**Breaking The Habit Chain**

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# Extensive Summary

Smoking addiction is driven by psychological, social, and physiological factors. Common reasons include stress relief, social influence, and habitual behavior. To promote successful cessation, tailored interventions are essential. Young adults benefit from social support and digital tools, while stress management programs are effective for those in their thirties. Middle-aged individuals respond well to behavioral therapy and medications, and older adults require health-focused education and personalized medical interventions. Comprehensive efforts targeting these diverse factors are necessary to enhance quitting success rates and address the complexities of smoking addiction.

# Introduction

## Background

Smoking addiction is a significant public health issue, driven by a combination of psychological, social, and physiological factors. (Cleveland Clinic, 2024) Despite widespread awareness of the health risks, many individuals continue to smoke due to stress relief, social pressures, and established habits. (smokefree, 2024) Understanding the underlying causes and identifying effective cessation strategies are crucial for reducing smoking rates and improving public health outcomes. This report, initiated to address these challenges, draws on data from the National Youth Tobacco Surveys of year 2023 to provide insights into addiction and propose targeted cessation interventions.

## Purpose of the Analysis

This analysis aims to uncover the factors contributing to youth’s smoking addiction and evaluate cessation strategies. By creating visualizations using Power BI and incorporating data from the 2023 National Youth Tobacco Survey, we seek to understand why people continue smoking and find it difficult to stop. (CDC, 2024) This analysis will provide actionable insights for developing effective, age-specific smoking cessation interventions, helping to identify the psychological, social, and physiological factors that perpetuate smoking habits. The ultimate goal is to and improve smoking cessation success rates across different age groups.

## Assumptions and Limitations

### Assumptions

* **Data Accuracy and Completeness**: The 2023 National Youth Tobacco Survey data is assumed to be accurate and complete, providing a reliable basis for analysis.
* **Self-Reported Data**: It is assumed that self-reported data accurately reflects respondents' smoking behaviors and attitudes.

### Limitations

* **Bias in Self-Reporting**: Potential biases exist in self-reported data, as individuals may underreport or overreport their smoking habits.
* **Cross-Sectional Nature**: The survey captures data at a single point in time, limiting the ability to observe long-term trends in smoking behaviors.
* **Age Group Exclusion**: The survey focuses on youth, excluding older populations, which limits the generalizability of findings to all age groups.
* **External Influences**: Factors such as socioeconomic status and regional cultural differences may not be fully accounted for, impacting the interpretation of results.
* **Dataset Limitations**: Analysis is constrained by the dataset available, and findings might not generalize to broader or different populations.

## Questions

1. At what age do people typically start smoking—is it during the impressionable teenage years when peer pressure is at its peak?
2. Why do people continue to smoke despite knowing the risks—could it be the allure of stress relief or the grip of addiction?
3. What substances do people choose to smoke—have the options diversified beyond just tobacco? Key Documents
4. What is it about certain flavors that makes them so irresistible to smokers—could it be the sweet allure of variety?

# Methods

## Data Source

Data was sourced from the 2023 National Youth Tobacco Survey, providing comprehensive information on youth smoking behaviours and attitudes across the United States. (CDC, 2024)

## Analysis Methods

Several visualizations were created using Power BI to understand why people smoke, what they smoke, and to find solutions to help people quit smoking.

## Data Quality Assessment

Data quality was assessed by checking for completeness and accuracy. This involved identifying and handling missing values through imputation and examining the impact of outliers to ensure they did not distort the results.

# Results

## Questions our analysis focus on

### Visualization 1: What age people start smoking

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Figure 1:The age people start smoking

The bar chart illustrates the distribution of ages at which individuals begin smoking, with the peak age being 13, where over 3,500 individuals start smoking. Ages 12 and 14 also show high numbers, around 2,700 and 3,000 respectively. As age increases beyond 13, the number of new smokers steadily declines, with noticeable drops at ages 16 and older. Some individuals start smoking as early as ages 8, 9, and 10, although these numbers are much lower. By the ages of 18 and 19, fewer than 500 individuals begin smoking.

This data highlights early adolescence, particularly ages 12 to 14, as a critical period for smoking initiation, likely due to factors such as peer pressure and curiosity. The trend of decreasing new smokers with age suggests that prevention efforts should focus on younger age groups to effectively curb the onset of smoking. Overall, the chart emphasizes the importance of targeting early adolescents in smoking prevention programs. Conclusions and recommendations

### Visualization 2 : The reasons why people smoke

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Figure 2:The reasons why people smoke

The line chart titled "Why Do You Smoke?" provides an insightful overview of the various reasons individuals cite for smoking, along with the number of people associated with each reason. The most prevalent reason, cited by around 600 individuals, is to manage feelings of anxiety, stress, or depression, highlighting the significant role mental health issues play in smoking habits. Following closely, over 500 individuals smoke to get a high or buzz from nicotine, emphasizing nicotine's addictive nature. Social influences are also notable, with approximately 400 individuals smoking because a friend does, and around 350 people are attracted to smoking due to the availability of various flavors like menthol, mint, candy, and fruit. Curiosity and the ability to use smoking products unnoticed at home or school are reasons cited by about 300 individuals each, while family influence and the perception that smoking is less harmful than other forms of tobacco are mentioned by 200 to 250 people.

Lesser cited reasons include the ease of obtaining smoking products and their lower cost compared to other tobacco products like cigarettes, with around 100 to 150 individuals mentioning these factors. Trying to quit using other tobacco products and influence from seeing people on TV or online are among the least cited reasons, with fewer than 100 individuals each. Overall, the chart illustrates that mental health management and nicotine addiction are primary drivers for smoking, while social influences, curiosity, perceived harmlessness, cost, and accessibility also contribute significantly to smoking habits.

### Visualization 3: Preference of smoking of youth

A graph showing the growth of a stock market

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Figure 3:Poeple's preference in smoking

The above line chart illustrates the number of people who engage in different types of smoking. The most popular method is e-cigarettes, with nearly 3,500 users, followed by marijuana, which has around 2,500 users. Traditional cigarettes are the third most common, with approximately 1,500 smokers. Cigars come next, with slightly over 1,000 users, while nicotine pouches are used by around 700 individuals. The least common smoking method is smoking pipes with tobacco, with fewer than 500 users.

This visualization highlights the shifting preferences in smoking habits, with e-cigarettes and marijuana significantly more popular than traditional cigarettes. The data reflects a trend towards newer, potentially perceived as less harmful, smoking methods. The declining numbers for cigars, nicotine pouches, and tobacco pipes suggest these methods are less favored among smokers. Overall, the chart underscores the rise of e-cigarettes and marijuana as the dominant choices, indicating changing patterns in smoking behavior.

### Visualization 4: Flavors preferred by youth to smoke

A graph of a person

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Figure 4:Flavors of E-Cigar preferred

The bar chart titled "Type of Flavor Preferred" illustrates the various flavors preferred by users of e-cigarettes and vaping devices. The most popular choice is Elf Bar, with 839 individuals favoring it, significantly outpacing other options. Other notable brands include Vuse with 333 users and Esco Bars with 302. Breeze and JUUL also have significant followings, with 239 and 237 users respectively.

Further down the list, Mr. Fog and Fume are preferred by 176 and 158 individuals, while Kangvape and SMOK (including NOVO) have 155 and 136 users. The least preferred flavors are Blu, NJOY, HQD, Suorin (including Air Bar), and Logic, with user counts ranging from 103 to 69. This visualization highlights Elf Bar's dominance in the market, reflecting its strong popularity among users. The diversity in other preferred brands suggests a wide range of options and individual preferences, with many users either experimenting with different flavors or lacking strong brand loyalty. Overall, the chart provides a snapshot of the varied flavor preferences within the vaping community.

## Solutions Derived from Our Analysis

### Visualization 5: How smoking affects youth

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Figure 5: Effect of smoking

The pie chart titled "Does Smoking Affect You Physically, Mentally, Emotionally?" illustrates the responses of individuals regarding the impact of smoking on their well-being. According to the chart, 64.8% (1,000 individuals) reported that smoking does not affect them physically, mentally, or emotionally, while 35.2% (1,000 individuals) indicated that it does have an effect. This data highlights a significant portion of smokers who recognize the negative impacts of smoking on their health and well-being.

To address the adverse effects of smoking, a solution could be to implement comprehensive support programs that target both groups identified in the chart. For those who acknowledge the harmful effects, targeted cessation programs offering mental health support, stress management strategies, and counseling can help them quit smoking. For those who do not perceive any negative impacts, educational campaigns highlighting the long-term health risks and providing accurate information about the subtle and cumulative effects of smoking could increase awareness and motivation to quit. Combining these approaches can create a supportive environment that encourages smokers to seek help and adopt healthier lifestyles. (BMC Prim Care, 2023)

### Visualization 6: How many tried quitting

A graph showing the loss of a person

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Figure 6:How many people tried quitting

The line chart titled "Count of Quitting" illustrates the frequency of quit attempts among smokers over the past 11 months. The highest count, nearly 600 individuals, represents those who did not try to quit at all. This is followed by about 400 individuals who attempted to quit 10 or more times. The numbers decrease with fewer attempts: around 300 for one attempt, 200 for three to nine attempts, 150 for two attempts, and fewer than 100 for those who tried quitting 10 or more times within a specific range.

For those who have never tried to quit, raising awareness about the health risks of smoking and providing motivational resources could encourage initial quit attempts. For individuals who have made multiple quit attempts, more intensive support such as personalized counseling, comprehensive cessation programs, and continuous follow-up could be beneficial. By tailoring interventions to different levels of quit attempts, we can better support smokers in their journey to quit and improve overall success rates in smoking cessation. (CDC, 2023)

### Visualization 7: Count of Underage selling

A pie chart with a red and white circle

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Figure 7:Underage Selling

The pie chart titled "Count of Underage Selling" illustrates the responses of individuals regarding their attempts to purchase tobacco products underage. According to the chart, 49.76% (838 individuals) did not attempt to buy tobacco products. However, 39.9% (672 individuals) reported trying to buy tobacco products but were unsuccessful, while 10.33% (174 individuals) successfully purchased tobacco products despite being underage. This data highlights the prevalence of underage individuals attempting to access tobacco products and the occurrence of successful purchases.

To address the issue of underage tobacco sales, stricter enforcement of age verification laws is essential. Implementing more robust verification systems at points of sale, increasing penalties for vendors who sell to minors, and conducting regular compliance checks can help reduce the incidence of underage sales. Additionally, educational campaigns aimed at both retailers and youths about the legal and health consequences of underage smoking can further discourage these attempts and ensure adherence to tobacco sales regulations. By enhancing both enforcement and education, we can mitigate the issue of underage tobacco sales effectively. (National Library of Medicine, 2022)

# Conclusion

Our analysis reveals crucial insights into the smoking habits and cessation challenges among youth, emphasizing the multifaceted nature of smoking addiction. The data identifies early adolescence as a pivotal period for smoking initiation, driven primarily by peer pressure and curiosity. Mental health issues, nicotine addiction, and social influences emerge as the primary reasons individuals continue smoking. Moreover, preferences are shifting towards e-cigarettes and marijuana over traditional cigarettes, reflecting changing patterns in smoking behavior. Despite some youth recognizing the negative impacts of smoking, a substantial portion remains unaffected or unaware of its long-term health risks. Quit attempts vary widely, with many smokers making multiple attempts but struggling to quit successfully. The issue of underage sales of tobacco products remains significant, with a notable percentage of youth successfully purchasing these products despite legal restrictions.

Authorities and policymakers play a crucial role in addressing the smoking epidemic among youth. By stepping up efforts to enforce existing laws, create supportive environments, and provide necessary resources, authorities can significantly impact youth smoking rates. Collaboration between government bodies, educational institutions, and community organizations is essential to develop comprehensive strategies that target prevention, cessation, and awareness. By investing in robust mental health programs, stringent regulatory measures, and widespread educational campaigns, authorities can help guide young people towards healthier, smoke-free lives.

# Recommendations

* **Mental Health and Stress Management Programs:** Implement comprehensive mental health support and stress management programs in schools and communities to address the primary reasons youth start and continue smoking. These programs should include counselling, stress-relief activities, and accessible mental health resources.
* **Targeted Smoking Prevention Campaigns**: Develop age-specific smoking prevention campaigns focusing on early adolescents. These campaigns should educate young people about the dangers of smoking, the addictive nature of nicotine, and the importance of resisting peer pressure.
* **Flavor and E-Cigarette Regulation**: Enforce stricter regulations on the marketing and sale of flavored e-cigarettes and vaping products. Limit the availability of flavors that appeal to younger users and mandate plain packaging with health warnings to reduce their attractiveness.
* **Enhanced Quit Support Programs**: Offer tailored smoking cessation programs that cater to different levels of quit attempts. Provide personalized counselling, comprehensive cessation support, and continuous follow-up for those who have made multiple quit attempts, and motivational resources for those who have never tried to quit.
* **Stricter Enforcement of Age Verification Laws**: Implement robust age verification systems at points of sale and increase penalties for vendors who sell tobacco products to minors. Conduct regular compliance checks to ensure adherence to tobacco sales regulations.
* **Educational Campaigns on Underage Smoking**: Launch educational campaigns aimed at both retailers and youth to highlight the legal and health consequences of underage smoking. Encourage community involvement to support adherence to age restrictions and discourage attempts to purchase tobacco products illegally.

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# Appendix

**Visualization**

A graph showing the loss of a person

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A graph showing the growth of a stock market

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A graph of red bars

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A pie chart with a red and white circle

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A graph with a red circle

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# A graph showing the fall of a stock market Description automatically generated

A graph showing the loss of a person

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**The PowerBi Link for the visualizations**



**Data Retrieved from** (CDC, 2023)