SUPPLY CHAIN WASTE

PROJECT-2: AGRICULTURAL PRODUCTION

prepared by:

Gyro A. Madrona

Electronics Engineer
Six Sigma Yellow Belt Certified

REPORT OUTLINE

Dataset

Data Cleaning

Regression Analysis

Visualizations

Conclusion

DATASET

SUPPLY CHAIN WASTE

Refers to the **inefficiencies** and **losses** that occur at various stages of the supply chain, from initial production of the raw materials to the final consumption by end-users.

13401 ROWS, 40 COLUMNS

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RangeIndex: 13401 entries, 0 to 13400
Data columns (total 40 columns):
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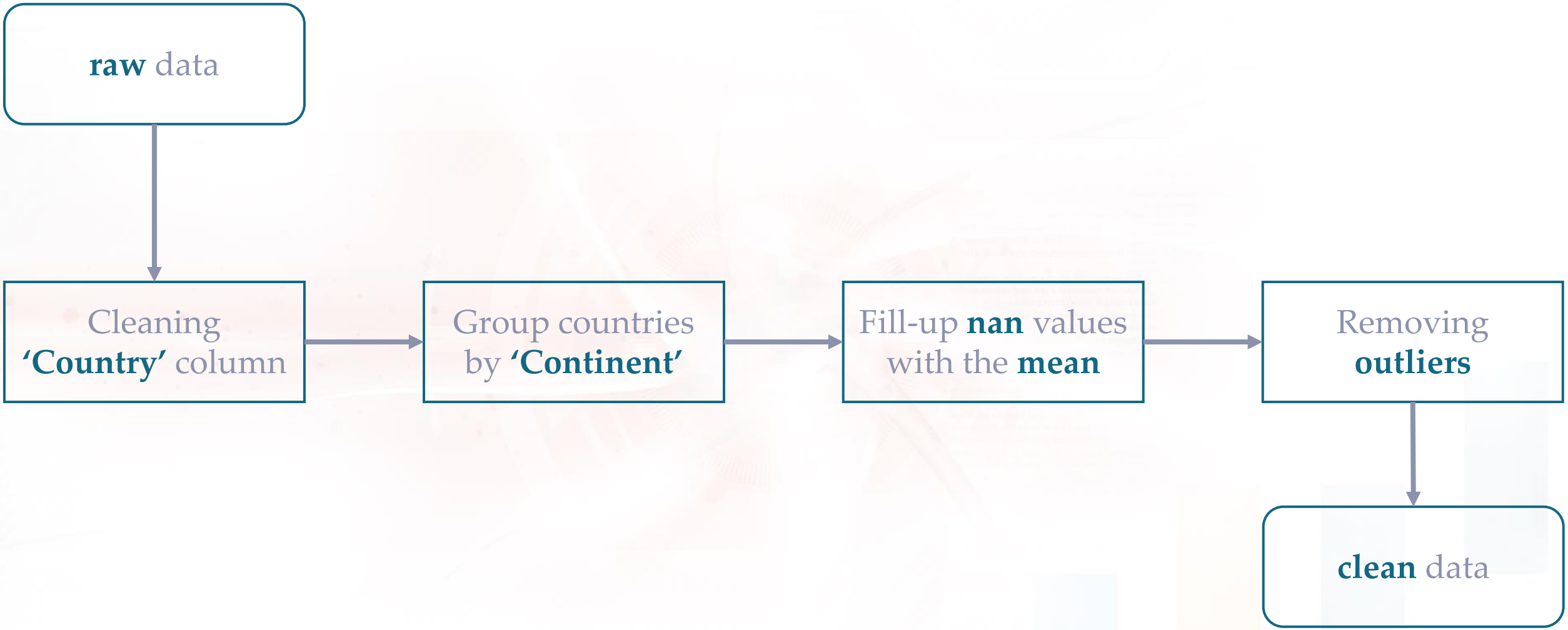
 0   Product                                 0 non-null      float64
 1   Country                                 13401 non-null  object
 2   Year                                    13401 non-null  int64
 3   Population                              13367 non-null  float64
 4   Production (t)                          11912 non-null  float64
 5   production__tonnes__per_capita          10002 non-null  float64
 6   Production per capita (kg)              10002 non-null  float64
 7   Yield (t/ha)                            11783 non-null  float64
 8   Yield (kg/animal)                       0 non-null      float64
 9   Land Use (ha)                           11911 non-null  float64
 10  area_harvested__ha__per_capita          10001 non-null  float64
 11  Land Use per capita (m²)                10001 non-null  float64
 12  Producing or slaughtered animals        0 non-null      float64
 13  Producing or slaughtered animals per capita  0 non-null  float64
 14  Imports (t)                             12515 non-null  float64
 15  imports__tonnes__per_capita             12359 non-null  float64
```

t,
Tonne (1000 kg)

ha,
Hectares (10,000 m^2)

DATA CLEANING

DATA CLEANING STEPS



REGRESSION ANALYSIS

The regression equation predicts **50%** of the variability in the model

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
292309	50.18%	50.14%	49.59%

Regression Equation

Supply_chain_waste = -681534 + 356 Year + 1225988 Population - 0.017765 Production
- 1219152 Yield + 0.14020 Land_used + 0.03153 Imports + 0.00553 Exports
+ 0.000269 Domestic_supply + 0.10286 Food + 0.005819 Animal_feed

SIGNIFICANT PREDICTORS

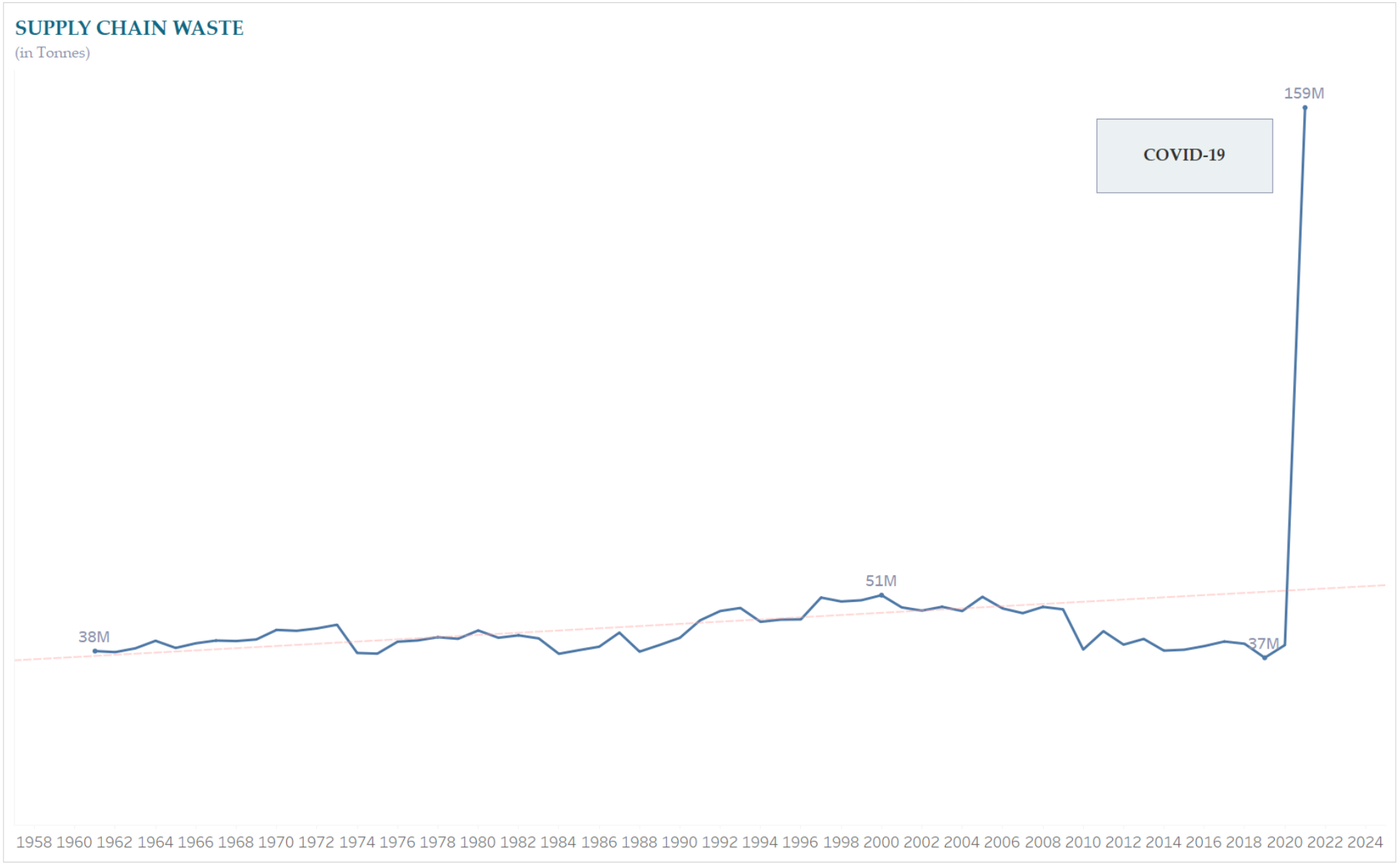
P-Value < 0.05,

- Year
- Production
- **Land_used** (25% R-sq)
- Imports
- Exports
- **Food** (29% R-sq)
- Animal_feed

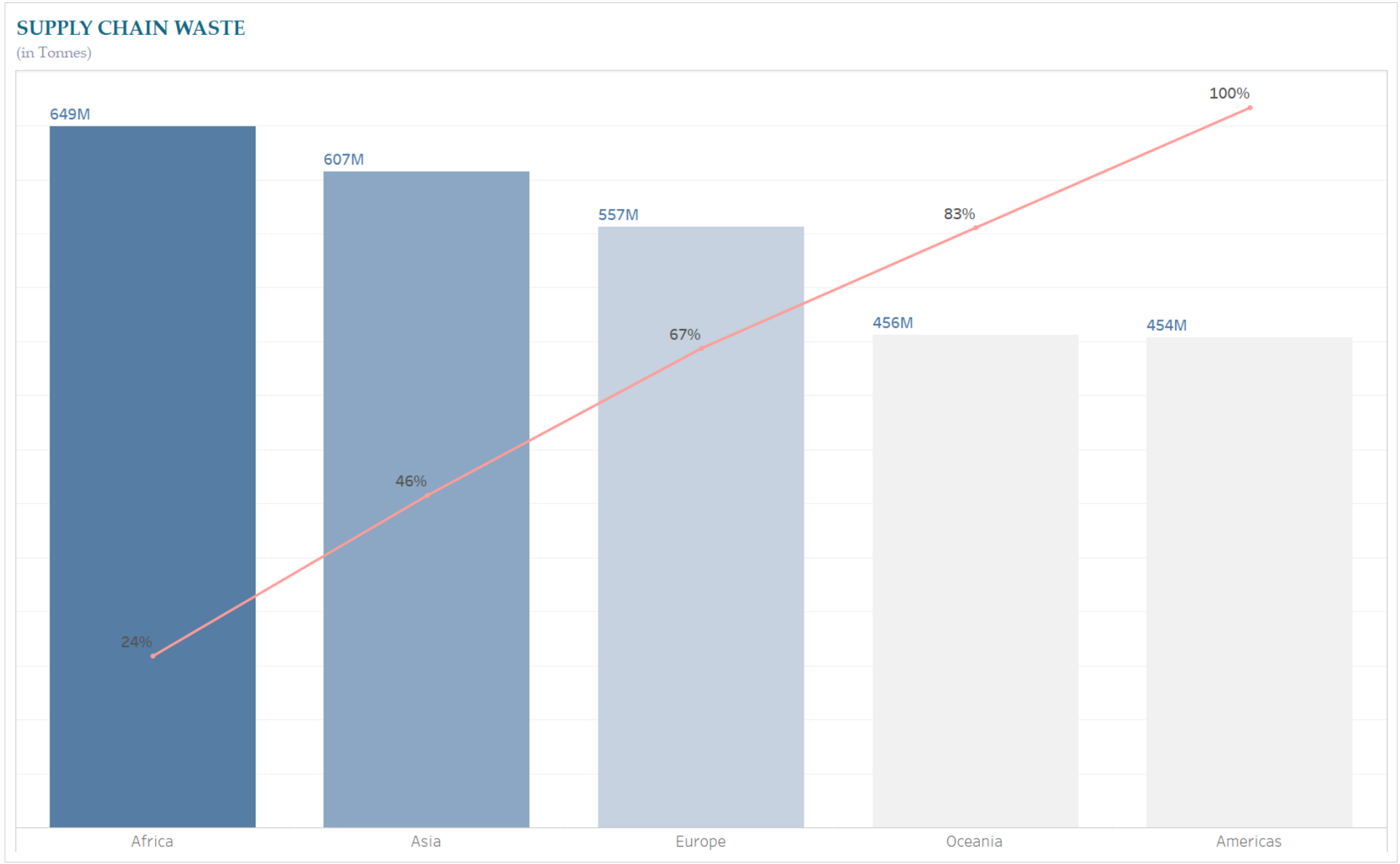
Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	-681534	340129	-2.00	0.045	
Year	356	171	2.08	0.037	1.15
Population	1225988	1091618	1.12	0.261	1423490.90
Production	-0.017765	0.000600	-29.58	0.000	13.08
Yield	-1219152	1091625	-1.12	0.264	1423475.66
Land_used	0.14020	0.00270	51.91	0.000	7.41
Imports	0.03153	0.00215	14.67	0.000	1.37
Exports	0.00553	0.00170	3.26	0.001	3.99
Domestic_supply	0.000269	0.000764	0.35	0.725	12.61
Food	0.10286	0.00302	34.01	0.000	1.88
Animal_feed	0.005819	0.000958	6.08	0.000	9.41

VISUALIZATION

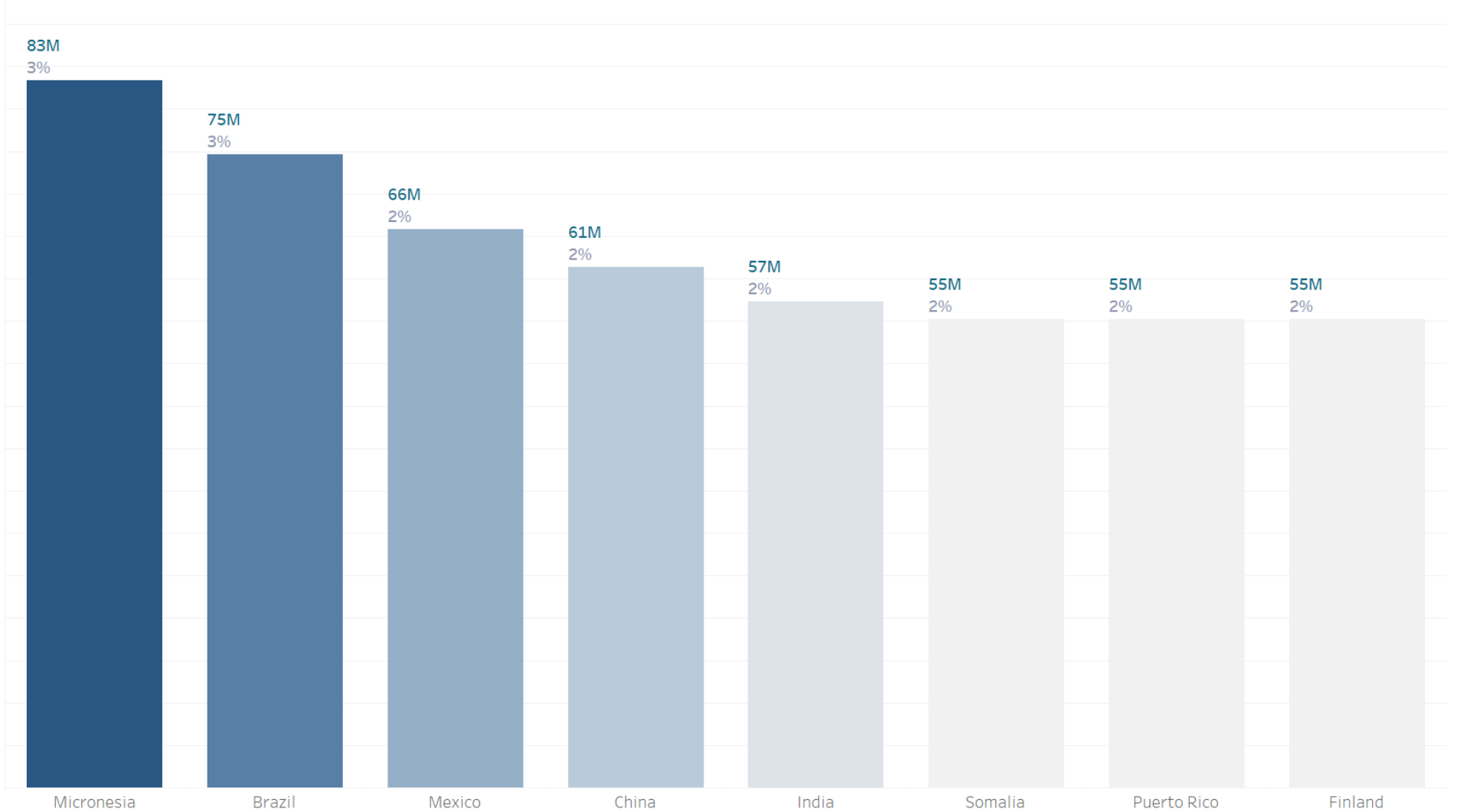


Year | Continent | Country | Land Used | Food | ⊞ Dashboard


SUPPLY CHAIN WASTE
(in Tonnes)
649M
607M
557M
456M
454M
24%
46%
67%
83%
100%
Africa
Asia
Europe
Oceania
Americas
Year
1961
2021
Year
Continent
Country
Land Used
Food
Dashboard

SUPPLY CHAIN WASTE

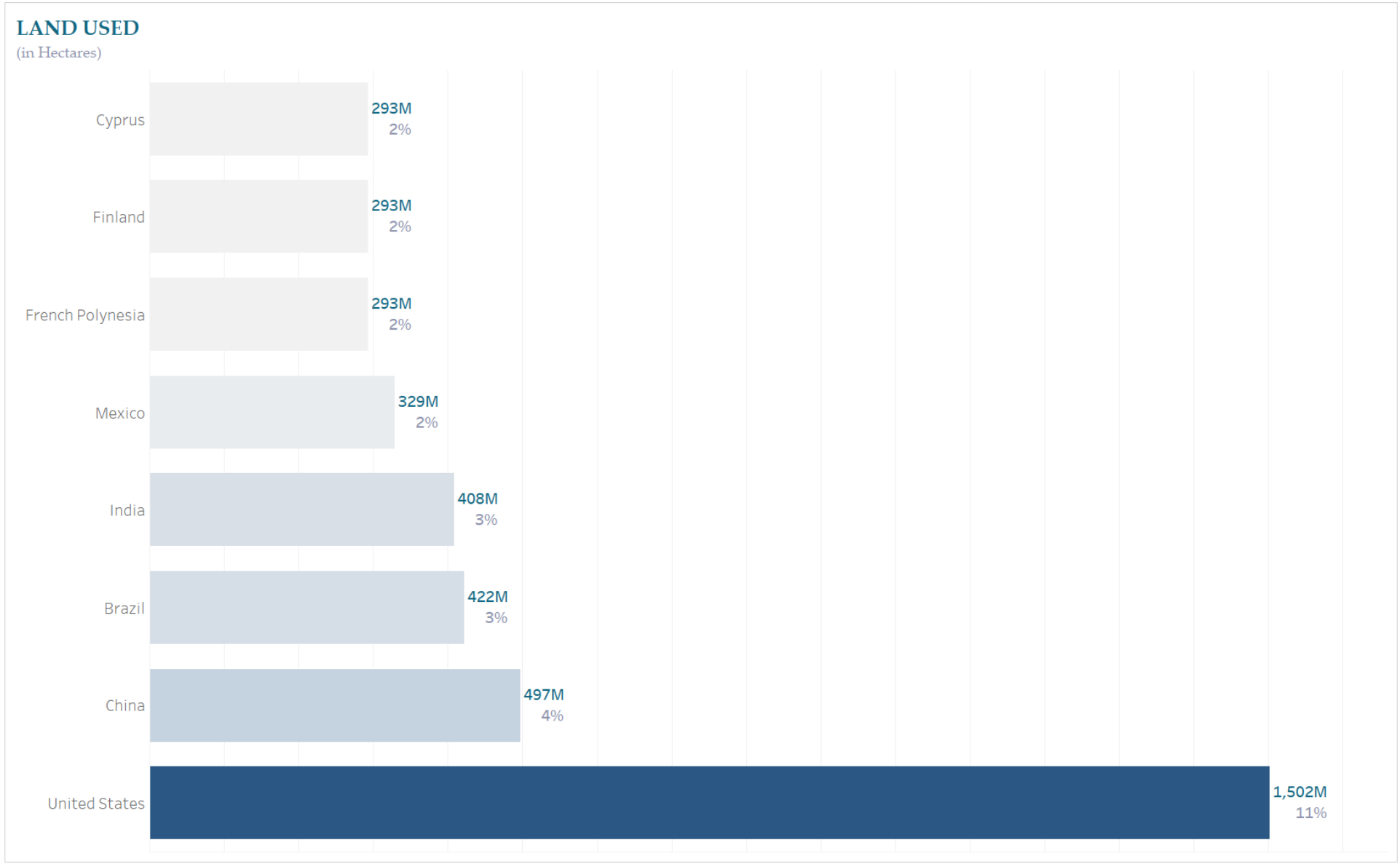
(in Tonnes)

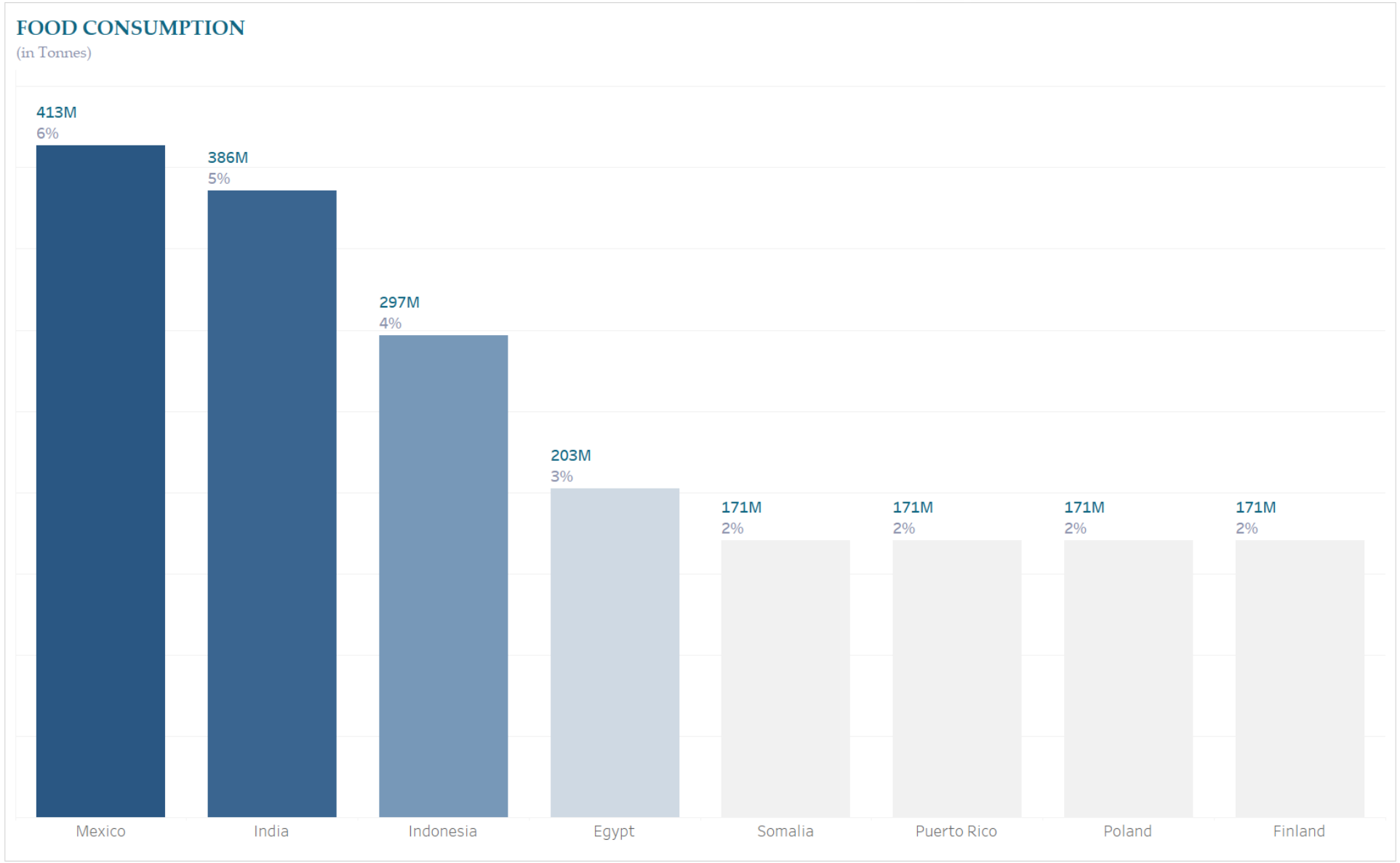


Continent

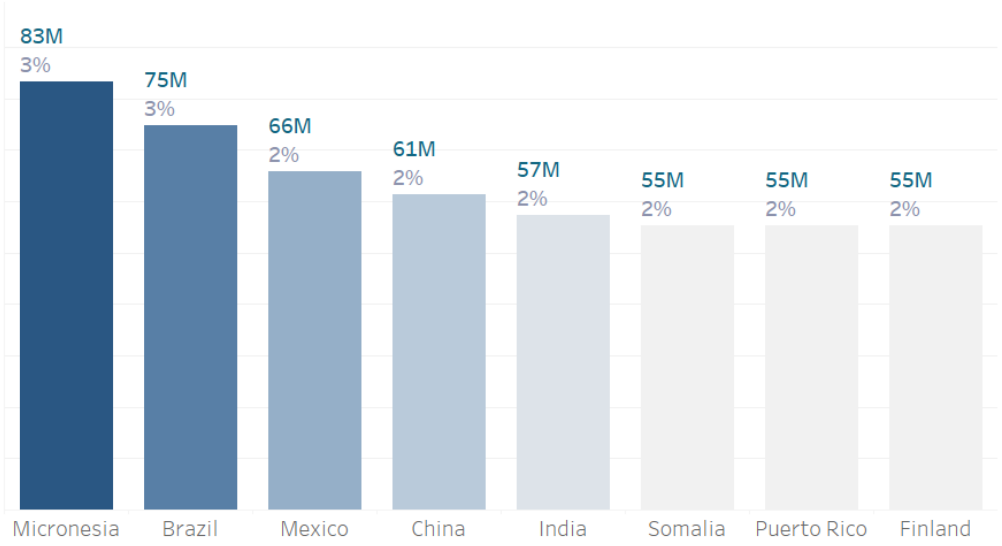
(All)

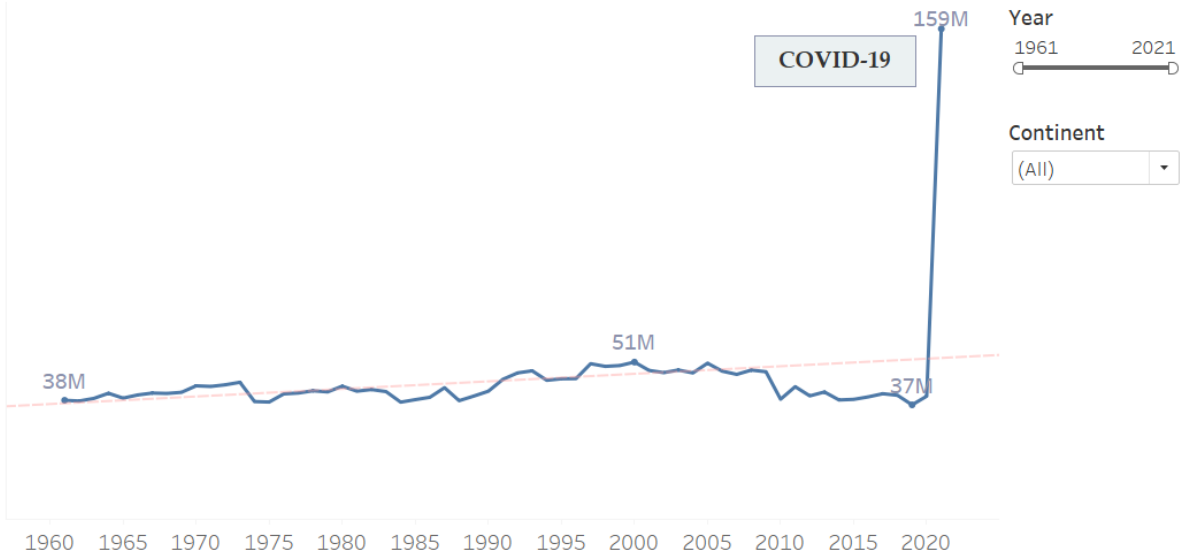
Year | Continent | **Country** | Land Used | Food | ⊞ Dashboard


LAND USED
(in Hectares)
Cyprus
293M
2%
Finland
293M
2%
French Polynesia
293M
2%
Mexico
329M
2%
India
408M
3%
Brazil
422M
3%
China
497M
4%
United States
1,502M
11%
Continent
(All)
Year
Continent
Country
Land Used
Food
Dashboard


FOOD CONSUMPTION
(in Tonnes)
413M
6%
386M
5%
297M
4%
203M
3%
171M
2%
171M
2%
171M
2%
171M
2%
Mexico
India
Indonesia
Egypt
Somalia
Puerto Rico
Poland
Finland
Continent
(All)
Year
Continent
Country
Land Used
Food
Dashboard

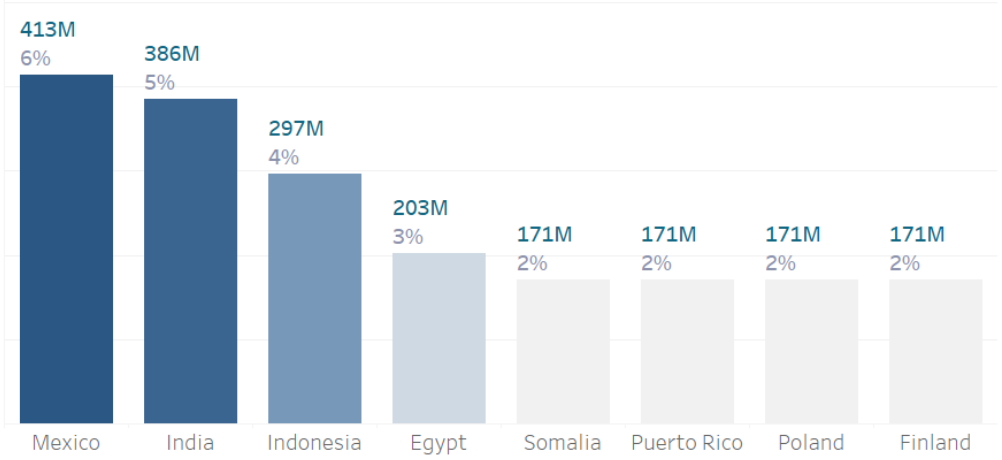
SUPPLY CHAIN WASTE





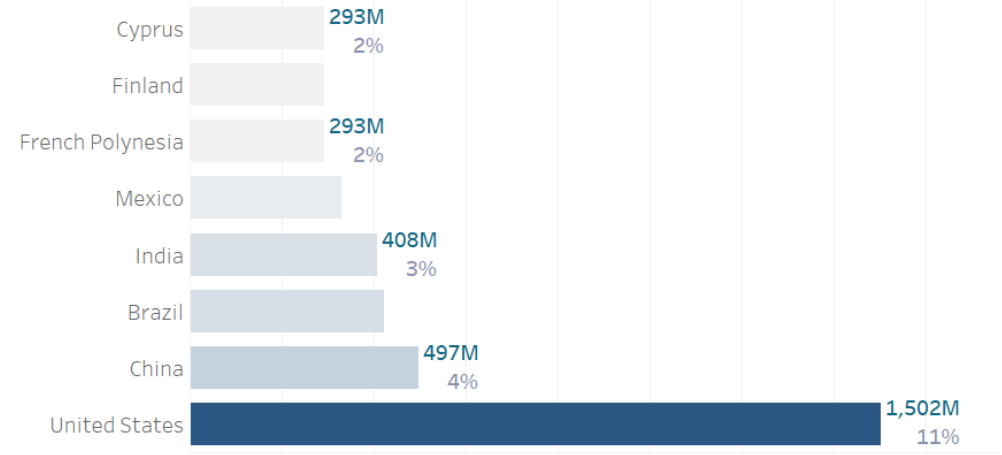
FOOD CONSUMPTION

(in Tonnes)



LAND USED

(in Hectares)

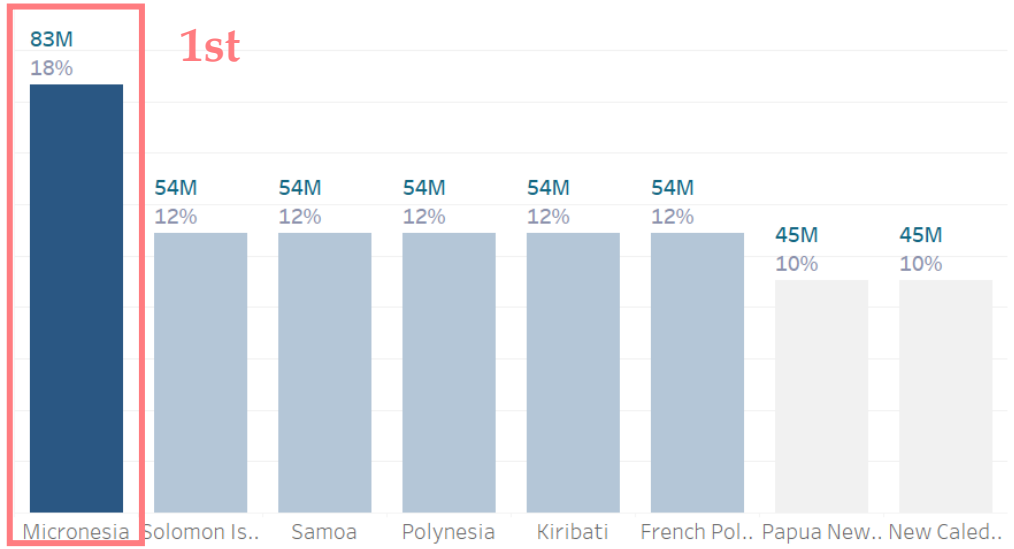


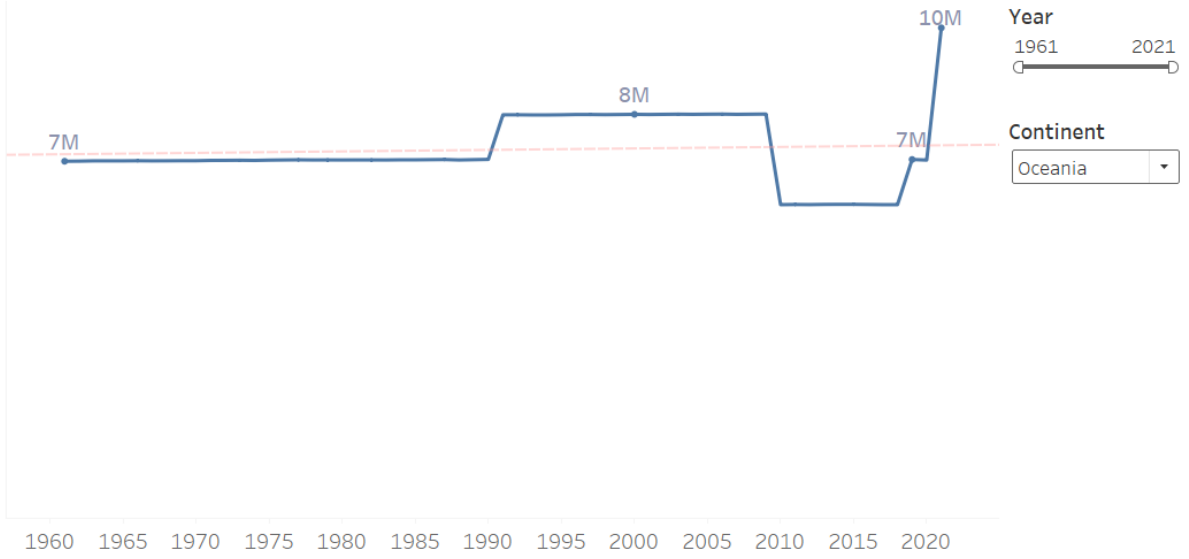
Year | Continent | Country | Land Used | Food | ⊞ Dashboard

CONCLUSION_

MICRONESIA

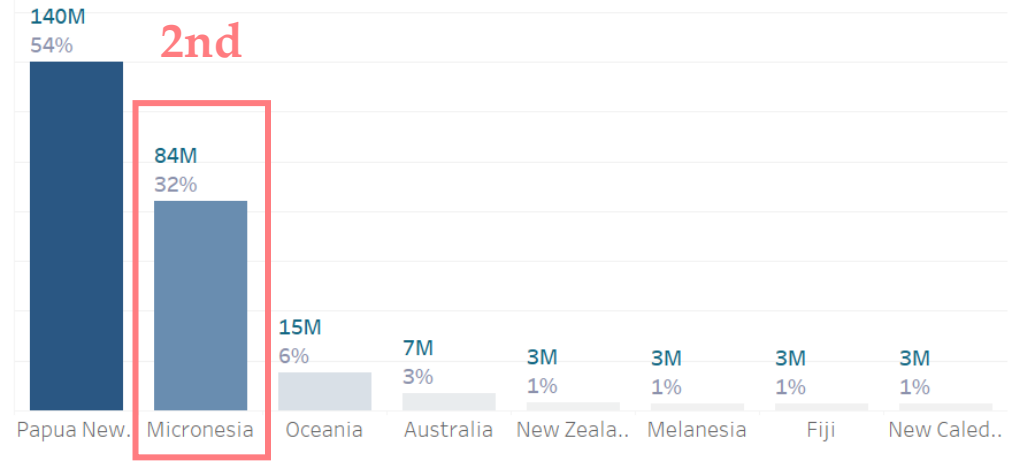
SUPPLY CHAIN WASTE





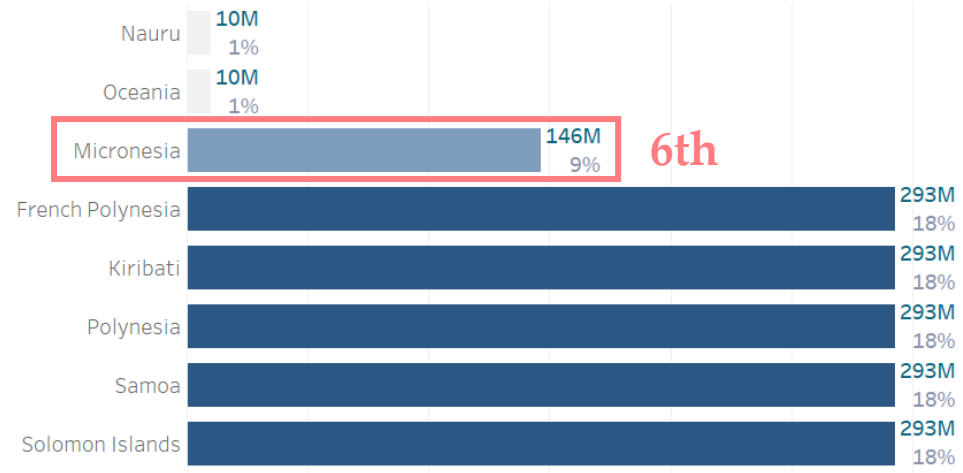
FOOD CONSUMPTION

(in Tonnes)



LAND USED

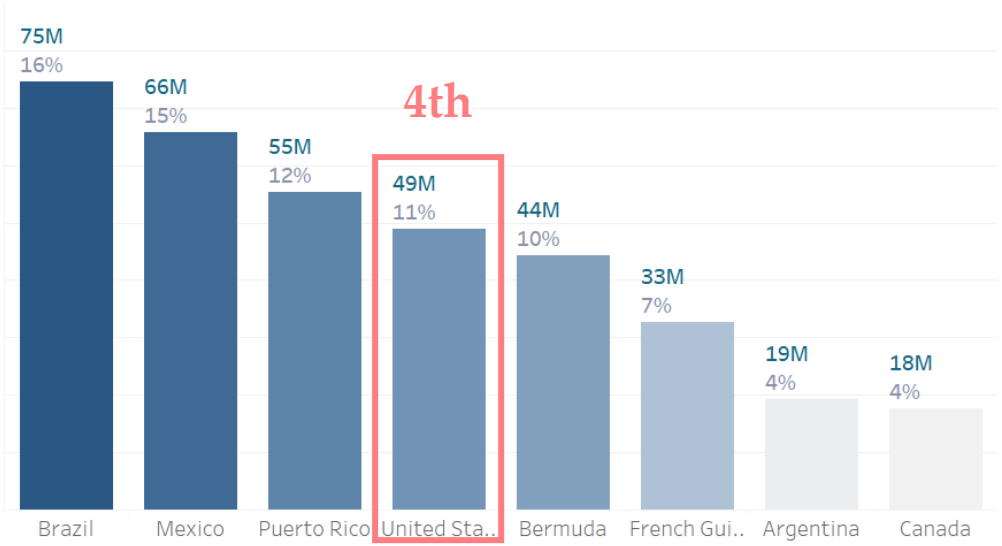
(in Hectares)

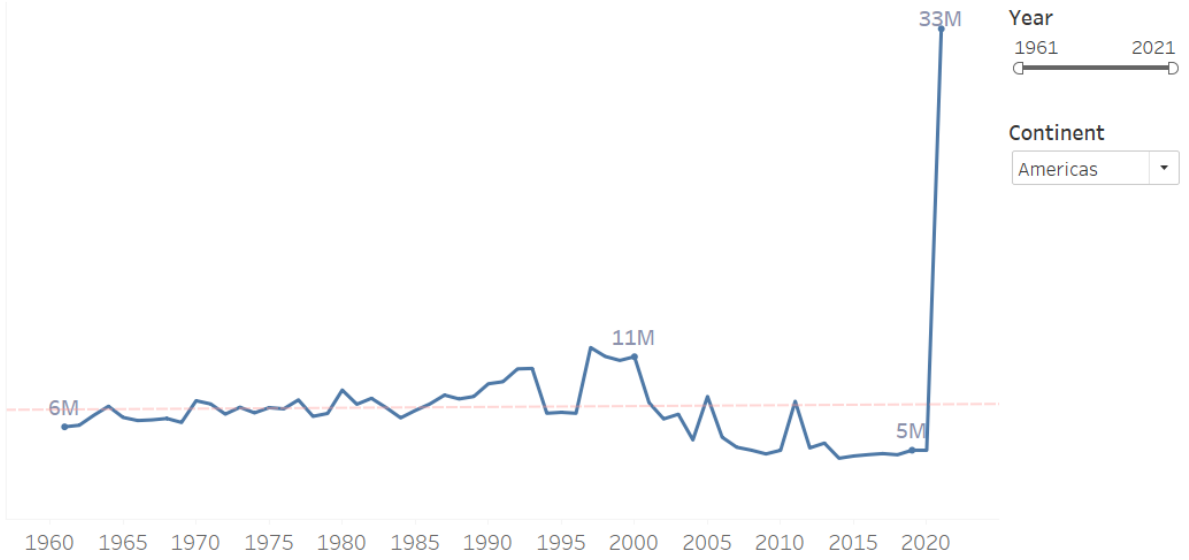


Year | Continent | Country | Land Used | Food | ⊞ Dashboard

UNITED STATES

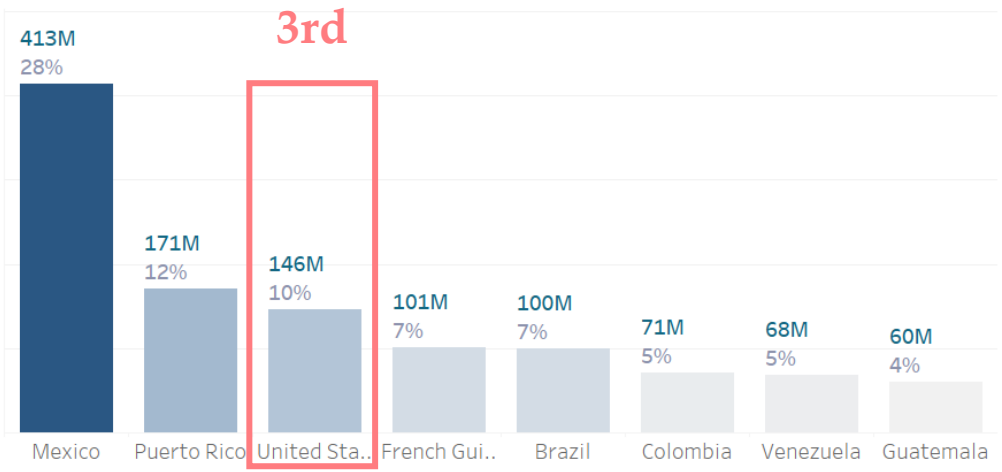
SUPPLY CHAIN WASTE





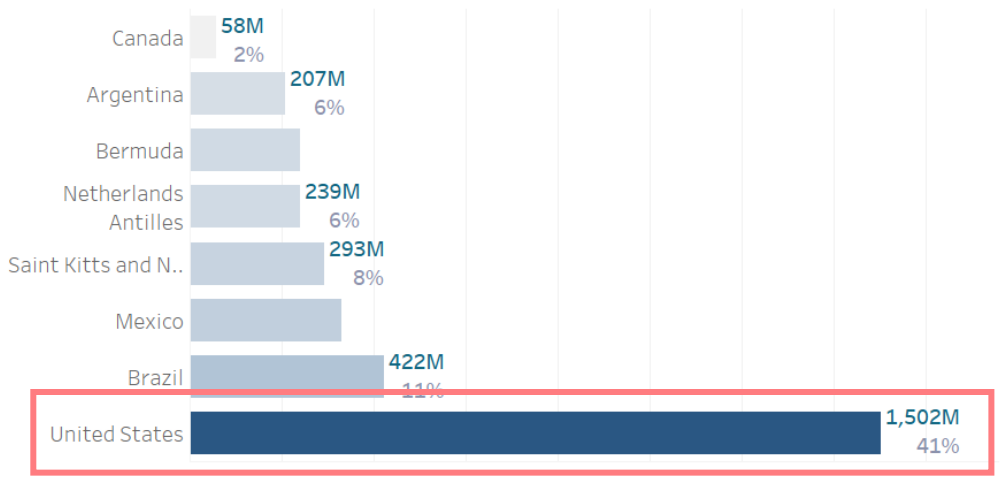
FOOD CONSUMPTION

(in Tonnes)



LAND USED

(in Hectares)



Year | Continent | Country | Land Used | Food | Dashboard

Supply chain waste is **directly** proportional to **food consumption** *(i.e. Micronesia)* and **inversely** proportional to the **land used** *(i.e. United States)* in agricultural production.