

# Plastic Consumption

Analysis on plastic consumption

Jafitha Johnson, Shantanu Suryawanshi, Pranay Reddy

University of New Haven

### Abstract

Adaptable, pliable, robust, inexpensive, and ubiquitous to manufacture Plastic is all of that. It is also both a wonder commodity that saves lives and the Earth's scourge. Owing to these inherent advantages, since the mass processing of synthetic plastics started in the 1950s, the rate of production and use of plastics has skyrocketed. However, this wonder creation has its dangers, the chemical composition of most plastics makes them resistant to many natural degradation processes and they are slow to degrade, therefore. Land-related plastic contamination poses a threat to plants and animals, including people based on land. It effects all living organisms, the water, the land, the air and can stop the future generations to have healthy lifestyle, hence it has become necessary to under the consumption so as make the necessary changes.

The dataset used has been taken 3 science citizen organizations events that have voluntary cleanup sessions around countries from the year Jan 1 -Dec 31, 2018. The dataset has been cleaned, filtered, and structured for making the right analysis, methodology.

## Plastic consumption

### Classification of Plastic Consumption

The estimated concentration of plastic on land is between four and twenty-three times that of the ocean. The quantity of plastic is larger and more concentrated on the ground than in the water. How much of importance it is to understand what constitutes for so much consumption. We analyze the dataset to find the top pollutants to create awareness.

### **Methodology**

The dataset has been cleaned by dropping any duplicates that it had, checked for Nan values, and replaced it with 0. The table also contained certain information that was not required for the analysis and hence those columns were dropped. Made use of the describe function of pandas to calculate all the insight on the table.

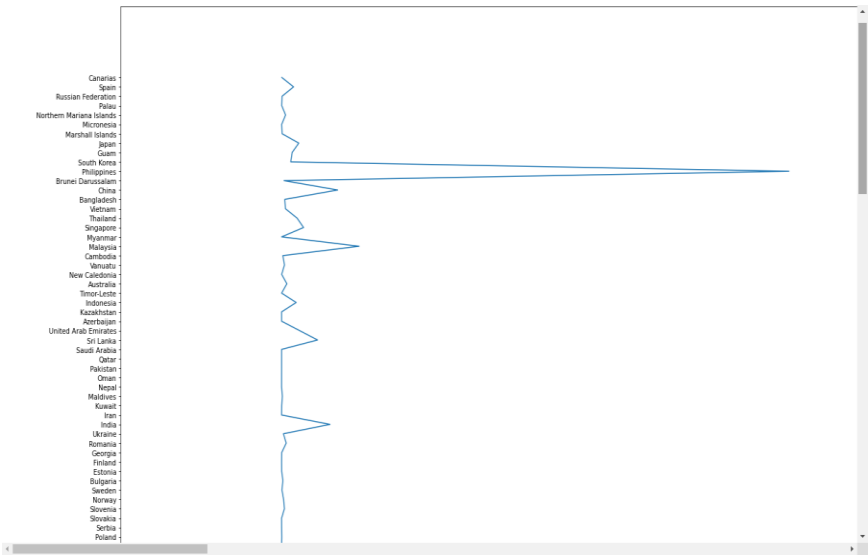
Since this dataset was a collection of cleanups, a visualization using matplotlib to understand how much of debris was collected, it included of items like plastic bags, cigarette butts, fishing hooks, beverage bottles, food packets etc.

Calculated the top used plastic items and its percentage and how these varied for each country and continent. Also understanding which countries need to cut down all these insights was achieved by using Pandas, NumPy, matplotlib and used a machine learning algorithm to understand its efficiency.

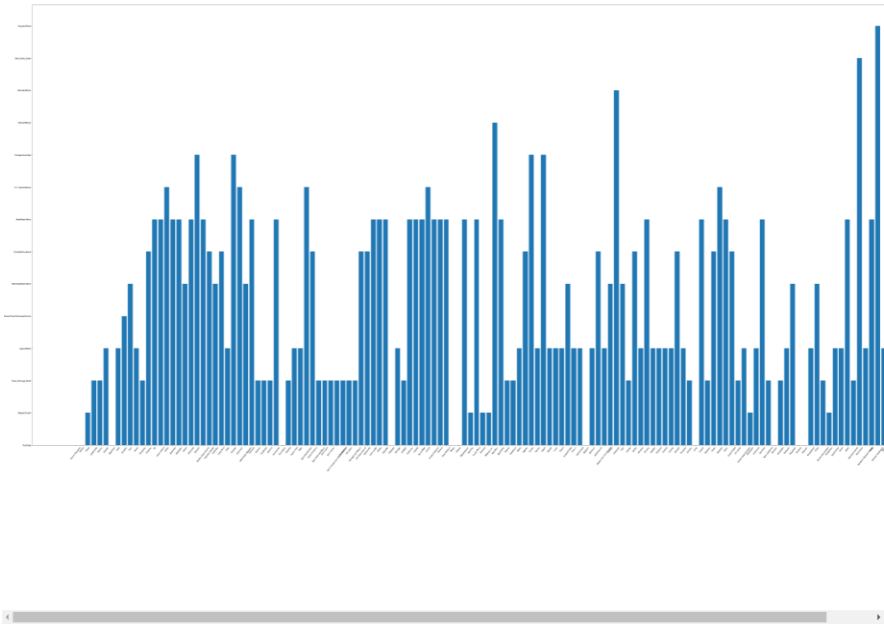
Plastic consumption

Results:

How much debris was collected during the cleanup events?



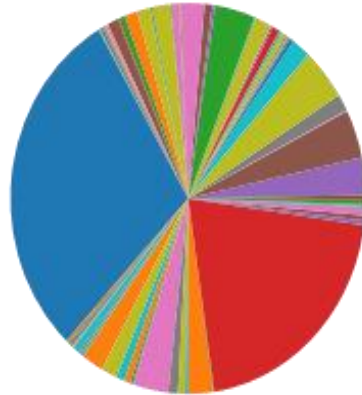
Which is the top used plastic for each country?



The country distribution of the debris collected using pie chart.

## Plastic consumption

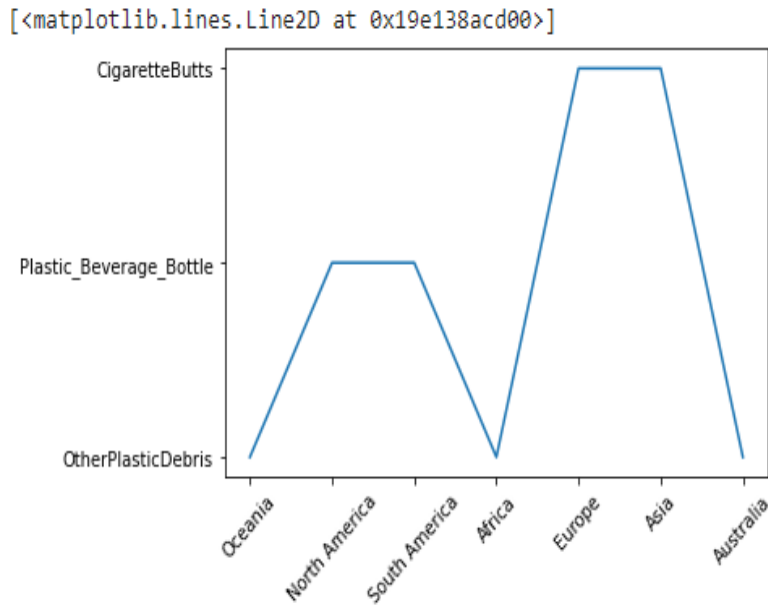
*Pie Chart Distribution According to Country without Ghana*



|  |                       |
|--|-----------------------|
|  | <b>Morocco</b>        |
|  | <b>Portugal</b>       |
|  | <b>Senegal</b>        |
|  | <b>Guernsey</b>       |
|  | <b>Ireland</b>        |
|  | <b>Isle of Man</b>    |
|  | <b>Jersey</b>         |
|  | <b>United Kingdom</b> |
|  | <b>Iceland</b>        |
|  | <b>New Zealand</b>    |
|  | <b>Kenya</b>          |
|  | <b>Malawi</b>         |
|  | <b>Mozambique</b>     |
|  | <b>Namibia</b>        |
|  | <b>South Africa</b>   |
|  | <b>Tanzania</b>       |
|  | <b>Madagascar</b>     |
|  | <b>Mauritius</b>      |
|  | <b>Seychelles</b>     |
|  | <b>Algeria</b>        |
|  | <b>Cameroon</b>       |
|  | <b>Malta</b>          |
|  | <b>Nigeria</b>        |
|  | <b>Tunisia</b>        |
|  | <b>Cyprus</b>         |
|  | <b>Egypt</b>          |
|  | <b>Greece</b>         |
|  | <b>Israel</b>         |
|  | <b>Turkey</b>         |
|  | <b>United States</b>  |
|  | <b>France</b>         |
|  | <b>Switzerland</b>    |

## Plastic consumption

Which is the top pollutant for given continent?



The algorithm used to predict its accuracy is logical regression: Logistic regression is a supervised algorithm for classification. The target variable (or output),  $y$ , may only take discrete values for the given set of features (or inputs),  $X$ , in a classification problem.

### Conclusion

From the given analysis, we conclude the maximum debris collected was at Ghana, the next one is United states and the third one is Philippines. The most pollutant for each country was calculated and for the countries mentioned above was other plastic debris, for the united states and Philippines it was cigarette butts. Enlisting them according to continents these three were the top pollutants, plastic beverage bottles, cigarette butts and other plastic debris.

We are responsible for trashing those items in large quantities. It is disturbing the way we dispose of waste. What is worse, waste management has become more reckless in this decade alone. Ecosystems differ greatly from area to area. In relation to our marine life and waterways, however, one of the most daunting implications of our global waste crisis manifests itself. Through our negligence, public wellbeing is at risk. We continue to generate vast quantities of garbage, we do not dispose of it properly, and eventually it will be our downfall in the ecosystems we all share as it is for the ecosystem and wildlife. In our care of our Earth, we will not avoid or facilitate longevity. Because of how much garbage we create the more pollution we generate affects us in the long run. Therefore, we need be aware and do the required to make a difference.