

The differences between how rich and poor countries spend their money

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1. Introduction

1.1 Background

Gross Domestic Product is considered as the world's most powerful statistical indicator of national development and progress. It is the sum of consumption, investments, and government spending and net exports. Since 1944 GDP has been the main tool for measuring a country's economy. Today, the economies of each country in the world are categorised from high income to low income depending on the size of GDP.

The amount that each sector contributes to the total GDP is presented as percentage of GDP (% of GDP). Whilst it is important to compare different countries according to the size of their GDP, the results are usually arbitrary and do not clearly illustrate the differences between economies apart from their sizes. There are also less learning points that lower income nations can emulate from the high income. Percentage of GDP should provide more insights than just the GDP.

1.2 Problem

This project aims to compare the differences in expenditure on different sectors of the economy between high, middle and low income countries. We will also predict the income group of the countries depending on how much they spend in each sector.

1.3 Interest

There are many stakeholders who will be interested in the results of this project. Firstly the information will be very useful to the institutions and states that work to uplift the millions of people in low income countries through investments. The information is very crucial to the governments in the different countries as it would clearly illustrate the areas that need attention in order to develop their nations. The data is also vital for the different organizations that work in the countries. Most importantly the results are important to the millions and billions of people in the developing countries who can use the insights of the findings to shape their future and demands on their leaders that will lead to

2. Data acquisition and cleaning

2.1 Data sources

The project will utilise the World Bank Open Databank to acquire the data necessary for the analysis. All the data is accessible [here](#) for referencing. The coordinates will be found from Google's public data which is accessible from [here](#). We will also utilise Foursquare database to find the coordinates of the countries so that we can segment them according to their income groups.

2.2 Data cleaning

After combining all the data, the dataset had 254 entries and 13 different features. But some of the entries were not countries per se but summaries of different groups for example the summary of the countries in the Arab world, or Sub Saharan Africa. These summary data were dropped. The final dataset had 213 countries or entries with 13 features available for comparison.

| | <i>Variable Name</i> | <i>Number of missing values</i> | <i>Percentage of available data (%)</i> |
|----|------------------------------|---|---|
| 1 | Region | 213 | 100 |
| 2 | Income Group | 213 | 100 |
| 3 | Country Name | 213 | 100 |
| 4 | Agriculture | 135 | 63.3802817 |
| 5 | Education | 137 | 64.3192488 |
| 6 | Expenses | 126 | 59.1549296 |
| 7 | Exports | 177 | 83.0985915 |
| 8 | Health | 184 | 86.3849765 |
| 9 | Imports | 177 | 83.0985915 |
| 10 | Industry and Construction | 174 | 81.6901408 |
| 11 | Military | 149 | 69.9530516 |
| 12 | Research and Development | 135 | 63.3802817 |

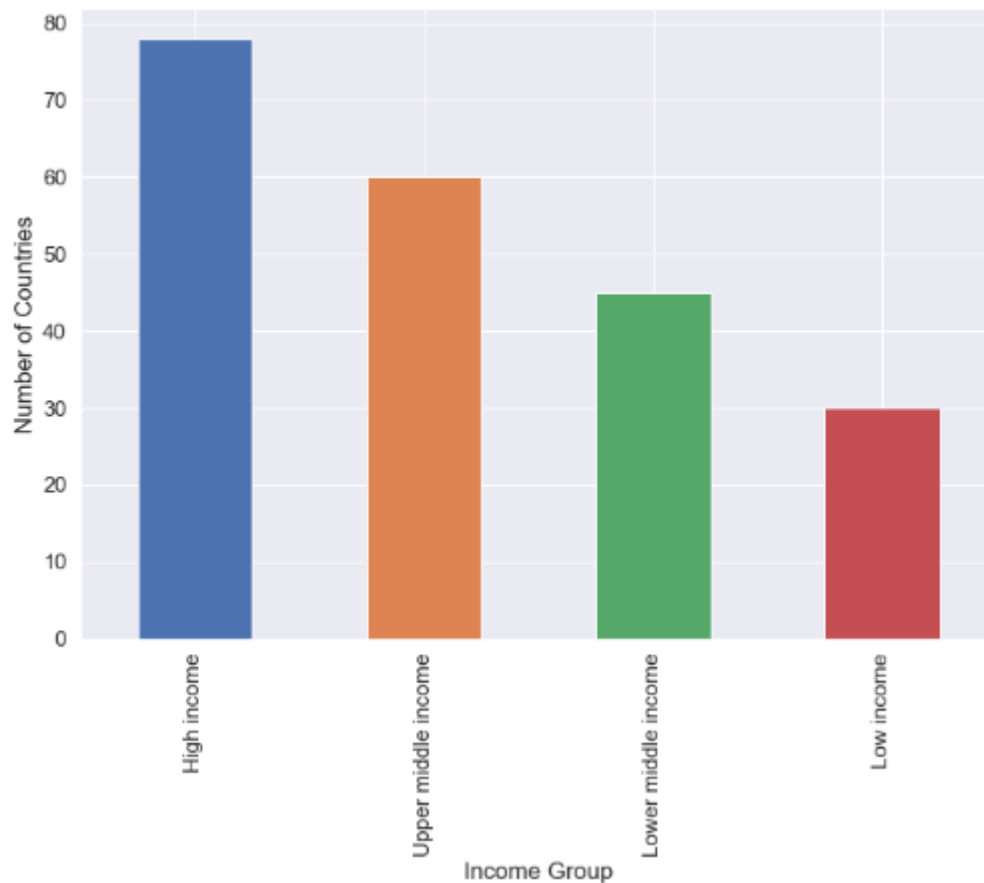
2.3 Feature selection

Several features were selected that will be analysed in this project.

3. DESCRIPTIVE DATA ANALYSIS

The indicators that were chosen for analysis were:

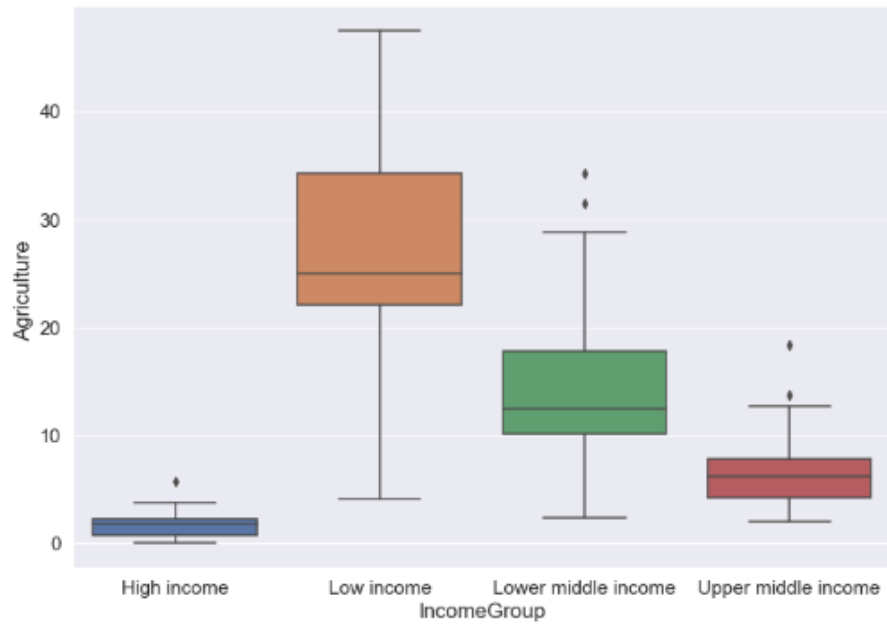
1. Agriculture, forestry, and fishing, value added (% of GDP)
2. Expense (% of GDP)
3. Imports of goods and services (% of GDP)
4. Exports of goods and services (% of GDP)
5. Industry (including construction), value added (% of GDP)
6. Government expenditure on education, total (% of GDP)
7. Military expenditure (% of GDP)
8. Research and development expenditure (% of GDP)



4. EXPLORATORY DATA ANALYSIS

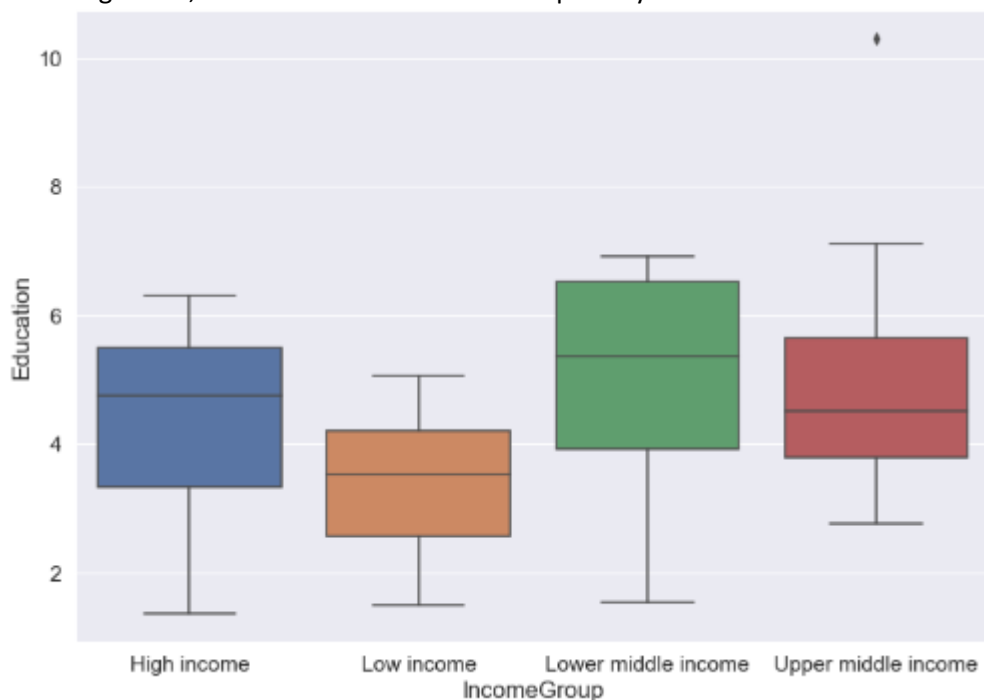
4.1 Relationship between Income Group and Agriculture

The data shows that agriculture makes up a much greater percentage of GDP for the poorer countries than for the richer countries. It can indeed be seen that Low income countries spend the most on agriculture with a decreasing trend with each income group. In low income countries this money usually goes towards subsistence farmers in rural areas who make up the majority of the populations. But since these are subsistence farmers whose majority of produce are for consumption, it means the countries have little amounts to invest in education, trade, and projects that will benefit them in the future and will help develop the countries. These countries are therefore trapped in the cycle of poverty and will in the long run become poorer and poorer unless interventions are done.



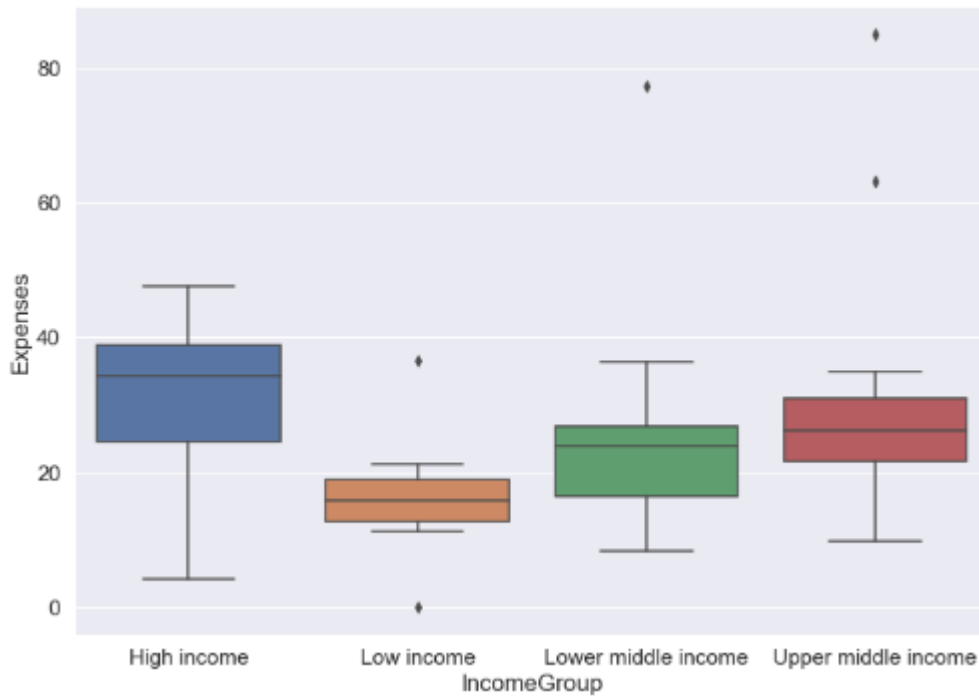
4.2 Relationship between Income Group and Education

Low income countries spend the least on education compared to the other income groups. Interestingly, the Lower middle income countries spend the most on education. Education is the key to development and progress. This is valuable insight into why other countries are becoming richer, whilst others are still stuck in poverty.



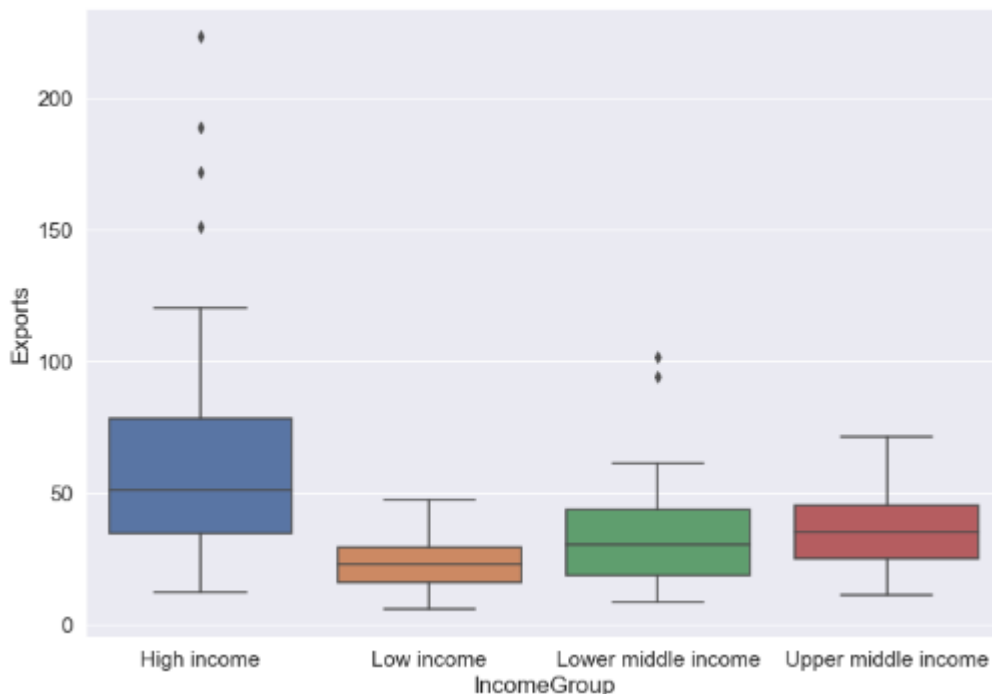
4.3 Relationship between Income Group and Expenses

Higher income countries spend more on expenses than poorer ones.



4.4 Relationship between Income Group and Exports

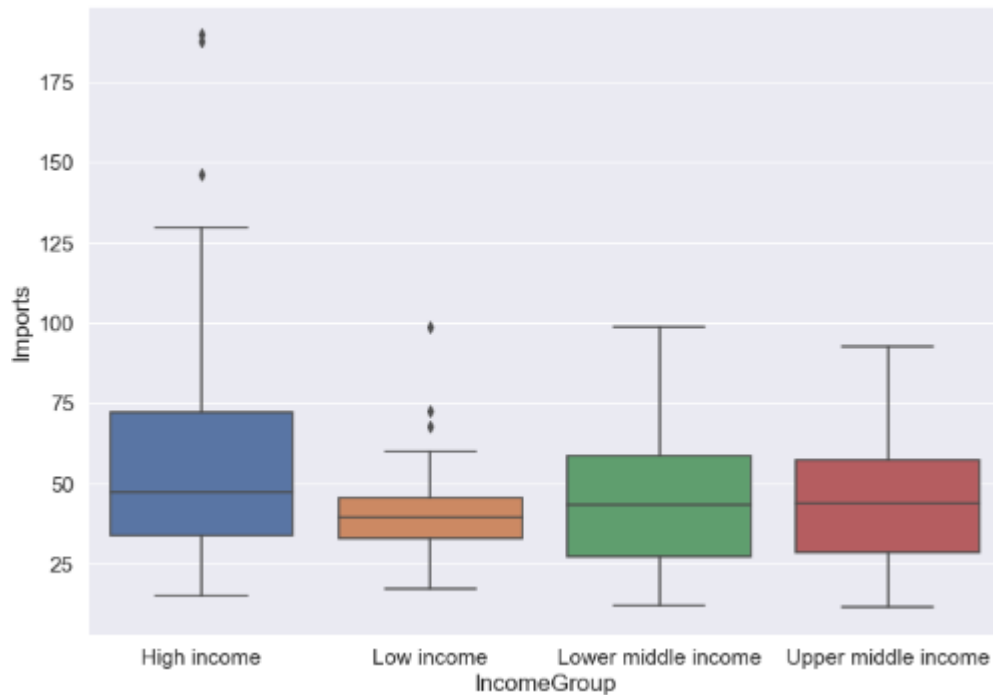
Interestingly, richer countries export more than poorer ones. This in some ways makes sense as the more a country exports, the more the economy grows, the greater the development is seen. Perhaps the greatest economic wonder of our time is the rise of China which has been fuelled by massive exports which the country was able to use to invest in its people and infrastructure which further propelled them into the second biggest economy in the world.



4.5 Relationship between Income Group and Imports

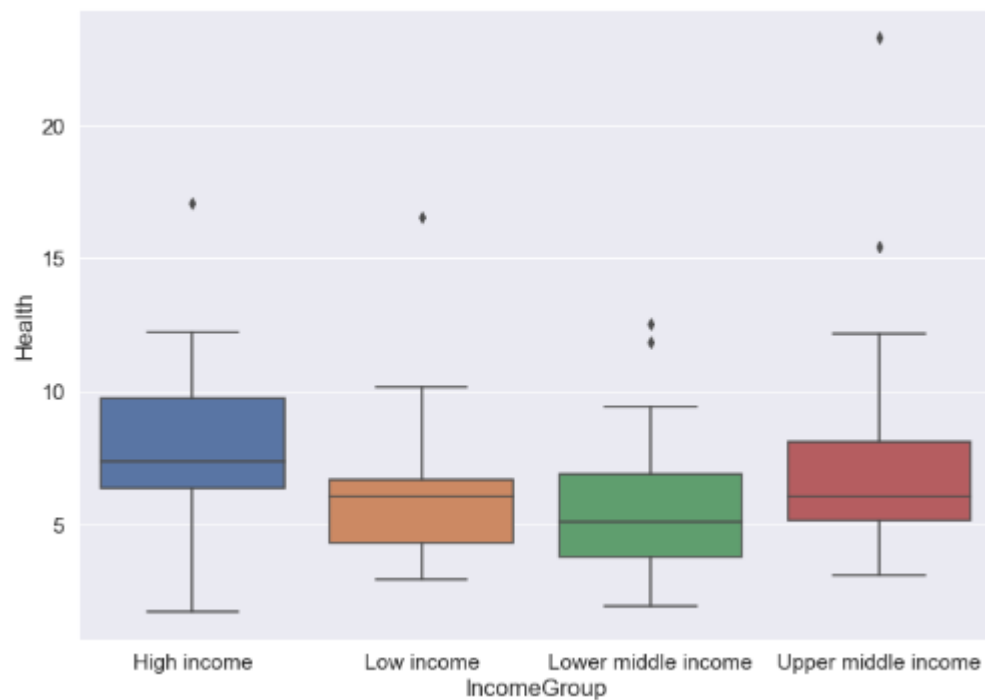
Surprisingly, the income as percentage of GDP is relatively the same across all the income groups. This is concerning as it means the poorer countries have a greater trade deficit than richer countries and this has implications that the gap between the developed and the

developing nations will continue to get wider and wider since the more developed nations export more than countries in the lower income groups.

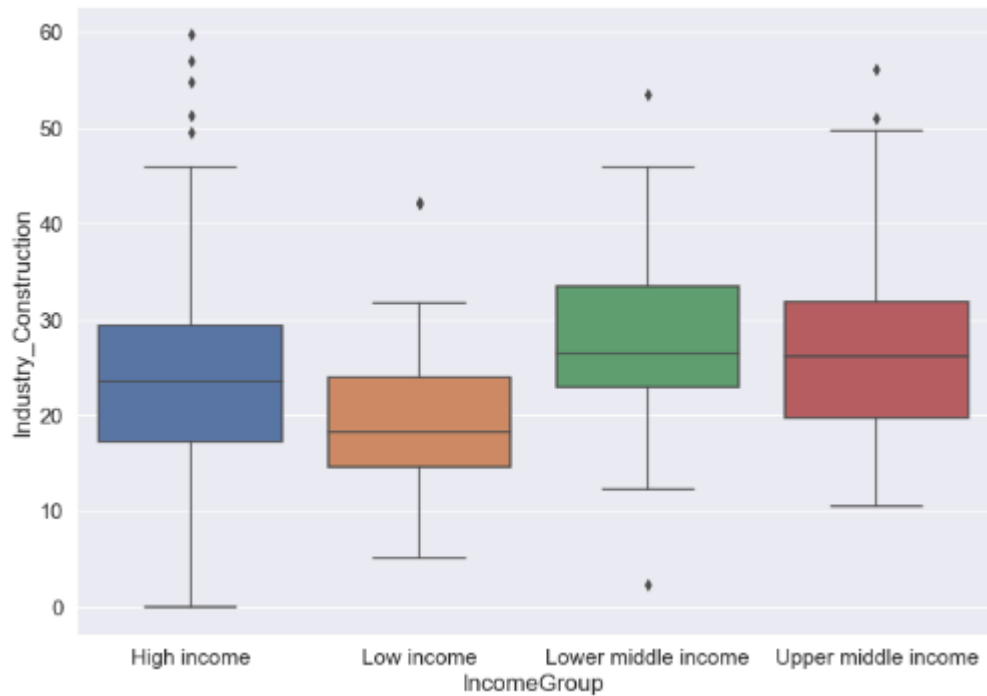


4.6 Relationship between Income Group and Health

Not much difference is noted in how much the different countries spend on health.



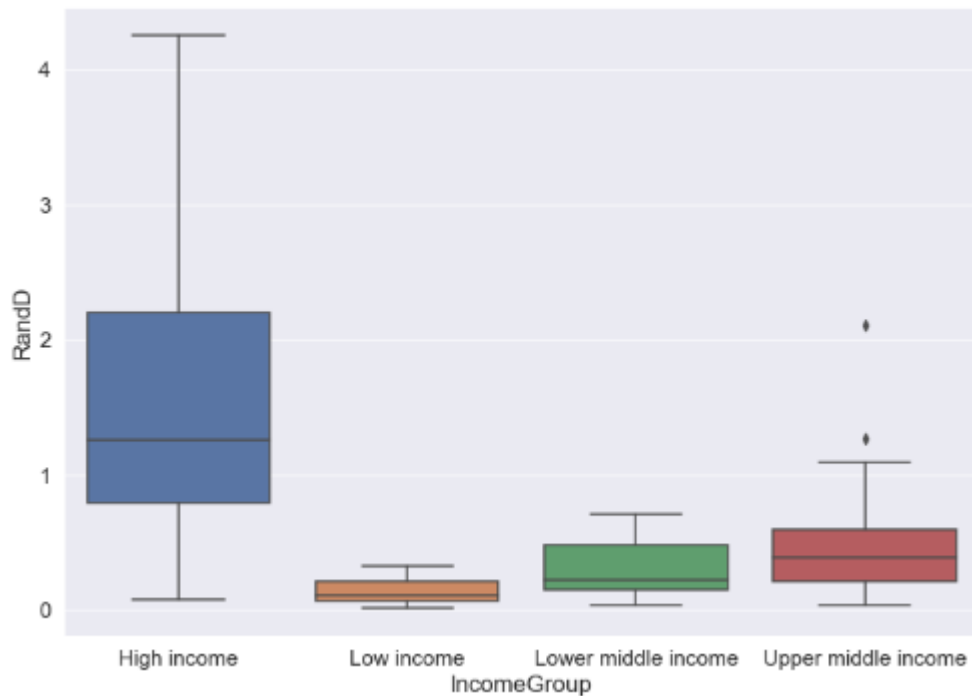
4.7 Relationship between Income Group and Industry and Construction



4.8 Relationship between Income Group and Military

There was no significant difference in military percentage of GDP between the different income groups.

4.9 Relationship between Income Group and Research and Development



The high income countries spend far more on Research and development than the other countries. This helps to explain why they have more exports than the poorer countries.

5. CONCLUSION

The project was very insightful and informative as it has revealed that Low income spend more on agriculture, whilst the high income nations spend more on research and development which could explain why they produce more exports than countries in the other income groups. It is evident that it is vital to solve this cycle of heavy investment in agriculture at the expense of other sectors that would stimulate growth if we are to uplift the billions of lives who are still stuck in extreme poverty.