



which food  
categories  
contributed most to  
microp plastic intake  
in the top 10 countries  
in 2018?

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# Objective

The purpose of this exploration is to analyse and investigate the global dietary microplastic intake in the top 10 countries from 1990 to 2018.

Data set is from Kaggle  
SAS Studio and SQL used

# Missing Values and outliers

Moments			
N	723	Sum Weights	723
Mean	1600.61457	Sum Observations	1157244.34
Std Deviation	567.11536	Variance	321619.831
Skewness	0.35901158	Kurtosis	-0.4271599
Uncorrected SS	2084511670	Corrected SS	232209518
Coeff Variation	35.4311006	Std Error Mean	21.0912472

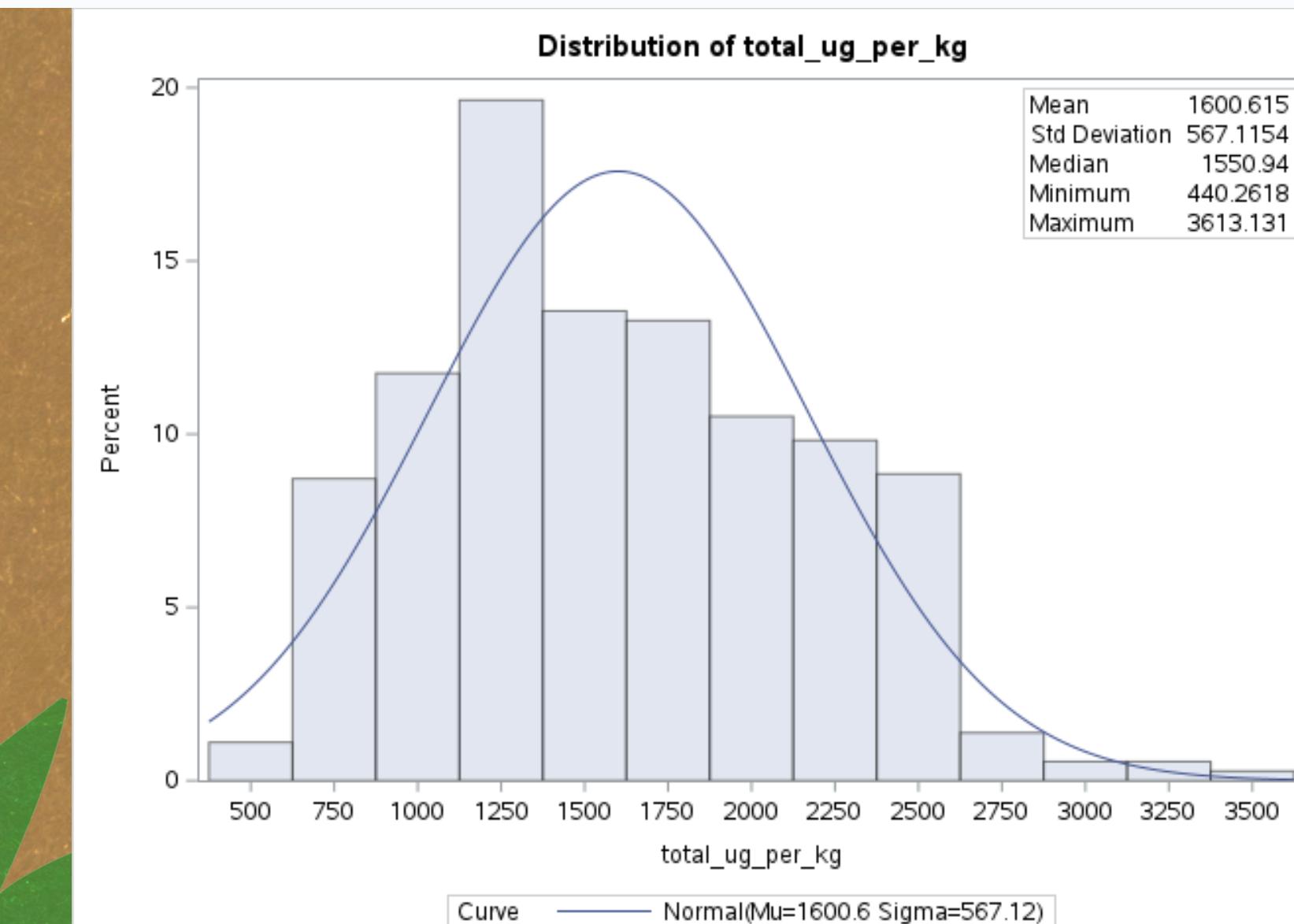
There are 723 observations, 21

variables , with no missing  
values.

Goodness of fit tests reject the  
null hypotheses. This means our  
data doesn't follow a normal  
distribution.

The average microplastic intake  
across observations is about  
1600.6 ug/kg, with a standard  
deviation of 567.1 ug/kg,  
indicating moderate variability.

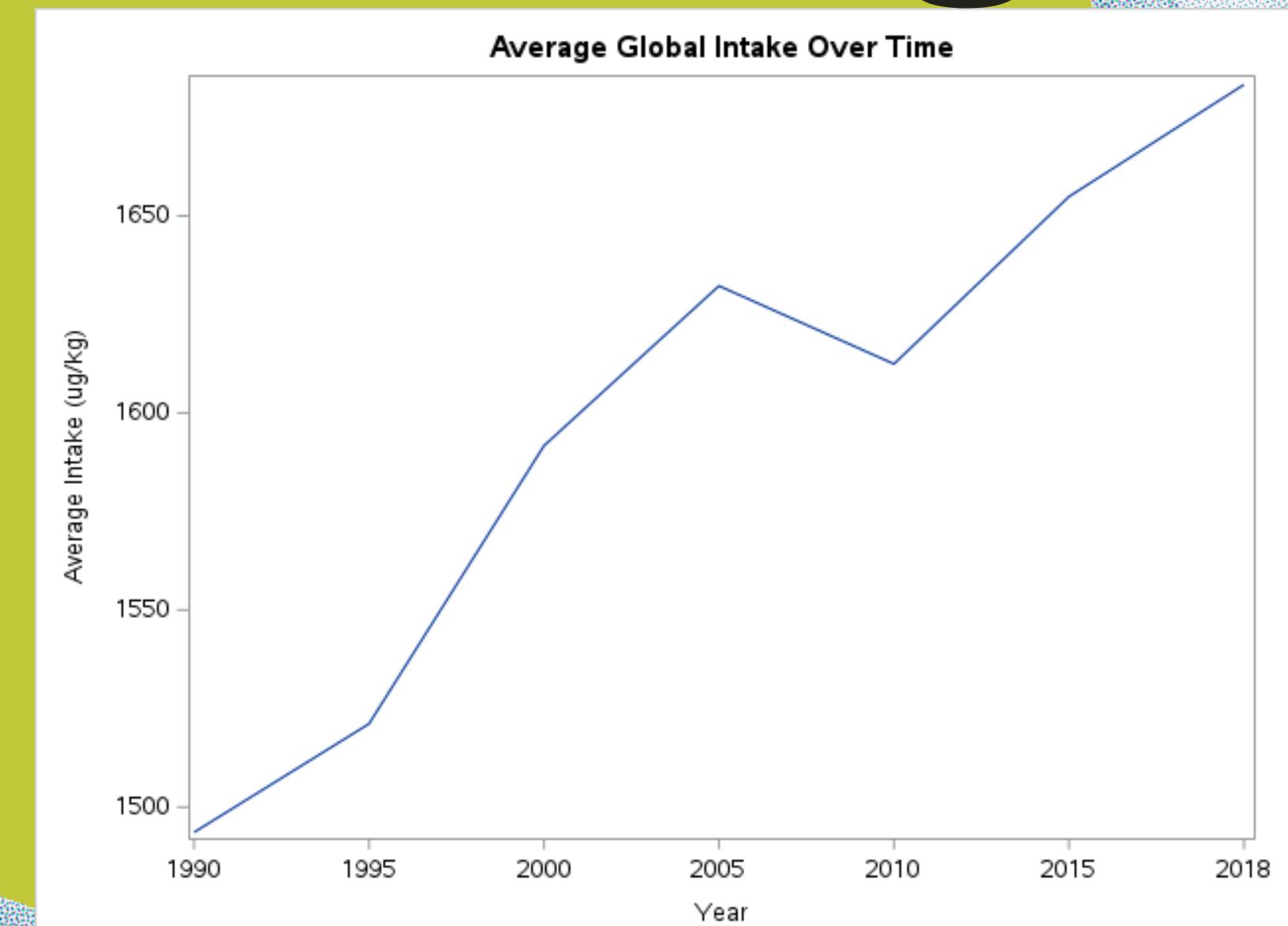
Goodness-of-Fit Tests for Normal Distribution				
Test	Statistic	p Value		
Kolmogorov-Smirnov	D	0.07369422	Pr > D	<0.010
Cramer-von Mises	W-Sq	0.80680920	Pr > W-Sq	<0.005
Anderson-Darling	A-Sq	4.62519781	Pr > A-Sq	<0.005



# The average microplastic intake by year is increasing

Average intake overtime(1990- 2018)

year	avg_total_intake
1990	1493.6
1995	1521.135
2000	1591.685
2005	1632.244
2010	1612.434
2015	1654.885
2018	1683.291

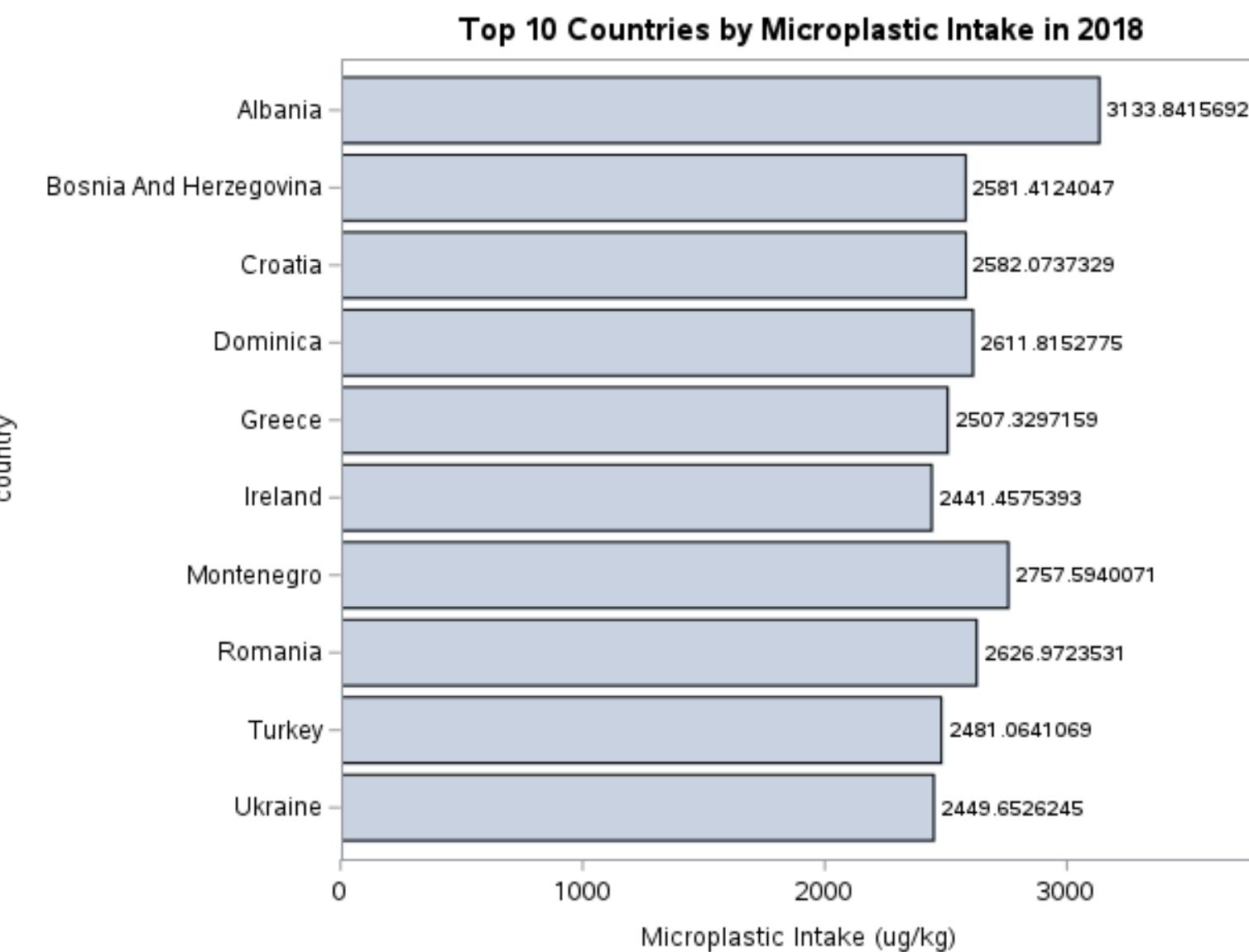


# Top 10 countries with the highest microplastic intake in recent year 2018

Top 10 Countries by Microplastic Intake in 2018

country	total_ug_per_kg
Albania	3133.8415692
Montenegro	2757.5940071
Romania	2626.9723531
Dominica	2611.8152775
Croatia	2582.0737329
Bosnia And Herzegovina	2581.4124047
Greece	2507.3297159
Turkey	2481.0641069
Ukraine	2449.6526245
Ireland	2441.4575393

Top 10 Countries by Microplastic Intake in 2018



# Percentage Change from 1990 to 2018

Percent Change in Microplastic Intake (1990 vs. 2018)				
country	intake_1990	intake_2018	absolute_change	percent_change
Laos	713.8321	1923.903	1210.071	169.5
Myanmar	493.4777	1232.894	739.4165	149.8
Vietnam	639.5147	1449.618	810.1036	126.7
China	1103.981	2414.705	1310.724	118.7
Malawi	861.7912	1866.177	1004.386	116.5
Albania	1559.644	3133.842	1574.197	100.9
Dominican Republic	1094.668	2155.773	1061.105	96.9
Cambodia	606.4092	1165.828	559.4193	92.3
Ghana	1204.634	2299.799	1095.165	90.9
Bangladesh	453.1009	864.2105	411.1096	90.7
Peru	961.1167	1682.532	721.4152	75.1
Indonesia	843.0607	1324.161	481.1001	57.1
Mali	871.5209	1318.321	446.8006	51.3
Angola	1043.279	1553.044	509.7654	48.9
India	840.2544	1243.916	403.6619	48.0
Algeria	1359.007	1981.005	621.9974	45.8
Djibouti	709.3111	1033.569	324.2578	45.7
Mongolia	1265.312	1817.603	552.2902	43.6
Ethiopia	642.3871	912.0819	269.6947	42.0
Senegal	826.7852	1156.78	329.9947	39.9
Romania	1920.974	2626.972	705.9986	36.8
Nigeria	1113.132	1495.974	382.8427	34.4
Cuba	1568.722	2053.61	484.8883	30.9
Brazil	1411.825	1842.454	430.6295	30.5
Thailand	969.477	1247.204	277.7265	28.6
Kuwait	1309.854	1670.51	360.6567	27.5
Colombia	1377.266	1753.32	376.0538	27.3
Bolivia	1228.308	1563.026	334.7172	27.3
Tunisia	1727.805	2166.704	438.8987	25.4
Sri Lanka	927.0112	1155.938	228.9269	24.7
Benin	1241.656	1499.292	257.6362	20.7
Uruguay	1598.899	1926.873	327.9743	20.5
Cameroon	1626.893	1921.069	294.1762	18.1

Laos and Myanmar saw microplastic intake rise by over 150%, while countries like France and Greece showed a decline, could be a result of higher food system regulation.

Congo	1452.452	1418.927	-33.5246	-2.3
United States	2453.515	2375.971	-77.5442	-3.2
Grenada	1649.253	1573.578	-75.6754	-4.6
Mozambique	1124.783	1072.987	-51.796	-4.6
Gabon	1635.303	1557.441	-77.8625	-4.8
Paraguay	1734.71	1650.262	-84.4486	-4.9
United Kingdom	2222.498	2112.515	-109.983	-4.9
Pakistan	1205.622	1140.945	-64.6772	-5.4
Australia	2215.667	2087.415	-128.252	-5.8
Canada	2243.536	2113.425	-130.112	-5.8
Portugal	2379.103	2202.77	-176.333	-7.4
Tanzania	1472.426	1353.634	-118.792	-8.1
Jordan	1450.774	1314.091	-136.682	-9.4
Austria	2356.303	2097.858	-258.445	-11.0
Norway	2407.684	2137.136	-270.549	-11.2
Bulgaria	2584.029	2291.125	-292.904	-11.3
Germany	2154.414	1895.977	-258.438	-12.0
Netherlands	2444.416	2145.245	-299.171	-12.2
Antigua And Barbuda	1730.089	1509.224	-220.865	-12.8
Spain	2451.664	2133.924	-317.739	-13.0
Hungary	2148.142	1855.567	-292.574	-13.6
Switzerland	2523.644	2176.054	-347.59	-13.8
Greece	2932.993	2507.33	-425.663	-14.5
France	2456.066	2098.964	-357.102	-14.5
Sweden	2405.145	1968.506	-436.639	-18.2
Saudi Arabia	1700.869	1378.931	-321.938	-18.9
Japan	1577.727	1274.781	-302.946	-19.2
Uganda	1628.774	1310.384	-318.389	-19.5
Iraq	1686.397	1311.545	-374.851	-22.2
Saint Lucia	1729.805	1300.467	-429.338	-24.8
Madagascar	1199.487	888.7116	-310.775	-25.9
Barbados	3375.538	1409.518	-1966.02	-58.2

# COUNTRIES WITH THE GREATEST REDUCTION

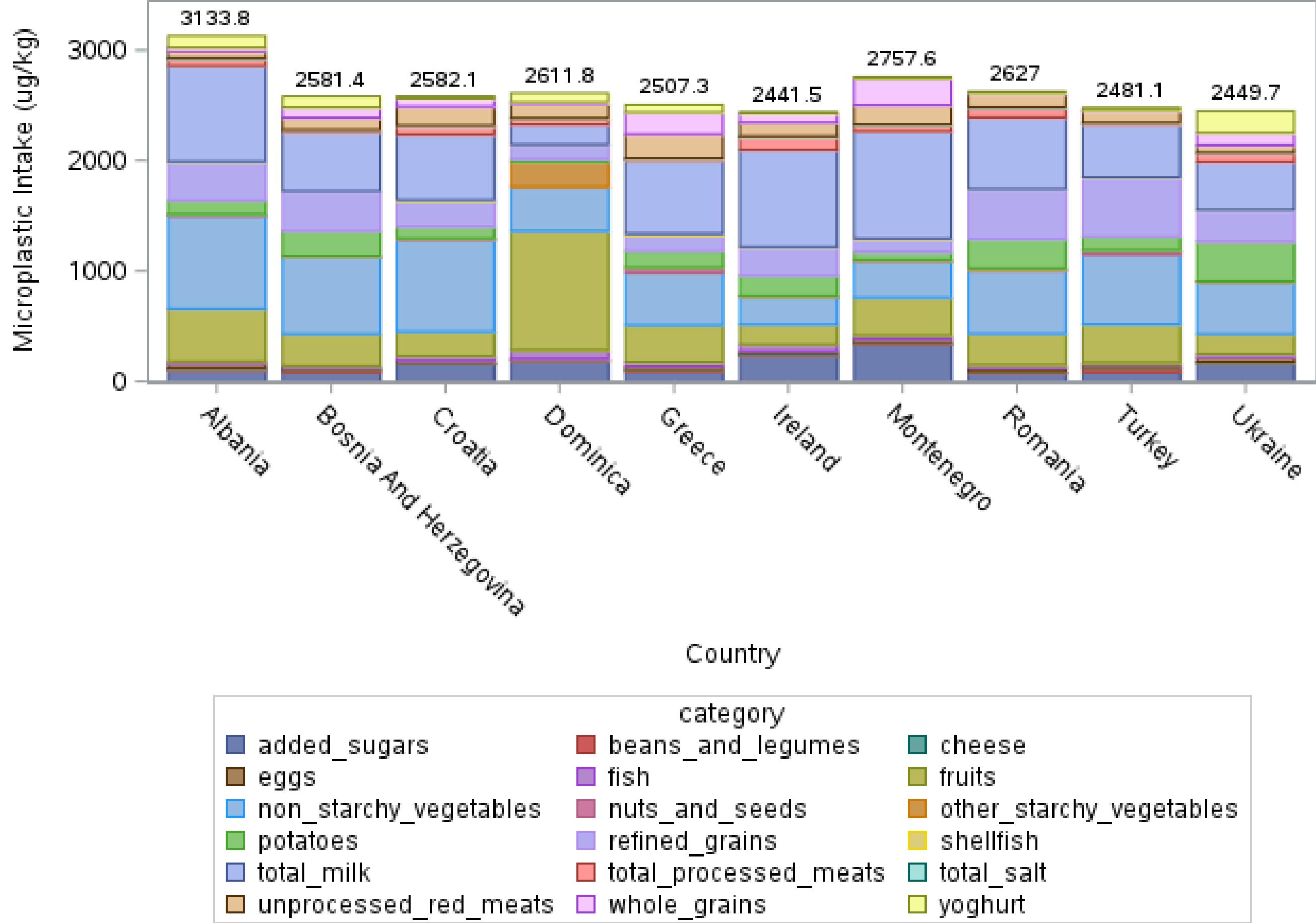


Countries with Greatest Reductions

country	intake_1990	intake_2018	absolute_change	percent_change
Barbados	3375.538	1409.518	-1966.02	-58
Madagascar	1199.487	888.7116	-310.775	-26
Saint Lucia	1729.805	1300.467	-429.338	-25
Iraq	1686.397	1311.545	-374.851	-22
Uganda	1628.774	1310.384	-318.389	-20
Japan	1577.727	1274.781	-302.946	-19
Saudi Arabia	1700.869	1378.931	-321.938	-19
Sweden	2405.145	1968.506	-436.639	-18
Greece	2932.993	2507.33	-425.663	-15
France	2456.066	2098.964	-357.102	-15

Barbados had the highest reduction, with microplastic intake dropping by 58% decrease over 28 years. Why?

## Top 10 Countries' Microplastic Intake by Food Category for 2018



- Refined Grains ,cheese, and Fish contribute heavily across all countries.
- Unprocessed red meats and yoghurt are minor contributors in all top countries.
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# Conclusion

- Cheese, fish, and refined grains are top contributors in high-intake countries.
- Albania leads in total microplastic intake through food.
- Countries like Barbados and France saw major intake reductions from 1990 to 2018.

# Resource

Dataset is from Kaggle –  
<https://www.kaggle.com/datasets/jayeshrmohanani/dataset-for-microplastic-consumption-in-food-items/data>

