The Map of European Drug Consumption

An interactive visualization based on the 2022 Statistical Bulletin by the European Monitoring Centre for Drugs and Drug Addiction.

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Motivation

One question that very commonly comes up in conversations as international students is: what of our countries consume more alcohol. Quickly people take out their phones and look for a ranked table with percentages. The sources for it are usually overlooked and certainly the details of surveys are not taken into account. Nonetheless, this information is usually good enough to settle the discussion. It also happens usually that you ask yourself, whether this cooffeeshop culture of legalized cannabis leads to dutch people smoking more than other countries. Once again you check your phone and look for an ordered table of percentages, ignore the source and move on. These moments made me realize that a comprehensive, rigorous and accessible source of information regarding drug consumption in different countries would be useful.

On the other hand, I love data visualization. I can spend hours making a set of boxplots look exactly as I want. Nevertheless, I am mostly familiar with *ggplot2*, a library used in R. Since I now mostly program in Python I thought it would be good to improve my data visualization skills in Python. Although I love plots in general, one thing that I specially like is map plots. This fit perfectly with the idea of a making a source of information regarding drug consumption: I would make a map of Europe (since that is the area that interests me the most) showing how drug consumption varies from country to country.

Methods

In order to create The Map of European Drug Consumption I needed two things: data visualization skills and data. Regarding the first, I checked Plotly and saw that it included a choropleth function that allowed you to create map visualizations, as well as interactive elements through Plotly Dash. Thus, I embarked in the journey of learning how to do this kinds of graphs. Turns out you need a .geojson file of the area you want to map (i.e. a json file with coordinates data to draw each of the different regions in the area). I found one and managed to create a first ugly looking map of Europe showing population data.

Next I needed to find a tidy and reputable data set to use. Thankfully I found the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), which had .xlsx files showing consumption of different drugs per country according to the latest survey performed. The only problematic aspect was that this only included countries members of the European Union and thus I had to restrict my visualization to this area. Data processing involved some effort but the tidy format of the original .xlsx files made everything easier.

Finally, because I wanted to do a comprehensive visualization including different drugs, I needed the plot to be interactive. Thankfully, Plotly Dash allows for this by creating a little website to host your plot where you can introduce different interactive elements. This implied learning how to setup a basic Dash website. Here my previous training in basic html was extremely handy and after a day of effort everything worked. For more details regarding the process and to see the code and data sets visit this github repository.

Result

In the end an interactive map of the European Union showing drug consumption for cannabis, alcohol, cocaine, amphetamines, ecstasy, tobacco and any illicit drug resulted. These different substances can be selected using a drop down menu on the upper-left corner of the website and the map and legend immediately update. By hovering over each country one can see what exact percentage of the population consumed that drug in the last month, when the survey these result comes from was conducted and what was its sample size. Countries with no data or not members of the European Union are shown in light-gray.

Some interesting results involve Spain having a higher prevalence of cannabis than the Netherlands (even though the drug is not legal there). It is also interesting to see how including the features about the survey (i.e. year and sample size) can help interpret results. Although it seems that Ireland consumes much more ecstasy than the rest of the European Union, hovering over one will see that the sample size of the survey was not reported, and thus the results should be taken with caution. We may then be inclined to claim that the Netherlands (which has a reasonable sample size) is more confidently a prominent consumer of ecstasy than Ireland.