INVEST IN A BETTER FUTURE THROUGH AGRICULTURE

Team 8

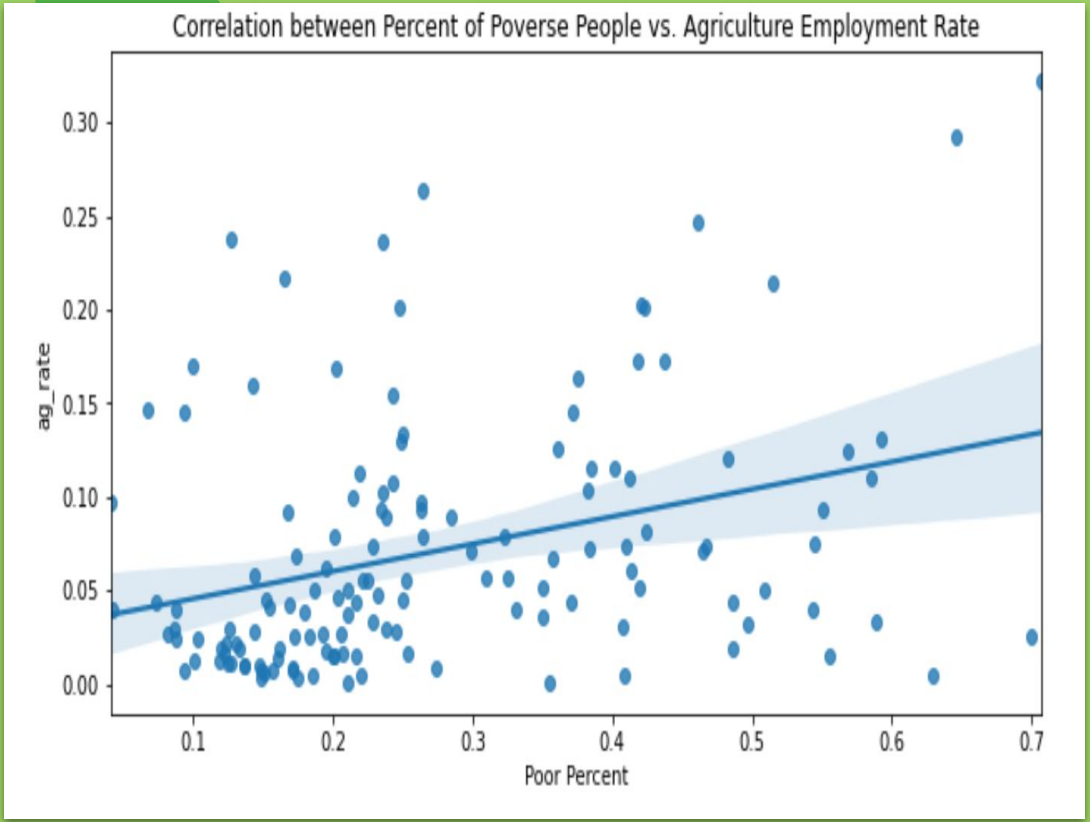
KEY FINDINGS

Countries to Invest In	Crops
Liberia	Meat: pig
Timor-Leste	Meat: pig
Madagascar	Meat: chicken
Haiti	Milk: whole fresh goat

PHASE 1:

Defining Social Good

Our Definition of Underprivileged Countries



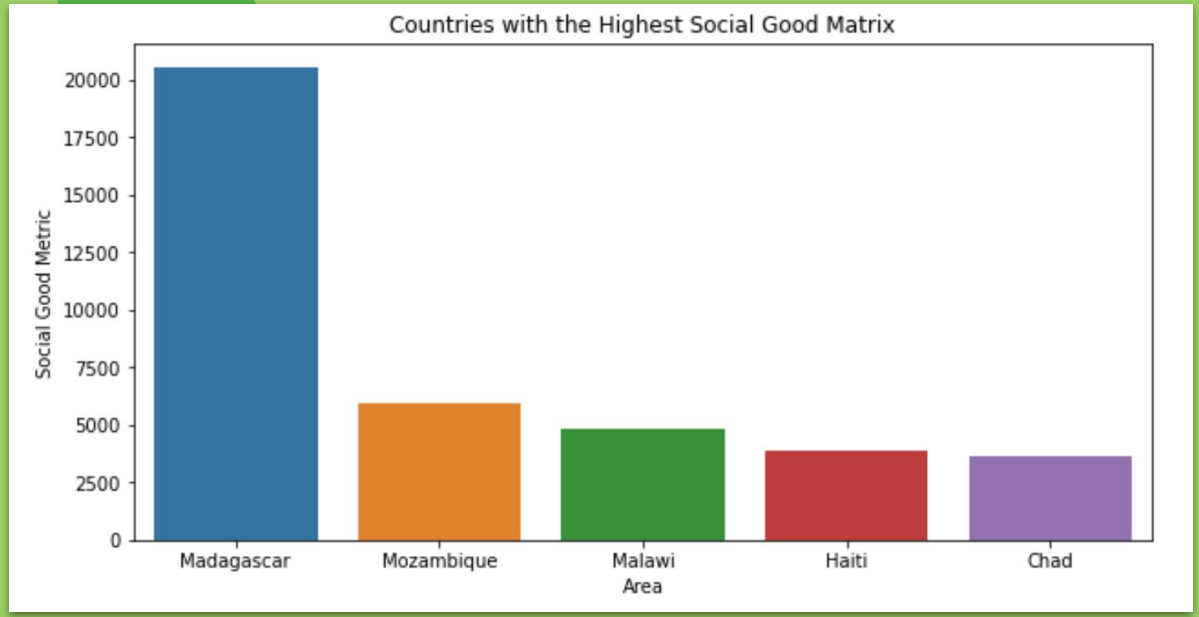
Positive Correlation between

Percent of population that is poor

AND

Percent of population that works in agriculture

How We Define Social Good



Social Good is defined as:

$$\frac{\text{Ag_rate} \times \text{poverty_rate} \times \text{undernourishment}}{\text{GDP per capita}}$$

Variables:

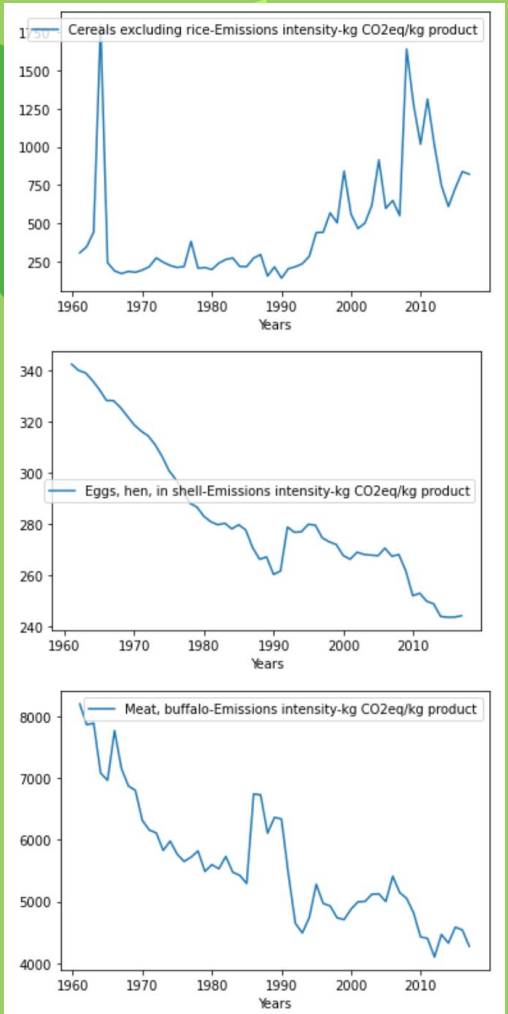
Ag_rate = Number of agricultural workers / Population

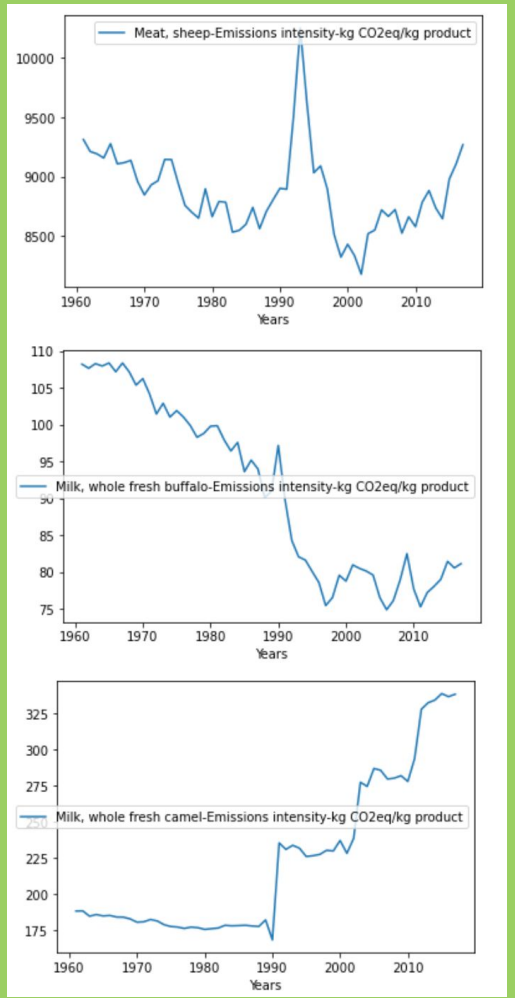
Poverty_rate = Percent of People Below Poverty Line

Undernourishment = Prevalence of Undernourishment (3yr avg.)

PHASE 2:

Minimizing Environmental Costs


Cereals excluding rice-Emissions intensity-kg CO2eq/kg product
Years
Eggs, hen, in shell-Emissions intensity-kg CO2eq/kg product
Years
Meat, buffalo-Emissions intensity-kg CO2eq/kg product
Years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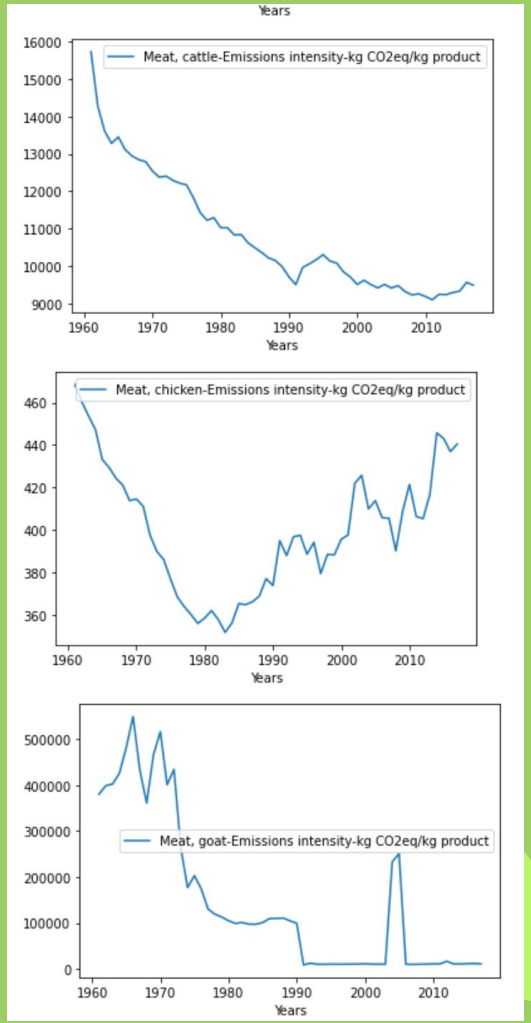
Milk, whole fresh camel-Emissions intensity-kg CO2eq/kg product
Years


Years
Meat, cattle-Emissions intensity-kg CO2eq/kg product
Years
Meat, chicken-Emissions intensity-kg CO2eq/kg product
Years
Meat, goat-Emissions intensity-kg CO2eq/kg product
Years

Combining Social Good and Environmental Metrics

Formula:

$$\frac{\text{Social Good}}{\text{Using last 5 years of C02 Emission}}$$

Metric used for defining environmental impact:

$$\frac{\text{CO2 Emission per country for last 5 years}}{\text{Overall worldwide CO2 emissions for last 5 years}}$$

FUTURE WORK

- Adding machine learning to compare future investments
- Use algorithm to see if environmental impact has decreased and if our definition of social good has increased
- Find a metric for the crop production values
- Use crop production as a factor to determine products to invest in

Team Presentation

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https://www.linkedin.com/in/kevin-zheng-322a50132/

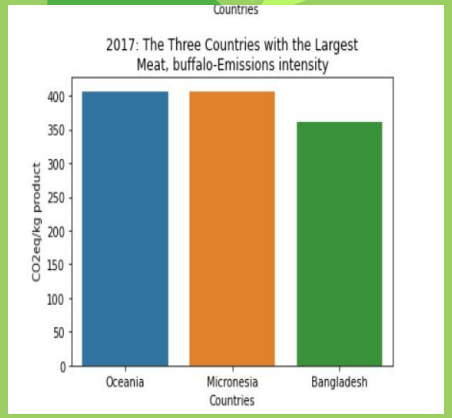
THANKS FOR LISTENING

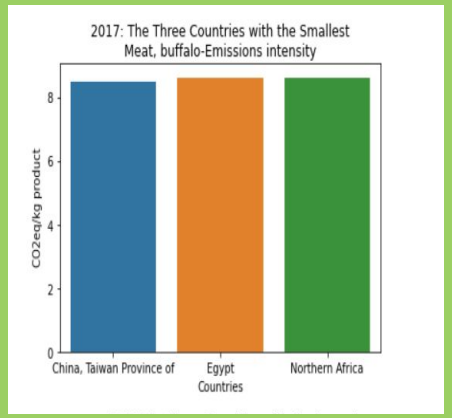
If you have any questions, take a look at the appendix

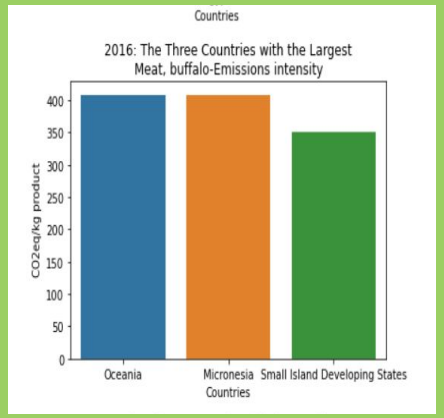
Appendix

- EDA
- Function (invest product)

EDA


Countries
2017: The Three Countries with the Largest Meat, buffalo-Emissions intensity
CO2eq/kg product
0
50
100
150
200
250
300
350
400
Oceania
Micronesia
Bangladesh
Countries


2017: The Three Countries with the Smallest Meat, buffalo-Emissions intensity
CO2eq/kg product
0
2
4
6
8
China, Taiwan Province of
Egypt
Northern Africa
Countries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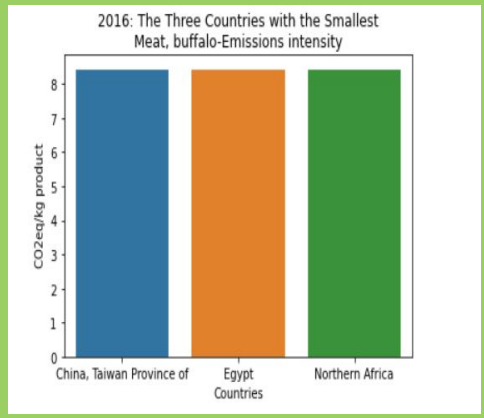
CO2eq/kg product
0
50
100
150
200
250
300
350
400
Oceania
Micronesia
Small Island Developing States
Countries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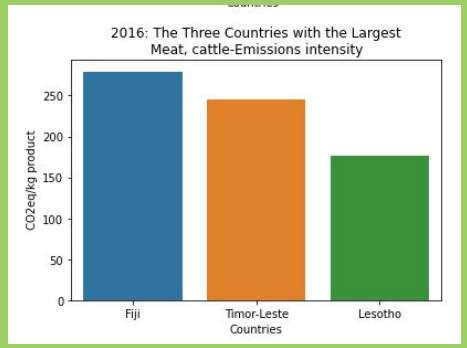
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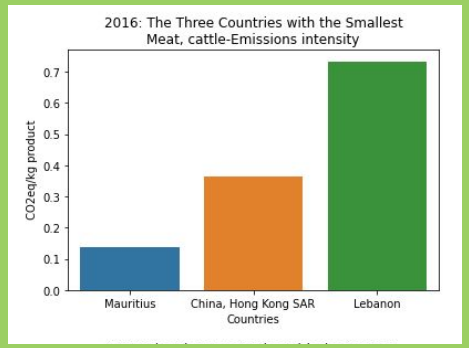
CO2eq/kg product
0
50
100
150
200
250
Fiji
Timor-Leste
Lesotho
Countries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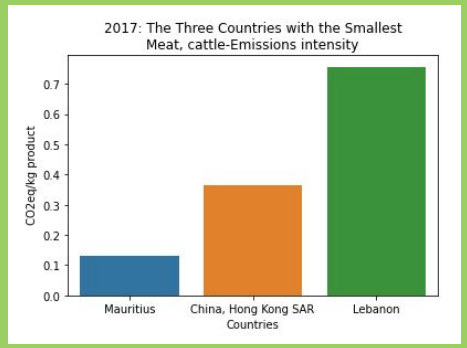
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Mauritius
China, Hong Kong SAR
Lebanon
Countries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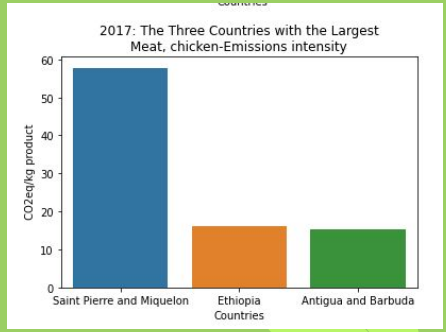
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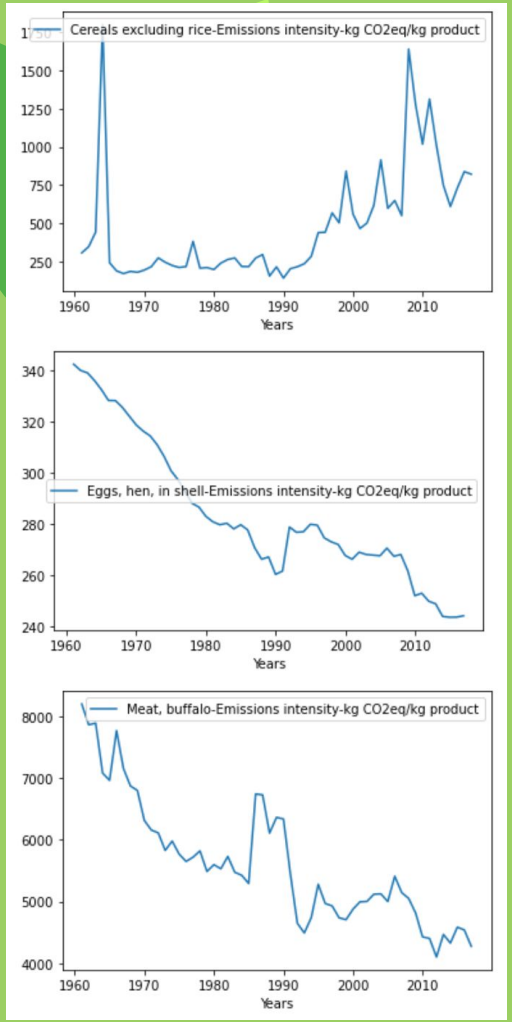
CO2eq/kg product
0
10
20
30
40
50
60
Saint Pierre and Miquelon
Ethiopia
Antigua and Barbuda
Countries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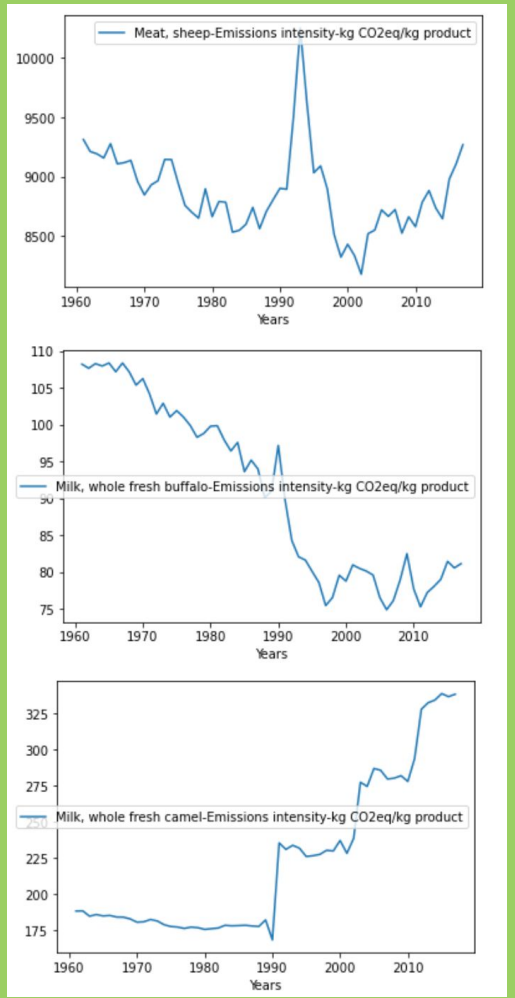
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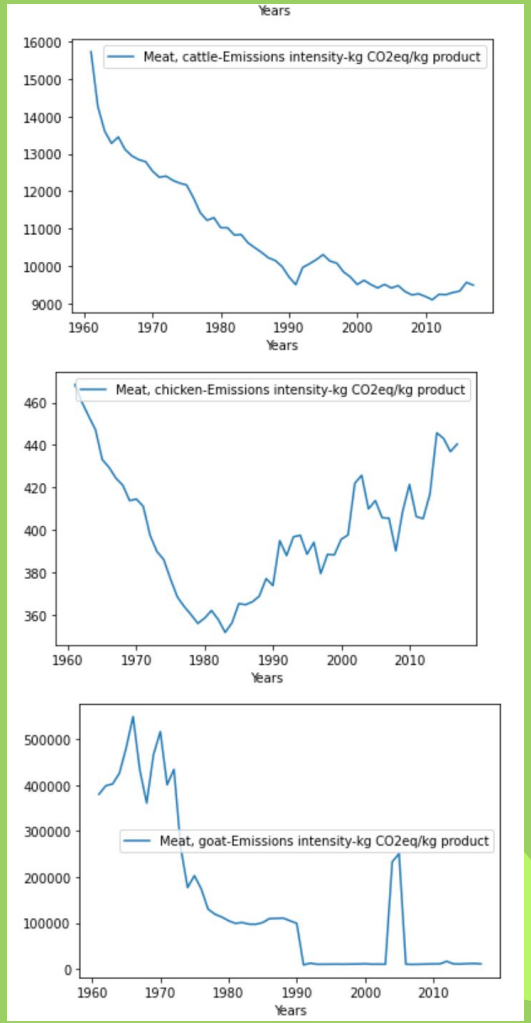
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Years
Meat, goat-Emissions intensity-kg CO2eq/kg product
Years

Function

Function used to determine which product to invest in based on the different metrics

```
#EmissionsList
def determineMinProd(Country):
    tempProd = (ProdTonDF.loc[Country]>=np.percentile(ProdTonDF,50))
    tempProd= tempProd.to_frame()
    prodEmissionsList = [x.split('-')[0] for x in EmissionsList]
    tempProd = tempProd.set_index(tempProd.reset_index()['index'].str.split('-', expand = True)[0])
    tempProd = tempProd.loc[prodEmissionsList, Country]
    return tempProd.loc[tempProd].index[0]
```