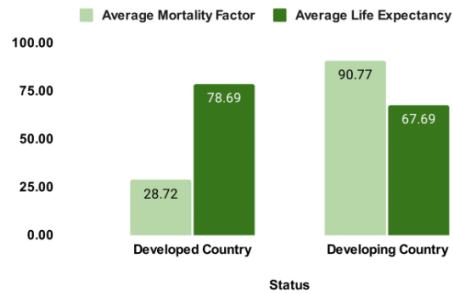
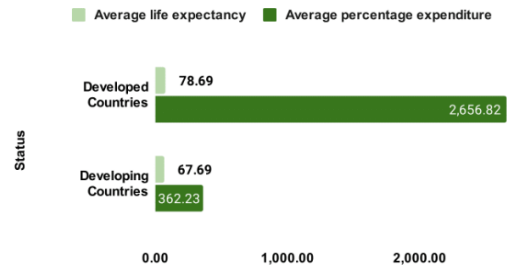


## LIFE EXPECTANCY DASHBOARD FOR DEVELOPING AND DEVELOPED COUNTRIES

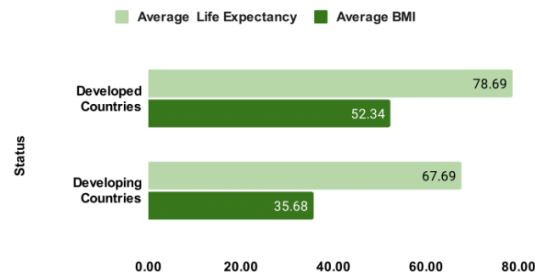
Effect of Mortality factor on Life expectancy



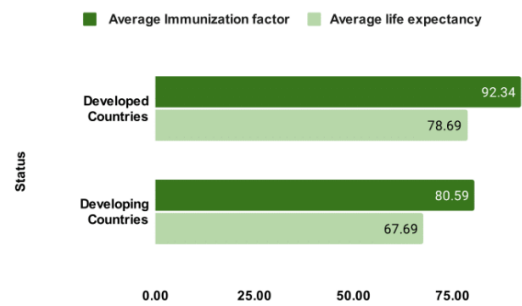
Influence of Percentage expenditure on Life expectancy



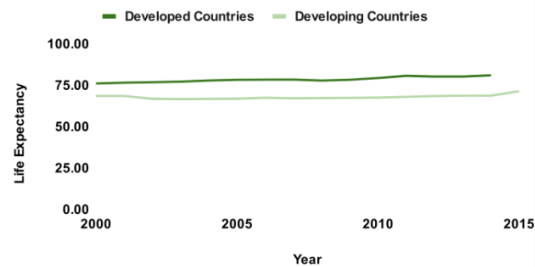
Impact of Body Mass Index (BMI) on Life expectancy



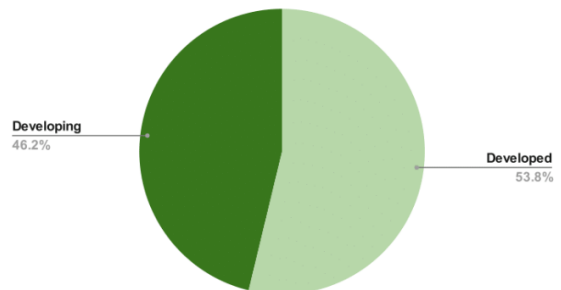
Effect of Immunization factor on Life expectancy



Trend of life expectancy over sixteen years (2000 - 2015)



Percentage distribution of Life Expectancy



**Uzomah Chukwuebuka Daniel**

**IMO SKILLUP SPREADSHEET PROJECT – DATA ANALYTICS**

**IMO STATE MINISTRY OF DIGITAL ECONOMY CENTRE OWERRI.**

**1<sup>ST</sup> JULY, 2023**

**Introduction**

Life expectancy refers to the average number of years a person is expected to live, based on statistical calculations and demographic data. It is a measure commonly used to assess the overall health and mortality trends within a population or a specific group of individuals.

Life expectancy is typically calculated at birth, providing an estimate of the number of years a newborn is expected to live if the current mortality rates remain constant throughout their lifetime. However, life expectancy can also be calculated at different ages, such as at age 65 or age 80, to assess the remaining years of life for individuals at specific stages.

Life expectancy is influenced by various factors, including healthcare access and quality, socio-economic conditions, education levels, lifestyle choices, and environmental factors. Improvements in medical advancements, disease prevention, nutrition, sanitation, and overall standards of living tend to contribute to higher life expectancies.

It is important to note that life expectancy is a statistical measure and does not guarantee the lifespan of any individual. It serves as an indicator of the general health and mortality patterns within a population, providing valuable insights into public health outcomes, social well-being, and policy planning.

The purpose of this report is to analyse a dataset on life expectancy and its various determinants. The dataset consists of 22 columns and 2939 rows, providing information on different factors that influence life expectancy across countries. The analysis aims to explore the impact of immunisation factors, mortality factors, economic factors, social factors, and other health-related factors on life expectancy. By examining these variables, we can gain valuable insights into the factors contributing to lower life expectancy between developed and developing countries.

**Data source:** This dataset was sourced from Kaggle and provided by my facilitator in the subject Data analytics for excel, **Mr Oluwayomi Zeblon** of Ministry of Digital Economy Owerri.

**Data Description:** The dataset contains the following columns:

A. Country: The country to which the data belongs.

B. Year: The year in which the data was collected.

C. Status: Classification of the country as; Developing or; Developed

- D. Life expectancy: Average life expectancy of persons in the country for that year.
- E. Adult Mortality: Mortality rate among adult in the country  
for that year
- F. Infant deaths: Number of infant deaths in the country for that year.
- G. Alcohol: Per capita alcohol consumption (in liters of pure alcohol) in that country for that year.
- H. Percentage expenditure: Expenditure on health as a percentage of Gross Domestic Product per capita (%).
- I. Hepatitis B : Hepatitis B vaccination coverage in (%).
- J. Measles: Number of reported cases of measles in the country for that year.
- K. BMI: Average Body Mass Index of the country's population.
- L. Under-five deaths: Number of deaths under five years old.
- M. Polio: (Pol3) immunisation coverage among 1-year-olds (%).
- N. Total expenditure: General government expenditure on health as a percentage of total government expenditure (%).
- O. Diphtheria: Diphtheria tetanus toxoid and pertussis (DTP3)
- P. HIV/AIDS: Deaths per 1,000 live births due to HIV/AIDS (0-4 years).

Q. GDP: Gross Domestic Product per capita (in USD).

R. Population: Population of the country.

S. Thinness 1-19 years: Prevalence of thinness among children and adolescents aged 10 to 19 (%).

T. Thinness 5-9 years: Prevalence of thinness among children aged 5 to 9 (%).

U. Income composition of resources: Human Development Index in terms of income composition of resources (index ranging from 0 to 1).

V. Schooling: Number of years of schooling (years).

### **Data Transformation and Cleaning:**

This dataset was cleaned and transformed using google sheet. During the data transformation process, column c which contains the status representing developed and developing where renamed into developed countries and developing countries respectively, also a column for average immunisation factor was created and the average for polio, diphtheria and hepatitis B was calculated to the average immunisation factor; in the same vein, a column for average mortality factor was also created by finding the average of adult mortality, under-five death and infant death.

The data was cleaned by removing blanks, duplicate values and white spaces were checked for and only one white space was found and removed to ensure an accurate analysis and concrete report.

After the data transformation and cleaning, 1650 rows and 22 columns remained as against the original data which had 2939 rows and 22 columns.

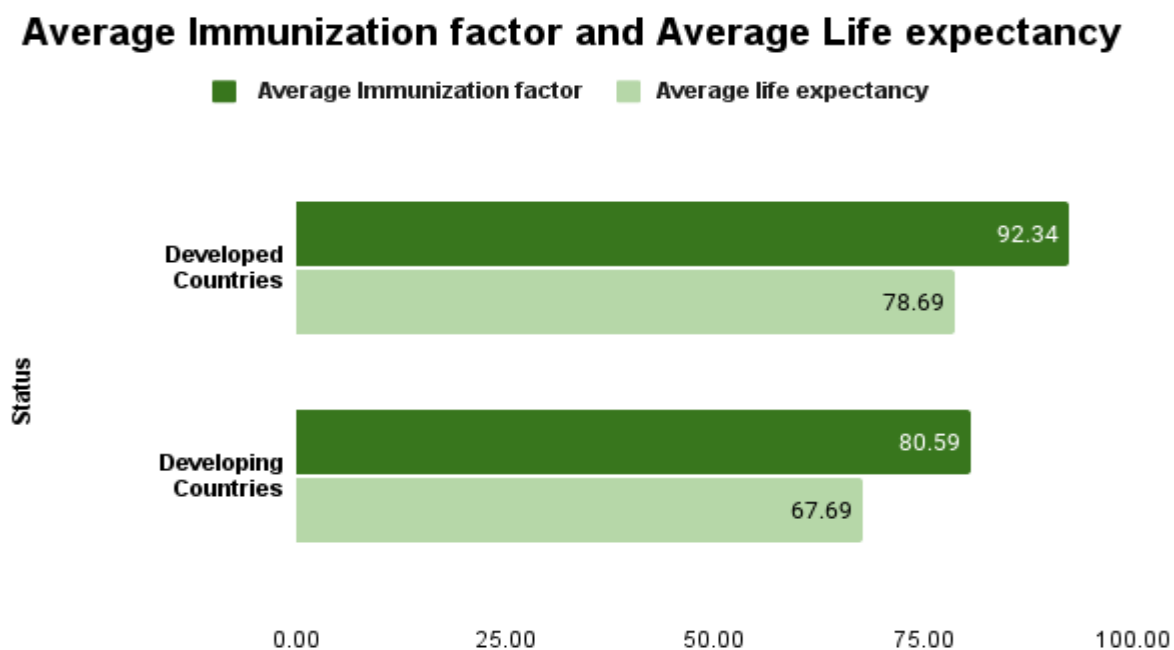
### **Problem statement**

1. Examine the relationship between immunisation factors (polio, Hepatitis B, Diphtheria vaccinations) and life expectancy for developed and developing countries .
2. Identify the trend of life expectancy over the period of 2000 to 2015. Specifically identifying if there is increase or decrease on average across different countries.
3. Examine the impact of percentage expenditure on life expectancy in both developing and developed countries respectively.
4. To investigate the relationship between life expectancy and mortality factors ( adult mortality, infant mortality and under five deaths)for both developed and developing countries.
5. Examine the relationship between Body Mass Index and life expectancy for developed and developing countries.

## EXPLORATORY DATA ANALYSIS AND VISUALISATION

The analysed dataset generated the following models which will assist to answer the problem statement and in turn generate meaningful insights. The following are the models with their corresponding explanation.

1.

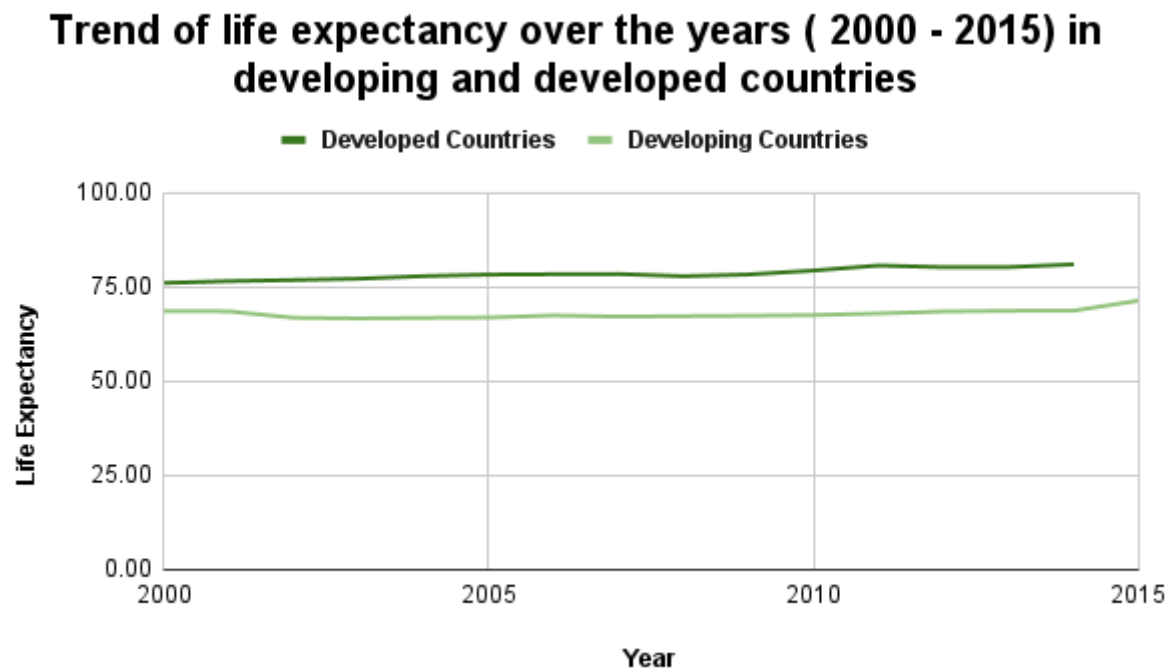


**FIG 1: Average immunisation factor and Average life expectancy**

The chart above indicates the average immunisation factor and average life expectancy for developed and developing countries. The chart shows that the developed countries had a higher average immunisation factor than the developing countries and the average life expectancy for developed countries is higher than

that of the developing country. Thus, this shows that there is a relationship between the average life expectancy and average immunisation factor.

2.



**FIG 2: Trend of life expectancy over a period of fifteen years(2000 - 2015) for both developed and developing countries.**

The line chart above shows the trend of life expectancy over a period of fifteen years(2000 - 2015) for both developed and developing countries. Based on the description of the line chart showing the trend of life expectancy over a fifteen-year period for developing and developed countries, where the line for developing countries is longer but lower in life expectancy, while the line for



developed countries is higher but shorter in years, we can draw the following implications:

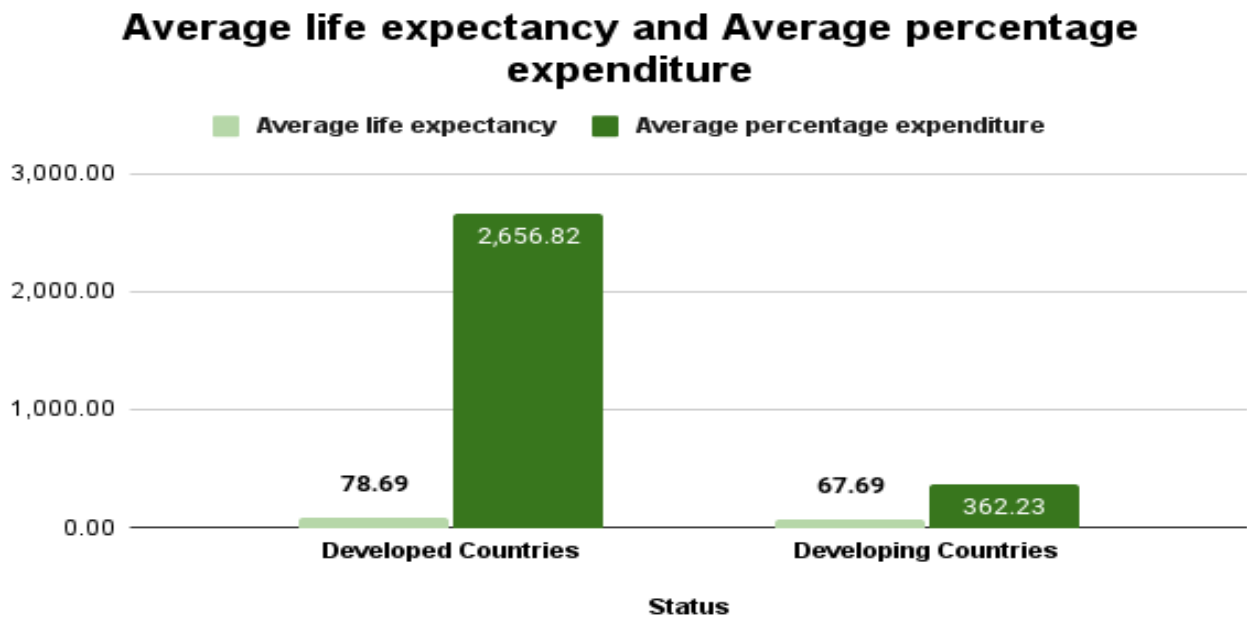
**Developing countries:** The longer line for developing countries suggests that there has been a gradual increase in life expectancy over the years. This indicates that developing countries have been making progress in improving the overall health and well-being of their populations.

However, the lower position of the line compared to developed countries suggests that, on average, developing countries have lower life expectancies compared to their developed counterparts.

The increasing trend over the years indicates that developing countries are taking steps to address various factors influencing life expectancy, such as healthcare, education, poverty reduction, and access to basic amenities.

**Developed countries:** The higher position of the line for developed countries indicates that, on average, they have higher life expectancies compared to developing countries. This suggests that developed countries have better healthcare systems, socio-economic conditions, and overall standards of living. The shorter length of the line for developed countries suggests that their life expectancy has already reached a relatively high level and has not increased significantly over the observed fifteen-year period. This could indicate that developed countries have already achieved a relatively stable and high life expectancy, with diminishing marginal gains over time.

3.



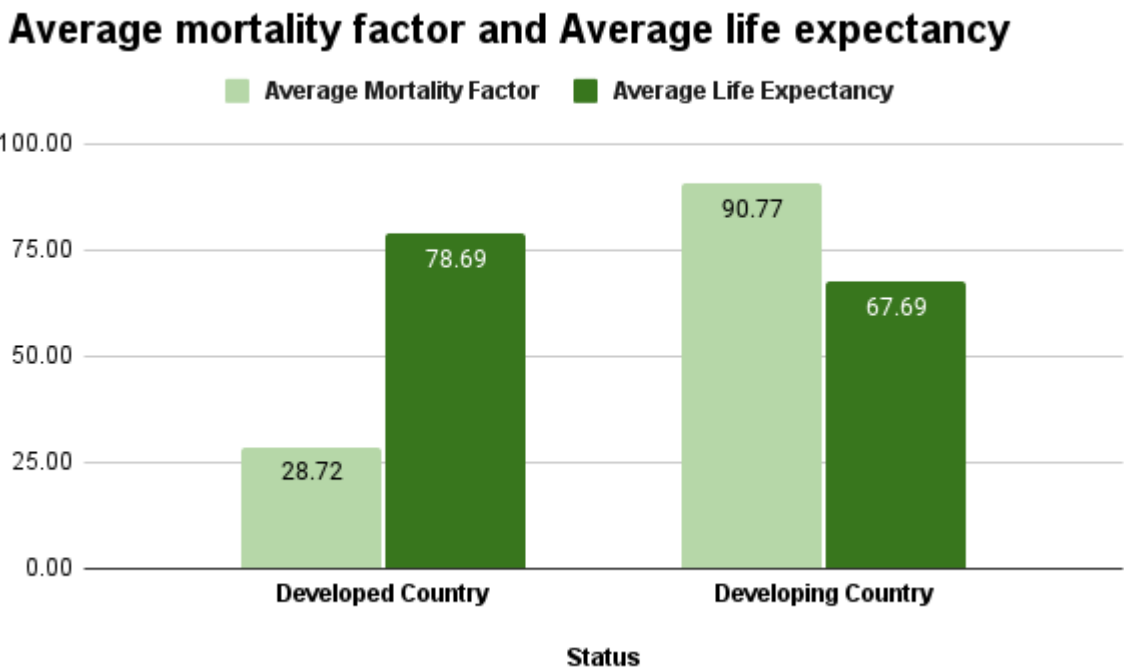
**FIG 3: Average life expectancy and average percentage expenditure**

The model above visualises an answer for the third problem statement. This chart signifies the average life expectancy and average percentage expenditure for both developed and developing countries. Although there is a wide difference between the average percentage expenditure between developed and developing countries, there exists a positive difference between their average life expectancies. From the foregoing, Compared to developing countries, the effect of expenditure on life expectancy is pronounced in developed countries.

This suggests that increased investment in the healthcare sector can have a positive impact on the average life expectancy in developing countries.

It implies that allocating a higher percentage of expenditure towards improving the overall well-being of the population can lead to significant gains in life expectancy.

4.



**FIG 4: Average mortality factor and average life expectancy**

The column chart above shows the average mortality factor and average life expectancy for developed and developing countries. FIG 4 shows that the average mortality factor was less in the developed countries than the developing countries which resulted in a higher life expectancy in the developed country than the developing country. Based on the dataset analysis of average mortality factors (adult mortality rate, infant mortality

rate, and under-five death) and average life expectancy for developed and developing countries, let's examine the implications of the provided numbers:

### **Developed countries:**

The average mortality factor for developed countries is 28.72, indicating a lower overall mortality rate across various age groups (adult, infant, and under-five).

The average life expectancy in developed countries is 78.69 years, suggesting a relatively longer lifespan compared to developing countries.

The lower mortality factor and higher life expectancy in developed countries imply that they have better healthcare systems, access to quality medical services, and lower risks of premature death.

### **Developing countries:**

The average mortality factor for developing countries is 90.77, indicating a higher overall mortality rate across various age groups.

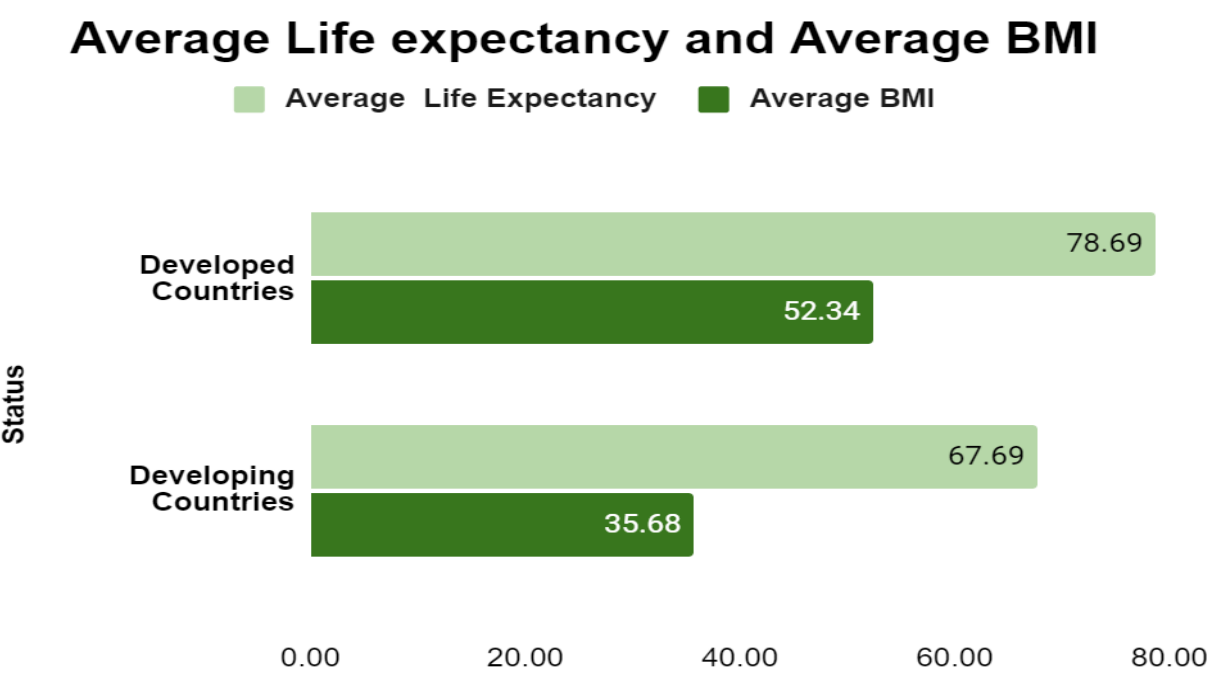
The average life expectancy in developing countries is 67.69 years, which is shorter than in developed countries.

The higher mortality factor and lower life expectancy in developing countries suggest that they face significant health challenges, such as limited access to healthcare, higher prevalence of diseases, inadequate nutrition, and insufficient healthcare infrastructure.

Overall, the dataset implies that developed countries have lower mortality rates and higher life expectancies compared to developing countries. This suggests that developed countries have more effective healthcare systems, better living conditions, and higher overall well-being, leading to lower mortality rates and longer lifespans.

On the other hand, the higher mortality rates and lower life expectancies in developing countries indicate the need for increased investment in healthcare infrastructure, access to quality medical services, improved sanitation and nutrition, disease prevention, and overall socio-economic development to address health disparities and enhance life outcomes.

5.



#### **Fig 4: Average life expectancy and Average BMI**

The bar chart shows the average life expectancy and average Body Mass Index (BMI) for developed and developing countries. The chart reveals that the developed countries have a higher average life expectancy (78.69 years) compared to developing countries (67.69 years). This indicates that factors such as healthcare infrastructure, access to medical resources, and lifestyle choices contribute to longer life spans in developed nations. Also, the chart shows that the developed countries have a significantly higher average BMI (52.34) compared to developing countries (35.68). A high BMI is often associated with obesity, which increases the risk of various health problems, including heart disease, diabetes, and certain cancers.

#### **Conclusion and Recommendation.**

After a careful analysis process, I would be giving the following recommendations based on the findings:

1. The analysis shows a positive relationship between immunisation factor and life expectancy. Hence, the public and private health sectors should sensitise the public on the necessity of immunisation and the government should subsidise vaccination against polio, diphtheria and hepatitis and other

diseases that require immunisation for children and adults. This will help to increase life expectancy.

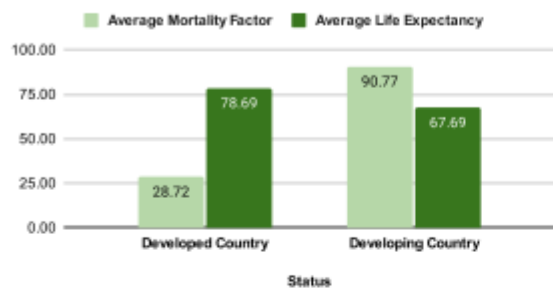
2. The trend in the line chart suggests that developing countries are making progress in improving life expectancy over the years, although they still lag behind developed countries in terms of average life expectancy. The shorter line length for developed countries indicates that they have already achieved higher life expectancies, with limited gains observed within the given time frame. It is recommended that developing countries should invest more on healthcare and other indicators of increased life expectancy.
3. Here, the data suggests that increasing expenditure, particularly in critical areas such as healthcare and social infrastructure, can have a positive impact on life expectancy in both developing and developed countries. However, the effect is more pronounced in developed countries, likely due to their higher baseline expenditure levels and better-established systems. Closing the gap in expenditure and focusing on improving social indicators are crucial steps in enhancing life expectancy in developing countries; the developed countries had a higher average percentage expenditure than the developing countries, hence, the developed countries had a higher average life expectancy than the developing countries.

4. From the findings of the analysis, I will recommend that we address social determinants of health in order to improve life expectancy and reduce mortality rates. Developing countries should address social determinants of health, including poverty, education, and access to clean water and sanitation. Efforts to reduce inequalities, improve education, and enhance living conditions can have a significant impact on health outcomes. They should strengthen health education by Promoting health education and raising awareness about preventive measures, healthy lifestyles, and healthcare utilisation which can empower individuals and communities to make informed decisions regarding their health. This can contribute to better health practices and improved health outcomes.
5. From the findings of the analysis, I will recommend that Developing countries should implement public health initiatives that promote healthy lifestyle choices, including regular exercise, balanced diets, and education on the risks of obesity. These initiatives can help prevent obesity-related health issues and improve overall well-being. Also, there should be nutritional education that is educating the population about proper nutrition and the importance of maintaining a healthy weight is crucial. Developing countries can invest in nutritional education programs that raise awareness about healthy food choices, portion control, and the long-term consequences of a high BMI.

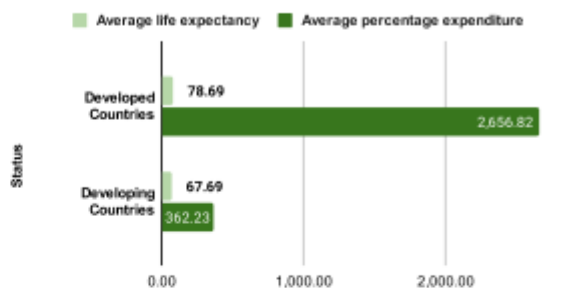


## LIFE EXPECTANCY DASHBOARD FOR DEVELOPING AND DEVELOPED COUNTRIES

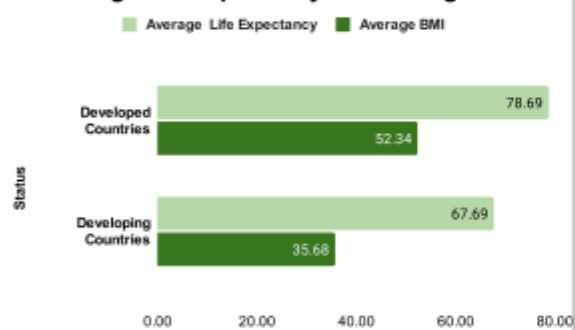
**Average mortality factor and Average life expectancy**



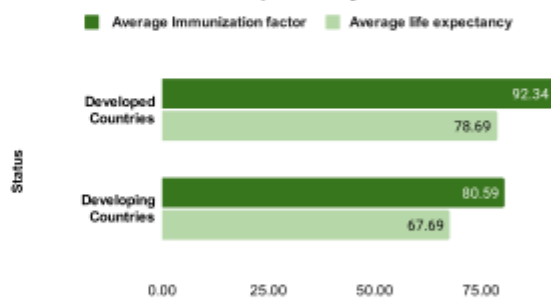
**Average life expectancy and Average percentage expenditure**



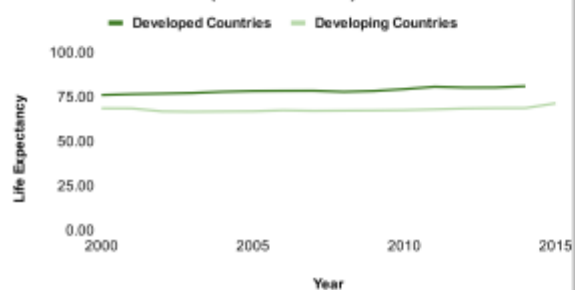
**Average Life expectancy and Average BMI**



**Average Immunization factor and Average Life expectancy**



**Trend of life expectancy over the years (2000 - 2015)**



**Percentage Average of Life Expectancy**

