Analysis on Plastic Consumption

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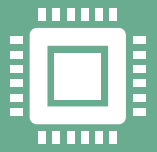
Agenda

- Introduction
- Dataset
- Methodology
- Visualization
- Conclusion

Introduction

Since 1950 plastic production and consumption has skyrocketed.

It is both a wonder commodity and the earth's scourge.



It has become necessary to understand what constitutes for so much consumption.

Data Set

- The data set is sourced from the European Environmental Agency's Marine Litter Watch Program and Ocean Conservancy's Trash Information.
- We analyze the data and provide insights on Top pollutants, its value and percentage for given country and continents.

FID	FIPS_CNTRY	ISO_2DIGIT	ISO_3DIGIT	NAME	COUNTRYAFF	CONTINENT	OBJECTID	COUNTRY	...	CigaretteButts	StringRingRibbon	PlasticStraps
149	PS	PW	PLW	Palau	Palau	Oceania	105	Palau	...	82.0	0	0
150	RS	RU	RUS	Russian Federation	Russian Federation	Asia	116	Russian Federation	...	904.0	52	48
151	RS	RU	RUS	Russian Federation	Russian Federation	Europe	116	Russian Federation	...	904.0	52	48
152	SP	ES	ESP	Spain	Spain	Europe	138	Spain	...	72940.0	105	596
153	SP	ES	ESP	Canarias	Spain	Africa	27	Canarias	...	401.0	61	37

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Preprocessing data

FIND AND REMOVE DUPLICATE VALUES.

CHECK NAN VALUES.

REPLACE NAN VALUES WITH 0.

DROP UNREQUIRED COLUMNS.

Methodology

- Finding Top names causing pollution.

	NAME	COUNTRY AFF	CONTINENT	COUNTRY	TotalDebrisItemsRecovered	TotalPlasticFoamFishingItemsRec	PCT_PlasticAndFoam	PCT_Glass_Rubber_Lumber_Metal	Plastic_Beverage_Bottle	Other_Plastic_Bottle	...	PlasticStraps	FishingNet	FishingLineLureRope	FishingGlowSticks	BuoysAndFloats	OtherPlasticFishingDebris	OtherFoamPlasticDebris	OtherPlasticDebris	Top_Value	Top_Value_Names
0	French Polynesia	France	Oceania	French Polynesia	582	399	68.6	31.4	100	0	...	0	0	15	0	0	0	4	0.0	130.0	PlasticBag
1	Samoa	Samoa	Oceania	Samoa	6889	4517	65.6	34.4	315	22	...	26	8	7	0	0	0	232	397.0	943.0	PlasticBag
2	Tonga	Tonga	Oceania	Tonga	1215	499	41.1	58.9	15	0	...	0	8	2	0	0	0	0	103.0	269.0	WrapperOrLabel
3	El Salvador	El Salvador	North America	El Salvador	11	11	100.0	0.0	10	0	...	0	0	0	0	0	0	0	1.0	100.0	PCT_PlasticAndFoam
4	Guatemala	Guatemala	North America	Guatemala	146484	102468	70.0	30.0	86594	90	...	12	8	125	0	3	0	111	770.0	86594.0	Plastic_Beverage_Bottle
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
147	Northern Mariana Islands	United States	Oceania	Northern Mariana Islands	96183	71581	74.4	25.6	5926	421	...	275	125	685	0	85	0	1806	8732.0	22680.0	CigaretteButts
148	Palau	Palau	Oceania	Palau	2816	2328	82.7	17.3	257	0	...	0	0	75	0	9	0	0	1051.0	1051.0	OtherPlasticDebris
149	Russian Federation	Russian Federation	Asia	Russian Federation	10901	7650	70.2	29.8	356	336	...	48	121	206	10	982	16	526	691.0	982.0	BuoysAndFloats
151	Spain	Spain	Europe	Spain	289930	257729	88.9	11.1	6675	561	...	596	3619	6873	23	282	91	29458	65799.0	72940.0	CigaretteButts
152	Canarias	Spain	Africa	Canarias	5463	4391	80.4	19.6	731	38	...	37	41	189	0	23	0	498	777.0	777.0	OtherPlasticDebris

Methodology

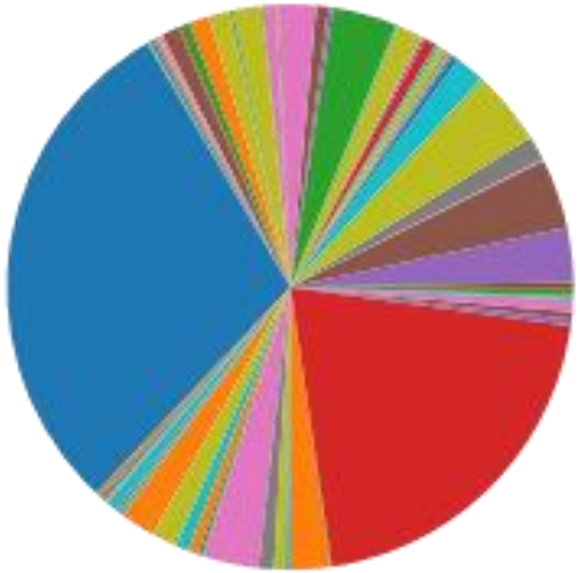
- Finding Top value ,Top percentage and removing outliers if present.

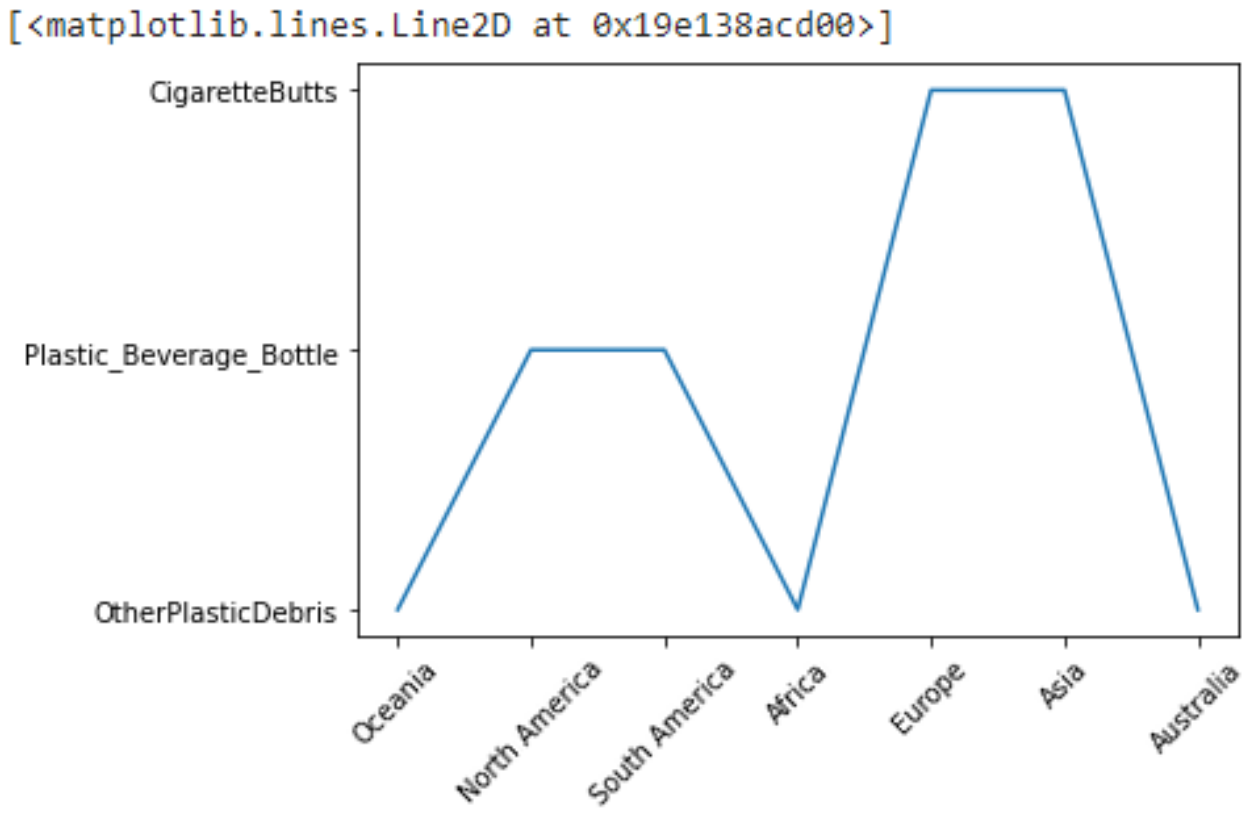
	NAME	COUNTRY AFF	CONTINENT	COUNTRY	TotalDebrisItemsRecovered	TotalPlasticFoamFishingItemsRec	PCT_PlasticAndFoam	PCT_Glass_Rubber_Lumber_Metal	Plastic_Beverage_Bottle	Other_Plastic_Bottle	...	FishingNet	FishingLineLureRope	FishingGlowSticks	BuoysAndFloats	OtherPlasticFishingDebris	OtherFoamPlasticDebris	OtherPlasticDebris	Top_Value	Top_Value_Names	Top_Value_Percentage
0	French Polynesia	France	Oceania	French Polynesia	582	399	68.6	31.4	100	0	...	0	15	0	0	0	4	0.0	130.0	PlasticBag	22.34
1	Samoa	Samoa	Oceania	Samoa	6889	4517	65.6	34.4	315	22	...	8	7	0	0	0	232	397.0	943.0	PlasticBag	13.69
2	Tonga	Tonga	Oceania	Tonga	1215	499	41.1	58.9	15	0	...	8	2	0	0	0	0	103.0	269.0	WrapperOrLabel	22.14
3	El Salvador	El Salvador	North America	El Salvador	11	11	100.0	0.0	10	0	...	0	0	0	0	0	0	1.0	100.0	PCT_PlasticAndFoam	909.09
4	Guatemala	Guatemala	North America	Guatemala	146484	102468	70.0	30.0	86594	90	...	8	125	0	3	0	111	770.0	86594.0	Plastic_Beverage_Bottle	59.11
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
147	Northern Mariana Islands	United States	Oceania	Northern Mariana Islands	96183	71581	74.4	25.6	5926	421	...	125	685	0	85	0	1806	8732.0	22680.0	CigaretteButts	23.58

Visualization

- Colombia
- Costa Rica
- Cuba
- Curacao
- Dominica
- Dominican Republic
- Grenada
- Guyana
- Honduras
- Jamaica
- Montserrat
- Nicaragua
- Panama
- Puerto Rico
- Saba

Pie Chart Distribution According to Country without Ghana

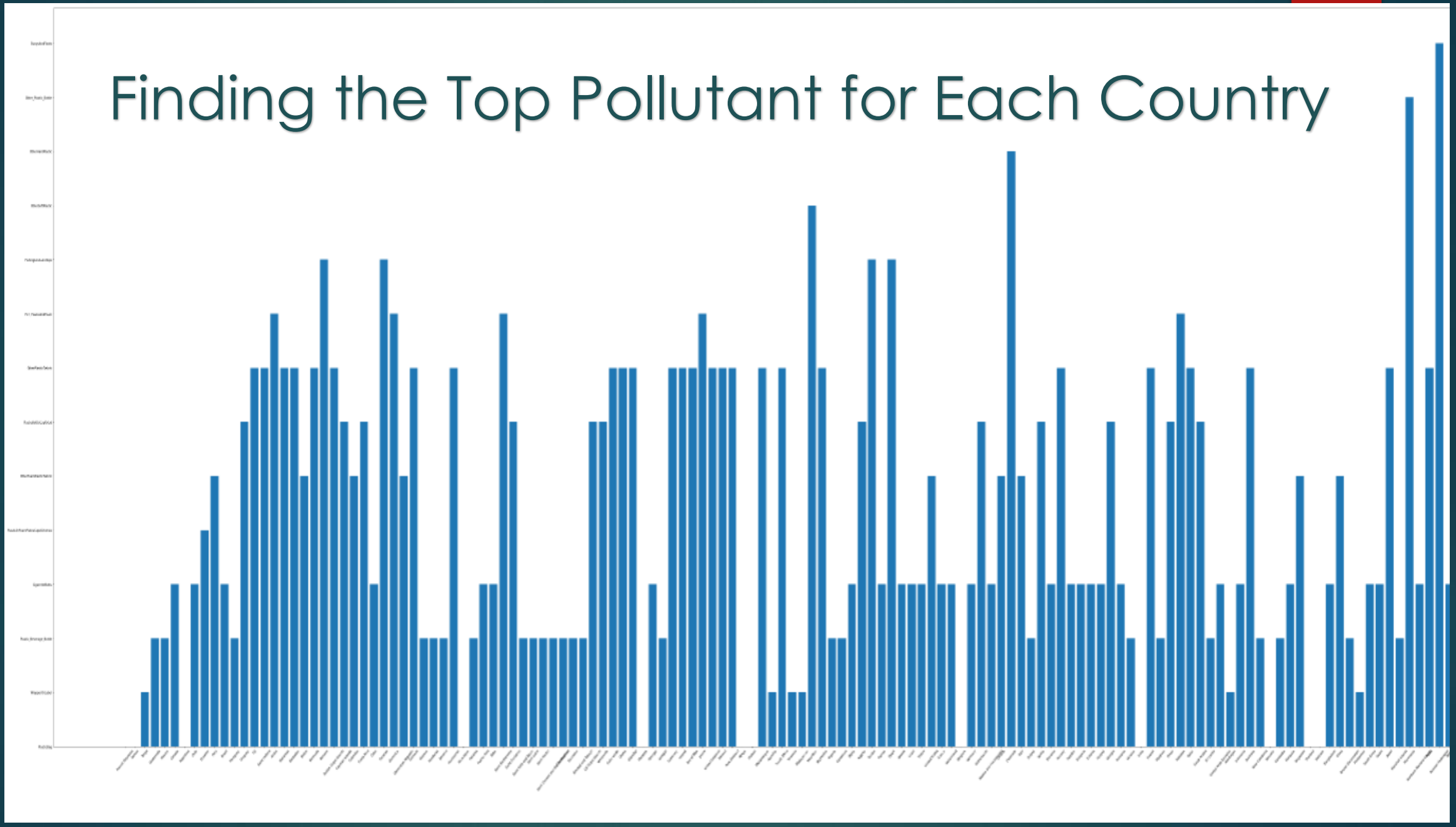




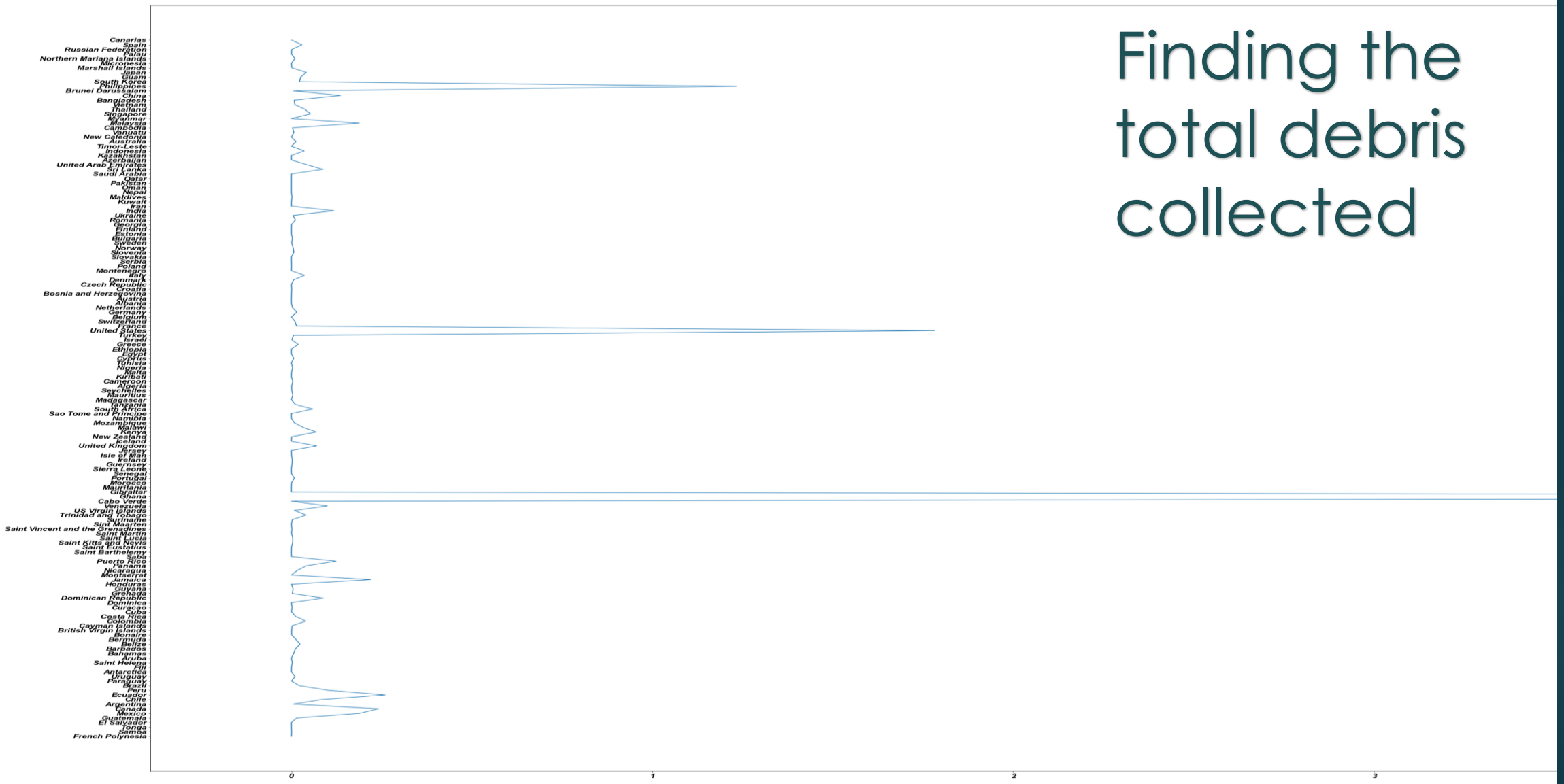
Visualization

FINDING THE TOP POLLUTANT FOR EACH CONTINENT

Finding the Top Pollutant for Each Country



Finding the total debris collected



Logical Regression

The algorithm used to predict its accuracy is logical regression

Logistic regression is a supervised algorithm for classification.

Model takes discrete values for the given set of inputs to generate output

Logical Regression

01

Train LR Accuracy: 0.752 (+/- 0.032) [LogisticRegression(random_state=555)]

02

Test Accuracy: 0.5882

03

Train Accuracy: 0.8614

Conclusion

- From the given analysis, we conclude the maximum debris collected was at Ghana, United states and Philippines.
- The most pollutant for Ghana was Plastic debris, Cigarette butts for united states and Philippines.
- The top pollutants for continents are plastic beverage bottles, cigarette butts and other plastic debris.
- We are responsible for most of the disposable; Therefore, we need be aware and do the required to make a difference.