



# Uncovering the Unseen Patterns of Global Food Waste

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## Group 5

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# Data Sources

## 01 FAO (Food and Agriculture Organization of the United Nations)

Contains data and information from openly accessible databases, reports and studies measuring food loss and waste across food products, stages of the value chain, and geographical areas.



## 02 World Bank

The World Bank's database displays GDP per capita in USD for all countries, 1960-2023.





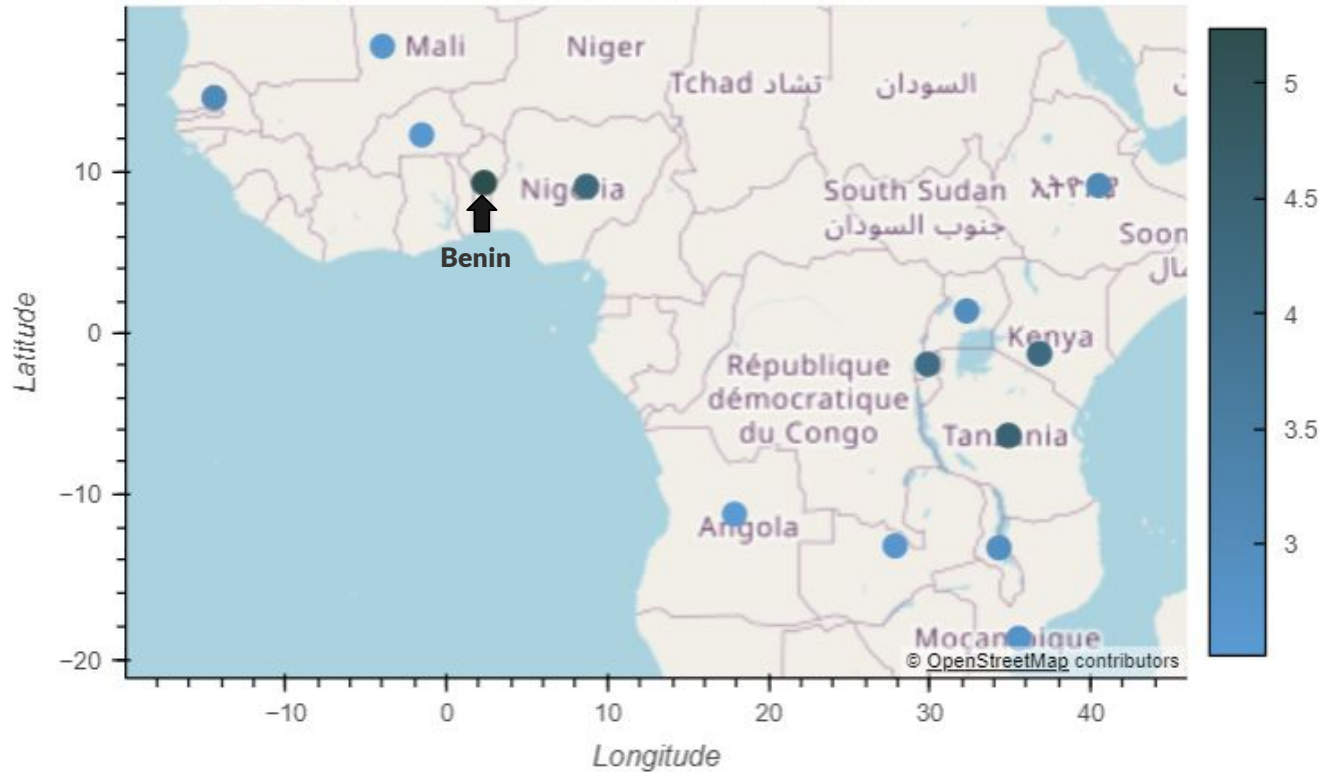


## Question 1:

How does the percentage of food loss and waste differ across various stages of the production process?



## Average Food Waste Percentage by Country



- Benin exhibited the highest percentage of food waste among the analyzed countries.
- Angola recorded the lowest percentage of food waste among the surveyed countries.
- Food waste rates are higher in East Africa compared to those in North West Africa.

<u>Country</u>	<u>Avg. Food Waste</u>
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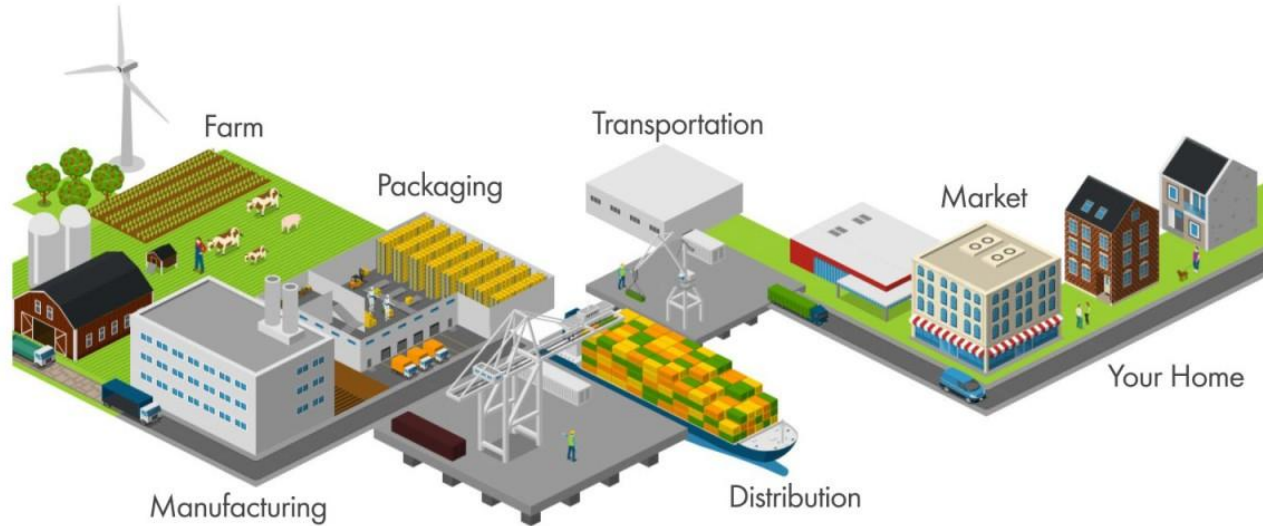
Benin:	5.24%
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Angola:	2.52%
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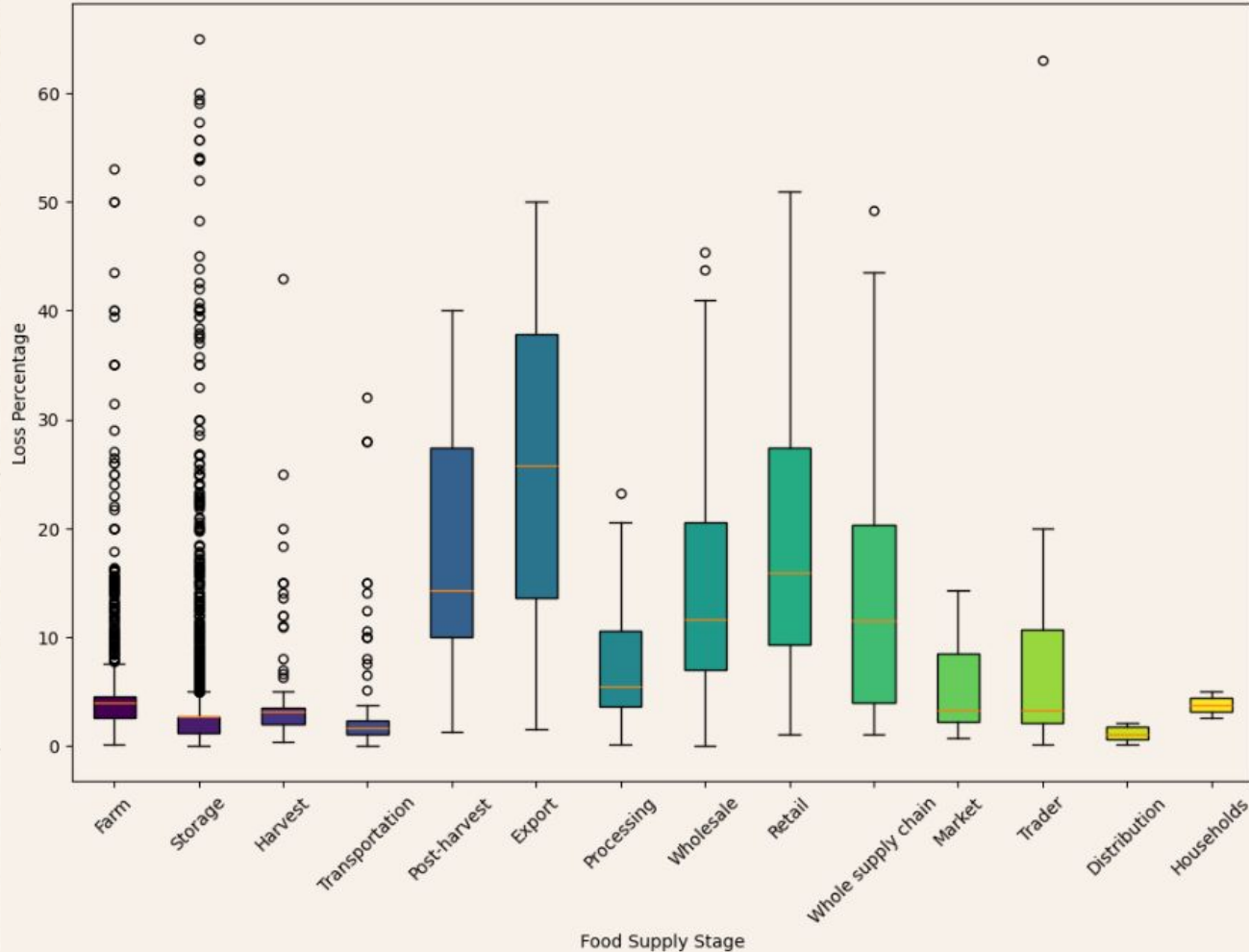




# The Food Supply Chain



Food Loss Percentage by Supply Stage

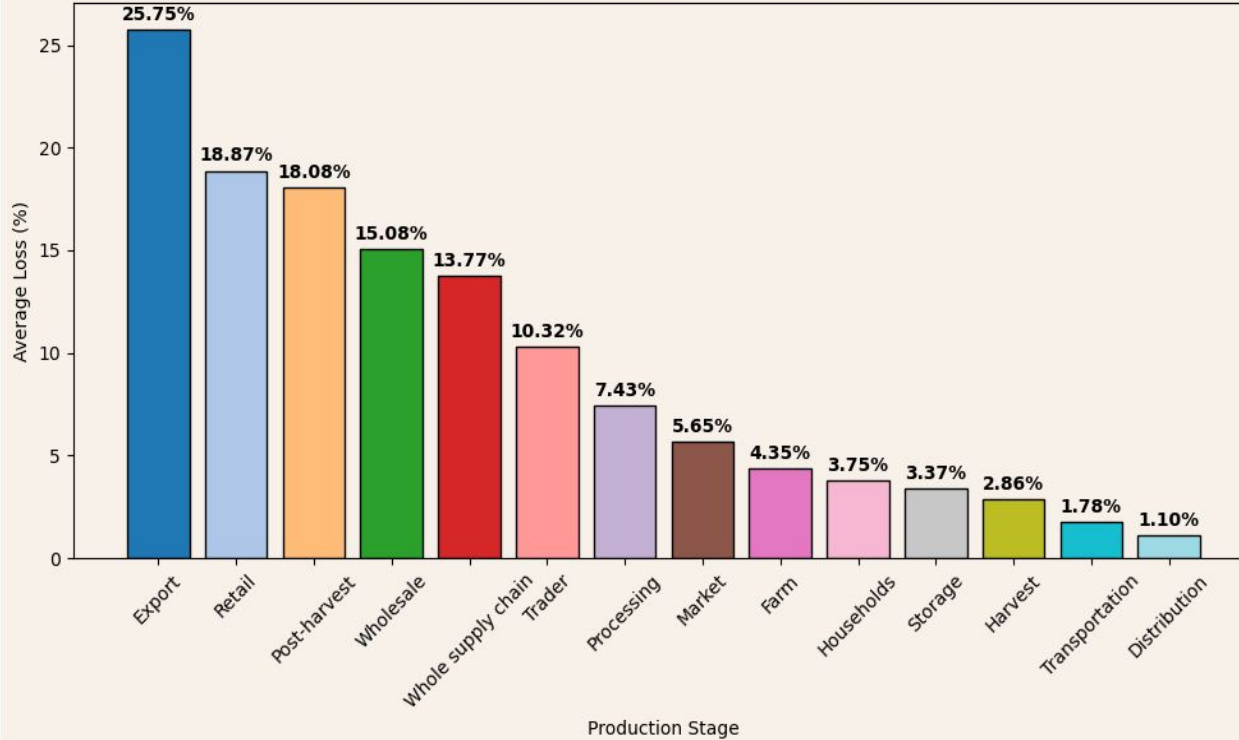


Comparison	P-value
Export vs Farm	2.90076e-17
Export vs Storage	1.96672e-08

- The Export stage shows consistent data with no extreme values, indicating stability.
- Farm and Storage has high variability with many outliers.
- Export shows statistically significant differences from Farm and Storage in food loss comparison.



**Average Food Loss Percentage by Production Stage**



- Export stage exhibits the highest loss in food waste indicating inefficiencies.
- Retail and post-harvest stages have significant losses highlights the need for better inventory management.
- Wholesale and whole supply chain stages also displayed high percentages suggesting poor efficiency.



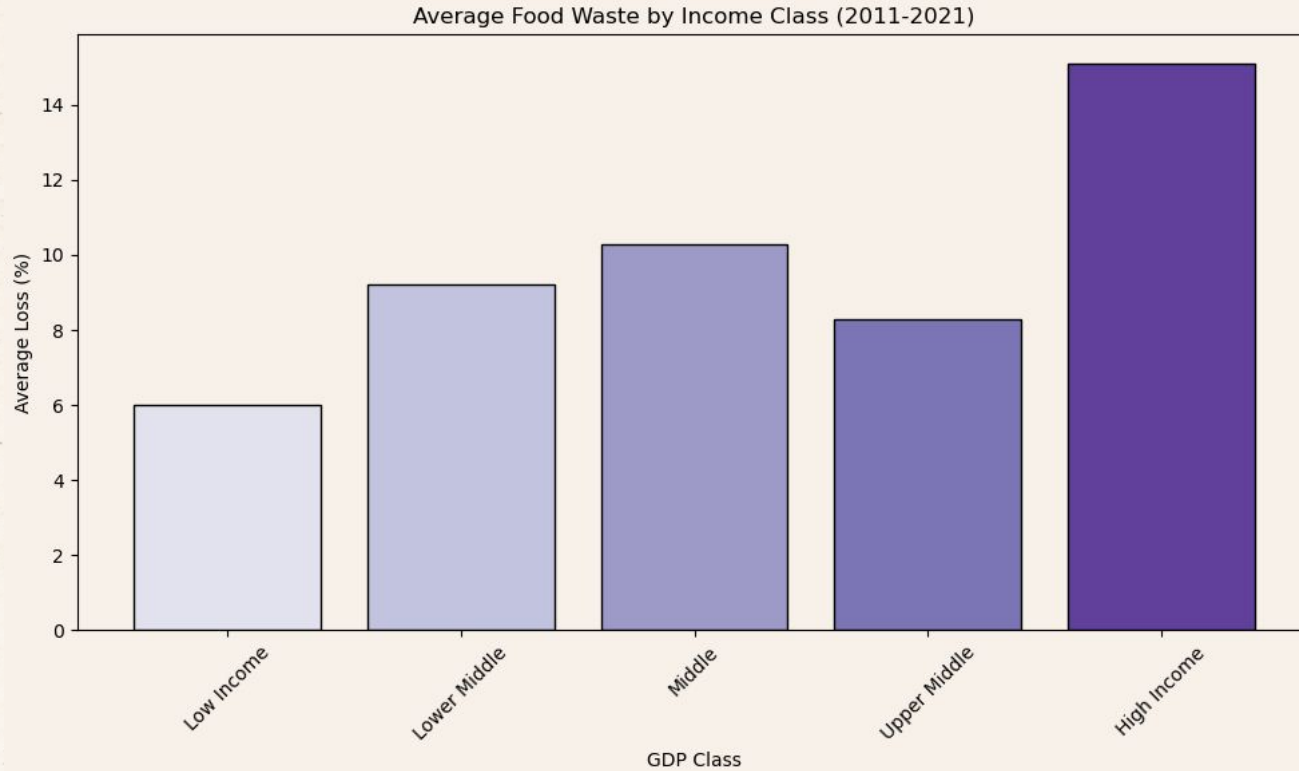


## Question 2:

What is the correlation between national wealth and food waste levels?



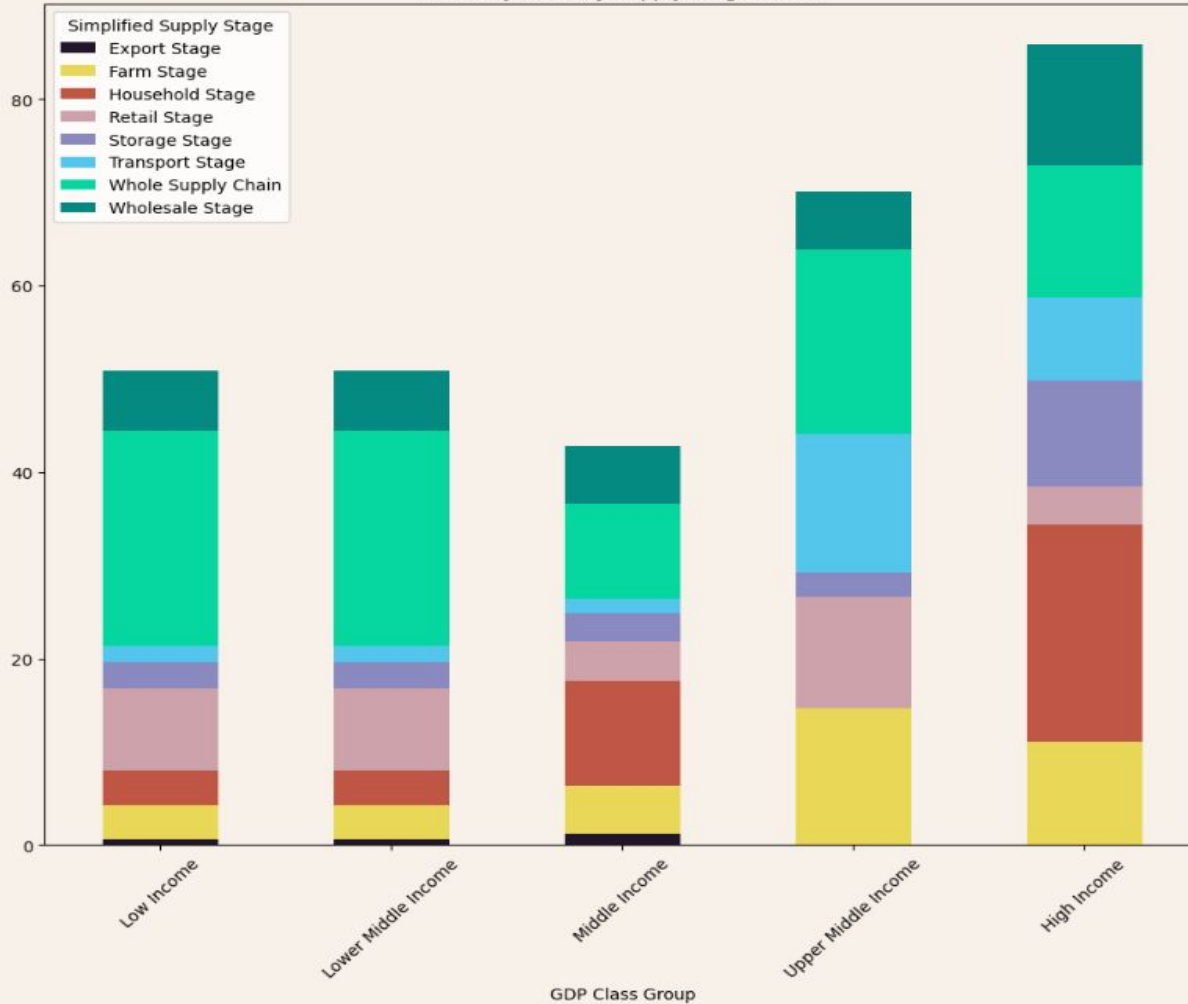




- Overall, it appears that high-income countries waste the most food on average.
- Where do these losses come from?



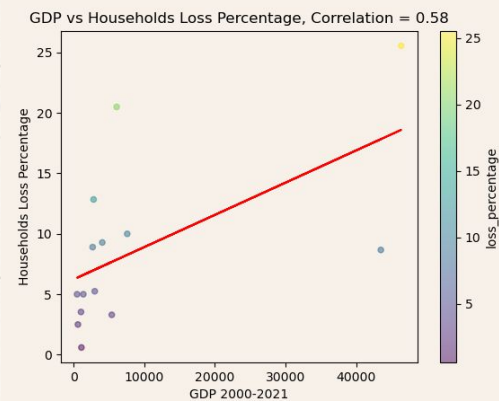
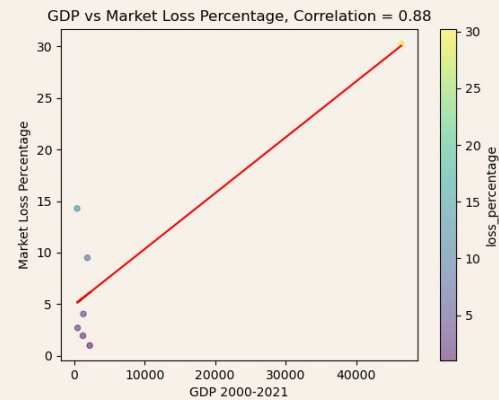
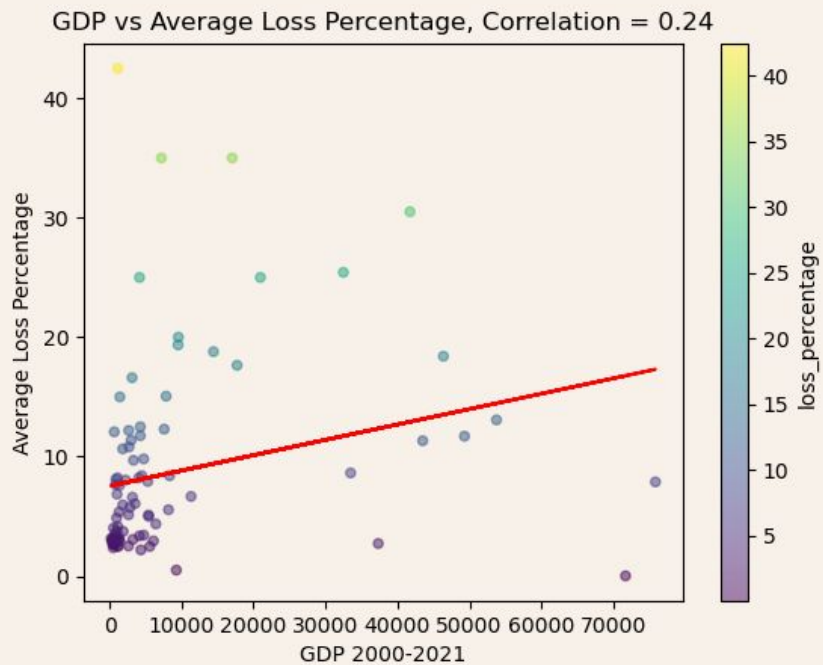
Waste by Class by Supply Stage (2021)



- Only lower-income countries report losses due to exports and trading.
- Higher-income countries lose more food during transport.
- High-income countries have the most waste due to households.









## Question 3

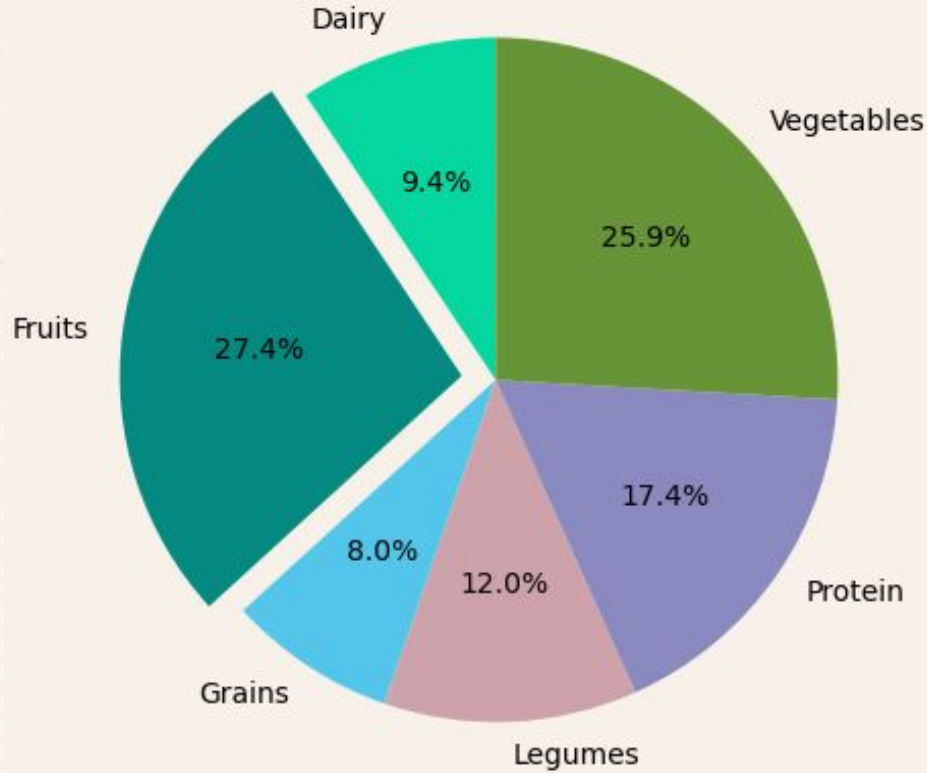
Which countries exhibit the highest average food waste, are specific types of commodities more susceptible to losses compared to others?







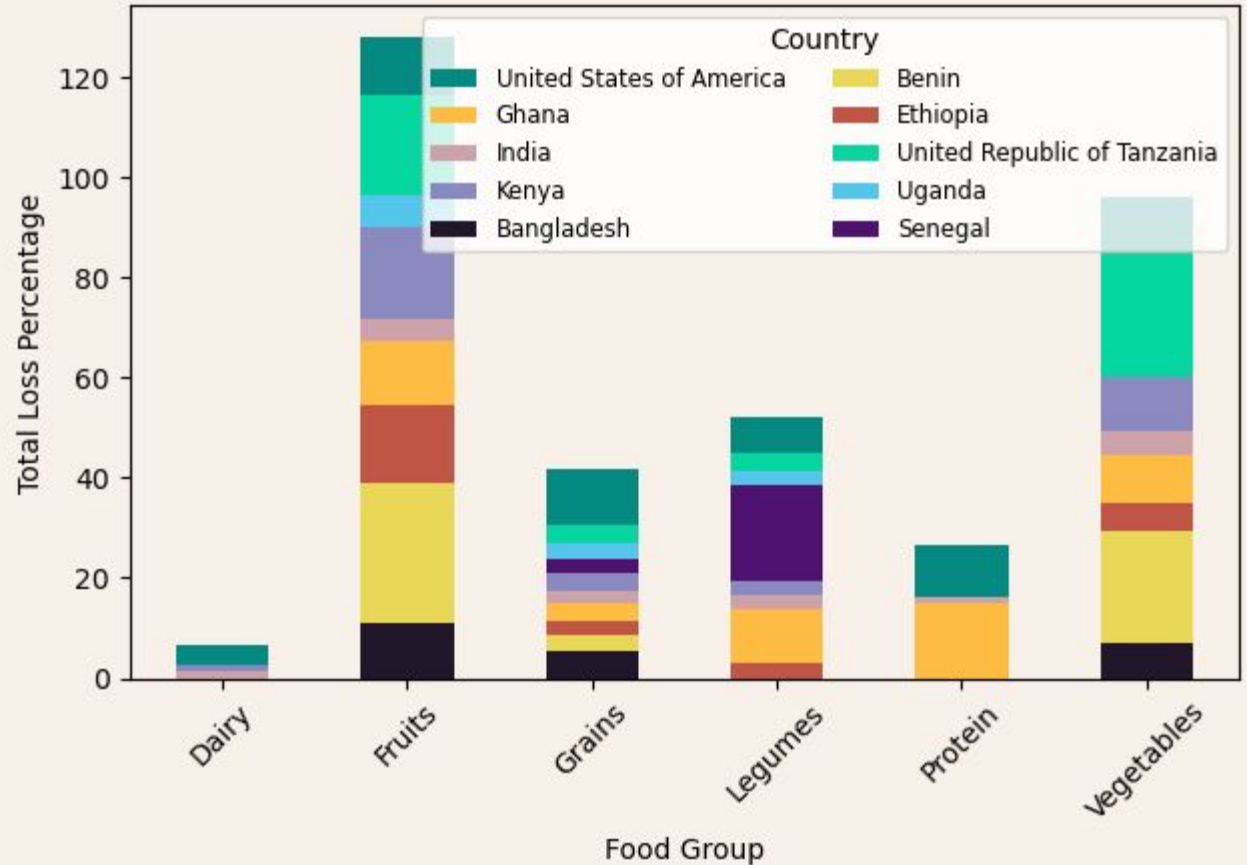
Food Waste by Food Group



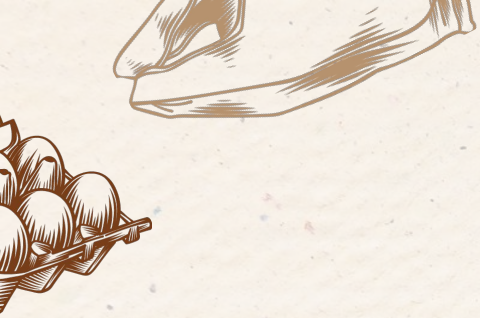
- 147 commodities reported in the data were grouped into 6 main food groups.
- Fruits were the most wasted food group when looking at all 127 countries.
- Grains accounts for the majority of the data frame, but was the least wasted food group.

- Fruits were the most wasted food for the top 10 most wasteful countries.
- The country with the highest reported waste was the United States.
- The United States had the greatest amount of data accounted for.

Top 10 Countries Food Waste

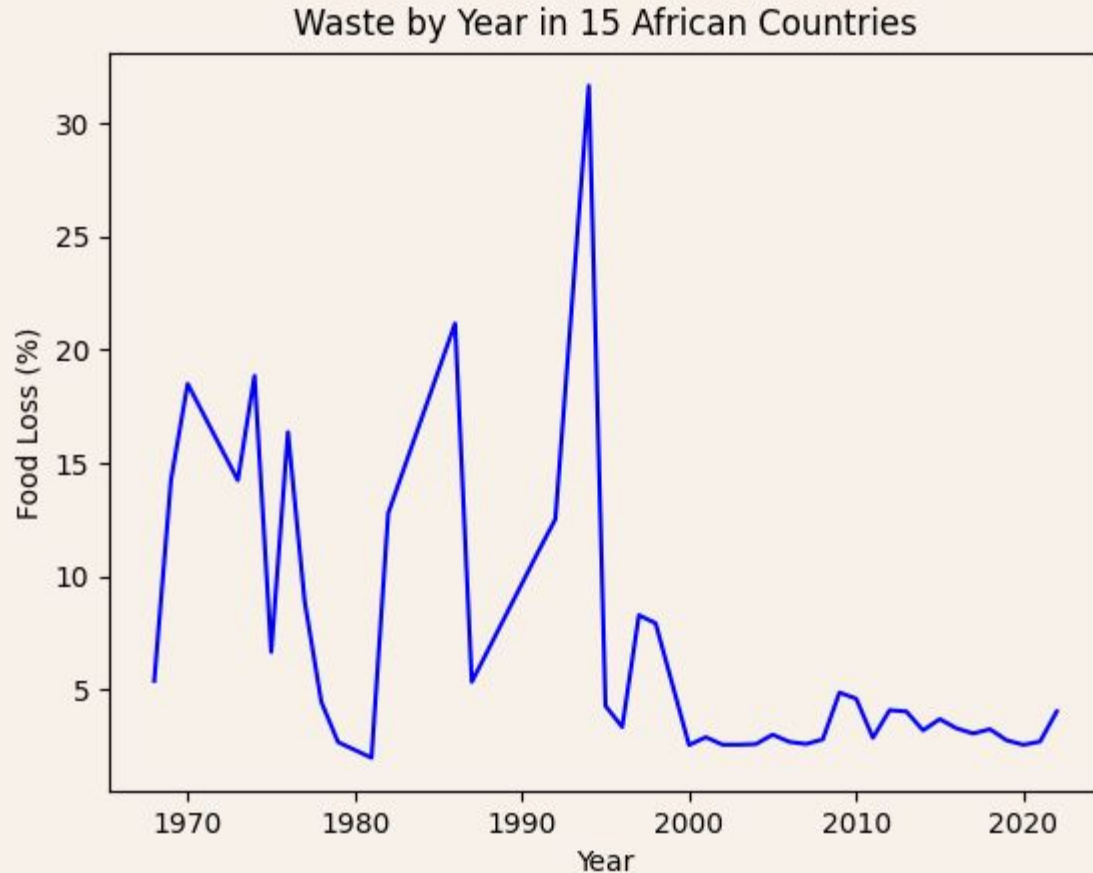






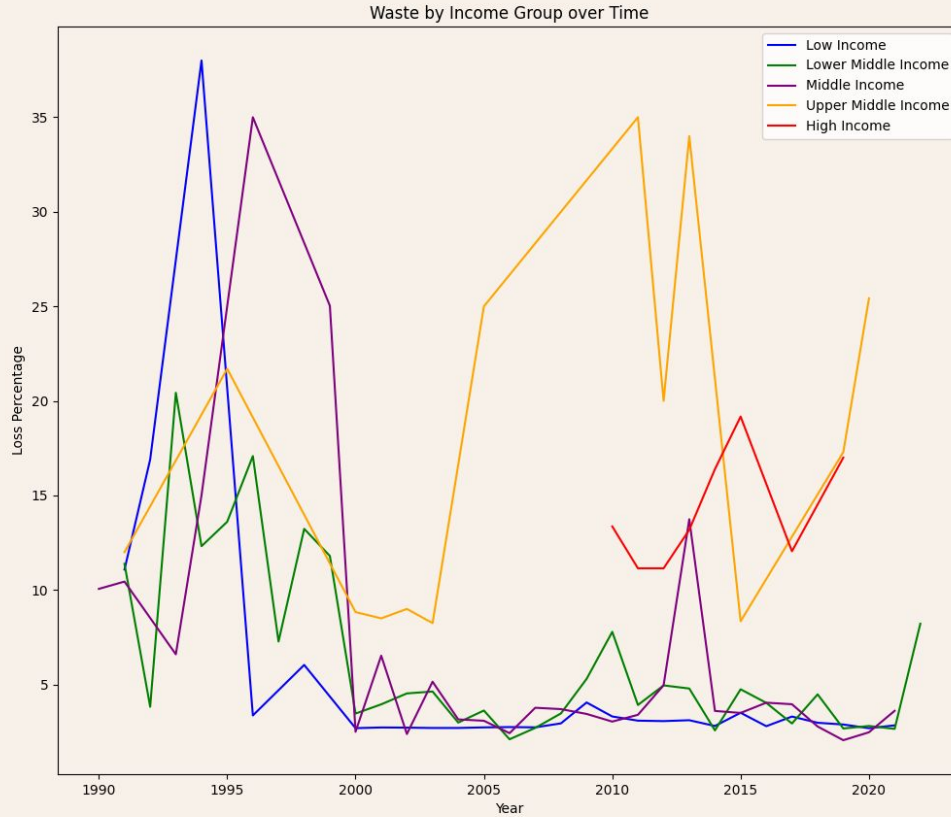
## Question 4:

How have global food waste rates evolved over time?



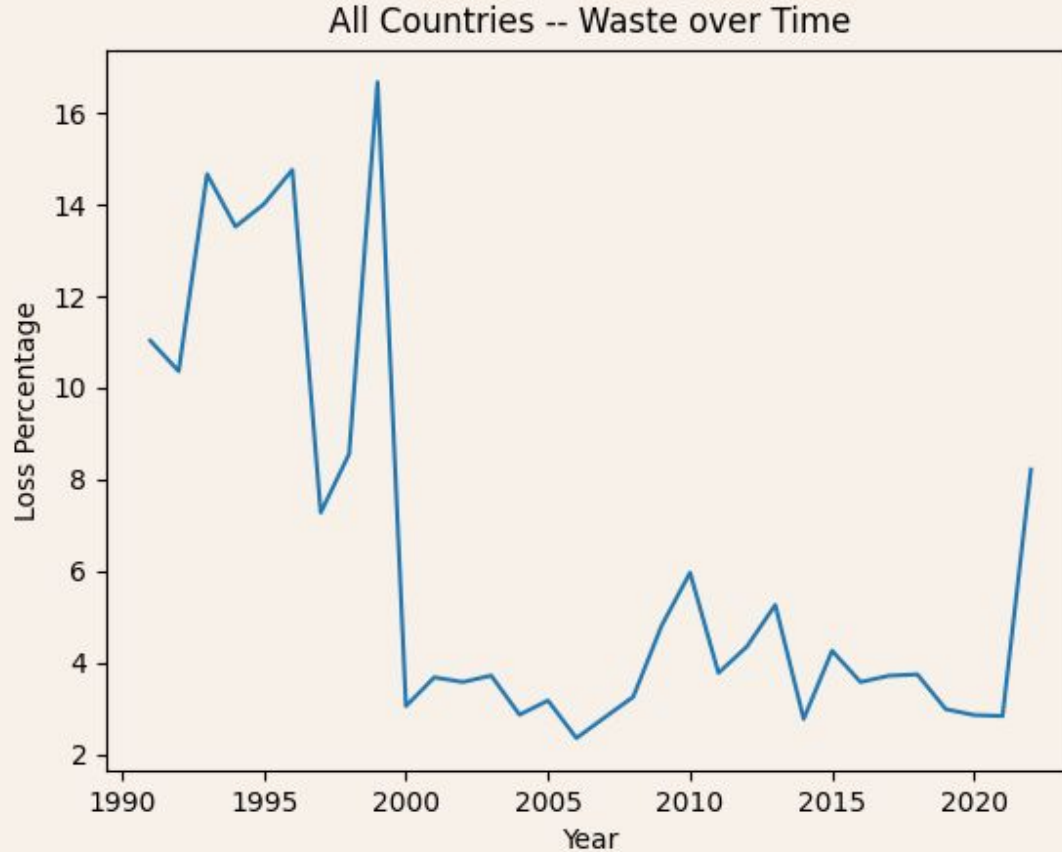
- Loss percentages fluctuated greatly prior to the 1990s.
- In the early 90s, there was a significant spike in waste percentage.
- Following that drastic spike, waste percentages decreased significantly and remained at a consistently low level.





- Lower-income countries seemed to follow a similar trend: quite a spike in waste during the 1990s, then consistently low levels after 2000.
- Higher-income countries fluctuated wildly and did not seem to show significant trends over time.

# Putting it all together...



# Data Limitations

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## **Data Availability:**

- Lack of comprehensive data across all countries and production stages can limit the scope of analysis. Some regions or countries may not have consistent or up-to-date data on food loss and waste.

## **Product Specificity:**

- An insufficiency of detailed data on specific product types can impede the analysis of which products are more susceptible to losses. Aggregated product categories may obscure significant differences in food loss rates among various product types.

## **Economic and Environmental Factors:**

- Data may not account for economic and environmental factors that influence food loss and waste, such as market prices, weather conditions, and policy changes. Lack of contextual information can limit the ability to understand the underlying causes of food loss and waste.

## **Methodological Differences:**

- Differences in how food loss and waste are defined and measured can lead to inconsistencies in the data.

