Biofuel-Production-analysis

This is a simple analysis of a biofuel production dataset found using google datasets.

The data covers the production of biofuel from various countries across the whole globe during the 2000-2010 decade, the data also includes the production per continent.

In this simple, and my first, analysis work the main focus is posed on transforming the given dataset in a format which is easy to plot using the seaborn library to visualize it and see how the different countries compare with eachother and also how the different continents do.

WHAT IS BIOFUEL?

Biofuel, any fuel that is derived from biomass—that is, plant or algae material or animal waste.

Since such feedstock material can be replenished readily, biofuel is considered to be a source of renewable energy, unlike fossil fuels such as petroleum, coal, and natural gas. Biofuel is commonly advocated as a cost-effective and environmentally benign alternative to petroleum and other fossil fuels, particularly within the context of rising petroleum prices and increased concern over the contributions made by fossil fuels to global warming.

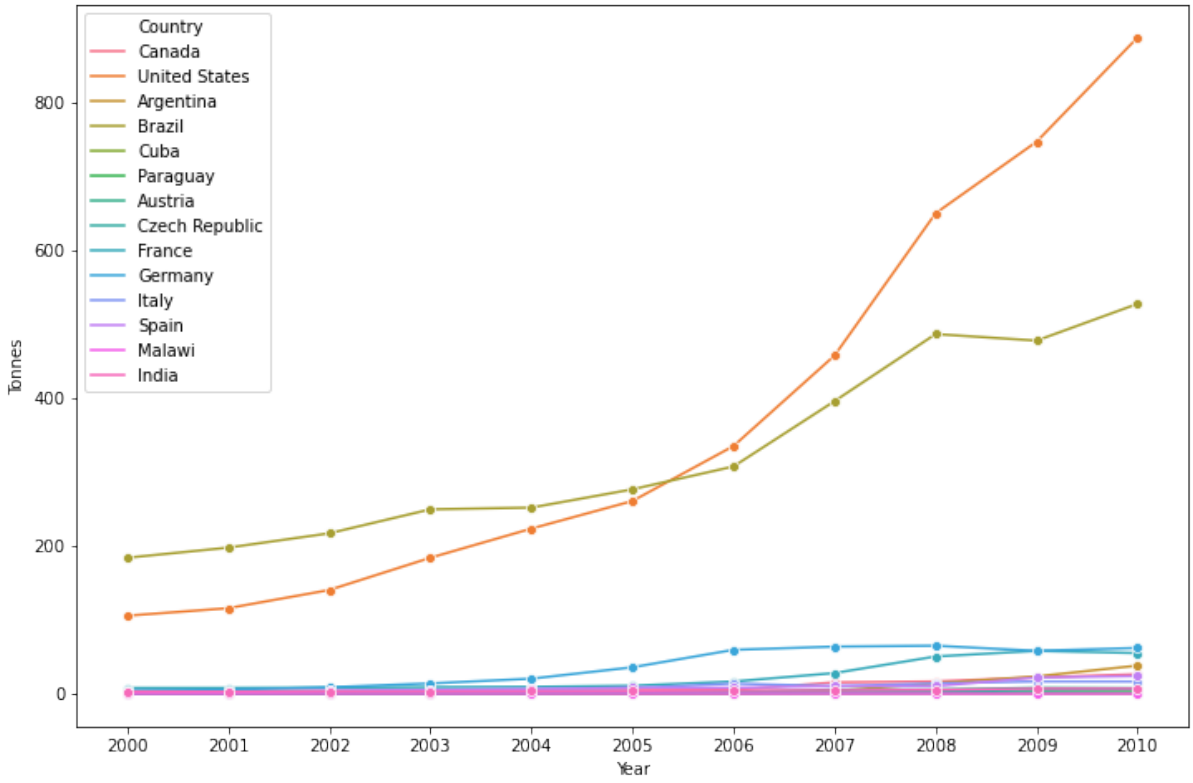
I first learned about biofuel during high-school and studied the subject more in depth while studying for my bachelor degree in Biotech, so I thought it would have been fun and interesting to apply data analysis to my field of study.

Analysis

After properly manipulating the initial dataframe I was able to draw some simple graphs using the seaborn library which clearly show how hugely different the production was during the last decade.
As I wanted to show how the production has changed over time I have first used lineplots graphs that make this kind of visualization extremely simple and easy.

I then wanted to get an idea on how the *total* production of a given country and continent compared against each other and for this I used barplots.

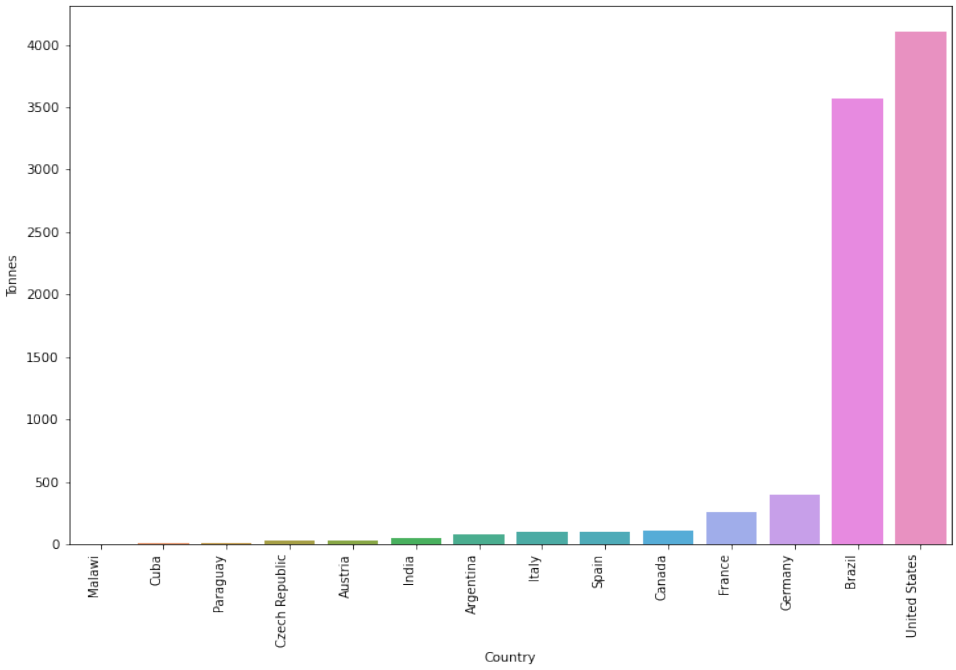
Let's start with the graphs about the different countries (dfprod dataframe).



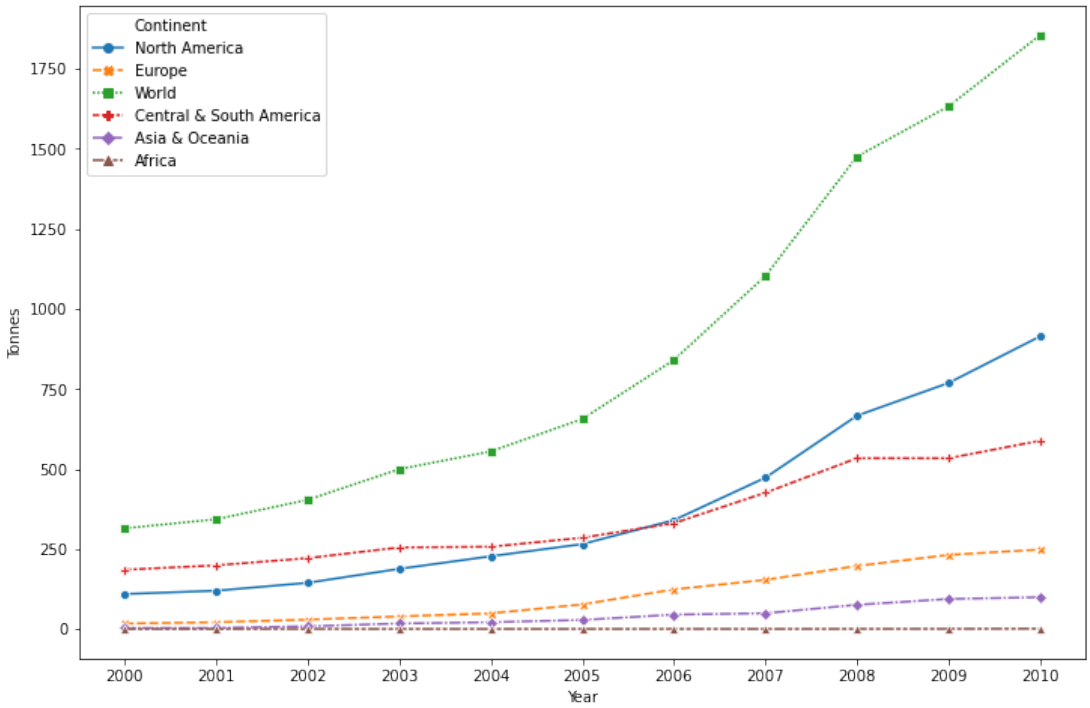
The graph clearly shows how the global production of biofuel was essentially monopolized by 2 countries: the US and Brazil.
The most interesting thing is how the production of biofuel in Western European countries has remained low and unchanged over the entire decade, while in both the USA and Brazil there is not only a steady increase, but also an acceleration in production after an initial more linear trend.
How can we explain this graph?
Well, one factor can be the presence of extensive plains that can be directed towards this type of cultivation for the production of energy and not for human and animal nutrition.
These lands are simply not available in Europe, and those available are almost exclusively used for food production.

The situation can be seen even better in the total production graph of the decade.

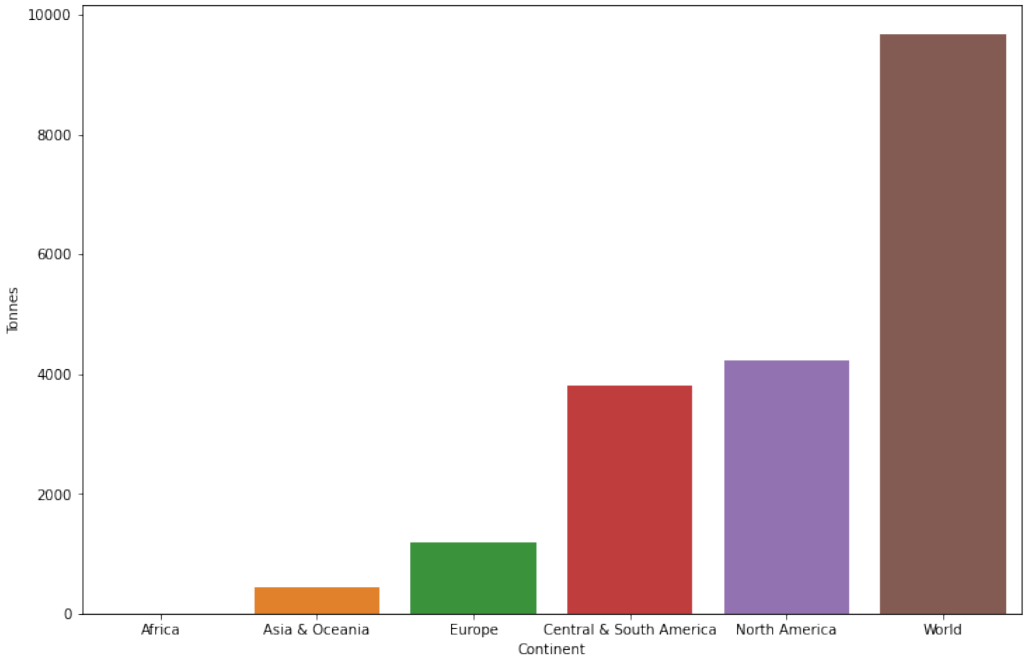
Only Germany and France are able to have a satisfactory minimum production, but still absolutely nothing and derisory when compared to Brazil and the USA.



Let's now take a look at how the different continents compare using the same kind of graphs.



As I expected, the production of the continents has the same trend as the production by nation: in fact, the lines are dictated exclusively by the presence of the USA and Brazil that make the other world productions derisory.
European production is especially worrying as it seems to be tending towards a plateau rather than an accelerated one as I would have expected.
Asia and Africa, on the other hand, are part of my expectations, as they have a huge and expanding population and therefore have a greater demand for food that cannot be sacrificed for energy production.



This concludes this quick analysis, I hope you found it informative.

Please remember that this is my first data analysis project using Python