

E-cigarette use

Members

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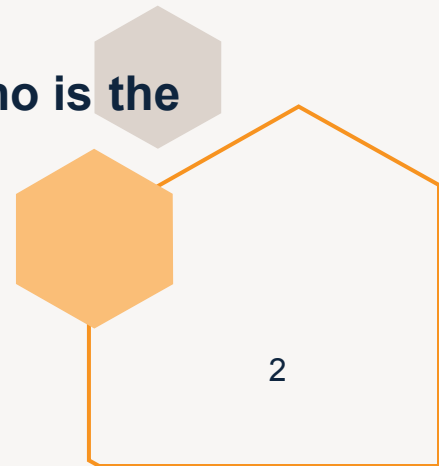


Research Question Motivation

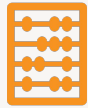
- In Australia, e-cigarettes entered the market in the mid-2000s¹
- There is a lot of research on the impacts of nicotine e-cigarettes informing campaigns, however, use of e-cigarettes has been significantly increasing since 2013², particularly among adolescents and young adults
- The true long-term impacts of e-cigarettes are yet to be concluded as vaping and e-cigarette use is still considered relatively new compared to tobacco smoking
- Anecdotally, e.g. in the news, adolescents have been presenting with respiratory symptoms and that e-cigarettes may be more harmful than tobacco smoking
- **Want to investigate/determine on a broad scale and with publicly available data, who is the typical e-cigarette user**

¹ <https://www.nzvapor.com/au/blog/company-news/history-of-vaping-law-in-australia/>

² <https://www.tobaccoinaustralia.org.au/chapter-18-e-cigarettes/18-3-extent>



Methodology Summary



Data Sources

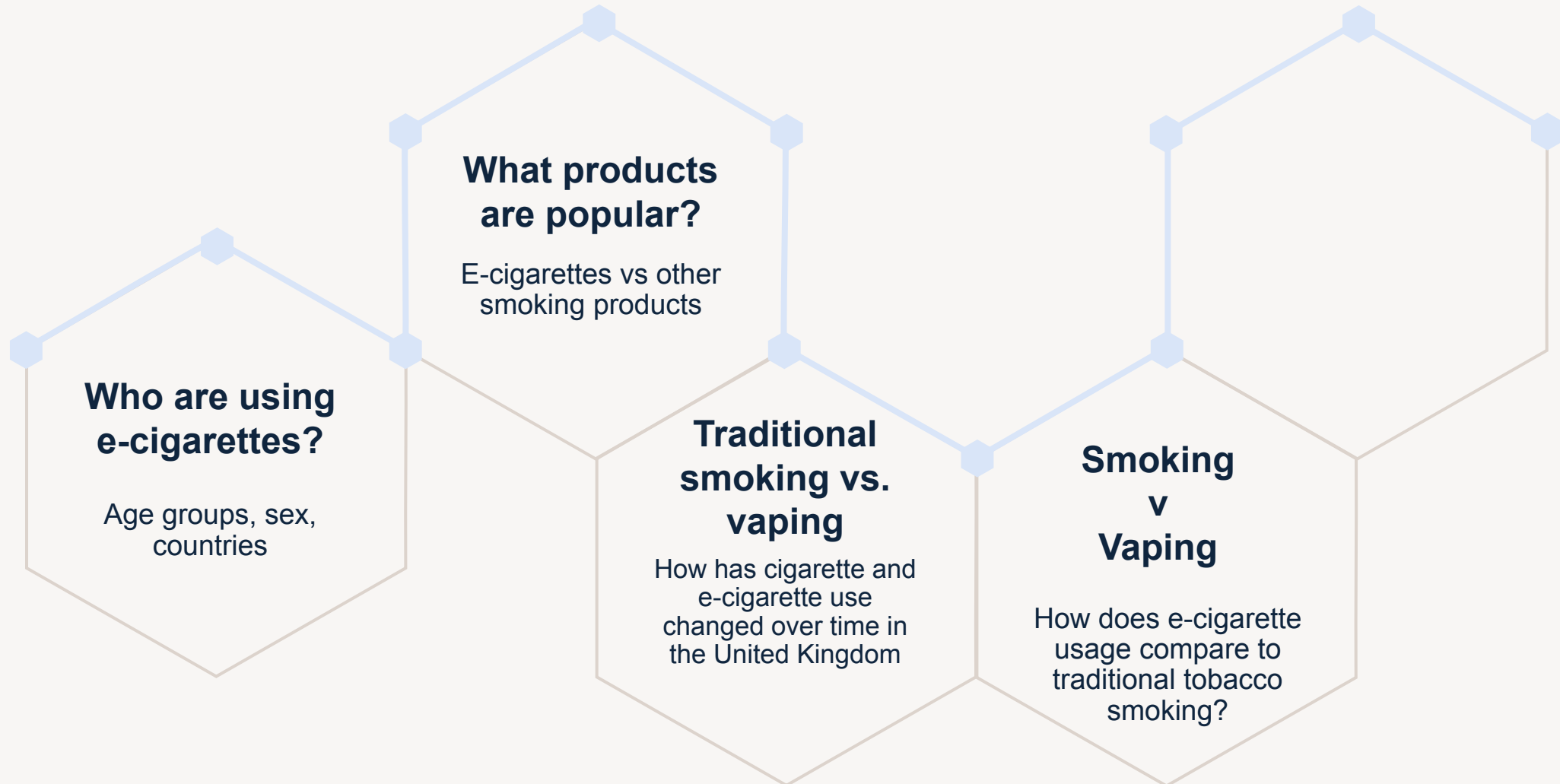
- World Health Organization (WHO) Global Health Observatory (GHO)
- National Adult Tobacco Survey (NATS)
- Adult Smoking Habits in the UK (Office for National statistics)



Data ingestion, Data Analysis & Visualization

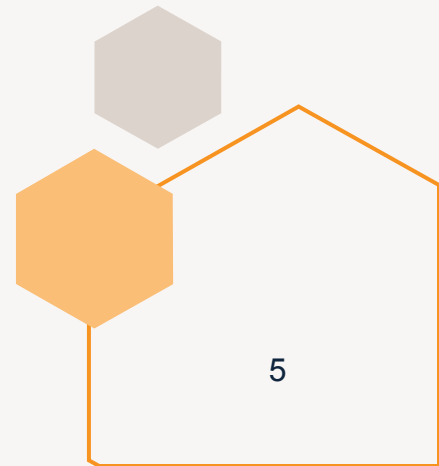
- Data ingestion: pathlib, pandas .read_csv, requests
- Used python, pandas, numpy for data cleansing, transformations, analysis and formatting
- Data visualisation: matplotlib.pyplot, plotly.choropleth to create bar charts, line charts, maps, pie charts

Research Questions



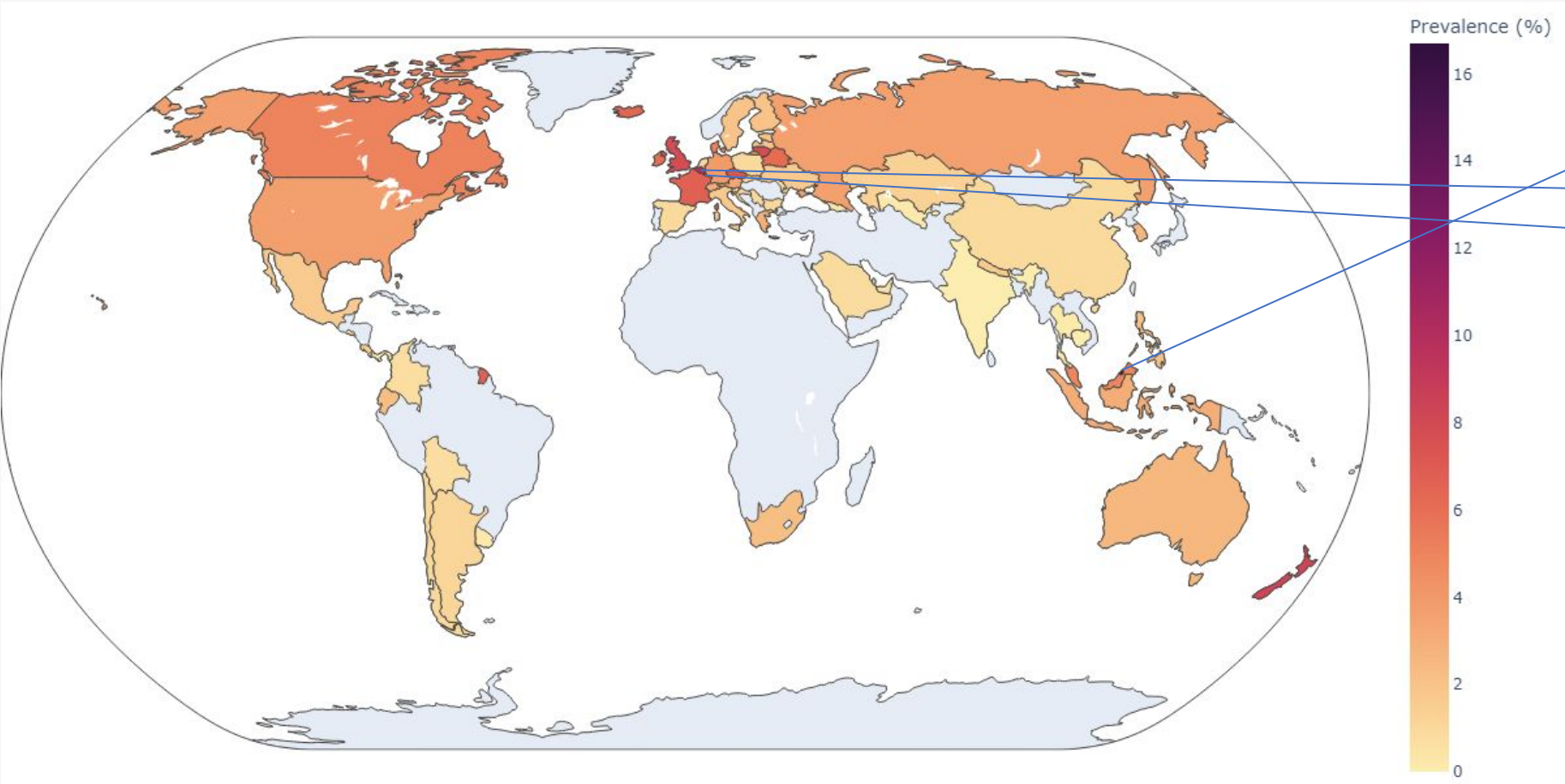
Q1. What is the prevalence of e-cigarette use among adults and adolescents across the world and how does it compare to smoking in general?

1. Data source: World Health Organization's Global Health Observatory API
2. Search through dictionary keys to find the right key to show the data in JSON format, then turned it into a DataFrame
3. Cleaned the DataFrame by removing all rows with NaN value in the column containing data on the prevalence of e-cigarette use
4. Selected columns that were relevant to the analysis, renamed columns to more meaningful names, replaced values to more meaningful words (e.g. SEX_FMLE to Female)
5. Plotted data on a map using plotly.express.choropleth
6. Saved figure as html to keep the map's interactivity

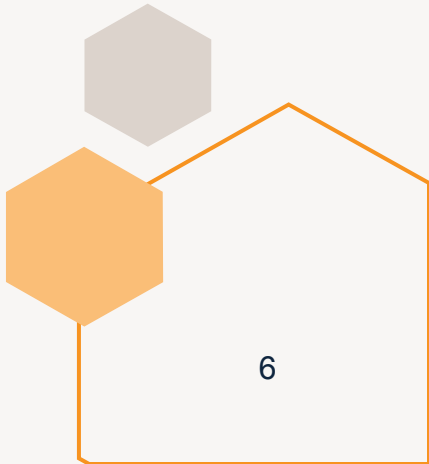


Prevalence of e-cigarette use among adults

(Data collected between 2013 and 2022)

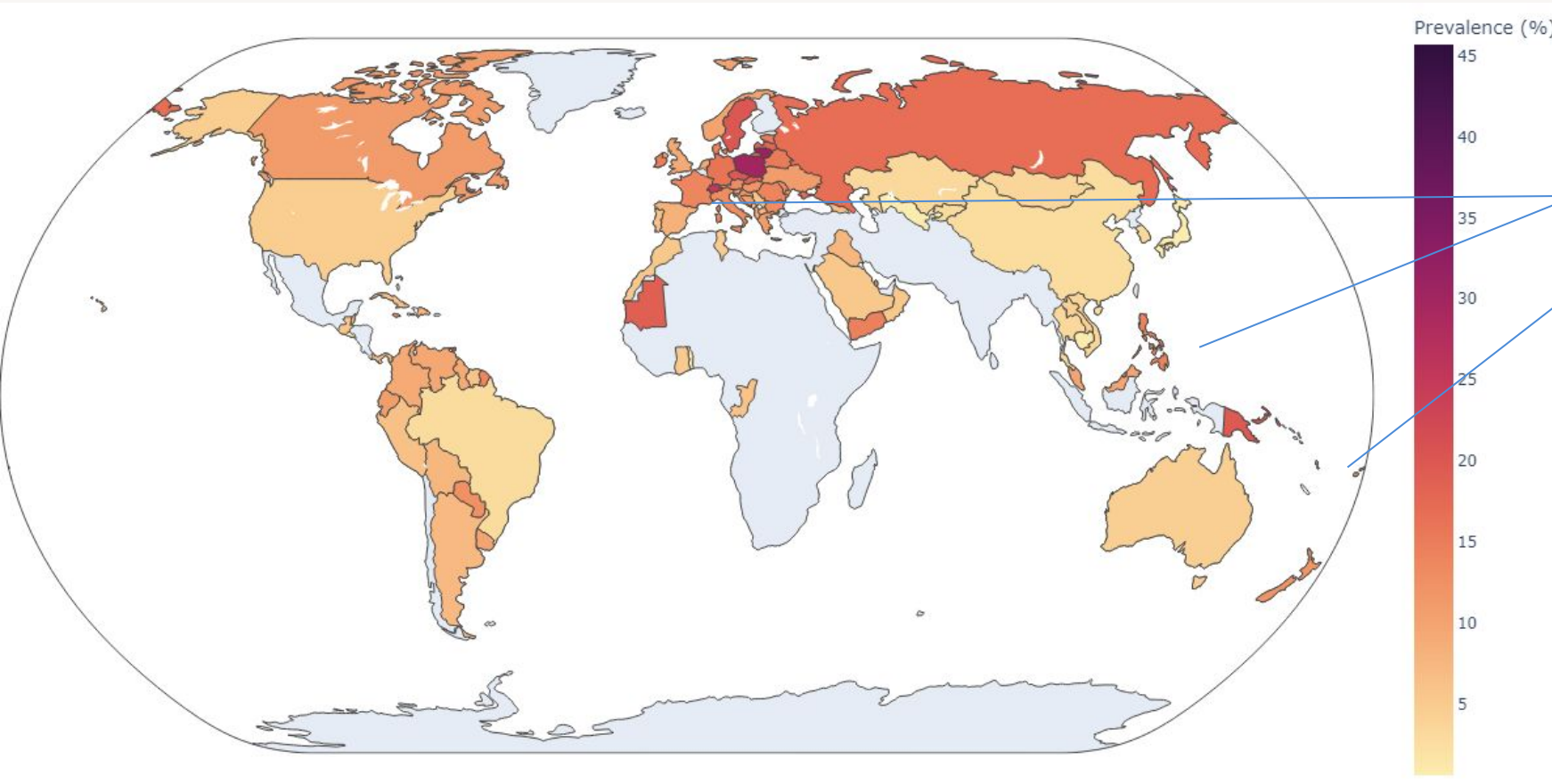


The country with the highest prevalence of e-cigarette use among adults (overall) is Brunei (16.7%), followed by Belgium (10.0%) then Luxembourg (9.4%)



Prevalence of e-cigarette use among adolescents (10-19 years old)

(Data available 2014 and 2022)

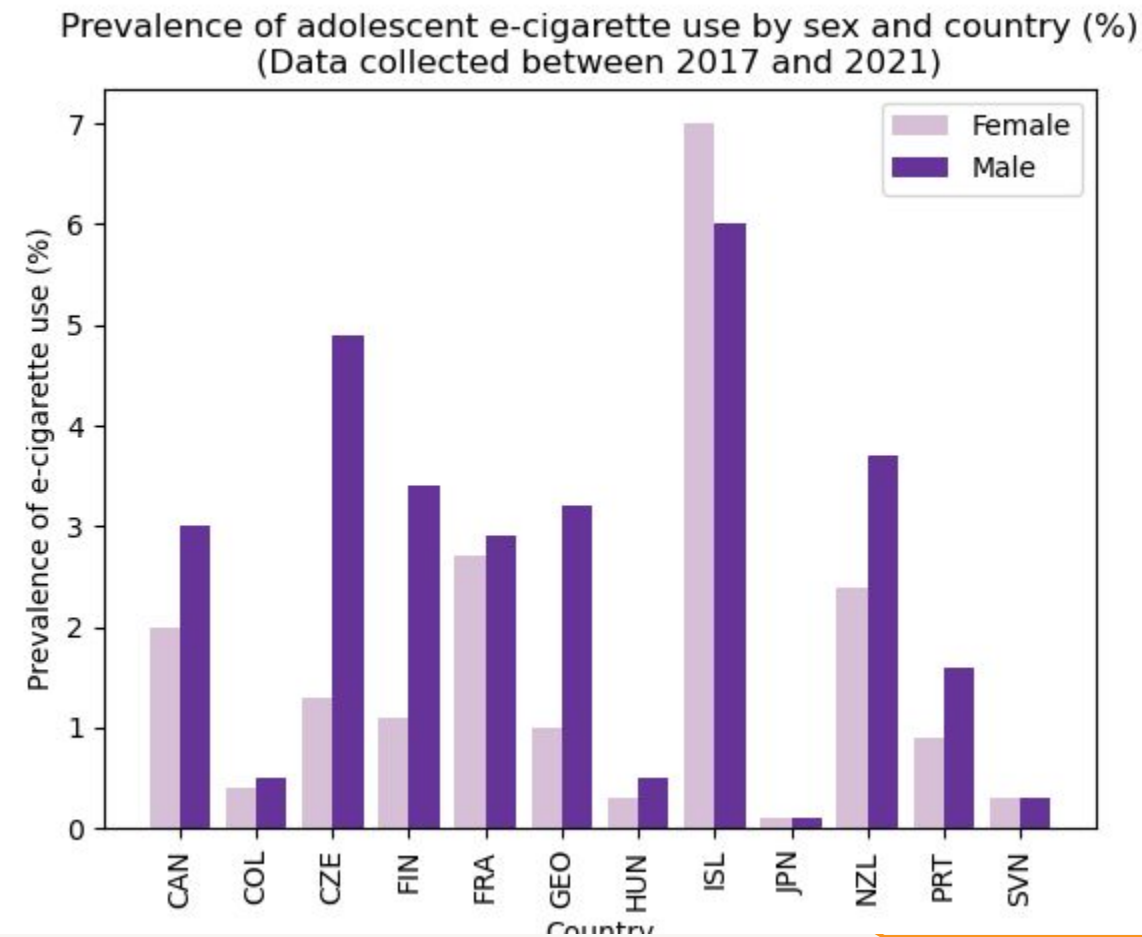
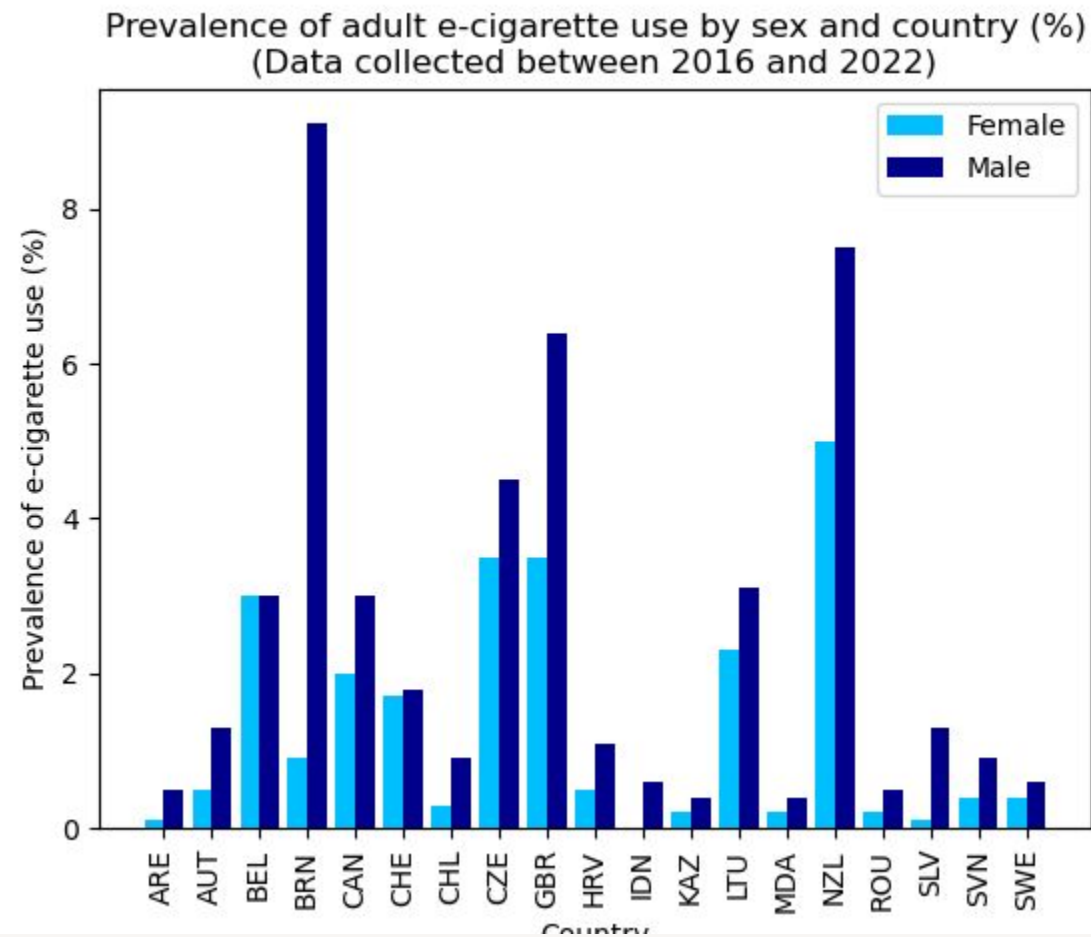


The country with the highest prevalence of e-cigarette use among adolescents (10-19 years old) (overall) is Palau (45.7%), followed by Monaco (41.0%) then Niue (35.7%).

Prevalence of daily e-cigarette use

The country with the highest prevalence of daily adult e-cigarette use is Brunei for males (9.1%) and for New Zealand for females (5.0%).

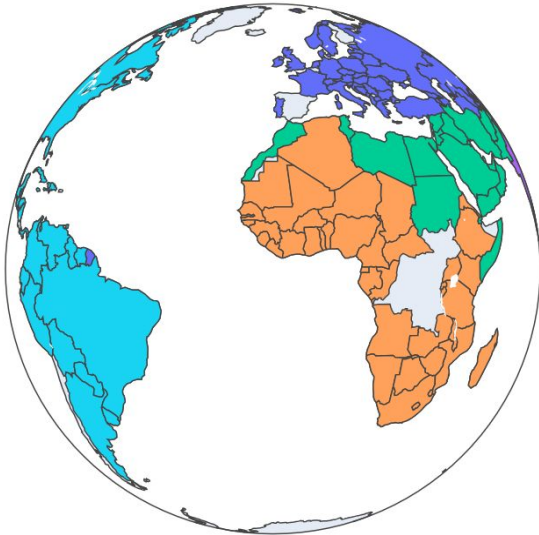
The country with the highest prevalence of daily adolescent e-cigarette use is Iceland for both males (6.0%) and females (7.0%).



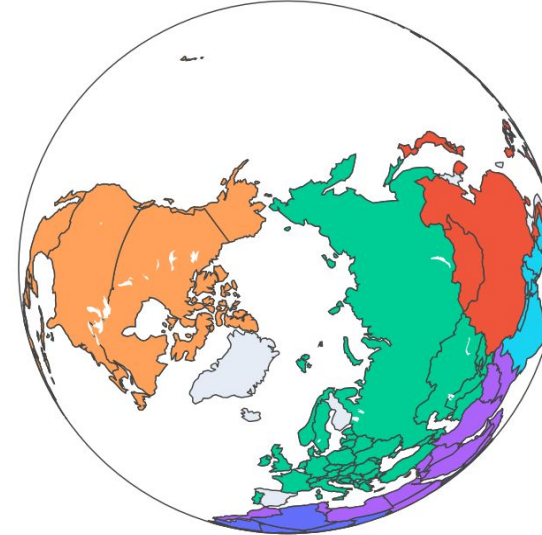
Prevalence of tobacco smoking among adults

(Data available between 2003 and 2022)

Prevalence of Male Smoking
World Health Organisation
(Information between 2003 and 2022)



Prevalence of Female Smoking
World Health Organisation
(Information between 2003 and 2022)



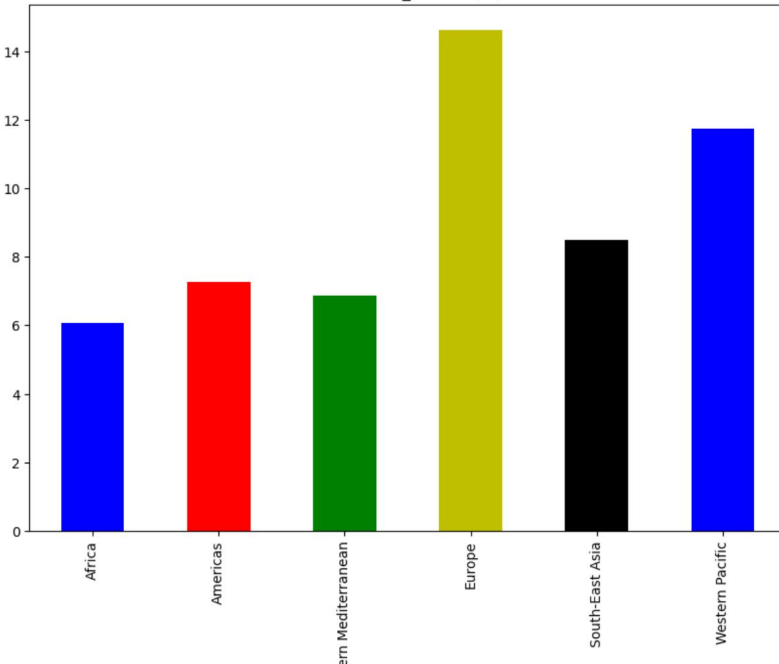
- Papua New Guinea has the highest prevalence of smoking for males (29.9%)
- Bulgaria has the highest prevalence of smoking for females (36%)

Prevalence of tobacco smoking among adults

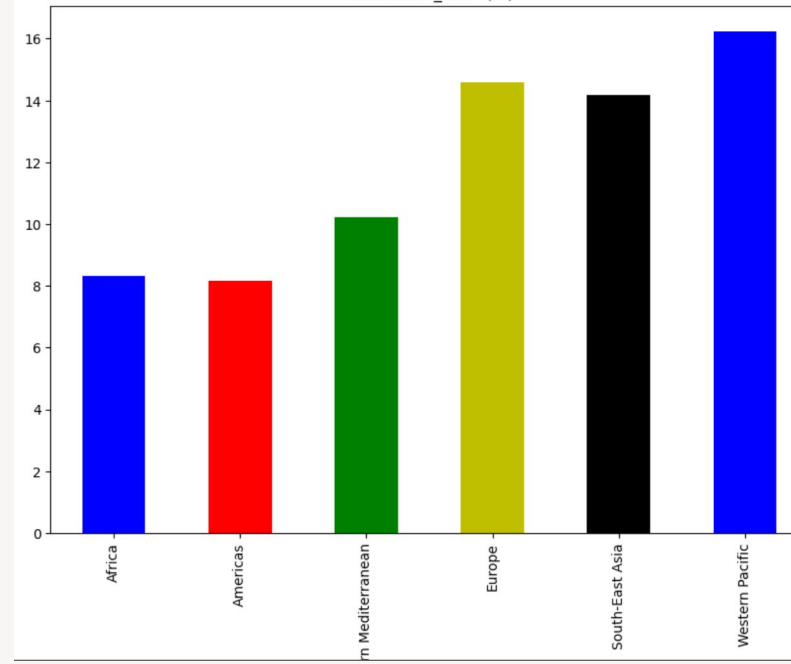
(Data available between 2003 and 2022)

- Europe has the highest average prevalence overall @ 14.63%
- Western Pacific has the highest average prevalence Male @ 16.26%
- Europe has the highest average prevalence among female @ 13.84%

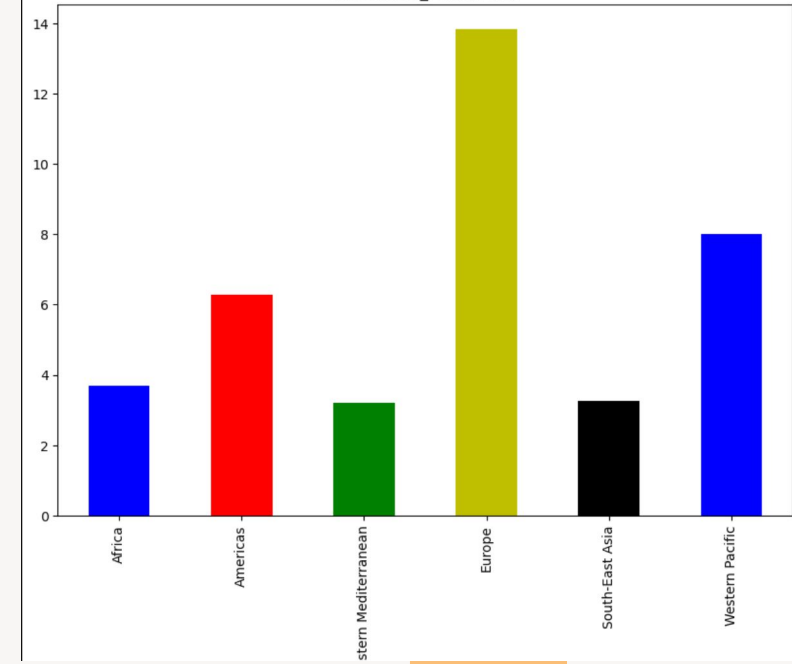
Prevalence_Overall (%)



Prevalence_Male (%)



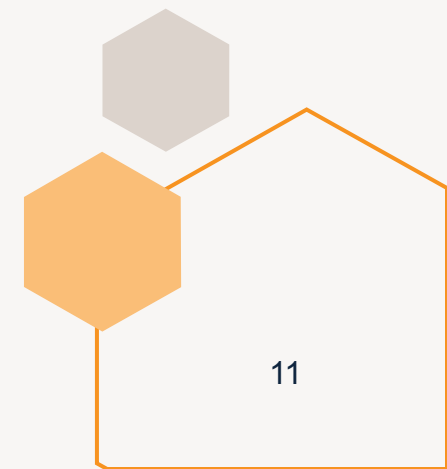
Prevalence_Female (%)



Q2. What types of tobacco do adults use in the United States and how does the distribution of e-cigarette use compare to the other tobacco types?

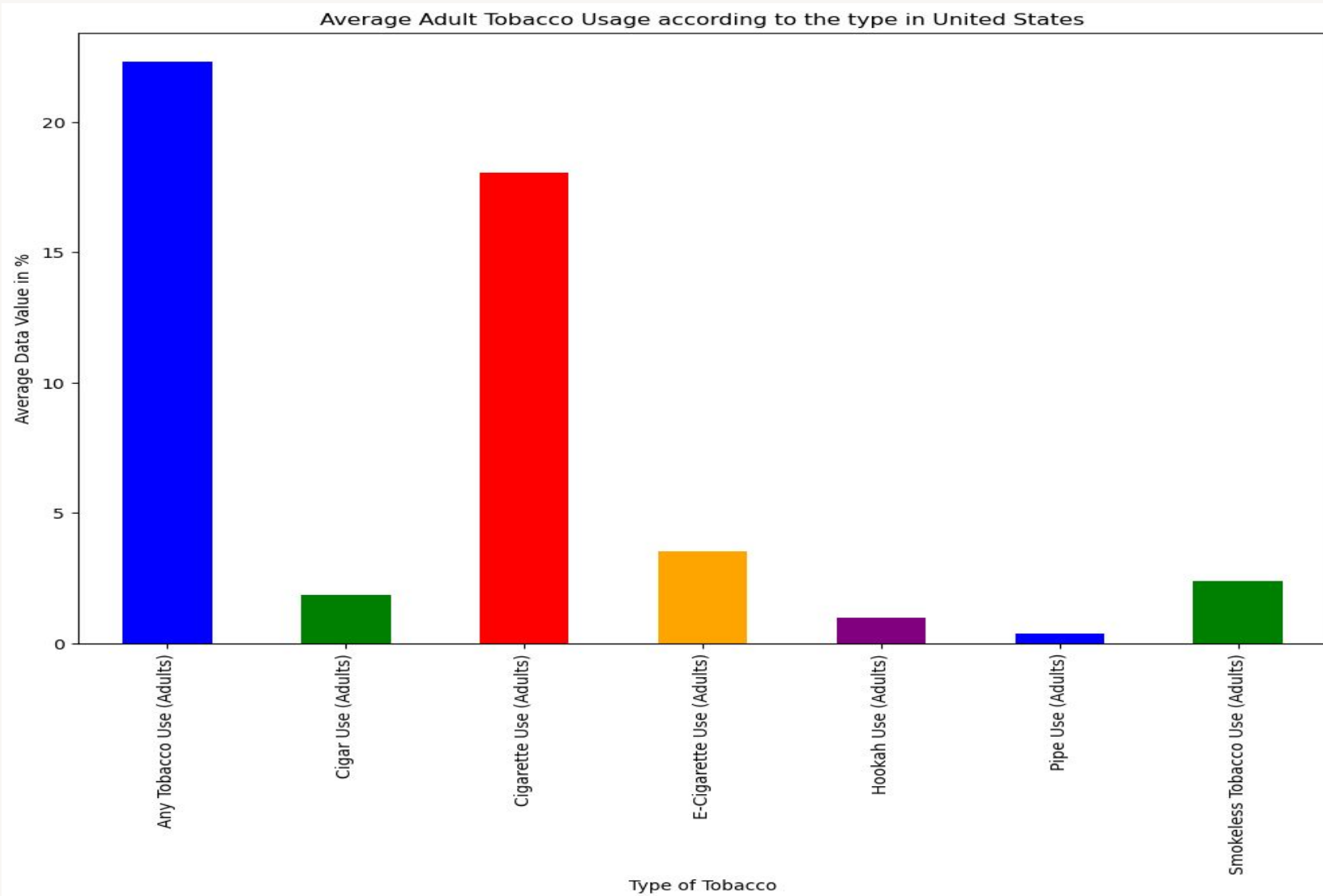
How we got there ?

- National adult tobacco survey (NATS): [National Adult Tobacco Survey \(NATS\) - Catalog](#).
- Downloaded the dataset as a csv file and then utilized the `.read_csv` function to read the dataset into python.
- Generated a new DataFrame containing only the columns that are necessary for my analysis.
- Performed data cleaning process by utilizing `.rename()` function rename columns and used `.dropna()` function to eliminate rows containing null values.
- Selected the rows needed for analysis using `.loc()` function.
- Visualized the data using bar charts and pie charts by utilizing 'matplotlib.pyplot' library.



Average Adult Tobacco Usage according to the type in United States

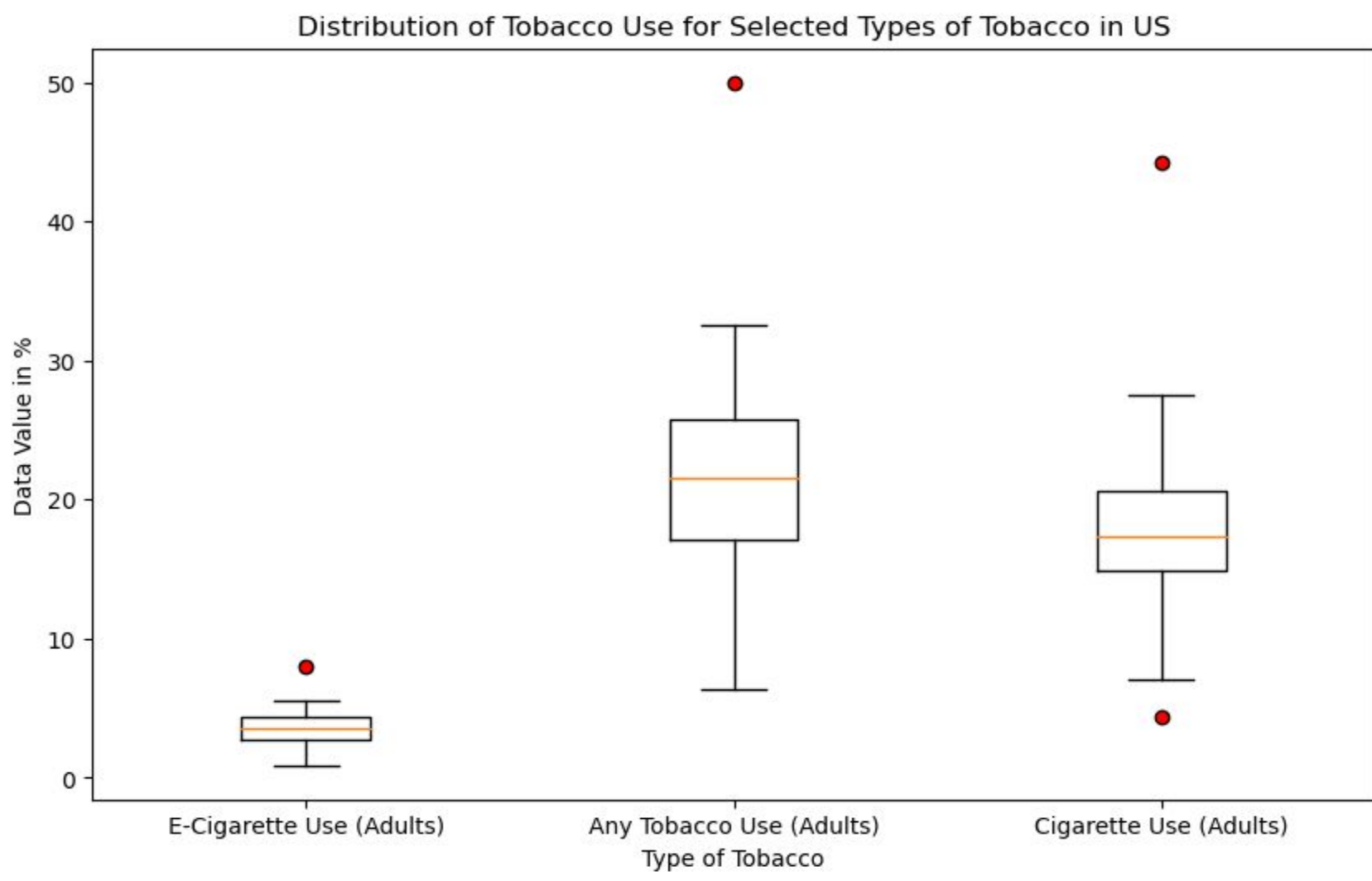
(Data available 2013 -2014)



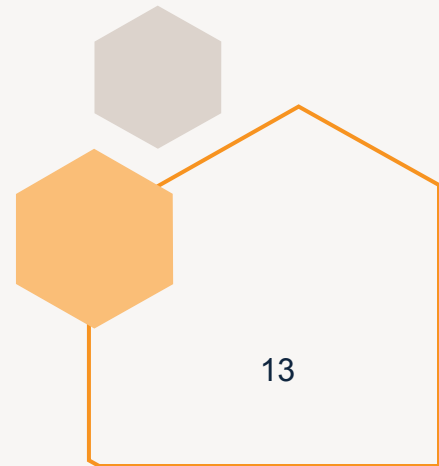
- The most common type of tobacco use is cigarette use, with an average data value of around 18%.
- The least common type of tobacco use is e-cigarette use, with an average data value of around 3%.
- Smokeless tobacco use and any tobacco use are more common than e-cigarette use, hookah use, pipe use, and cigar use.

Distribution of tobacco use for selected types of tobacco in United States

(Data available 2013 -2014)

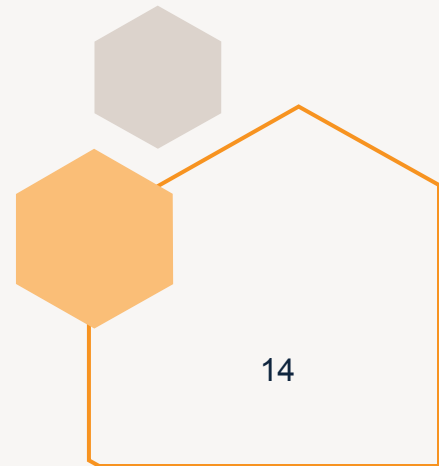


E-cigarette use: The median is the lowest of the three types of tobacco, and the IQR is also the smallest. This means that e-cigarette use is less common than other types of tobacco use, and there is less variation in e-cigarette use among adults.

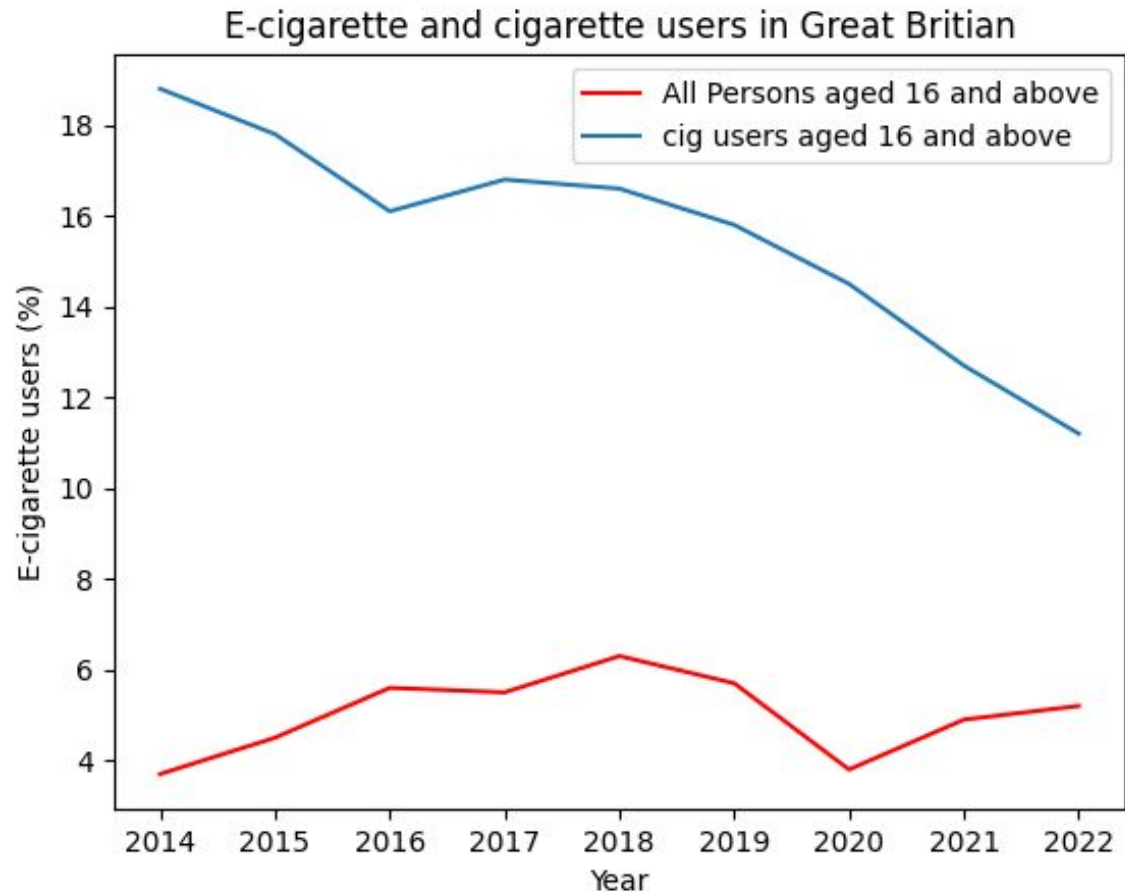


Q3. How has cigarette and e-cigarette use changed over time in the United Kingdom

1. Data Source - Adult Smoking Habits in the UK (Office for National Statistics)
2. Downloading data as an Excel file (.xlsx)
3. Using Excel to create a .CSV file that Pandas will easily read
4. Creating Data Frames with the relevant data
5. Using Matplotlib to graph cigarette and e-cigarette use
6. Saved figures as a PNG. file

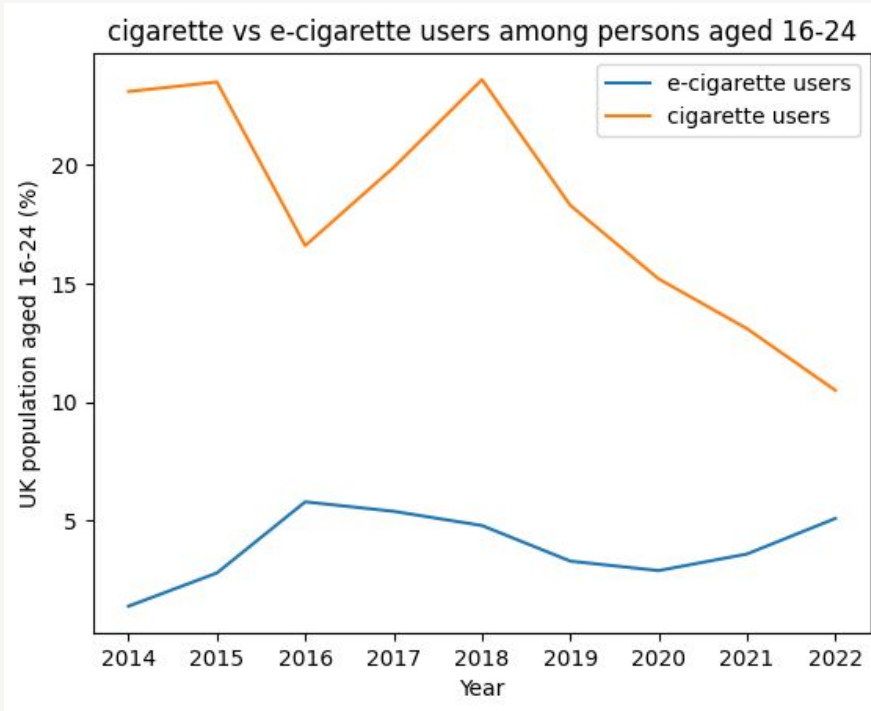


E-cigarette vs cigarette use

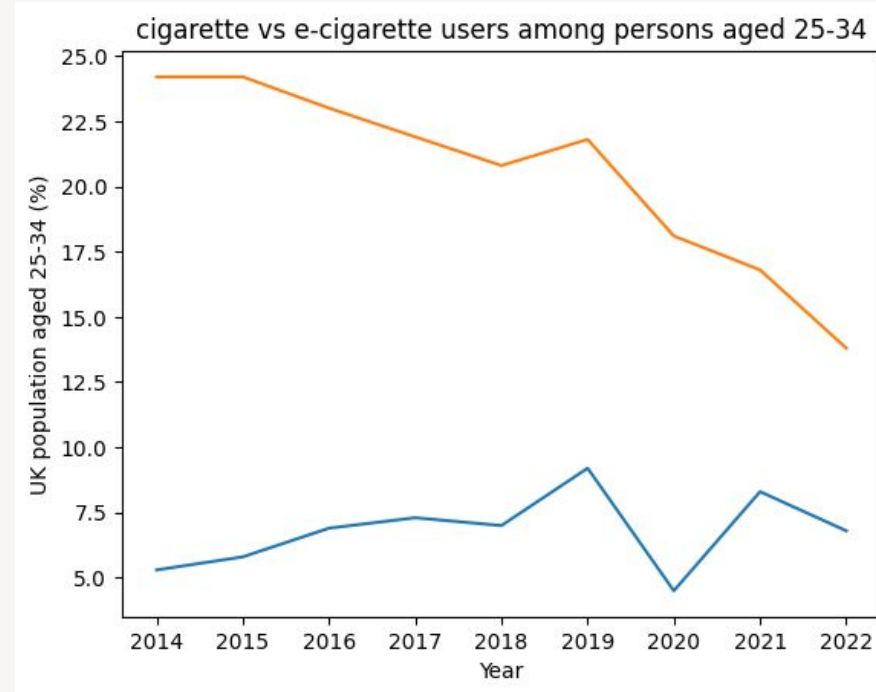


- E-cigarettes were initially introduced to the market as a healthier alternative to Traditional smoking
- 2014-2018 shows us this may have been the case
- From 2019 onwards, e-cigarette use has stagnated while cigarette use has been on a steady decline since 2017
- 2022 has shown to have the lowest percentage of cigarette smoking (12.9%)

E-cigarette Vs cigarette use among different age groups



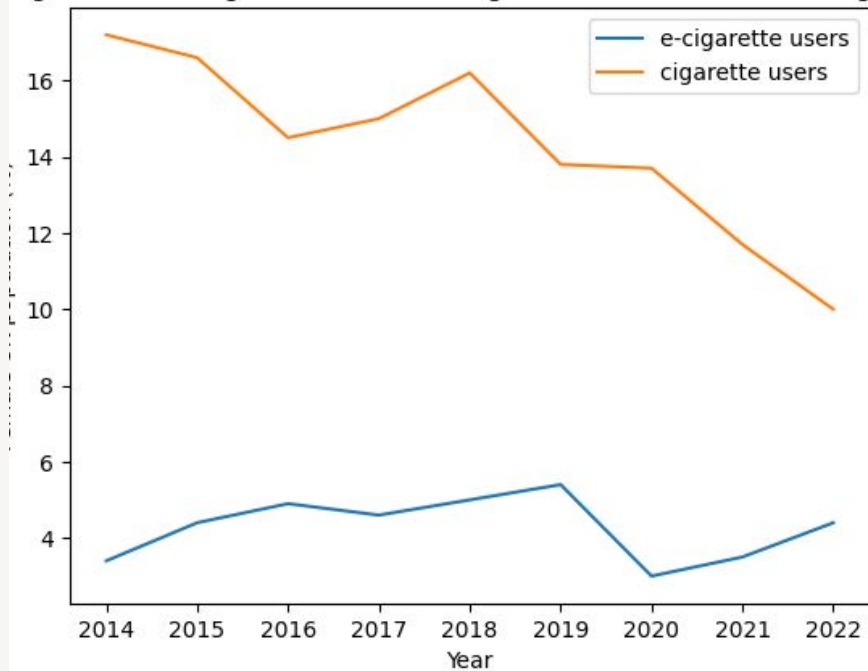
- Cigarette smoking for young adults have been on a steady decline since 2018
- E- cigarette use however, has not had an impactful increase.
- Only shows incremental increase since 2020



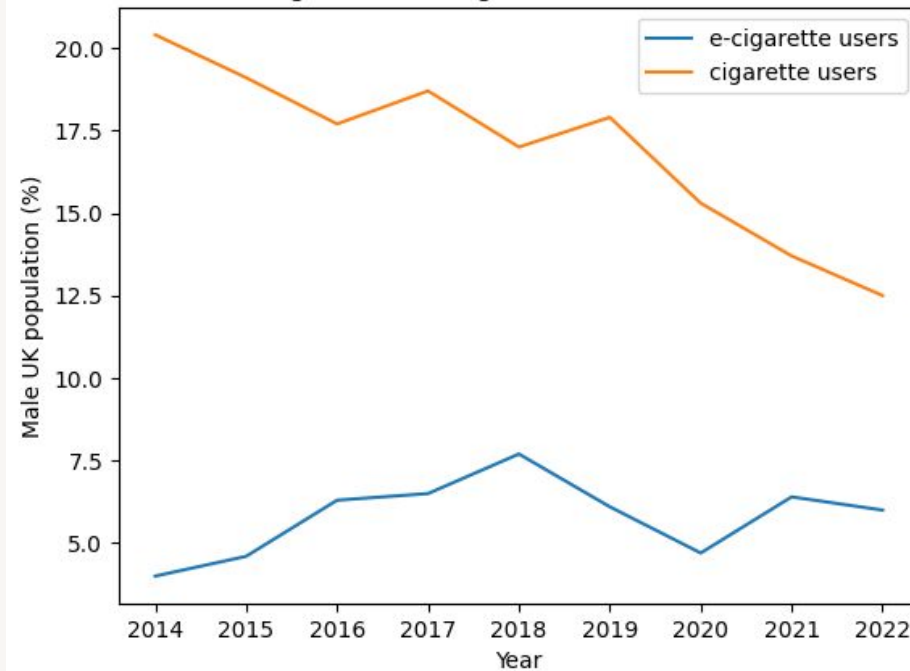
- Cigarette and e-cigarette smokers in this age bracket have shown the largest percentage of active smokers
- 2014 - 2019 has shown a steady growth in e-cigarette use
- After 2021, data shows that cigarette and e-cigarette smoking have both decreased
- Quitting out right, rather than switching to the alternative

E-cigarette Vs cigarette use among different genders

cigarette vs e-cigarette users among Females in the United Kingdom



Male E-cigarette and cigarette users in Great Britain

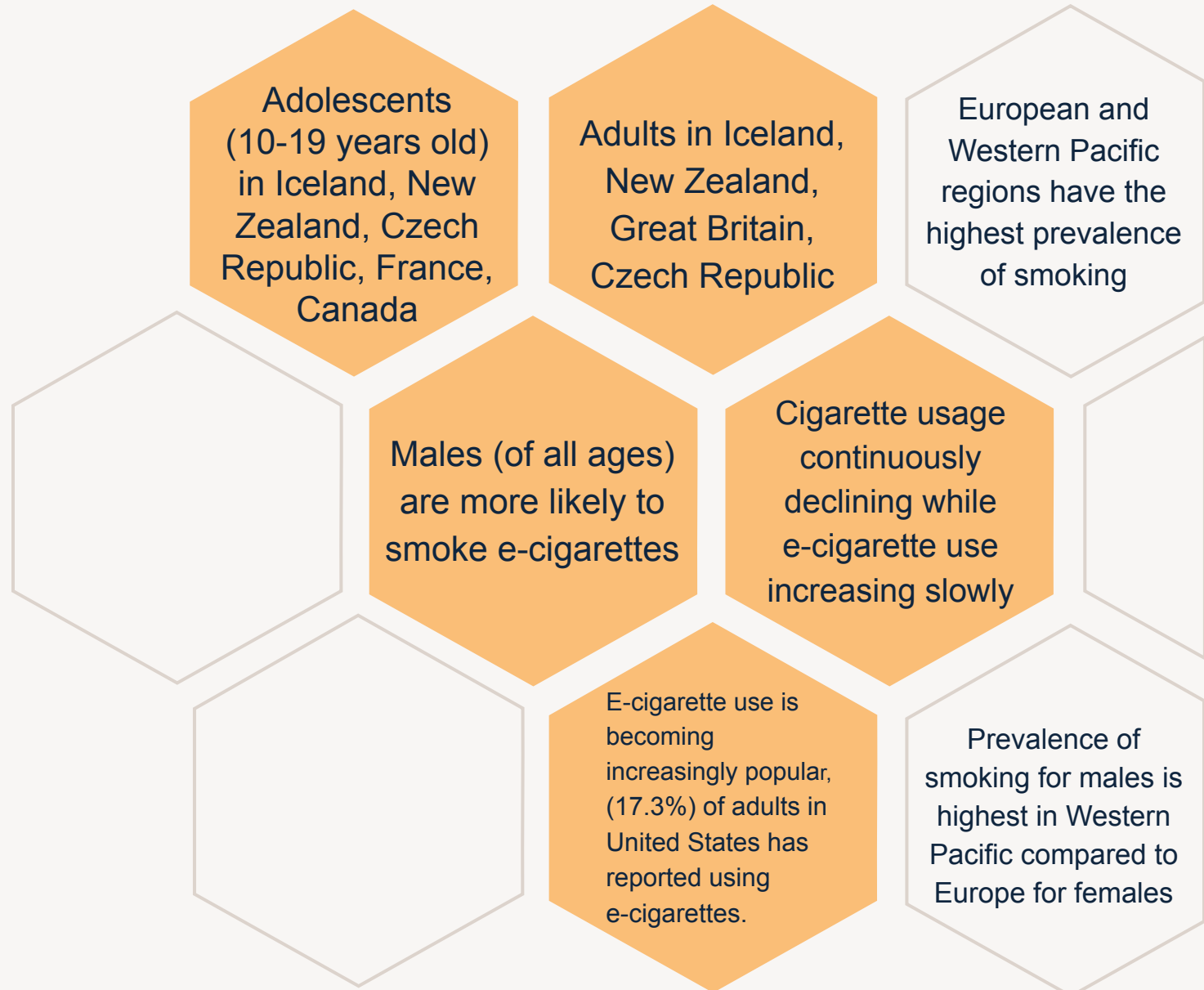


- Both male and female cigarette users have shown a similar decline
- Female e- cigarette users have been on a slow incline since 2020
- While male e-cigarette users have been stagnant/decrease over the past two years



Conclusion

Who is the target audience for an anti e-cigarette campaign?



Thank you

