 years and above. Altogether, 8,964 households were contacted in 498 locations (Primary Sample Units–PSUs) across 15 districts in four provinces, namely, Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan, and the Federal Capital (Islamabad Capital Territory–ICT). 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.

The same sampling framework was used for the 2023 Survey. Altogether, 500 PSUs[6] (with 18 households in each PSU) were covered. However, new households were selected from each PSU following the same procedure adopted in the previous study. Therefore, the comparisons made in this report between the two surveys reflect trends and should not be interpreted as outcomes of longitudinal data.

A total of 9,000 households were interviewed in the 2023 survey. One respondent from each household was interviewed. First, demographic information of all household members was obtained. The respondents were then selected based on the following order of preference: smoker, past smoker and non-smoker. In the case of more than one smoker in a household, one smoker was randomly selected using the Kish grid method. If there was no smoker in a household, a past smoker or a non-smoker was selected.

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. The survey results are developed after applying statistical weights provided by PBS.

After cleaning the survey data for incomplete and inconsistent values, information on 8,997 households was used for the analysis. Table 1 presents the distribution of sample households across regions and provinces. The total sample of 8,997 consists of 6,640 urban and 2,357 rural households. The weighted shares of urban and rural areas in the total sample turn out

[6] PBS had provided a list of 502 PSUs for the survey. However, 4 PSUs could not be surveyed due to law and order/security situation in 2021-22 Survey. Similarly, 2 PSUs were not surveyed in the 2023 Survey.

to be 38.3 percent and 61.7 percent, respectively. The regional and provincial shares of the sample more or less coincide with the population shares of the 2023 Census.

| Table 1: Distribution of sample households | | |
|---|---|---|
| Sample size = 8,997 | Weighted sample shares (%) | Population Census shares (%) |
| **Pakistan** | **100.0** | **100.0** |
| Urban | 38.3 | 38.9 |
| Rural | 61.7 | 61.1 |
| Punjab | 53.1 | 52.9 |
| Sindh | 22.3 | 23.1 |
| Khyber Pakhtunkhwa (KPK) | 19.2 | 16.9 |
| Balochistan | 4.4 | 6.2 |
| Islamabad Capital Territory (ICT) | 1.0 | 1.0 |

Table 2 furnishes sample distribution across categories of respondents. Overall, 5,242 smokers were interviewed, while the number of past smokers and non-smokers was 989 and 2,766, respectively. Significant variations exist across provinces in terms of the proportion of smokers. The ratio of smokers is higher in Khyber Pakhtunkhwa and Balochistan[7] than in other regions.

Table 2: Sample by category of respondents
*(Unweighted numbers and weighted percentages)*

| | Current Smokers | | Past Smokers | | Non-Smokers | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % |
| **Pakistan** | **5,242** | **61.9** | **989** | **10.8** | **2,766** | **27.3** |
| Urban | 3,744 | 57.4 | 762 | 12.1 | 2,134 | 30.5 |
| Rural | 1,498 | 64.7 | 227 | 10.0 | 632 | 25.2 |
| **Regions** | | | | | | |
| Punjab | 2,333 | 59.1 | 435 | 10.2 | 1,444 | 30.8 |
| Sindh | 1,320 | 59.9 | 272 | 11.0 | 748 | 29.1 |
| KPK | 960 | 67.5 | 175 | 12.9 | 233 | 19.6 |
| Balochistan | 440 | 87.7 | 64 | 9.3 | 33 | 3.0 |
| ICT | 189 | 33.8 | 43 | 7.2 | 308 | 59.0 |

[7] A study by Pakistan Institute of Development Economics has also shown that smoking prevalence in Balochistan is higher than the national average. [The Economic Cost of Tobacco-Induced Diseases in Pakistan, 2021, available at https://pide.org.pk/research/the-economic-cost-of-tobacco-induced-diseases-in-pakistan]

# 3 Key Findings

The survey findings are grouped into the following sub-sections: i) demographic and socioeconomic characteristics of smokers, ii) smoking practices, iii) effects of the increase in cigarette prices, iv) brand loyalty and switching, v) responses of smokers to hypothetical changes in prices, vi) use of other tobacco products, and vii) past smokers.

## DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS OF SMOKERS

Table 3 presents the demographic and socioeconomic characteristics of current smokers. On average, the sample smokers were 42 years old. More than half of the smokers (57.5 percent) were in the 26–45 age cohort, while 10.1 percent were young smokers (aged 15–25 years). There are no significant differences in urban-rural locations, barring the youth group. Young smokers were 12.7 percent and 8.7 percent in urban and rural areas, respectively.

The mean age of starting smoking was 22 years, with a range of 12–70 years. A significant majority (over 80 percent) initiated smoking by the age of 25, while approximately a quarter (25.2%) began smoking before turning 18. No substantial differences were found between urban and rural regions.

The proportion of female smokers was found to be relatively low, constituting around 1% of the total smoking population, with a negligible difference between urban (1.1%) and rural (1.0%) regions.

The educational background of current smokers reflects the country's broader literacy and educational attainment challenges. A significant proportion (49.1 percent) have no formal education or have not completed primary school.[8]

The employment profile of smokers reveals that the majority of smokers (89.2 percent) are engaged in paid work, with the largest segments being unskilled laborers (25.4 percent) and self-employed individuals (25.0 percent). Additionally, 21 percent of smokers are salaried employees, while a similar proportion (20.8 percent) work in agriculture, fishing, and livestock-related activities.

[8] According to Population Census 2023, 48 percent of individuals (aged 10 years and above) are either illiterate or have no formal education.

The primary income sources of the respondents who did not work for pay at the time of the survey included government assistance, income from savings/investment, property rent, remittances and pension.[9]

Table 3: Demographic and socioeconomic characteristics of smokers, 2023-24
(*weighted percentages*)

| | | Pakistan | Urban | Rural |
|---|---|---|---|---|
| Current age of smoker | Mean years | 41.7 | 40.1 | 42.5 |
| *Distribution* (%) | 15-25 | 10.1 | 12.6 | 8.7 |
| | 26-35 | 25.2 | 28.6 | 23.4 |
| | 36-45 | 32.3 | 29.0 | 34.1 |
| | 46 and above | 32.4 | 29.8 | 33.9 |
| Age when started smoking | Mean | 21.9 | 22.0 | 21.8 |
| | Minimum | 12 | 12 | 12 |
| | Maximum | 70 | 70 | 70 |
| *Distribution* (%) | Below 15 | 8.2 | 7.9 | 8.3 |
| | 15-17 | 17.1 | 17.7 | 16.7 |
| | 18-25 | 55.0 | 53.7 | 55.7 |
| | 26-35 | 14.9 | 14.6 | 15.0 |
| | 36 and above | 4.9 | 6.0 | 4.2 |
| Female Smokers (% of total) | | 1.1 | 1.2 | 1.0 |
| Educational Attainment *Distribution* (%) | No Formal Education | 34.9 | 25.8 | 39.9 |
| | Primary or less | 27.6 | 23.5 | 29.9 |
| | Matric | 18.1 | 22.1 | 15.9 |
| | Intermediate | 7.9 | 12 | 5.6 |
| | Graduate or above | 11.5 | 16.5 | 8.7 |
| Smoker - Currently Studying (% of total) | | 2.2 | 3.8 | 1.4 |
| Smokers Working for Pay (% of total) | | 89.2 | 88.8 | 89.4 |
| Employment Status | Farming and fishing | 17.8 | 4.3 | 25.2 |
| *Distribution* (%) | Unskilled labor (agriculture) | 10.5 | 2.8 | 14.8 |
| | Livestock rearing | 3.0 | 1.8 | 3.6 |
| | Self-employed (non-agriculture) | 25.0 | 33.4 | 20.4 |
| | Unskilled labor (non-agriculture) | 14.9 | 17.3 | 13.6 |
| | Private service | 14.2 | 21.6 | 10.1 |
| | Government service | 6.8 | 9.3 | 5.4 |
| | Unemployed – searching for job | 1.4 | 2.4 | 0.9 |
| | Others | 6.4 | 7.1 | 6.0 |

[9] Not shown in the table.

For income-related analyses, households are divided into three groups with respect to their income: the bottom 20 percent are categorized as lower-income, the middle 60 percent as middle-income and the top 20 percent as higher-income. The average annual income of sample smokers is reported to be Rs 494,742.[10]

| Table 4: Income and expenditure reported by smokers, 2023-24 (*Weighted numbers and percentages*) | | | | |
|---|---|---|---|---|
| | | Pakistan | Urban | Rural |
| Average annual income (Rs) | | 494,742 | 578,468 | 449,645 |
| Income categories | Low income | 179,903 | 180,464 | 179,767 |
| | Middle income | 423,276 | 440,624 | 412,193 |
| | High income | 1,282,630 | 1,277,456 | 1,287,141 |
| Average annual expenditure (Rs) | | 506,287 | 593,996 | 459,045 |
| Average monthly expenditure on cigarettes (Rs) | | 3,508 | 3,848 | 3,321 |
| Average expenditure on cigarettes as percent of total expenditure (%) | | 11.5 | 11.0 | 11.7 |
| Income categories | Low income | 13.9 | 13.7 | 13.9 |
| | Middle income | 11.1 | 11.1 | 11.1 |
| | High income | 9.0 | 9.0 | 9.1 |

On average, smokers allocated 11.5 percent of their total expenditure towards cigarettes. Regional variation is small as urban smokers spent 11.7 percent of their total expenditure on cigarettes compared to 11.0 percent in rural smokers. However, the share of cigarette expenditure decreases as income levels rise, indicating that lower-income households devote a larger portion of their budget to cigarettes compared to higher-income groups. This finding aligns with previous research in Pakistan, which revealed that poorer households tend to spend a disproportionately higher percentage of their income on cigarettes compared to more affluent ones.[11] In the 2021-22 Survey, the average reported share of expenditure on cigarettes was 5.7 percent.[12]

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[10] According to Household Integrated Economic Survey 2018-19 conducted by Pakistan Bureau of Statistics, average annual income of employed male was Rs 216,426, which would be equivalent to Rs 464,266 in 2023 after inflation adjustment.

[11] 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.

[12] The surge in the share of expenditures on cigarettes is mainly due to the substantial increase in cigarette prices after the tax increase in February 2023.

## SMOKING PRACTICES

A significant majority of smokers (98 percent) were regular daily smokers, with only a small fraction smoking occasionally (Table 5).[13]

| Table 5: Regular and occasional smokers, 2023-24 | | |
|---|---|---|
| | Number | Weighted % |
| Regular (daily smokers) | 5,151 | 98.0 |
| Occasional | 91 | 2.0 |
| **Total** | **5,242** | **100.0** |

### Brands used and smoking intensity

Respondents were asked about the regular brands they use and their smoking and purchasing habits. The reference period of this information is the 'last 30 days'. As shown in Table 6, Capstan remains the most popular brand with a share of 31.4, followed by four brands (Morven, Kisan, Pine and Red & White) having a market share ranging between 5.5 and 6.5 percent. As compared to 2021-22, the market in terms of cigarette brands has become more diverse; the share of the top five brands decreased from 77.5 percent to 55.3 percent. Also, the share of a premium brand, Gold Leaf, has declined from 15.8 to 4.9 percent.

| Table 6: Cigarette brands used by smokers | | *(Weighted percentage shares)* | | |
|---|---|---|---|---|
| | 2023-24 | | | 2021-22 |
| | Pakistan | Urban | Rural | Pakistan |
| Capstan | 31.4 | 39.6 | 26.9 | 33.3 |
| Morven | 6.5 | 6.7 | 6.4 | 14.4 |
| Kisan | 6.0 | 6.1 | 6.0 | 4.9 |
| Pine | 5.9 | 6.2 | 5.7 | 0.7 |
| Red & White | 5.5 | 5.8 | 5.3 | 6.4 |
| Gold Leaf | 4.9 | 9.3 | 2.5 | 15.8 |
| Café | 4.0 | 2.1 | 5.1 | 1.4 |
| Gold Flake | 3.4 | 2.6 | 3.8 | 7.5 |
| Press | 2.6 | 1.0 | 3.4 | 0.7 |
| Olympic | 2.1 | 1.2 | 2.7 | 0.3 |
| Lord One KSF | 2.1 | 0.6 | 2.9 | 0.1 |
| Gold Street | 1.5 | 1.3 | 1.6 | 0.3 |
| Dubai KSF | 1.4 | 0.1 | 2.2 | 0.4 |
| Cricket | 1.2 | 0.4 | 1.7 | 0.4 |
| Platinum | 1.2 | 0.8 | 1.4 | 0.3 |
| Classic | 1.1 | 0.6 | 1.5 | 0.6 |
| President | 1.1 | 0.3 | 1.5 | 0.4 |
| Canton HL | 1.0 | 0.2 | 1.4 | 1.0 |
| Others* | 17.0 | 15.2 | 18.0 | 11.0 |

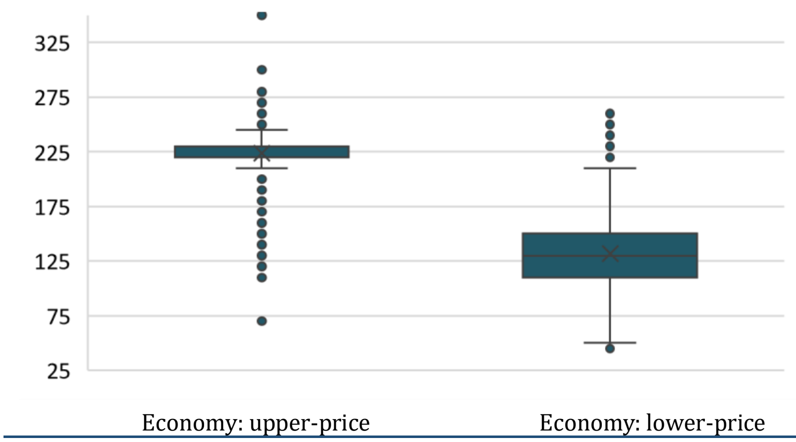
* Brands with an aggregate share of less than one percent in 2023.

[13] Percentage of occasional male smokers was reported to be 1.6 percent in Global Adult Tobacco Survey 2014.

The broader cigarette market is dominated by economy brands, with a collective share of 93.4 percent. As mentioned earlier, the tier threshold of brands is a retail price (excluding GST) of Rs 12,500 per thousand cigarettes. However, at the time of the survey, the threshold was Rs 9,000 per thousand cigarettes. In terms of cigarette packs, this translates into Rs 180 per pack, and after including GST, the market price becomes Rs 212. The government also notifies a minimum price of cigarettes. At the time of the survey, it was 60 percent of the threshold,[14] which means a cigarette pack could not be sold below Rs 127 (including GST).

The survey data reveal an interesting pattern in the pricing of economy cigarette brands. The printed retail prices of these brands cluster into two distinct segments: (1) the most popular brands priced very close to the FED tier threshold, and (2) the majority of other brands priced close to the government-mandated minimum price. The average market prices of economy brands also show similar price segmentation (Chart 1). To facilitate a more nuanced analysis, the economy brands are categorized into two sub-groups: economy upper-price and economy lower-price, where brands with an average price of Rs 200 and above are included in the upper band.

Chart 1: Average market prices of economy brands




The average prices of cigarette packs reported by the respondents are presented in Table 7. The average per-pack market price of the upper and lower-price economy brands is Rs 224 and Rs 127, respectively. While no significant regional differences are observed in the prices of upper-price economy and premium brands, except for lower-price economy brands.

Table 7: Average prices of cigarette packs (Rs)

| | Pakistan | Urban | Rural |
|---|---|---|---|
| Economy – Lower price band | 127 | 135 | 125 |
| Economy – Upper price band | 224 | 222 | 224 |
| Premium | 447 | 443 | 457 |

[14] The minimum price was revised to 55 percent in the Finance Act 2024, effective from July 1, 2024.

Within the economy brands, the respective shares of the upper-price-band and lower-price-band are 48 percent and 45 percent (Table 8). The latter is more popular in rural areas, with a share of 53.3 percent. On the other hand, the overall share of premium brands is 6.6 percent, with consumption of these brands predominantly concentrated in urban regions.

Table 8: Cigarette brand consumed by price category (%)

| | 2023-24 | | | 2021-22 |
|---|---|---|---|---|
| | Pakistan | Urban | Rural | Pakistan |
| Economy – Lower price band | 45.0 | 30.0 | 53.3 | 16.3 |
| Economy – Upper price band | 48.4 | 56.7 | 43.8 | 63.4 |
| Premium | 6.6 | 13.3 | 3.0 | 20.3 |
| | **100.0** | **100.0** | **100.0** | **100.0** |

Compared with the 2021-22 Survey, there appears to be a significant shift towards economy brands. The share of premium brands has declined from 20.3 percent in 2021-22 to 6.6 percent in 2023-24. The brand switching is evident within the economy brands as well. Although the aggregate share of economy brands has increased from 79.7 percent to 93.4 per cent, the share of the lower-price band increased enormously—from 16.3 percent to 45 percent. On the other hand, the share of the upper-price band declined from 63.4 percent to 48.4 percent.

The average number of cigarettes smoked per day (smoking intensity) is 12.3, as shown in Table 9. Notably, smokers of lower-price economy brands exhibit a higher smoking intensity (14.3) compared to those using upper-price economy brands (10.6) and premium brands (10.7). While no significant differences in smoking intensity are observed between urban and rural areas for economy brands, premium brand smokers in rural areas (13.3) tend to smoke more than their urban counterparts (9.6). Overall, the smoking intensity has declined from 14.2 in 2021-22.

Table 9: Smoking intensity – Last 30 days
*(Number of cigarettes smoked per day)*

| | 2023-24 | | | 2021-22 |
|---|---|---|---|---|
| | Pakistan | Urban | Rural | Pakistan |
| **Overall** | **12.3** | **11.4** | **12.8** | **14.2** |
| Economy – Lower price band | 14.3 | 14.0 | 14.4 | 17.0 |
| Economy – Upper price band | 10.6 | 10.4 | 10.7 | 14.0 |
| Premium | 10.7 | 9.6 | 13.3 | 12.3 |

## Purchasing habits and cigarette prices

The sale of loose cigarettes remains a widespread practice in Pakistan, defying the existing legal prohibition. A significant proportion of smokers (35.3 percent) affirmed that they usually purchase loose cigarettes (Table 10). Interestingly, this practice is more prevalent in urban areas, where 44 percent of smokers reported buying loose cigarettes, compared to 30.5 percent in rural areas. Purchasing loose cigarettes is less common among users of the lower-price economy than in other categories. The practice of loose stick purchase is more pervasive (56.7 percent) in young smokers aged 15-25 years (Chart 2). Overall, the sale of loose cigarettes has increased compared to 30.2 percent in 2021-22.

Table 10: Purchase of loose cigarettes (%)

| | 2023-24 | | | 2021-22 |
|---|---|---|---|---|
| | Pakistan | Urban | Rural | Pakistan |
| **Overall** | **35.3** | **44.0** | **30.5** | **30.2** |
| Economy – lower-price band | 24.7 | 29.4 | 23.3 | 16.6 |
| Economy – upper-price band | 44.0 | 50.8 | 39.2 | 29.1 |
| Premium | 43.4 | 48.2 | 31.8 | 44.4 |

Chart 2: Purchase of loose cigarettes by age group (%)

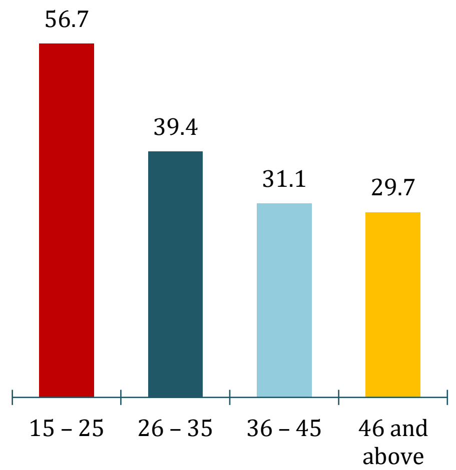
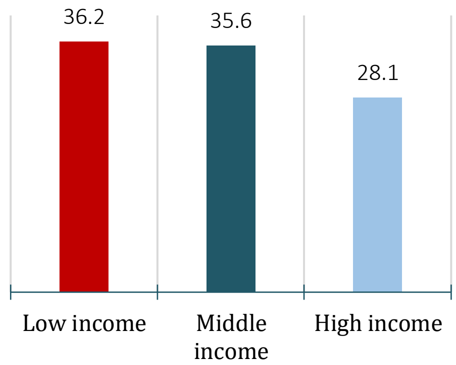
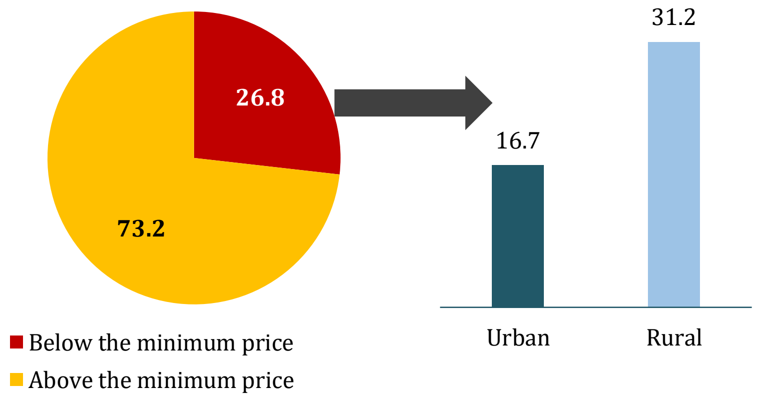



Chart 3: Purchase of loose cigarettes by income group (%)




As mentioned earlier, the minimum price of a 20-cigarette pack was Rs 127 at the time of the survey. Nevertheless, the price of cigarette packs purchased by 26.8 percent of smokers was below the minimum price (Chart 4). The extent of sale below the minimum price is much greater in rural areas (31.2 percent).

Chart 4: Purchase of packs below the minimum price (%)




## EFFECTS OF INCREASE IN CIGARETTE PRICES

Smokers were asked about their response to the cigarette price increase in February 2023. As presented in Table 11, about 26.3 percent of the respondents reported reducing their cigarette consumption. Additionally, 22.6 percent of smokers either affirmed attempting to quit smoking or seriously thought about quitting. Another notable response was switching to cheaper brands (9.9 percent). Regional differences in responses were minimal.

Table 11: Response to increase in cigarette prices in February 2023
*(Weighted percentages of respondents)*

| | Total | Urban | Rural |
|---|---|---|---|
| Smoked fewer cigarettes | **26.3** | **24.0** | **27.6** |
| Attempted to quit smoking | 13.8 | 14.4 | 13.4 |
| Seriously thought about quitting | 8.8 | 10.3 | 8.0 |
| Switched to a cheaper brand | 9.9 | 9.6 | 10.1 |
| Bought more single cigarettes | 1.4 | 1.3 | 1.4 |
| Others | 0.5 | 0.4 | 0.6 |
| None | 39.2 | 39.9 | 38.8 |

Subsequent to a general response to the price increase, a specific and direct question was asked: Has the number of cigarettes you consume daily changed after February 2023? Overall, 30.1 percent of the smokers replied "yes" with 29.9 percent reporting a decrease and a mere 0.2 percent indicating an increase (Table 12). They were also asked about the reasons for the change in consumption. Increased price was attributed as the main reason for reduced smoking by 27.2 percent of respondents, which is consistent with the response rate of 26.3 percent to a similar (but open-ended) question (Table 11).

| Table 12: Reasons for change in cigarette consumption<br>*(Weighted percentages of respondents)* | | | | |
|---|---|---|---|---|
| | | Total | Urban | Rural |
| Has the number of cigarettes you consume daily changed after February 2023? | No | 69.9 | 70.8 | 69.4 |
| | Yes | 30.1 | 29.2 | 30.6 |
| | Increased | 0.2 | 0.4 | 0.03 |
| | Decreased | 29.9 | 28.8 | 30.5 |
| Reasons for reduced consumption | Price | **27.2** | **27.4** | **27.1** |
| | Price and other | 2.2 | 1.0 | 2.8 |
| | Other | 0.7 | 0.8 | 0.7 |

A question was also asked about the daily consumption of cigarettes before and after the price increase in February 2023. The aggregated monthly consumption of the respondents was estimated using the data on smoking intensity (before and after price increase) and the number of smoking days. The estimates suggest that cigarette consumption has declined by 19.3 percent. Reduction in cigarette consumption is relatively high in low and middle-income groups compared to high-income.

| Table 13: Decline in cigarette consumption due to price increase, 2023-24<br>*(Weighted percentages)* | | | |
|---|---|---|---|
| | Total | Urban | Rural |
| **Overall** | **19.3** | **18.1** | **19.9** |
| Low income | 21.1 | 19.8 | 21.4 |
| Middle income | 19.3 | 18.8 | 19.5 |
| High income | 16.5 | 14.8 | 17.7 |

## BRAND LOYALTY AND SWITCHING

Table 14 presents the extent of and reasons for brand switching. Respondents were asked whether they had switched brands during the last five years. Overall, 17.4 percent of smokers reported having shifted to other brands. Interestingly, rural smokers were more likely to switch brands (18.5 percent) compared to their urban counterparts (15.4 percent). Furthermore, brand switching is substantially higher among the users of lower-price economy brands (27.1 percent) than the higher-price economy (9.5 per cent) and premium brands (8.7 percent).

Price concern was the most common reason for switching brands, cited by 78.6 percent of respondents, followed by taste concern (13.7 percent). On the other hand, health concern was referred to by a small proportion (1.6 percent) of smokers.

| Table 14: Brand switching during the last five years (*Percentage of smokers who switched their brands*) | | | |
|---|---|---|---|
| | Pakistan | Urban | Rural |
| **Overall** | **17.4** | **15.4** | **18.5** |
| Economy: Lower-price band | 27.1 | 28.7 | 26.6 |
| Economy: Upper-price band | 9.5 | 9.8 | 9.2 |
| Premium | 8.7 | 8.8 | 8.4 |
| **Reasons for brand switching** | | | |
| Price concern | 78.6 | 76.1 | 79.8 |
| Taste concern | 13.7 | 15.1 | 13.1 |
| Non-availability of own brand | 2.2 | 1.3 | 2.6 |
| Just for experience | 3.8 | 6.1 | 2.8 |
| Health concern | 1.6 | 1.4 | 1.7 |

## 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 tobacco products was explicitly explored.

Overall, 9.0 percent of the smokers were also using other tobacco products. The most used product among smokers was Hooka/Shisha (5.0 percent) followed by *Naswar* [15] (2.7 percent). The use of both these products is more prevalent in rural areas.

| Table 15: Smokers using other tobacco products (*as a percentage of total smokers*) | | | |
|---|---|---|---|
| | Pakistan | Urban | Rural |
| **Used other products** | **9.0** | **6.3** | **10.5** |
| Hooka/Shisha | 5.0 | 3.0 | 6.0 |
| Naswar | 2.7 | 1.0 | 3.6 |
| Bidis | 0.8 | 1.1 | 0.6 |
| E-cigarette | 0.2 | 0.5 | 0.0 |
| Others | 0.3 | 0.6 | 0.2 |

[15] 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.

## RESPONSES OF SMOKERS AGAINST HYPOTHETICAL CHANGES IN PRICES

Table 16 presents the responses of smokers who affirmed various statements concerning hypothetical increases in cigarette prices. The amount of increase for each smoker was chosen according to the cigarette pack's reported price, and ranged from Rs 50 to Rs 200 per pack.[16]

Over half of the respondents (52.6%) are likely to reduce the number of cigarettes they smoke. This is the most common response and indicates that price increases are likely to have a direct impact on consumption behaviour. Around 47 percent of the respondents expressed a commitment to quitting, stating they would either attempt to quit or seriously consider doing so. Over 30 percent agreed to the statements that they would buy more single sticks or switch to cheaper brands, while a quarter of respondents indicated switching to cheaper substitutes. Interestingly, rural smokers appear to be more sensitive to price increases than urban smokers. The proportion of affirmative responses to all statements is relatively higher among rural respondents.

Table 16: Response to hypothetical increase in cigarette prices

| | Pakistan | Urban | Rural |
|---|---|---|---|
| Will seriously think about quitting | 46.9 | 43.5 | 48.5 |
| Will attempt to quit smoking | 47.1 | 42.2 | 49.3 |
| Will smoke fewer cigarettes | 52.6 | 47.9 | 54.7 |
| Will switch to cheaper brands | 34.9 | 29.6 | 37.3 |
| Will buy more single cigarettes | 31.4 | 26.7 | 33.5 |
| Will switch to cheaper substitutes | 25.5 | 20.0 | 27.9 |

## PAST SMOKERS

The survey included 989 individuals who had previously smoked. Most past smokers (64.3 percent) had quit during the past five years. Among them, the proportion of respondents who quit during the past 12 months was 23.7 percent, indicating a significant number of recent quitters whose responses can presumably be associated with the recent price increase to a certain extent.

[16] Rs 50 for prices up to Rs 150, Rs 75 for prices from Rs 151 to Rs 250, Rs 150 for prices from Rs 251 to Rs 500, and Rs 200 for prices more than PKR 500.

| Table 17: Past smokers: Primary reason for quitting smoking (*Weighted percentage of respondents*) | | | |
|---|---|---|---|
| | Pakistan | Urban | Rural |
| Number | 989 | 762 | 227 |
| **Number of years since quit smoking** | | | |
| 0-1 year | 23.7 | 23.3 | 25.1 |
| 2-5 years | 40.6 | 39.5 | 44.3 |
| 6 years and above | 35.6 | 37.2 | 30.6 |

The top reasons for quitting smoking, as outlined in Table 18, were health concerns (49.6 percent) and pressure from family or friends (20.9 percent). Price concern was cited by 18.3 percent of past smokers. It is interesting to note that the pattern of responses is different among respondents who quit smoking during the 12 months. Among them, the primary motivation for quitting smoking was price concern (48.5 percent).

| Table 18: Primary reasons for quitting smoking (*Weighted percentage of respondents*) | | | |
|---|---|---|---|
| | Pakistan | Urban | Rural |
| **All respondents** | | | |
| Health concerns | 49.6 | 53.7 | 46.5 |
| Pressure from family or friends | 20.9 | 20.5 | 21.3 |
| Price concern | 18.3 | 14.4 | 21.3 |
| Religious reason | 5.3 | 4.3 | 6.0 |
| Warnings on packs | 2.7 | 4.0 | 1.8 |
| Others | 2.7 | 2.7 | 2.7 |
| Don't know/refused | 0.4 | 0.4 | 0.4 |
| **Respondents who quit smoking during the last 12 months)** | | | |
| Health concerns | 39.7 | 41.0 | 39.1 |
| Pressure from family or friends | 6.3 | 11.4 | 3.8 |
| **Price concern** | **48.5** | **39.7** | **52.7** |
| Religious reasons | 1.4 | 3.9 | 0.2 |
| Warnings on the pack | 1.6 | 1.9 | 1.5 |
| Others | 1.3 | 2.1 | 0.9 |
| Don't know/refused | 1.2 | 0.0 | 1.8 |

# 4 Conclusion and Policy Implications

The study reveals significant shifts in smoking behaviour, largely driven by the February 2023 increase in cigarette prices, indicating the potential of tobacco taxation in Pakistan for achieving dual objectives of public health promotion and revenue generation. The study finds that a considerable number of smokers responded to the price hike by reducing cigarette consumption or switching to cheaper brands. Overall, cigarette consumption was reported to be reduced by almost one-fifth after the cigarette tax increase that led to higher cigarette prices.

Nevertheless, the availability of low-cost cigarettes and loose cigarette sales among price-sensitive smokers continue to undermine the effectiveness of tax increases as a deterrent. While there was a shift from premium to economy brands, the switching was also observed with economy brands towards more affordable cigarettes, particularly among rural and lower-income smokers. The extent of loose cigarette purchases is also alarming, particularly among young smokers.

The responses of recent past smokers about the reason for quitting also substantiate the impact of price increases on reducing consumption. Similarly, even after a recent massive price increase, about half of the current smokers expressed their intention to reduce consumption or attempt quitting if prices are further raised. Therefore, the potential of cigarette taxation should continue to be exploited to achieve Pakistan's tobacco control policy objectives.

A substantive gap exists between tax rates applied to low-priced and high-priced brands. The large price variation, caused by tax rate differentials, creates opportunities for smokers to opt for cheaper brands rather than quitting. It is recommended that the government should move towards a uniform FED rate for all cigarette brands.

Tax administration is another crucial area to focus on to enhance the effectiveness of tobacco control policies. The incidence of selling loose cigarettes and packs below the minimum price is a matter of concern. The government needs to enforce bans on illegal sales of single sticks and underpriced packs by imposing penalties on those who break the rules. The enforcement measures could be similar to those proposed in the Finance Act 2024 about sealing retailers' outlets if cigarette packs are sold without affixing, or affixing counterfeited, tax stamps. By addressing these policy gaps, Pakistan can enhance the effectiveness of its tobacco control strategy and reduce the public health and economic burdens associated with smoking.

# 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 [17] developed the following formula 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 considerations, it was decided to survey 16 clusters (districts) for this study with a total sample of around 9,000. The names of selected districts with the level of development are furnished in Table A1.1.

## The Stratification Procedure

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

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[17] 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 (Jamal, 2016)[18]. 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, 2012-13. Jamal (2016) also provided a provincial and national ranking of districts according to the magnitude of ISDIs, which represent the level of socioeconomic development.

The following criteria were 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 high level of development in 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 the Pakistan Bureau of Statistics (PBS) for technical review and to randomly draw an appropriate number of PSUs for the survey. The allocation of PSUs among proposed districts was finalized by PBS, considering the population weights. PSUs were randomly selected from the PBS sampling framework used for national surveys. It consists 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

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[18] 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.

measure of size. PBS also provided 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 | | |
|---|---|---|---|---|---|
| | | | Urban | Rural | Total |
| **Punjab** | Lodhran | Low | 10 | 7 | 17 |
| | Rajanpur | Low | 11 | 6 | 17 |
| | Sargodha | Medium | 22 | 16 | 38 |
| | T.T. Singh | Medium | 12 | 10 | 22 |
| | Gujrat | High | 16 | 12 | 28 |
| | Lahore | High | 112 | 0 | 112 |
| | **Total – Punjab** | | **183** | **51** | **234** |
| **Sindh** | Shikarpur | Low | 5 | 9 | 14 |
| | Sanghar | Medium | 7 | 13 | 20 |
| | Karachi | High | 82 | 14 | 96 |
| | **Total – Sindh** | | **94** | **36** | **130** |
| **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** | | **355** | **145** | **500** |

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 its diversity. PBS agreed to the suggestion and revised the list of selected PSUs accordingly. However, two PSUs have been dropped (one from Karachi division and one from D. I. Khan district) due to logistical and law-and-order problems. Thus, finally 500 PSUs were covered for the household survey of smokers.

After the completion of the 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 6th household was selected with a skipping of five made after one successful interview. A total of eighteen households (SSUs) 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 Province and Districts

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

| | Unweighted Numbers | | | Weighted Numbers | | |
|---|---|---|---|---|---|---|
| | Urban | Rural | Overall | Urban | Rural | Overall |
| **Pakistan** | 6,640 | 2,357 | 8,997 | 1,012,066 | 1,629,898 | 2,641,964 |
| Punjab | 3,292 | 920 | 4,212 | 509,651 | 893,199 | 1,402,849 |
| Sindh | 1,621 | 719 | 2,340 | 298,852 | 290,770 | 589,622 |
| KPK | 964 | 404 | 1,368 | 145,536 | 360,423 | 505,959 |
| Balochistan | 374 | 163 | 537 | 38,410 | 78,236 | 116,647 |
| Islamabad | 389 | 151 | 540 | 19,616 | 7,271 | 26,887 |
| Lower Dir | 135 | 117 | 252 | 5,876 | 232,467 | 238,343 |
| Peshawar | 667 | 125 | 792 | 89,337 | 16,897 | 106,235 |
| Dera Ismail Khan | 162 | 162 | 324 | 50,322 | 111,058 | 161,381 |
| Sargodha | 411 | 273 | 684 | 77,906 | 196,008 | 273,914 |
| Toba Tek Singh | 215 | 181 | 396 | 47,936 | 200,608 | 248,544 |
| Gujrat | 275 | 229 | 504 | 73,050 | 182,495 | 255,545 |
| Lahore | 2,015 | 1 | 2016 | 192,696 | 107 | 192,803 |
| Lodhran | 180 | 126 | 306 | 53,025 | 173,401 | 226,425 |
| Rajanpur | 196 | 110 | 306 | 65,039 | 140,579 | 205,618 |
| Shikarpur | 53 | 199 | 252 | 29,161 | 166,430 | 195,591 |
| Sanghar | 96 | 264 | 360 | 44,674 | 109,407 | 154,081 |
| Karachi–Central | 306 | | 306 | 58,442 | | 58,442 |
| Karachi–East | 252 | | 252 | 43,762 | | 43,762 |
| Karachi–South | 180 | | 180 | 37,357 | | 37,357 |
| Karachi–West | 307 | 89 | 396 | 42,684 | 5,585 | 48,268 |
| Karachi–Korangi | 212 | 4 | 216 | 22,753 | 572 | 23,324 |
| Karachi–Malir | 215 | 163 | 378 | 20,020 | 8,776 | 28,796 |
| Quetta | 249 | 39 | 288 | 27,915 | 2,968 | 30,884 |
| Kachhi | 53 | 34 | 87 | 4,808 | 57,319 | 62,127 |
| Kech | 72 | 90 | 162 | 5,687 | 17,949 | 23,636 |

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