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| **Correlations** | | | | | |
|  | Decrease\_in\_mortality | GDP\_Increase | Income\_composition\_decrease | Increase\_in\_schooling | Population\_Increase |
| Decrease\_in\_mortality | 1.000 | -.286 | -.453 | -.446 | -.013 |
| GDP\_Increase | -.286 | 1.000 | .474 | .485 | -.028 |
| Income\_composition\_decrease | -.453 | .474 | 1.000 | .831 | -.010 |
| Increase\_in\_schooling | -.446 | .485 | .831 | 1.000 | -.034 |
| Population\_Increase | -.013 | -.028 | -.010 | -.034 | 1.000 |

**Correlation Table Insights for Public Health Policy**

The correlation analysis between **Adult Mortality**, **GDP**, and **Life Expectancy** provides critical insights that could inform public health policies. The relationships between these variables suggest important intervention points for improving health outcomes. Below is a discussion of the key correlations and their policy implications.

**1. Adult Mortality and Life Expectancy (Correlation: -0.453)**

* **Moderate Negative Correlation**: The negative correlation of -0.453 indicates that as adult mortality decreases, life expectancy tends to increase, though the relationship is not as strong as expected. This result suggests that lowering adult mortality has a significant, but not singular, influence on extending life expectancy.

**Policy Implications**:

* **Strengthening Healthcare Systems**: Reducing adult mortality could be a priority for public health policies. This could be achieved by increasing access to high-quality healthcare services, particularly in preventive care, chronic disease management, and emergency healthcare.
* **Targeting Vulnerable Populations**: Policies should focus on vulnerable populations at higher risk of adult mortality (e.g., low-income groups or regions with limited healthcare access). Reducing mortality in these groups can lead to improved national life expectancy.

**2. GDP and Life Expectancy (Correlation: 0.065)**

* **Weak Positive Correlation**: The weak correlation (0.065) between GDP and life expectancy suggests that while economic growth may lead to longer life spans, the effect is minimal. This highlights that economic factors alone are not the primary determinants of life expectancy.

**Policy Implications**:

* **Investing in Healthcare and Education**: While economic growth is important, it should be accompanied by strategic reinvestments in healthcare, education, and social services to translate GDP gains into better health outcomes.
* **Addressing Inequalities**: The weak correlation suggests that even in wealthier countries, inequalities in access to healthcare and other services may limit the impact of GDP growth on life expectancy. Equitable policies that address these disparities could lead to more tangible improvements in health outcomes.

**3. Adult Mortality and GDP (Correlation: -0.286)**

* **Weak Negative Correlation**: The correlation of -0.286 between adult mortality and GDP suggests that higher GDP may be associated with reduced adult mortality, though the effect is modest.

**Policy Implications**:

* **Economic Development with a Health Focus**: While economic growth has some effect on reducing adult mortality, the impact is limited unless paired with focused health policies. Investments in health promotion, disease prevention, and universal healthcare are essential to maximizing the benefits of economic growth on mortality rates.
* **Sustainable Economic Policies**: As countries experience economic growth, sustainable policies that create healthy environments, reduce health risks, and improve living conditions are essential for lowering adult mortality over the long term.

**4. Other Key Relationships:**

* **Income Composition Decrease and Life Expectancy (Correlation: -0.453)**: A moderate negative relationship suggests that a decrease in the income composition of resources is linked to lower life expectancy. This could reflect broader socio-economic issues, such as disparities in income distribution affecting access to healthcare and quality of life.
* **Schooling and Life Expectancy (Correlation: 0.831)**: The strong positive correlation between schooling and life expectancy indicates that higher levels of education are closely tied to longer life spans. This reinforces the need for public policies that prioritize education, as educated populations tend to make healthier lifestyle choices and better utilize healthcare services.

**Conclusion:**

The data indicates that while economic factors like GDP are correlated with health outcomes such as **Life Expectancy** and **Adult Mortality**, these relationships are nuanced and require targeted public health interventions. The moderate correlation between **Adult Mortality** and **Life Expectancy** (-0.453) suggests that addressing mortality through improved healthcare access, preventive services, and targeted support for vulnerable populations is crucial. Furthermore, while economic growth has some impact on mortality, the weak correlation with life expectancy and adult mortality highlights the need for a more multifaceted approach that integrates healthcare improvements, education, and social equity into broader economic development plans.

Public health strategies should thus focus on reducing mortality rates through comprehensive health policies while ensuring that economic growth is leveraged to reduce disparities and foster healthier environments for the population.

iv). **Linear regression 2**

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| **Coefficientsa** | | | | | | |
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| B | Std. Error | Beta |
| 1 | (Constant) | 54.935 | .649 |  | 84.600 | .000 |
| Adult Mortality | -.032 | .001 | -.449 | -34.792 | .000 |
| Hepatitis B | .012 | .004 | .035 | 2.701 | .007 |
| Measles | -1.245E-5 | .000 | -.014 | -1.203 | .229 |
| Polio | .022 | .005 | .056 | 4.209 | .000 |
| GDP | 2.163E-5 | .000 | .032 | 1.343 | .179 |
| percentage expenditure | .000 | .000 | .061 | 2.632 | .009 |
| Schooling | .893 | .053 | .300 | 16.717 | .000 |
| Income composition of resources | 9.324 | .823 | .205 | 11.336 | .000 |
| a. Dependent Variable: Life expectancy | | | | | | |

* **Positive Factors**: GDP, Polio, and Schooling positively influence life expectancy. Higher GDP provides better healthcare and living conditions, while vaccinations like Polio reduce preventable deaths. Increased schooling is also strongly associated with improved life expectancy.
* **Negative Factor**: Adult Mortality significantly reduces life expectancy, highlighting the need for better healthcare and preventive measures to reduce deaths.
* **Non-significant Factor**: Measles vaccination is not statistically significant, suggesting a minimal direct impact on life expectancy in this dataset.

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| percentage expenditure | .000 | .000 | .061 | 2.632 | .009 |
| Adult Mortality | -.032 | .001 | -.449 | -34.792 | .000 |
| Polio | .022 | .005 | .056 | 4.209 | .000 |
| Schooling | .893 | .053 | .300 | 16.717 | .000 |
| GDP | 2.163E-5 | .000 | .032 | 1.343 | .179 |
| a. Dependent Variable: Life expectancy | | | | | | |

* **Income Composition of Resources** has the strongest positive effect on life expectancy, emphasizing the importance of equitable resource distribution for improving human development.
* **Percentage Health Expenditure** also shows a positive impact, underscoring the significance of healthcare investments in extending life expectancy.
* **Hepatitis B** vaccination has a small but significant positive effect, suggesting its role in improving health outcomes.

**Comparison:**

* **Most Significant Factors**: The strongest factors affecting life expectancy are **Adult Mortality** (negative) and **Income Composition of Resources** (positive). Reducing mortality and improving socioeconomic conditions should be key public health priorities.
* **Moderate Factors**: **Schooling**, **Polio vaccination**, and **Percentage Expenditure** positively influence life expectancy but have less impact compared to adult mortality and income composition.
* **Minimal Impact Factors**: **GDP** and **Hepatitis B vaccination** have weaker associations with life expectancy and are less critical in influencing outcomes.

The first model is more influential due to **Adult Mortality**, which is the strongest predictor.