

# Tobacco Use Insights: Trends, Demographics, and Policy Impacts

Yi-Huai Chang

CAPP30239: Static Visualization Project

## Introduction

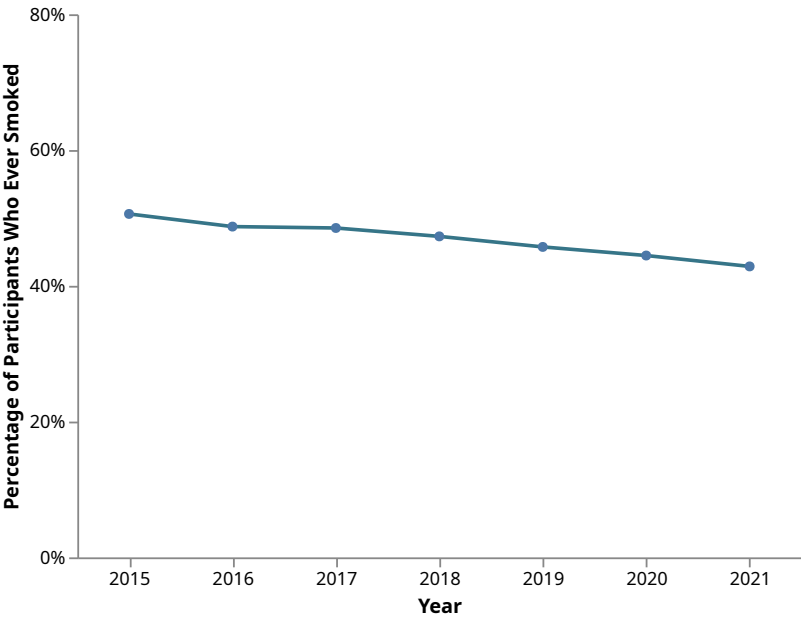
Tobacco use has long been recognized as a leading cause of preventable death in the United States, with significant public health implications. In recent years, the use of cigarettes among youth has shown a decline; however, vaping has risen rapidly as a popular substitute, especially within younger populations. This report aims to explore patterns of tobacco use across different demographic groups and over time, utilizing data from the **National Survey on Drug Use and Health (NSDUH)** to provide a comprehensive view of these behaviors at a national level.

Through analysis of NSDUH data, this project examines how tobacco and vape usage vary by age, gender, ethnicity. By visualizing these trends and identifying demographic disparities, this study seeks to pinpoint high-risk populations and evolving patterns in usage. The findings are intended to inform public health strategies, guiding targeted interventions and policy initiatives to reduce tobacco usage in the United States.

### Quick View: Recent Trend of Tobacco Product Usage

#### Trend of Cigarette Smoking Experience Over Years

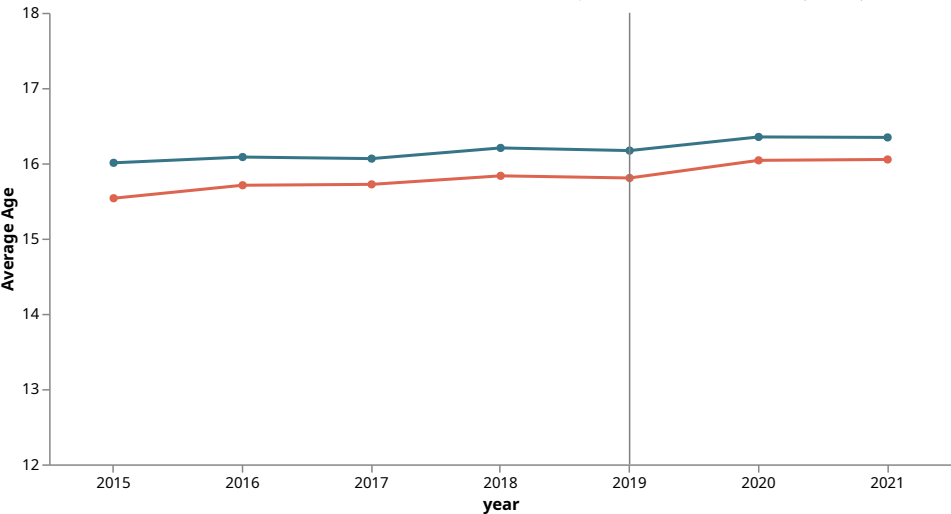
The smoking population is decreasing over years.



This line chart shows the proportion of people who have ever smoked cigarettes over time. The data reveals a slight downward trend, suggesting that fewer people are initiating smoking each year. This decline may be attributed to effective public health campaigns, policy changes, and shifts in societal attitudes toward smoking. A significant policy change contributing to this trend is the introduction of **"Tobacco 21"**. On December 20, 2019, legislation was signed amending the Federal Food, Drug, and Cosmetic Act to raise the federal minimum age for tobacco sales from 18 to 21. To further understand this trend, we can examine the average age of first cigarette use over the years, broken down by gender.

#### Average Age When First Smoked Cigarette by Year

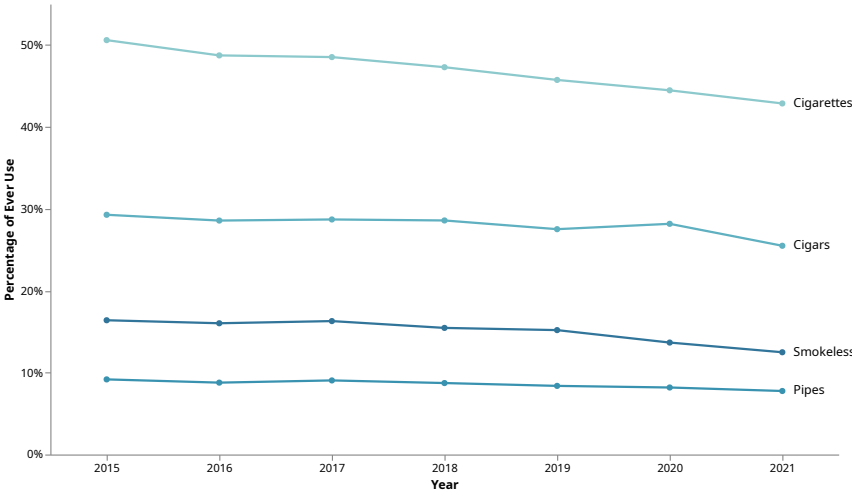
Increasing over time no matter which gender, especially after "Tobacco 21" (2019).



This chart shows a gradual increase in the average age at which individuals first smoked cigarettes from 2015 to 2021, for both genders. Studies show that around 95% of adult smokers tried cigarettes before turning 21. And here, unsurprisingly, the average initiation age hovers around 16—below the legal purchasing age. Notably, there is a slight uptick after 2019, aligning with the implementation of the **"Tobacco 21"** policy. This suggests that the policy may have contributed to delaying the initiation age for smoking, with both males and females showing similar trends over time.

#### Percentage of Ever Use of Cigarettes, Smokeless Tobacco, Cigars, and Pipes by Year

Cigarette use shows the steepest decline among all tobacco products, while other forms of tobacco exhibit more gradual decreases over time.



This line chart tracks the percentage of ever use of various tobacco products (Cigarettes, Smokeless Tobacco, Cigars, and Pipes) from 2015 to 2021. By restricting access for individuals under 21, the **"Tobacco 21"** policy likely reduced the ease with which adolescents and young adults could start using cigarettes, contributing to a steady decrease in ever-use rates. For cigars and smokeless tobacco, which show more stable patterns with only slight decreases, the policy may have had a less pronounced impact. These products typically have lower usage rates among young people compared to cigarettes, so the policy's effect on overall ever-use may be less visible. For pipes, which already had very low usage, the policy's impact is likely minimal or difficult to detect, as their rarity suggests they are less popular among youth and thus less affected by the age restriction.

#### Cigarettes vs Vapes Usage among 12-17 year old in 2020 and 2021

Vape usage shows higher prevalence than cigarette usage among youth, with slight decreases in both from 2020 to 2021.



Another factor influencing cigarette usage is the prevalence of **vapes**. This pie chart visualizes the proportion of 12-17 year-old individuals who have ever used versus never used cigarettes and vape products for the years 2020 and 2021. For cigarettes, the majority of respondents reported never using them, with a slight decline in ever-use from 7.7% in 2020 to 6.4% in 2021. In contrast, vape usage shows a notably higher percentage of ever-users, though it also decreased from 18.4% in 2020 to 14.8% in 2021.

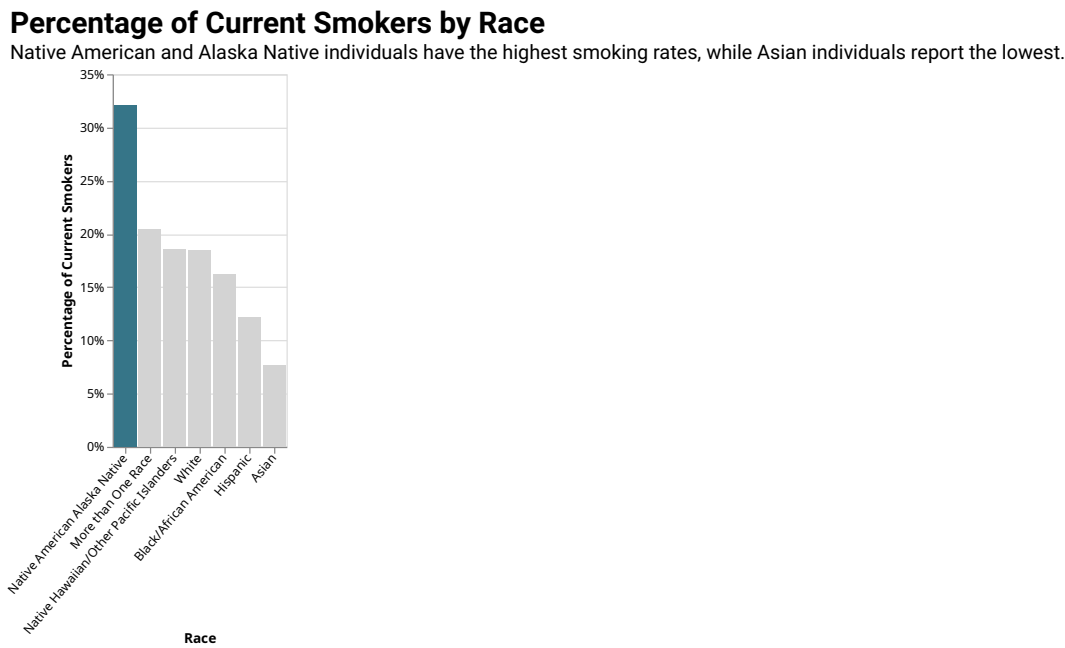
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## Demographic Analysis: Age and Race

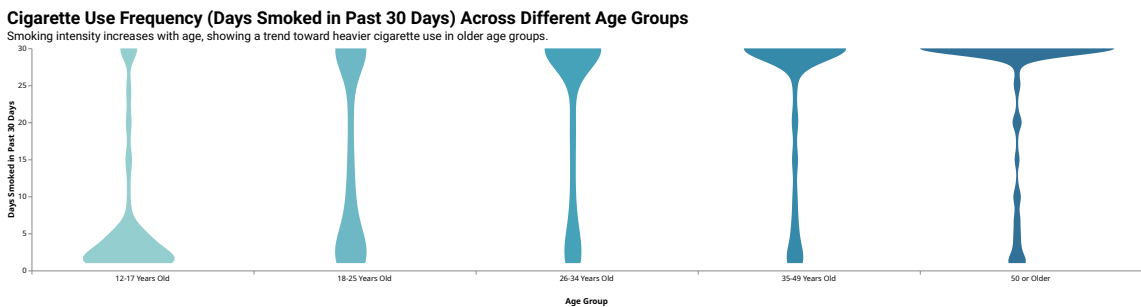
Now, focusing on cigarette usage across different demographic groups, we first examine the differences by race:



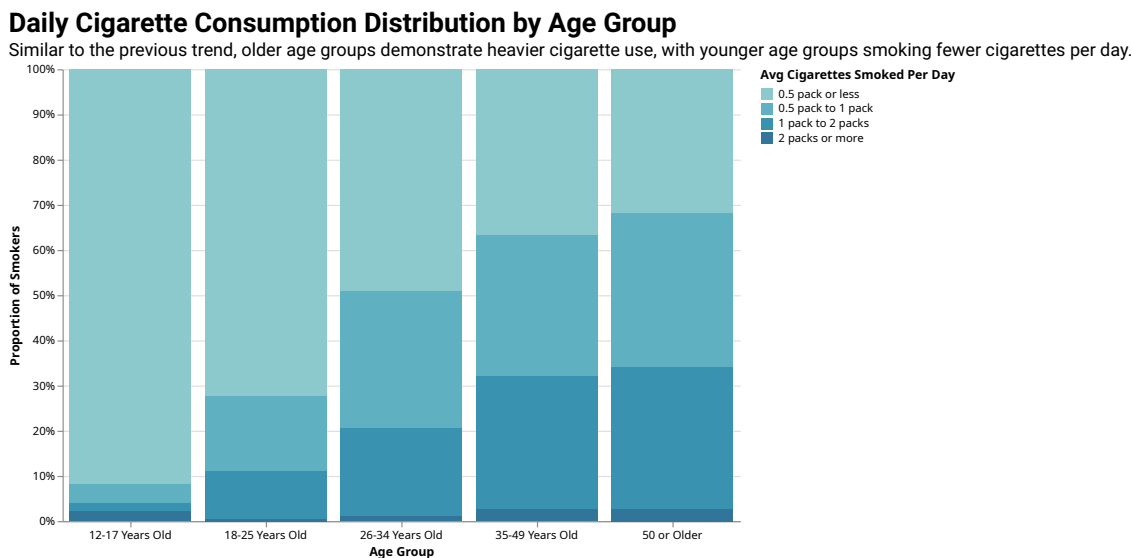
According to the FDA, since 1978, **Native Americans/Alaska Natives** have had the highest use of commercial tobacco compared to people of other races. In this survey data, we can also see the same results. Native Americans/Alaska Native individuals have the highest percentage of current smokers, while Asian populations show the lowest smoking rates.

To address these disparities, multiple programs and initiatives aim to improve tobacco cessation and treatment within Native American and Alaska Native communities. For example, the **Indian Health Service (IHS)** provides targeted resources and support, including tobacco cessation programs within IHS clinics and hospitals, as well as training for healthcare providers to deliver culturally sensitive treatment and support for quitting smoking.

Next, we look at the cigarettes usage among different age groups:



This violin plot demonstrates the distribution of cigarette use frequency across different age groups, showing how many days do the participants smoked during the past 30 days. The 26-34 years old group shows the broadest distribution, with higher frequencies of both light and heavy smoking. The 18-25 group has a more narrow and lighter use pattern, while the 50+ group shows more sporadic but heavier smoking behaviors. We can see the similar trend in the below graph:



This stacked bar chart shows the proportion of smokers across different age groups, categorized by the average number of cigarettes smoked per day. Younger age groups tend to smoke fewer cigarettes per day, while middle-aged individuals (35-49 years old) have a higher proportion of heavy smokers. The trend reveals a clear gradation where older age groups are more likely to smoke larger quantities of cigarettes daily, consistent with the patterns observed in the violin chart above.

It could be argued that many tobacco policies and public health campaigns tend to focus more heavily on preventing youth initiation and supporting young adults in quitting, while fewer resources and incentives specifically target older adults. There are some reasons for limited focus on older adults:

- **Perception of Difficulty in Quitting:** There's a common perception that older smokers may be less motivated to quit or might find it harder to do so due to long-standing habits. This can lead to fewer targeted campaigns and incentives aimed specifically at this demographic.
- **Youth Prevention Priority:** Public health campaigns often prioritize youth and young adults to prevent lifetime addiction and the associated healthcare costs over time.
- **Inadequate Incentives in current campaigns and policies:** Campaigns may lack financial or social incentives specifically designed for older adults, such as subsidized cessation treatments, community support groups, or insurance discounts for cessation success. Without clear incentives, older smokers may feel less urgency or support to quit.

The possible policy suggestions are:

- **Increased Access to Cessation Programs with Older Adult Focus:** Programs like *Clear Horizons* demonstrate that older smokers benefit from resources tailored to their specific needs. Expanding access to such programs, alongside financial incentives like subsidies for cessation medications, could encourage more older adults to consider quitting.
- **Incentive Structures in Healthcare:** Insurance providers could offer premium reductions or other incentives to older adults who quit smoking. Employers or retirement communities could introduce rewards for cessation to support healthier aging.
- **Campaigns Highlighting Immediate Benefits:** Campaigns could focus more on the immediate health benefits of quitting, such as better breathing, improved stamina, and reduced medication costs, to appeal to older adults who may prioritize quality of life improvements over long-term health outcomes.

## Conclusion

This report provides a comprehensive analysis of tobacco and vape usage patterns across different demographic groups in the United States, drawing from the National Survey on Drug Use and Health (NSDUH) data. Key findings indicate a decline in cigarette initiation, likely influenced by public health campaigns and policies such as the "Tobacco 21" law. While youth show a shift toward reduced smoking, vaping remains a significant concern, particularly among younger populations. Additionally, demographic disparities in tobacco use are evident, with Native American and Alaska Native communities experiencing the highest smoking rates and older adults exhibiting both higher frequency and quantity of use. However, existing public health campaigns often focus on youth, potentially overlooking the needs of older smokers. To address this, expanding cessation resources tailored for older adults, increasing health-care incentives, and emphasizing immediate health benefits in campaigns could better support cessation across all age groups, reducing overall tobacco use and associated health risks.