



Types of Nicotine Use Across States

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Project Proposal

Cigarette use has been declining over the years, but there are other methods of ingesting nicotine. To study the reality behind nicotine, we're going to observe several different states and observe the various preferences around usage. The value of identifying types of nicotine use across several states is seeing if the trends hold up in different regions. If there is no correlation between the chosen states and type of nicotine use, that could indicate that there's other factors at play that may warrant further research.

QUESTIONS

What is the difference in the consumption of nicotine

How frequently are these products being used?

How many total people are using tobacco in each state?

Which type of tobacco products are preferred?



DATA SOURCE

Center for Disease Control, through a self-report survey called “Behavioral Risk Factor Surveillance System Survey”.

This survey before we limit to our individual states is going has an N of 43341 entries of varying sample sizes – some samples being over 10000 participants – which means there is a robust foundation for analysis. Our individual states N will vary.

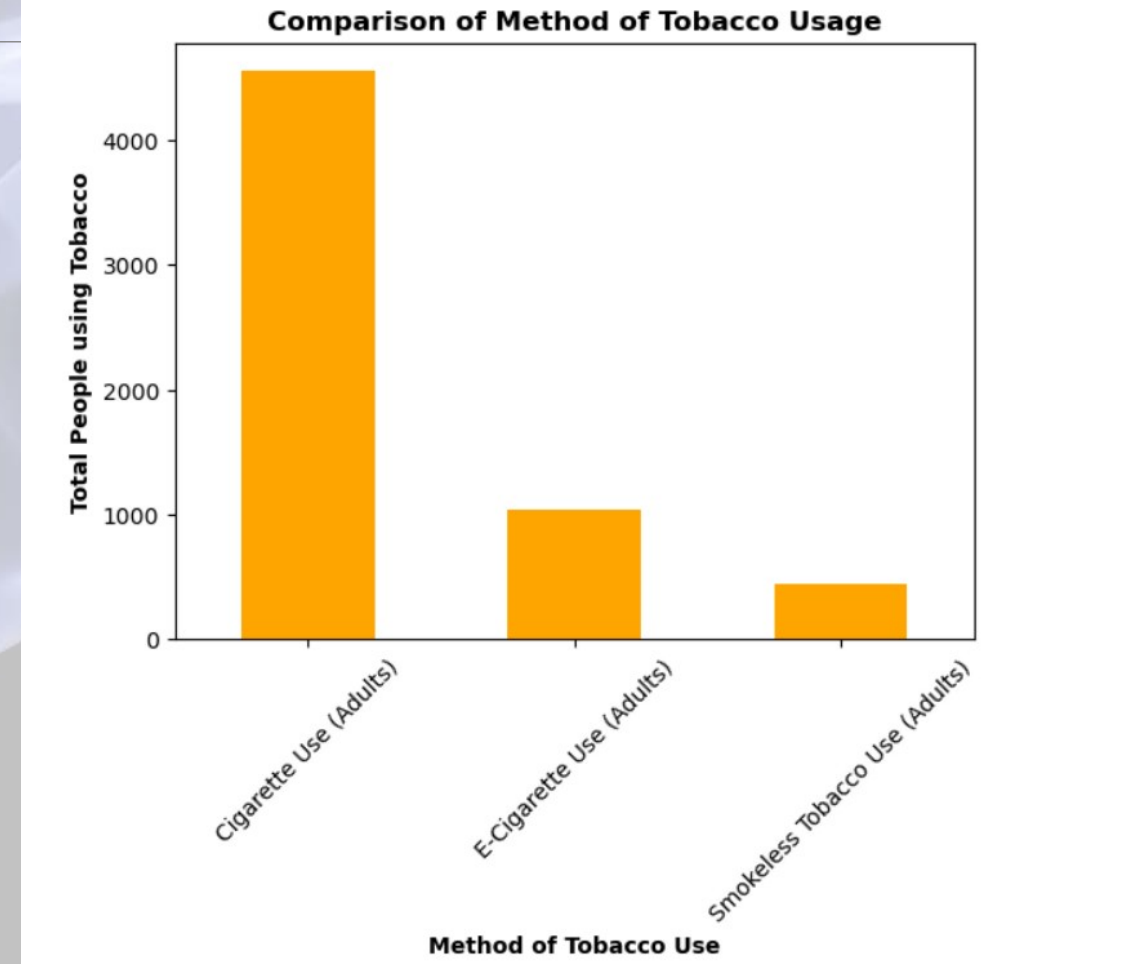
Source Citation:

Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2023, August 25. “Behavioral Risk Factor Data: Tobacco Use (2011 to present)” URL: <https://data.cdc.gov/Survey-Data/Behavioral-Risk-Factor-Data-Tobacco-Use-2011-to-pr/wsas-xwh5>

Connecticut

Overall Population of Tobacco Users (CT)

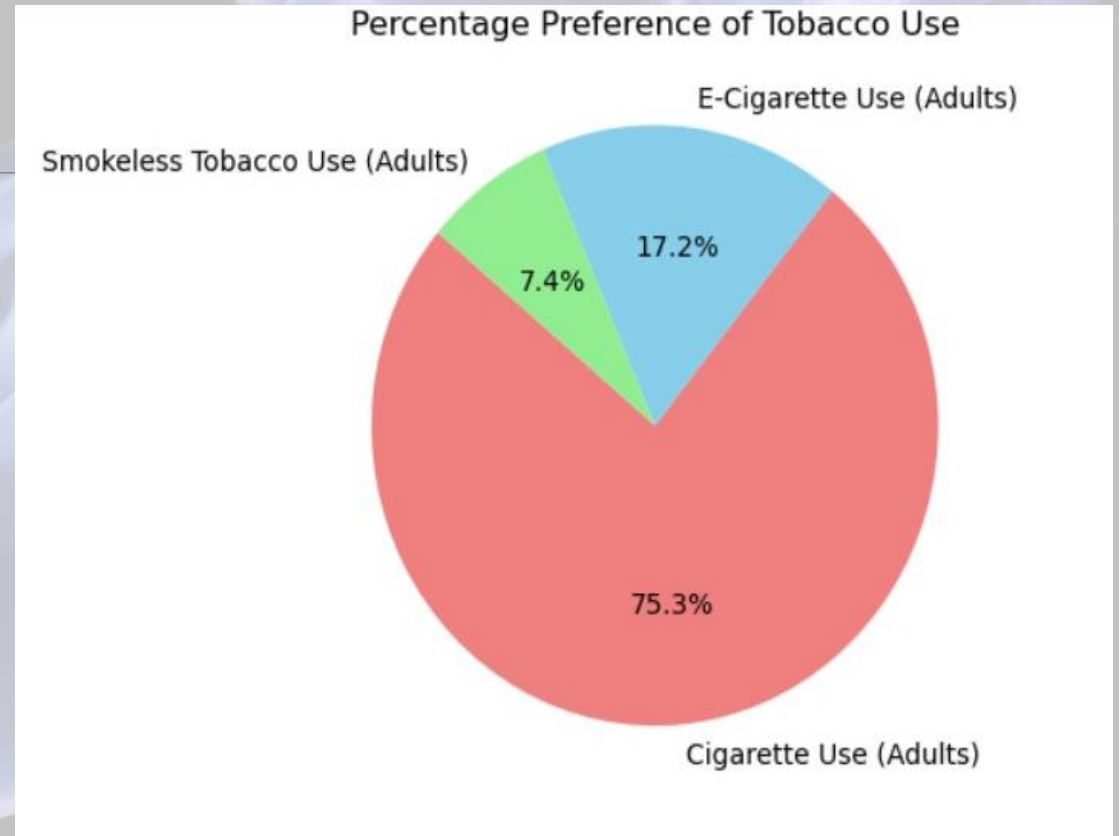
The value of determining the overall population of tobacco users within Connecticut is identifying the total N count of the sample size (approximately 6000) and visualizing the raw number of tobacco users. This gives us insight into what our later percentage of users means in real life. This is relevant because when we consider statistical reasoning, we have to also consider scale. For example, 90% of a sample size of 100 is a large percentage, but not a large sample size. However, 10% of a sample size of 10000 is a small percentage, but it's a larger sample size and therefore there's more affected than in the previous example.



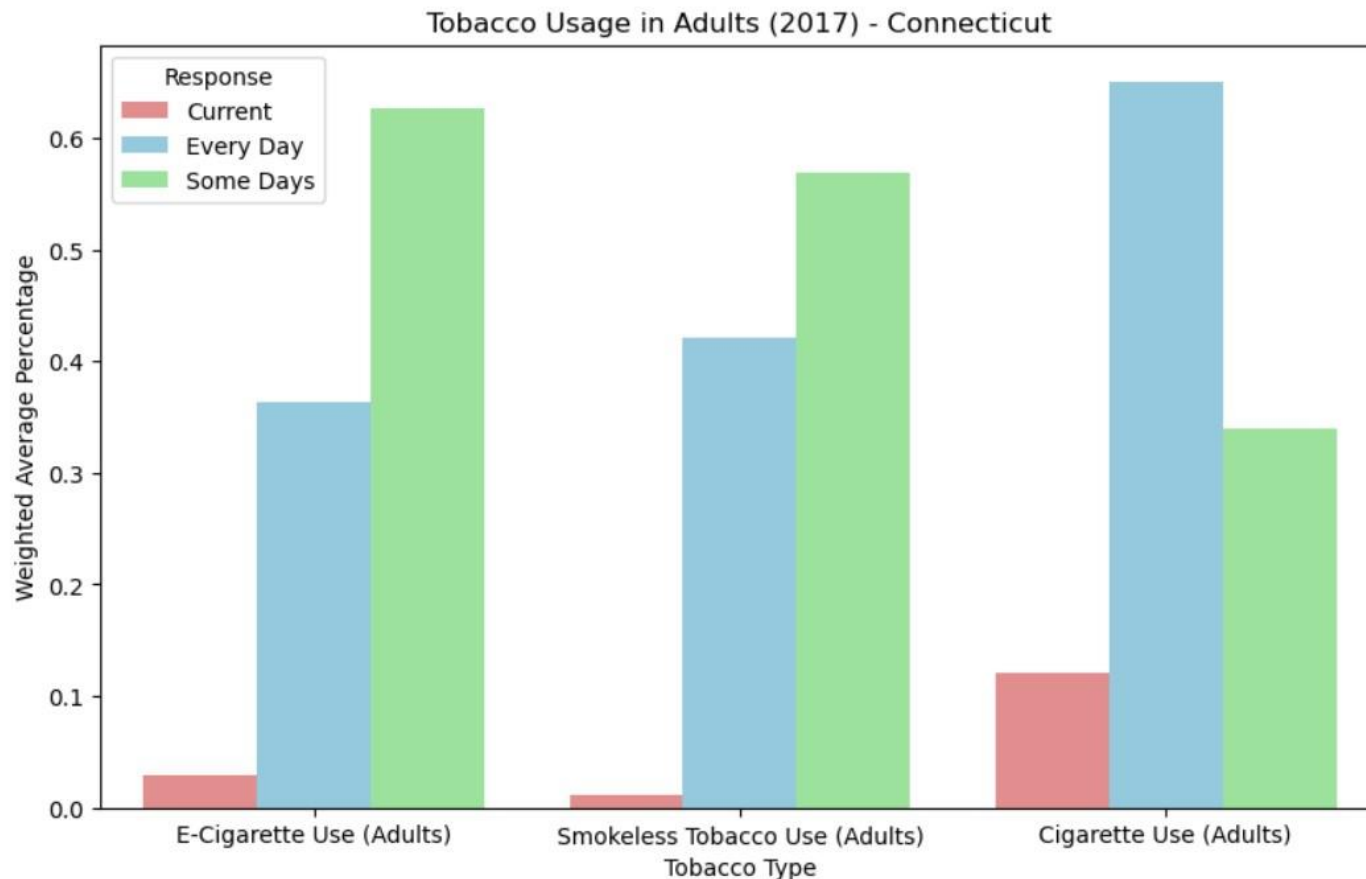
Connecticut

Percentage Preference of Tobacco Users (CT)

This chart now visualizes the aforementioned percentages. Now that we have an idea of the raw values, the pie chart clearly demonstrates the significant dominance smoking tobacco has over the market, as approximately 75% of 6000 users prefer smoking cigarettes to e-cigarettes or other non-smoking options



Connecticut

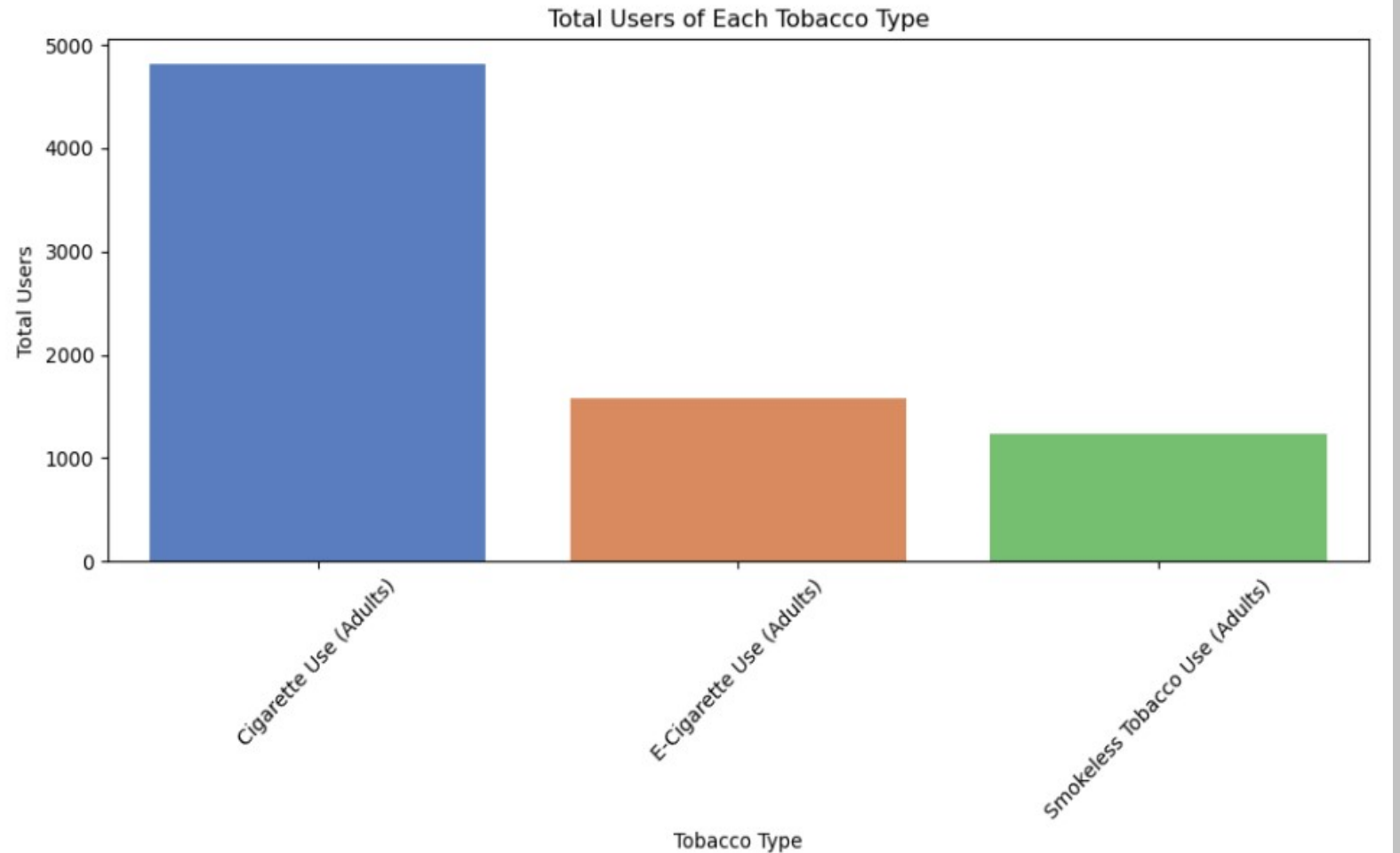


Frequency of Tobacco Use (CT)

Last but not least we take an overview of how frequent our users are consuming nicotine to put their usage into perspective. Most interestingly, smokeless and e-cigarette users are more likely to smoke some days rather than every day, while cigarette users tend towards consuming every day. Given that cigarette users are the predominant smokers in our sample set, we can conclude that most tobacco users are using daily.

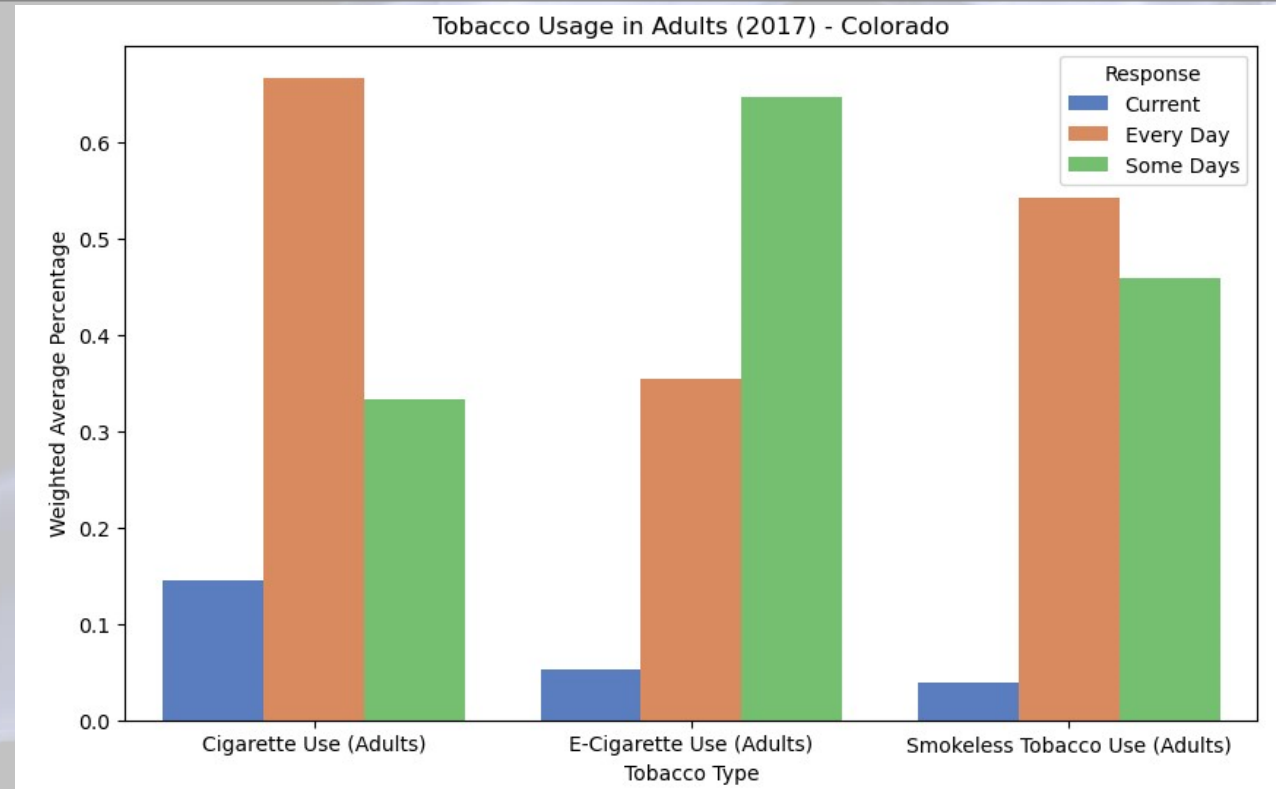
Colorado

As expected, Cigarettes are the most popular choice. Vaping and smokeless tobacco seem pretty close to each other which also falls in line with what we would expect in 2017



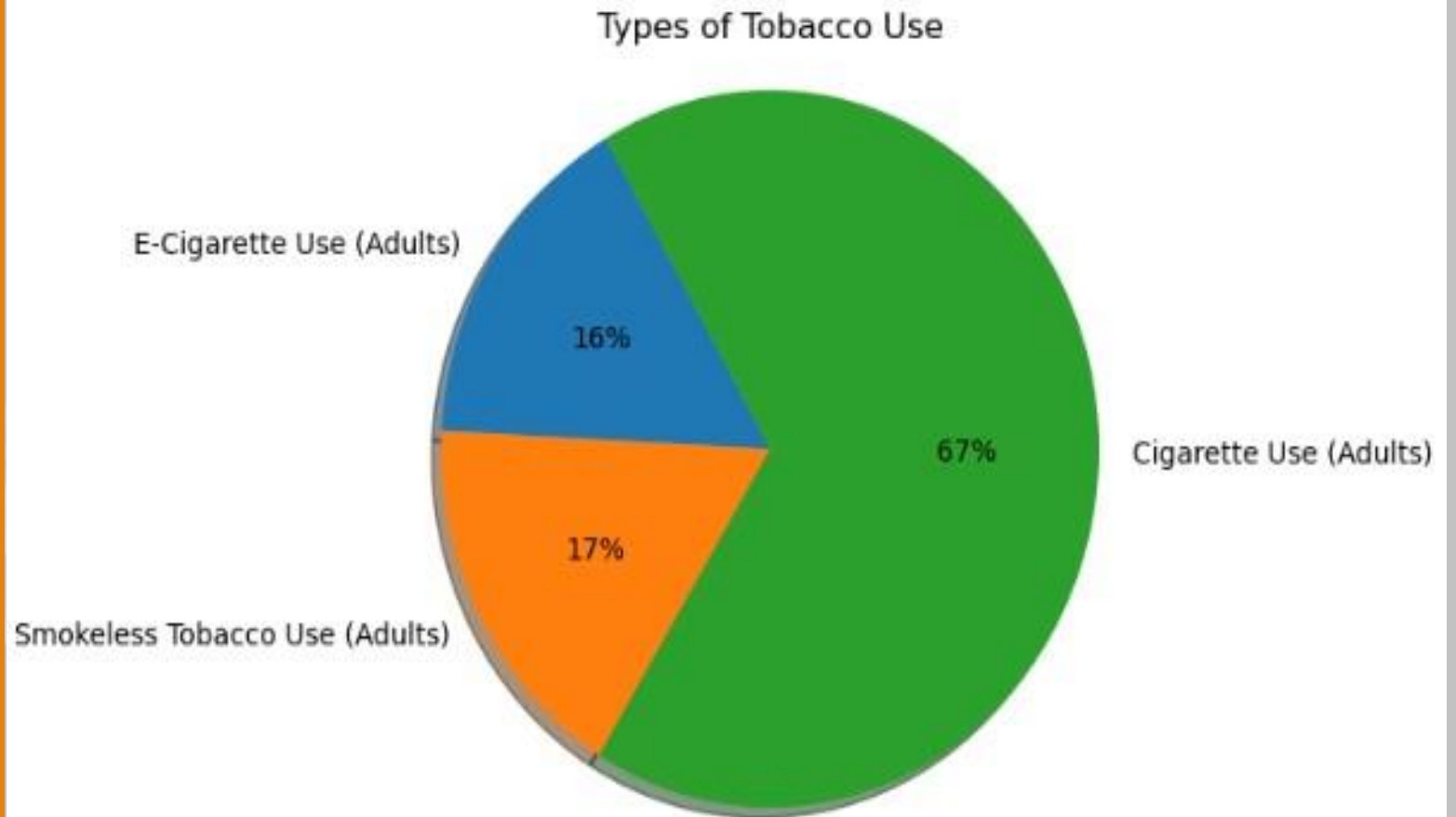
Colorado

This summary shows some of the stats gathered from Colorado. This pool of data was small but shows that Cigarettes are more popular than the other options. E cigarettes are not far behind though.



Georgia

Analyzing data from 5,498 participants in the state of Georgia revealed cigarettes as the most commonly selected tobacco product. As shown in the following pie chart, Cigarette use constitutes 67% of the total. The amount of both Smokeless and E-cigarette users are similar in size.



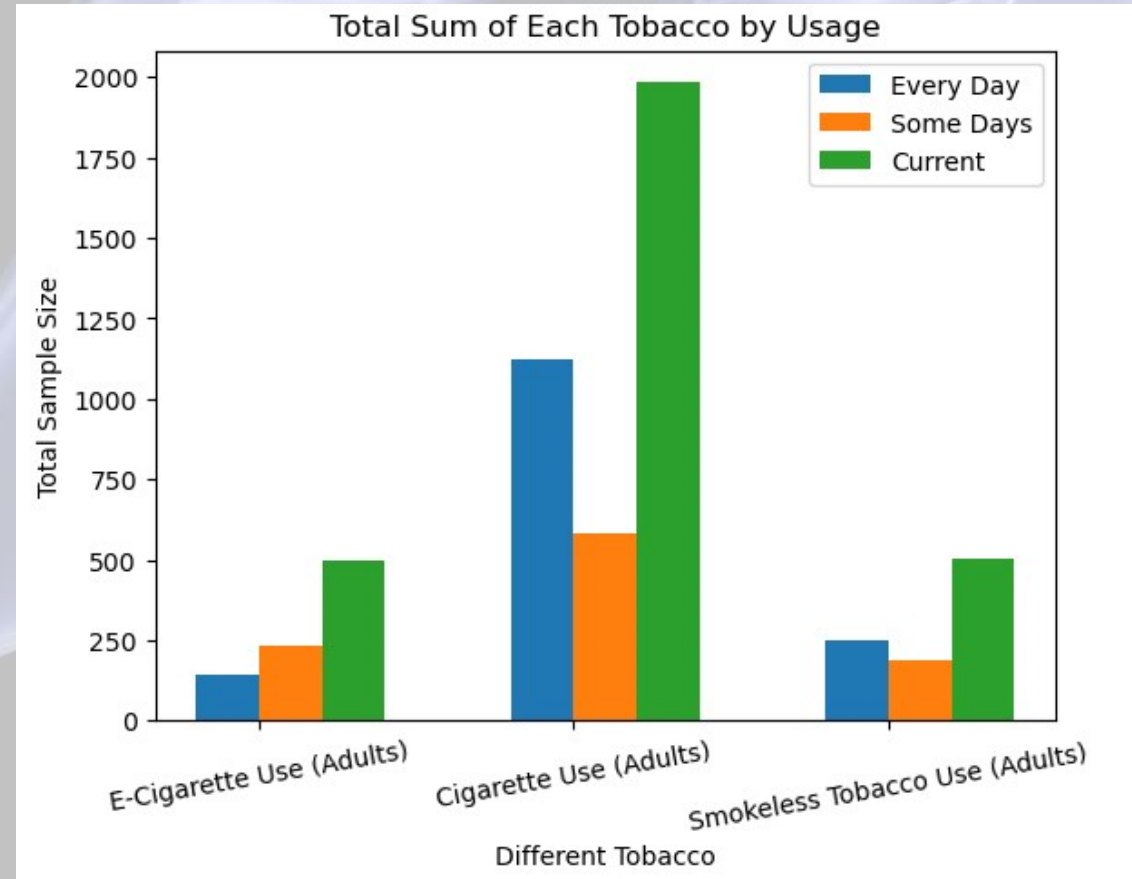
Georgia

Frequency

A complication that our team came across while reading and creating charts was under the Frequency column, there were three different types and one being "Current". Current did not specify exactly if the users were either a everyday or some day user. Perhaps in future surveys a recommendation would be to further explain what Current indicated. Overall it can be inferred that more users used tobacco more often than some days.

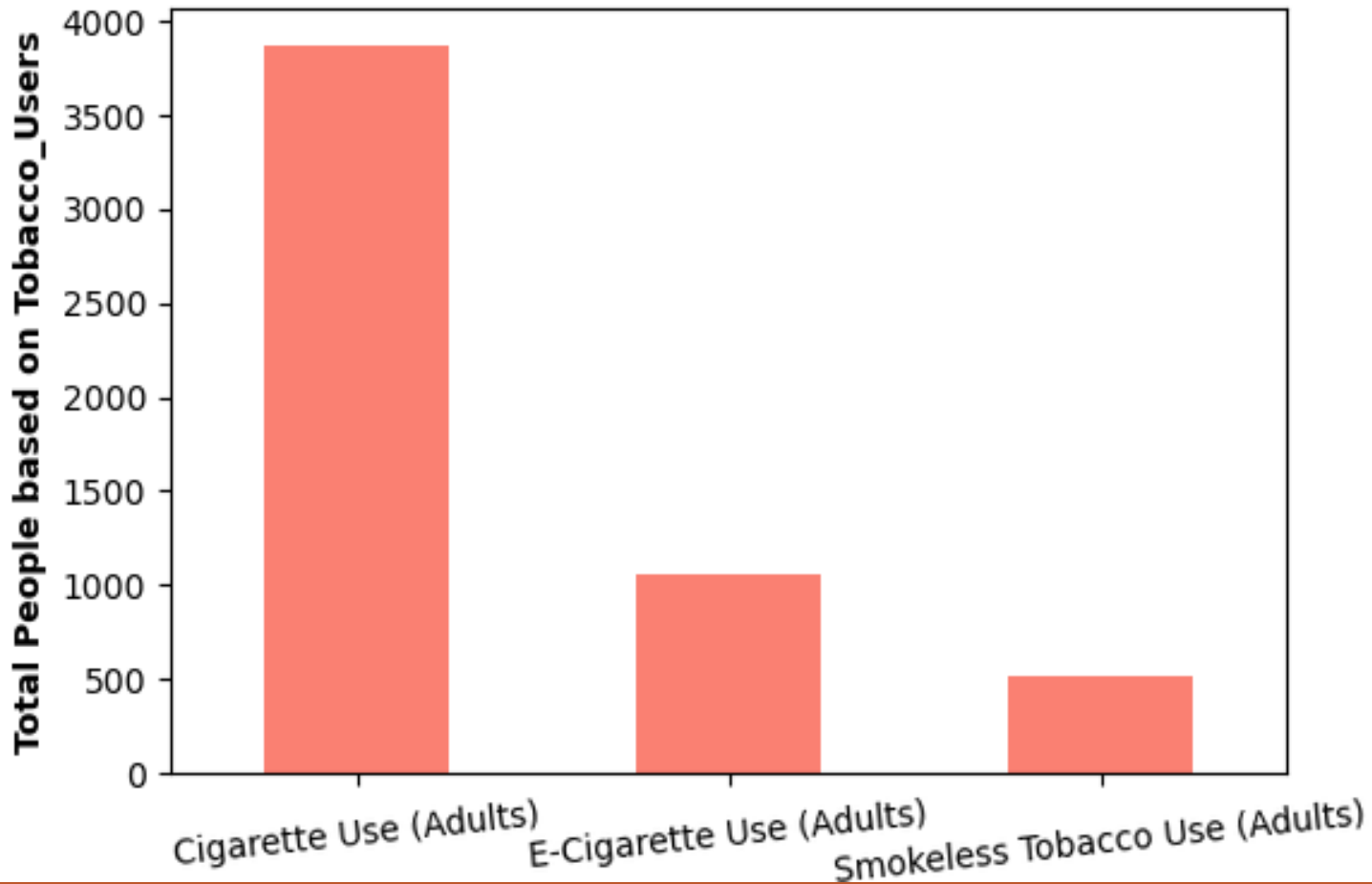
bar chart

The bar graph reinforces the observation that cigarettes are the predominant tobacco product, and it indicates that a majority of users consume tobacco on a daily basis rather than occasionally. However, it can be inferred that with E-Cigarettes, more users reported using them on some days rather than every day. The Clustered Bar Chart facilitates a clearer visualization of the frequency of each tobacco type.



California

Preferred Method of Tobacco Usage

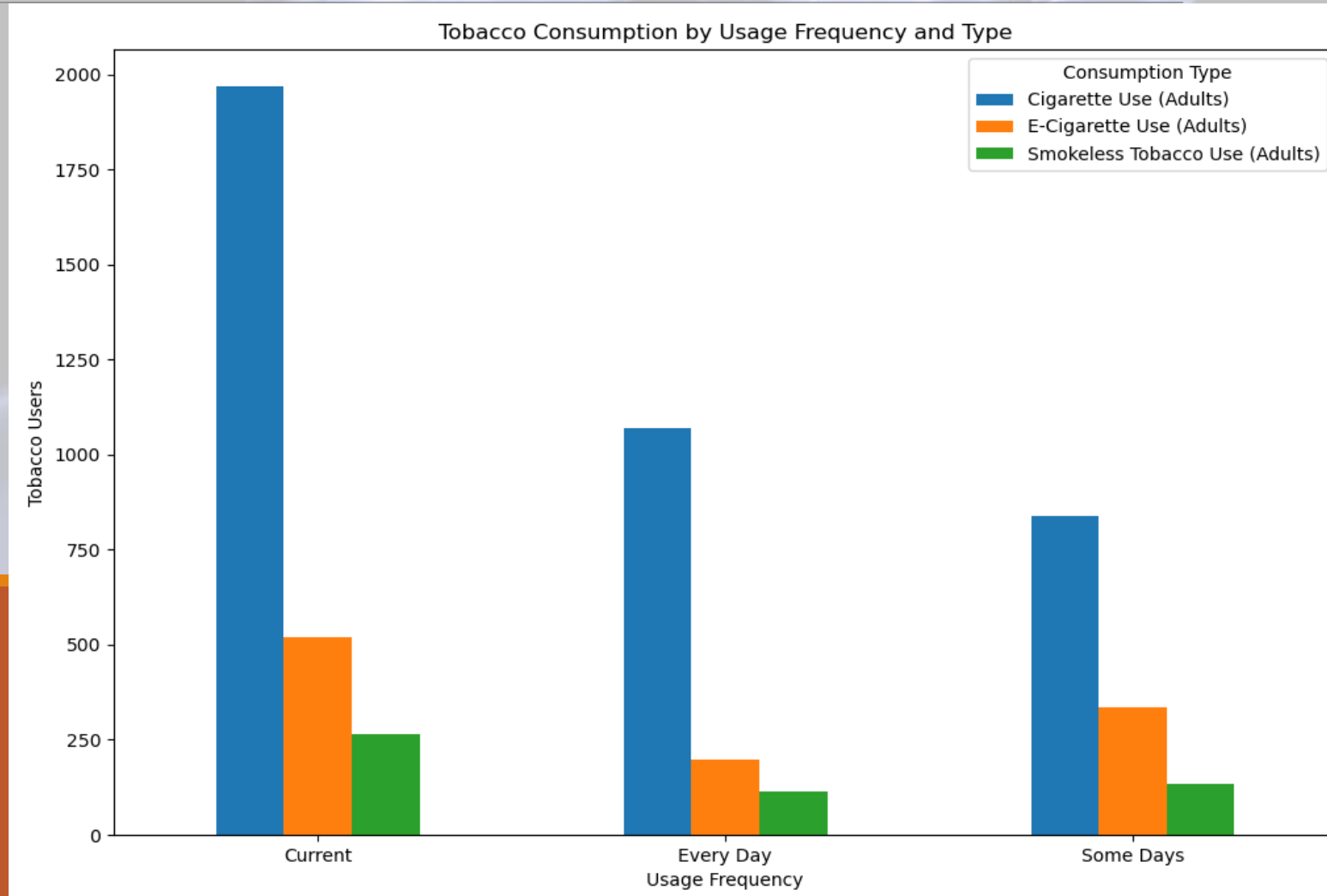


The total sample size 57560 participant in California, it was determined that approximately 5443 individuals were Tobacco users. When comparing preferred consumption method of Tobacco users, Cigarette Use is the most popular method compared to E-Cigarette Use and Smokeless Tobacco Use also known as chewing tobacco.

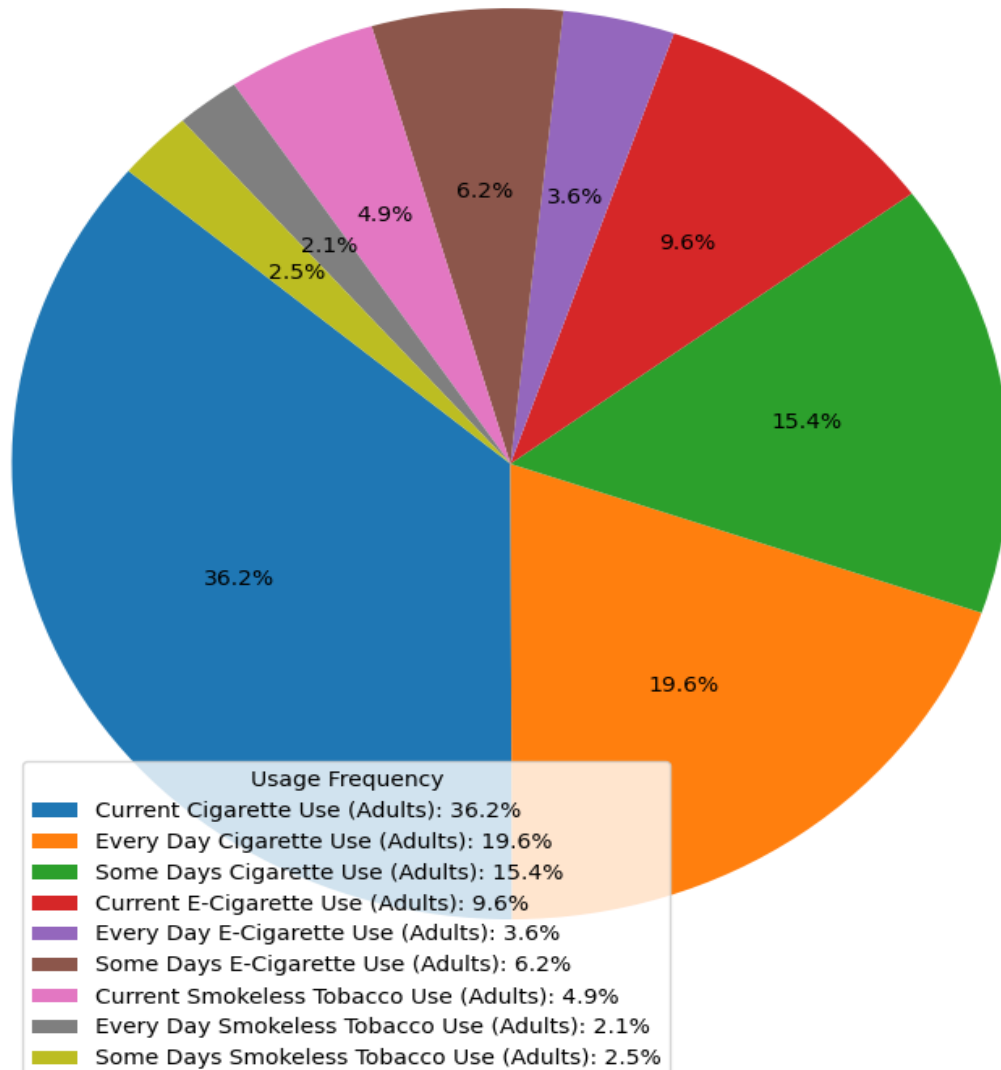
Approximately 71.2% of tobacco users in California preferred method of nicotine consumption is cigarette use.

California

When looking at the tobacco consumption by usage frequency and preferred method of consumption. Every Day tobacco users preferred Cigarette use. But some days tobacco users preferred E-cigarette and smokeless tobacco use compared to the cigarette use method.



Distribution of Consumption Types by Usage Frequency



California

Like the state of Georgia, Current tobacco Users in this state of California did overwhelming did not specify whether they use tobacco everyday or some days. This can does make it difficult to make an inference in this category. As approximately 50 percent did not specify a preference when come to usage frequency.

Summary Statistics

As you can see there's a major distortion between the weighted average and the unweighted median and range. One of the important jobs of being a data analyst is connecting why you choose particular tools to apply and ways to represent your data and I feel this particular comparison is a salient example.

The lack of weighting on the median and range means that the smaller sample sizes that have much higher percentages of tobacco users are of equal weight to the larger sample sizes that do not. The weighted average adjusts for this fact and provides us an average that properly represents the population.

State	Weighted Average	Median	Range
California	9.46	42.9	66.3
Colorado	12.64	34.7	68.1
Connecticut	9.15	37.0	68.0
Georgia	13.99	38.5	67.8

CONCLUSION

From the assessed data we can draw several conclusions. First and foremost is that nicotine use is still a part of American culture, as the (weighted) average use of tobacco products ranged from 9-14% of participants in our sample populations. In all of our sample sets, the most popular tobacco product was cigarettes. Interestingly in all of our sample sets, where the user specified frequency of use (as opposed to 'current'), cigarette users were more likely to use every day. E-cigarettes and smokeless tobacco products tended to be used "some days" (even if by a small margin). We can surmise based on this that most nicotine users are using every day.

Some questions that arise based on the analysis:

- as e-cigarettes become more popular, will overall nicotine use go down as e-cigarette users tend to use only some days?
- does the cost of nicotine products affect the usage?
- what are the ages of the people predominantly using nicotine products?
- our data set did feature age but unfortunately much of the entries simply said "all ages"

Thank you very much for joining us for this presentation, and we will now open the floor to questions and comments!

Photo Reference

A cigarette with a burnt end. URL:<https://pixabay.com/en/cigarette-ash-tobacco-burning-2011189/>

Pexels-Pixabay. 2016 April 9. "Photo of Lighted Cigarette Stick."

URL:<https://www.pexels.com/photo/close-up-photo-of-lighted-cigarette-stick-70088/>

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