"Crabs, Cows, and Chaos: Forecasting the Future of Meat & Seafood"

Using past meat and seafood consumption data to predict future needs across the world

Key Question

How can we accurately forecast future meat and seafood demand to support global supply chain planning and meet evolving consumption needs?

Executive Summary

- By Leveraging consumption data from over 100 countries, our machine learning model predicts annual meat and seafood demand for future consumption

- Our model integrates historical data of population and meat consumption trends to predict future demand.

How We Gathered and Predicted our Data

- **Comprehensive Data Collection:**
  Compiled historical meat and seafood consumption data from 100+ countries, with population and meat consumption trends.

- **Machine Learning Model:**
  Developed an advanced predictive simulation using linear, lasso, and ridge regression models, to analyze population and consumption trends, projecting future meat and seafood demand.

- **User-Driven Insights:**
  Combined user-provided input to generate accurate, country-specific demand forecasts from the 3 machine learning models.

Snapshot of the Metric Outputs

Model Metrics

Linear Regression

Population Metrics

Mae: 580.34

Mse: 413.09K

R2: 0.97

Rmse: 642.72

Meat Consumption Metrics

Mae: 4.28

Mse: 30.47

R2: 0.63

Rmse: 5.52

Lasso Regression

Population Metrics

Mae: 580.33

Mse: 413.08K

R2: 0.97

Rmse: 642.72

Meat Consumption Metrics

Mae: 4.28

Mse: 30.47

R2: 0.63

Rmse: 5.52

Ridge Regression

Population Metrics

Mae: 578.13

Mse: 410.88K

R2: 0.97

Rmse: 641.00

Meat Consumption Metrics

Mae: 4.33

Mse: 31.33

R2: 0.62

Rmse: 5.60

Conclusions

- What's important is that we look at key metric outputs being generated by the models to determine which models give us the most accurate output

- One model doesn’t necessarily perform better than the other- data and criteria selection is what determines the quality of the prediction

Additional Questions

- **How resilient are our demand forecasts in the face of global disruptions (e.g., pandemics, climate change, geopolitical conflicts)?**
- **What key factors will most influence poultry and seafood consumption trends beyond 2030?**
- **How can supply chains adapt to meet projected demand while minimizing waste and inefficiencies?**