

A REPORT ON GLOBAL LIFE EXPECTANCY

By

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**Introduction**

In this report, I analyze a dataset that examines life expectancy across different countries over several years, taking into account various health, economic, and social factors. Life expectancy serves as a key measure of a country's overall health and development, and by exploring variables such as adult mortality, infant deaths, vaccination rates, healthcare expenditure, and GDP, I aim to understand the underlying factors that influence life expectancy.

However, while working with this dataset, I have encountered several gaps and inconsistencies that raise concerns about the completeness and accuracy of the data. Missing values in essential variables, such as healthcare spending and vaccination coverage were replaced with an average of the variable and that could distort the analysis and make it difficult to form a full picture. Additionally, I have questions regarding how some of the life expectancy values were calculated, which might affect the overall interpretation of the results. These issues must be kept in mind as I move forward with the analysis.

**Data Preparation**

For this analysis, the dataset was prepared by first removing all “null values” from the Life Expectancy column to minimize errors and ensure accurate insights. To handle missing data in other columns, the column averages were used to replace null values, maintaining the overall dataset structure without discarding information. Additionally, the Country field was standardized to ensure consistency, facilitating accurate grouping and comparison across nations. These steps in data cleaning were essential to produce reliable and meaningful results from the analysis.

**Analysis Questions**

In order to understand the dataset and draw insight with meaning, certain questions were populated to be answered using visuals in order represent data in a much comprehensive format. These questions were;  
  
- How many countries are included in the dataset?

- What is the average global life expectancy?

- How has the global population changed over the years?

- How are countries distributed by their development status?

- How is GDP distributed across different countries?

- How has life expectancy changed over time globally?

- How do schooling years relate to life expectancy?

- How does adult mortality affect life expectancy?

- How do HIV/AIDS mortality rates impact life expectancy?

**How many countries are included in the dataset?**

* Visual: A card visual shows that there are **183 countries** represented in the dataset after performing data cleaning.
* Insight: The dataset covers 183 countries, offering a broad international scope for analysis of life expectancy and related variables.

**What is the average life expectancy across all countries?**

* Visual: A card visual presents the global average life expectancy of **69.22 years**.
* Insight: The global average life expectancy of 69.22 years highlights the general health standards across the world, balancing the higher life expectancies in developed countries and the lower life expectancies in developing nations.

**How has the global population changed over the years?**

* Visual: An area chart shows the sum of the global population by year, revealing trends in population growth.
* Insight: The chart shows a steady increase in global population over time, with occasional fluctuations or stagnation. These variations raise questions about the data source and global factors, such as healthcare, economic conditions, and crises, which influence population dynamics.

**How are countries distributed by their development status?**

* Visual: A doughnut chart visual shows the distribution of countries by their status (Developing or Developed).
* Insight: The majority of countries in the dataset are classified as **Developing (82.51%)**, with a smaller portion categorized as **Developed (17.49%)**.

**How is GDP distributed across different countries?**

* Visual: A map visual uses bubble sizes to represent average GDP, with larger bubbles indicating higher GDP values.
* Insight: Higher GDP values are concentrated in certain regions, such as Europe, North America, and parts of Asia, while smaller GDP values are found in developing nations, especially in Africa and parts of Southeast Asia.

**How has life expectancy changed over time globally?**

* Visual: A line graph shows the average life expectancy by year, revealing an upward trend.
* Insight: There has been a steady increase in life expectancy globally, indicating improvements in healthcare, living conditions, and socio-economic factors over time.

**How do schooling years relate to life expectancy?**

* Visual: A scatter plot shows the relationship between schooling years and average life expectancy, with status as a legend.
* Insight: As the number of schooling years increases, life expectancy also tends to increase. Developed countries, which have higher schooling years, also have relatively higher life expectancy.

**How does adult mortality affect life expectancy?**

* Visual: A scatter plot shows the relationship between adult mortality and average life expectancy, with status as a legend.
* Insight: There is a strong inverse relationship between adult mortality and life expectancy. As adult mortality rates increase, life expectancy decreases. Developed countries, which have lower adult mortality rates, tend to have higher life expectancies.

**How do HIV/AIDS mortality rates impact life expectancy?**

* Visual: A scatter plot shows the relationship between HIV/AIDS mortality and life expectancy, with status as a legend.
* Insight: As HIV/AIDS mortality rates increase, life expectancy decreases significantly. Developed countries, which tend to have lower HIV/AIDS mortality rates, exhibit higher life expectancies.

**Conclusion**

In summary, the examination of life expectancy across 183 countries provides valuable insights into global health disparities and socio-economic factors. While the global average life expectancy of 69.22 years indicates progress, significant disparities persist between developed and developing nations. The analysis reveals that economic conditions, as indicated by population growth trends and GDP distribution, have a profound impact on life expectancy, with wealthier nations achieving better outcomes. Additionally, access to education and healthcare, as reflected in schooling years and adult mortality rates, are strongly correlated with longer lifespans. Moreover, the devastating impact of HIV/AIDS mortality remains a critical factor in reducing life expectancy, particularly in developing countries. These findings underscore the need for targeted interventions in healthcare, education, and economic development to improve life expectancy globally.