

# Life Expectancy: An Analysis and Prediction Based on Key Influencing Factors | Group:L01-04

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November 30, 2024

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# 1 INTRODUCTION

## 1.1 MOTIVATION

### 1.1.1 Context

Life expectancy is a crucial indicator of a country's overall health and quality of life. It is used by governments, health organizations, and policymakers to measure progress in public health, identify disparities, and allocate resources effectively. By analyzing health, economic, and social indicators, this project aims to uncover the strongest predictors of life expectancy across countries and regions. The applied domain of this research is public health and global development, focusing on the interplay between critical variables such as mortality rates, immunization coverage, and economic conditions. This analysis holds the potential to inform targeted strategies for improving health outcomes worldwide.

### 1.1.2 Problem

The central research question we address is: What are the most significant factors influencing life expectancy across countries and regions? While numerous indicators are believed to impact life expectancy, determining their relative importance and understanding their interactions remain complex tasks. We aim to construct a multiple linear regression model to explore these relationships and provide actionable insights. Specifically, this model will help answer research questions such as:

- How do immunization rates and healthcare access correlate with life expectancy?
- What role do socio-economic factors like GDP per capita and schooling play in influencing life expectancy?
- Are there significant differences in life expectancy predictors across regions?

### 1.1.3 Challenges

This problem presents several challenges:

- 1. Diverse Predictors:** Life expectancy is influenced by a combination of health metrics, socio-economic factors, and categorical variables (e.g., region). Balancing these diverse predictors in a single model can be complex.
- 2. Multicollinearity:** Many predictors, such as infant mortality, under-five mortality, and immunization rates for Diphtheria and Polio, are highly correlated with each other. Although removing the countries column and replacing it with Region has helped reduce multicollinearity, caution is still needed in addressing relationships between these variables.
- 3. Exclusion of Country-Specific Effects:** By removing the countries column and relying on Region instead, we lose the ability to capture country-specific nuances. While regions share common characteristics, individual countries within a region can have significantly different healthcare systems, policies, and socio-economic conditions, which might influence life expectancy in ways that regional-level aggregation cannot fully explain.
- 4. Limited Scope:** Focusing on regions rather than countries simplifies the model and addresses multicollinearity but may overlook important local factors that could affect life expectancy.

## 1.2 OBJECTIVES

### 1.2.1 Overview

The overall intent of this project is to identify the key factors influencing life expectancy across different countries and regions. By leveraging multiple linear regression, we aim to uncover relationships between life expectancy and various health, economic, and social indicators. The goal is to build a predictive model that highlights which factors have the strongest impact on life expectancy, thereby providing insights that can guide policy decisions and interventions aimed at improving health outcomes worldwide.

### 1.2.2 Goals & Research Questions

The primary goals of this project are to:

- Develop a multiple linear regression model that identifies and quantifies the relationship between life expectancy and several predictor variables.
- Investigate how health indicators (e.g., infant mortality, immunization rates), socio-economic factors (e.g., GDP, schooling), and lifestyle factors (e.g., alcohol consumption, BMI) influence life expectancy at a regional level.
- Provide actionable insights for policymakers by identifying which factors have the most significant impact on life expectancy.

The specific research questions guiding this project are:

1. **What are the strongest predictors of life expectancy across different regions?**
2. **How do those predictors correlate with life expectancy?**
3. **Are there significant differences in life expectancy predictors across different regions?**

These objectives aim to enhance understanding of life expectancy trends and offer insights into areas for improvement in global health policy.

## 2 METHODOLOGY

### 2.1 Data

The dataset [1] is publicly available under the CC0: Public Domain and can be accessed via Kaggle. The CC0 license allows us to freely use, share and modify it without any legal restrictions, including for any commercial purposes.

The data was compiled by the World Health Organization (WHO) and United Nations. It includes information on global life expectancy and its related factors. The dataset was collected under the conditions of global health surveys conducted by the WHO and related health organizations. The sample size spans 193 countries and includes data from the years 2000 to 2015. The sampling method is based on the available health and demographic data.

Each row in the dataset represents a country's life expectancy, along with several demographic and health-related indicators such as income, education and healthcare factors.

#### Response Variable

The focal response variable for this analysis is Life Expectancy. Life expectancy is a quantitative, continuous variable representing the average number of years a person is expected to live, based on statistical averages. It is measured in years and is recorded with whole values.

#### Predictor Variables

##### 1. *Country*

Country is a qualitative variable that represents the name of the country for each observation. While not used directly in the analysis, this variable helps to identify the data for each country

##### 2. *Region*

Region is a qualitative variable representing the geographic region to which each country belongs. This variable is crucial for grouping countries based on regional similarities

##### 3. *Year*

Year is a qualitative variable that represents the specific year in which the data was collected. It spans from 2000 to 2015 and serves as a categorical identifier for different time periods. The inclusion of this variable allows us to analyze trends in life expectancy over time and examine how health, socio-economic, and environmental factors evolve from year to year.

##### 4. *Infant deaths*

Infant Deaths is a quantitative variable that measures the number of infant deaths per 1,000 live births. Infant mortality is a critical indicator of a country's healthcare quality, particularly in terms of prenatal and neonatal care.

##### 5. *Under five deaths*

Under 5 deaths is a quantitative variable representing the number of deaths of children under 5 per 1000 live births. This indicator is a key measure of healthcare quality and child health, reflecting the effectiveness of healthcare systems in preventing early childhood deaths.

##### 6. *Adult mortality*

Adult mortality is a quantitative variable measures the number of deaths per 1000 adults aged 15-60 years. This indicator is often used as a proxy for healthcare quality and public health, as higher mortality rates in this age group typically reflect poor healthcare infrastructure or insufficient public health systems.

##### 7. *Alcohol consumption*

Alcohol consumption is a quantitative variable measured in litres per capita. This variable represents the average amount of alcohol consumed per person in a country. High levels of alcohol consumption are linked

to various health issues, including liver disease, accidents, and chronic illnesses, all of which can reduce life expectancy.

#### **8. Hepatitis B**

Hepatitis B is a quantitative variable that represents the percentage of the population with chronic hepatitis B infection. Hepatitis B is a significant risk factor for liver disease and can reduce life expectancy, particularly in countries with high prevalence rates.

#### **9. Measles**

Measles is a quantitative variable representing the number of reported measles cases per 1,000 people. Measles is a preventable disease, and high rates of measles are often indicative of poor vaccination coverage or inadequate healthcare systems, both of which can negatively impact life expectancy.

#### **10. BMI**

BMI is a quantitative variable that measures the average BMI of the population. High BMI values, particularly those indicating obesity, are associated with numerous health risks, including cardiovascular disease and diabetes, which can lower life expectancy.

#### **11. Polio**

Polio is a quantitative variable that measures the percentage of children who have received the polio vaccine. High vaccination rates are typically associated with better public health outcomes and lower rates of infectious diseases, which contribute to higher life expectancy.

#### **12. Diphtheria\***

Diphtheria is a quantitative variable that measures the percentage of children vaccinated against diphtheria. High vaccination coverage for diphtheria indicates better healthcare systems and disease prevention efforts, which are correlated with longer life expectancy.

#### **13. Incidents HIV**

Incidents HIV is a quantitative variable that measures the percentage of the adult population living with HIV. The disease has a significant impact on mortality rates, especially in countries with high infection rates.

#### **14. GDP per capita**

GDP is a quantitative variable that measures a country's total economic output, divided by its population. It is reported in USD. GDP per capita serves as an indicator of a country's economic prosperity, with higher GDP typically associated with better healthcare access, improved infrastructure, and overall higher living standards.

#### **15. Population**

Population is a quantitative variable that represents the total population of each country in the dataset. This variable, while not directly influencing life expectancy in a causal sense, helps contextualize the data, especially when comparing countries of different sizes.

#### **16. Thinness 10-19 years**

Thinness 10-19 is a quantitative variable that represents the percentage of the population aged 10-19 years with a BMI below the healthy range. High rates of thinness in this age group may indicate malnutrition or insufficient healthcare, both of which can reduce life expectancy.

#### **17. Thinness 5-9 years**

Thinness 5-9 is a quantitative variable that represents the percentage of children aged 5-9 years who are underweight (based on BMI). High thinness rates in children are indicative of poor nutrition, which can adversely affect child development and overall life expectancy in the population.

#### **18. Schooling**

Schooling is a quantitative variable that measures the average number of years of schooling in a country. This indicator is important because higher educational attainment is associated with better health literacy, healthier behaviors, and greater access to healthcare resources.

### **19. Economy Status**

Economic Status is a qualitative variable that classifies countries based on their development status, typically categorized as developed or developing. Developed countries tend to have higher levels of healthcare infrastructure, better education systems, and more robust social services, which all contribute to longer life expectancy.

## **2.2 Approach**

For our data analytics solution, we utilized a dataset sourced from Kaggle. This dataset provides information on various factors related to life expectancy across 173 countries, with one column specifically labeled “Country.” Since we have multiple independent variables influencing the dependent variable, Life Expectancy, we will employ Multiple Linear Regression to analyze and model these relationships effectively. Due to the complexity of handling individual countries and creating sub-models for each, as advised by our instructor, we used the Region column. This approach helped simplify the analysis and provided meaningful regional insights.

We started by creating a first-order model by eliminating the Country column. To ensure the robustness of this model, we applied the multicollinearity assumption by using statistical measures like Variance Inflation Factor (VIF). Based on the results of the multicollinearity check, we refined the model by removing highly correlated variables and built a second version of the model. To assess the significance of the predictors, we performed the F-test for overall model significance and t-tests for individual predictors. Using these results, we created a refined model that only included statistically significant terms. Next, we implemented stepwise regression using stepmod and evaluated the model using criteria such as Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and Mallows' Cp to verify the model's validity and select the best fit.

Additionally, we create an interaction model. From this interaction model, we extended our analysis to a Higher-order model to capture any non-linear relationships among predictors. The Higher-order model was tested to determine if it was a better fit for the data. If the model contained significant terms, it was considered a valid model and was retained for further analysis. Finally, we performed model evaluation and checked for adherence to residual assumptions, including normality, independence, and homoscedasticity, to ensure the model's reliability. This systematic approach allowed us to refine the model step by step, ensuring it was both statistically sound and predictive.

By following this method, we ensured that our model accounted for the complexity of the data while maintaining interpretability. The use of statistical tests and validation techniques made the approach robust, and we are confident it will provide meaningful and reliable insights for the data analytics solution.

## **2.3 Workflow**

For this project, we followed a structured approach to model development, which can be broken down into several key tasks. Below is a detailed workflow [Figure 2.1] outlining the steps we undertook, the challenges faced, and how we dealt with any difficulties.

### **1. Getting the Data:**

We started by acquiring a dataset from Kaggle, which contained various variables related to life expectancy across world. One of the columns, Country, had data for 173 countries. Due to the high number of unique values in this column, creating separate sub-models for each country would have been impractical. Following the advice of our instructor, we decided to focus on the Region column instead, which making the modeling process more manageable.

### **2. Data Cleaning and Model Initialization:**

After not considering the Country column, we created a first-order model using the remaining variables. This model provided a baseline for further analysis.

### **3. Multicollinearity Testing:**

We applied the assumption of multicollinearity by calculating the Variance Inflation Factor (VIF) for each predictor in the model and we plot a graph for highly correlated terms. The goal was to identify any highly correlated variables that might distort the model's performance. Based on the results, we eliminated some variables that showed high multicollinearity, ensuring that our model remained stable and reliable.

### **4. Performing F-test and Individual t-tests:**

Once we cleaned the model by addressing multicollinearity, we performed an F-test to check the overall significance of the model and individual t-tests to assess the significance of each predictor. By evaluating these tests, we were able to refine our model and eliminate any non-significant terms.

### **5. Stepwise Model Refinement:**

To further improve the model, we applied stepwise regression using the stepmod function. This iterative process helped us identify and retain only the most significant terms. Additionally, we calculated evaluation criteria such as AIC, BIC, and Mallows' Cp to verify the adequacy of the model.

### **6. Creating Interaction Terms:**

After refining the model, we created interaction terms to capture the relationships between different predictors. This step was crucial for identifying potential synergies between variables. If any interaction terms proved to be non-significant, we removed them and repeated this process until we were left with only significant terms. This approach helped ensure that our model was both interpretable and valid.

### **7. Exploring High-Correlation Terms and Higher-Order Models:**

Using the GGally package, we created a plot to identify the terms with the highest correlations. Based on these findings, we selected the most highly correlated terms and tested higher-order models incorporating them. If the addition of a higher-order term was statistically significant and the adjusted R-squared ( $R^2_{adj}$ ) value increased, we proceeded to include higher-order terms. If the additional term did not improve the model, we reverted to the previous model with one less term. We continued this process by moving to the next higher-order term and repeating the evaluation until all terms with higher correlation were tested. This iterative approach helped us identify the best-fitting model for the data.

### **8. Building and Evaluating Higher-Order Models:**

As we iterated through different model orders, we built higher-order model and checked the performance. If the models had significant terms and improved upon previous models, we retained them as the final model. If not, we returned to the previous steps, selected the next highest correlated term, and continued building higher-order models until we arrived at the best model.

### **9. Model Evaluation and Residual Assumption Check:**

Once the final model was determined, we performed a Residual Assumption Check. This step involved evaluating key assumptions, such as homoscedasticity, normality of residuals, and the absence of autocorrelation. By verifying these assumptions, we ensured that our model met the necessary criteria for reliable predictions.

## **2.4 Contributions**

### **1. Rahul Gandhi:**

- Conducted multi-collinearity testing using Variance Inflation Factor (VIF) and scatterplot matrices to identify and remove highly correlated terms.
- Ensured model stability by addressing potential multicollinearity issues.
- Performed a detailed residual analysis to evaluate key regression assumptions, including linearity, independence, equal variance, and normality.

**2. Ojas Sharma:**

- Focused on developing and testing the initial regression models.
- Conducted a full F-test to evaluate the overall significance of the model.
- Performed individual t-tests to identify and remove non-significant terms.
- Utilized stepwise regression to finalize the selection of significant predictors.

**3. Juan Byju:**

- Designed and created visualizations to illustrate data trends and model outputs.
- Defined the project's motivation and objectives.
- Refined the model by implementing stepwise regression, comparing significant terms, and evaluating models using metrics such as BIC, AIC, and Mallows' Cp to ensure the inclusion of meaningful predictors.
- Compiled and interpreted the results of the final model.

**Ayush Senthil Nelli:**

- Built and tested interaction models, iteratively removing insignificant terms to improve the model.
- Validated the model by ensuring residual assumptions were met.
- Leveraged the GGally package to identify and assess highly correlated terms for significance.
- Introduced higher-order terms, making adjustments only when they significantly enhanced the adjusted  $R^2$ .

**Sri Harsha Tuttaganti:**

- Focused on higher-order model development, adding and testing higher-order terms iteratively.
- Evaluated the significance of these terms and finalized the optimal model structure.
- Ensured that all retained terms satisfied both statistical and practical significance criteria in the final model.

**Justification for Equity in Workload Distribution**

The workload distribution was equitable despite the variation in specific roles and tasks. Each member's responsibilities were assigned based on their strengths, ensuring efficiency and high-quality outputs. The effort and time required for each task were balanced, preventing any individual from being overburdened. Collaborative efforts, such as model refinement and group discussions, allowed for shared contributions and active participation from all team members. This approach not only maintained fairness but also fostered teamwork, effectively utilizing the strengths of each member to achieve the project's objectives.

### 3 MAIN RESULTS OF THE ANALYSIS

#### 3.1 Research Questions Result:

Bases on the Correlation matrix [Figure 3.1]

The 3 most correlated terms are:

- Infant deaths
- Adult mortality
- Economy status Developed

Result (Infant deaths): Based on the graphical analysis [Figure 3.2], there is a clear linear relationship between life expectancy and infant deaths. Life expectancy decreases as the number of infant deaths per 1,000 population increases. This indicates a significant negative correlation, where higher infant mortality is associated with shorter life expectancy.

Result (Adult mortality): The plot of life expectancy versus adult mortality [Figure 3.3] shows a strong inverse relationship. As adult mortality rates increase, life expectancy decreases significantly. This highlights the critical impact of adult mortality on life expectancy.

Result(Economy status): From graph [Figure 3.4], life expectancy is notably higher in developed countries compared to developing countries. The distinction between the two groups is evident, with developed countries consistently achieving higher life expectancy values. This underscores the role of economic status in influencing life expectancy.

#### 3.2 Multicollinearity Result:

##### 3.2.1 Initial Full Model: [Figure 3.5]

$$\begin{aligned} \text{LifeExpectancy} = & 83.301550588 + 0.373540986 * \text{RegionAsia} + 1.945042477 * \text{RegionCentralAmericaandCaribbean} - \\ & 0.657631937 * \text{RegionEuropeanUnion} + 0.267344658 * \text{RegionMiddleEast} + 0.664637877 * \text{RegionNorthAmerica} - \\ & 0.813834987 * \text{RegionOceania} + 0.280601144 * \text{RegionRestofEurope} + 1.734598696 * \text{RegionSouthAmerica} + \\ & 0.071750017 * \text{Year}_{Y2001} + 0.083610190 * \text{Year}_{Y2002} + 0.004729251 * \text{Year}_{Y2003} + 0.035900270 * \text{Year}_{Y2004} - \\ & 0.001230519 * \text{Year}_{Y2005} + 0.014358678 * \text{Year}_{Y2006} + 0.043131386 * \text{Year}_{Y2007} + 0.097431267 * \text{Year}_{Y2008} + \\ & 0.155014184 * \text{Year}_{Y2009} + 0.238632483 * \text{Year}_{Y2010} + 0.268800877 * \text{Year}_{Y2011} + 0.295888104 * \text{Year}_{Y2012} + \\ & 0.410287395 * \text{Year}_{Y2013} + 0.505466388 * \text{Year}_{Y2014} + 0.528827324 * \text{Year}_{Y2015} - 0.052710586 * \text{Infant\_deaths} - \\ & 0.051038167 * \text{Under\_five\_deaths} - 0.046575680 * \text{Adult\_mortality} - 0.007583318 * \text{HepatitisB} - 0.004477760 * \\ & \text{Alcohol\_consumption} + 0.001943927 * \text{Measles} - 0.132934140 * \text{BMI} + 0.009792741 * \text{Polio} + 0.008138577 * \\ & \text{Diphtheria} + 0.090954743 * \text{IncidentsHIV} + 0.000020266 * \text{GDP\_per\_capita} - 0.000227516 * \text{Population\_ln} - \\ & 0.036645320 * \text{Thinness}_{ten\_ineteen\_years} + 0.025003027 * \text{Thinness}_{five\_in\_years} + 0.100686332 * \text{Schooling} + \\ & 2.501124616 * \text{EconomyStatusDeveloped}_{Yes} \end{aligned}$$

**Outcome:** The initial VIF analysis detected multicollinearity for four predictors: Infant\_deaths, Under\_five\_deaths, Polio, and Diphtheria.

**Reason for Detection:** High VIF values were observed, exceeding the commonly accepted threshold of 10 for Infant\_deaths (48.20), Under\_five\_deaths (50.05), Polio (12.20), and Diphtheria (13.26), indicating strong collinearity among these variables.

**Resolution:** To address this issue, one variable was removed from each highly correlated pair. Specifically:

- Under\_five\_deaths was removed, as it was closely related to Infant\_deaths.
- Diphtheria was removed, as it was closely related to Polio.

### **3.2.2 Revised Model: [Figure 3.6]**

**Outcome:** After excluding Under\_five\_deaths and Diphtheria, the VIF values were recalculated for the remaining predictors.

**Results:** No multicollinearity was detected in the revised model. The highest VIF values in the revised model (Infant\_deaths: 8.64 and Thinness\_five\_nine\_years: 9.20) were below the critical threshold, confirming that multicollinearity was sufficiently reduced.

**Significance:** The removal of collinear predictors improved model stability, ensuring that coefficients are more interpretable and estimates more reliable.

## **3.3 F-Test Result Result:**

The F-test was conducted to determine if the revised model contains at least one predictor that significantly explains variation in life expectancy.

Based on image [Figure 3.7], the p-value for the F-test is extremely low, significantly below 0.05, which means that at least one predictor in the revised model significantly varies with life expectancy. This indicates that the revised model contains a predictor that is statistically significant in explaining the variation in life expectancy.

## **3.4 Individual T-test Result:**

In the refined model, we removed the following insignificant variables: Alcohol\_consumption, Measles, and Population\_mln, as they had high p-values indicating no significant effect on life expectancy. The Year variable was kept because it is categorical, and if any year within the range is significant, the entire term is retained. The remaining predictors, including Region, Infant\_deaths, Adult\_mortality, Hepatitis\_B, BMI, Polio, Incidents\_HIV, GDP\_per\_capita, Thinness\_ten\_nineteen\_years, Thinness\_five\_nine\_years, Schooling, and Economy\_status\_Developed, were retained due to their strong statistical significance.

Output for those iteration are shown below in Figures,

Model based on Full F-Test result, [Figure 3.8] Model After performing Individual t-test, [Figure 3.9]

## **3.5 Stepwise Result:**

The stepwise selection procedure resulted in a model with an adjusted R-squared of 0.9826, indicating a strong fit. Notably, the variables “Thickness\_ten\_nineteen\_years” and “Thickness\_five\_nine\_years” were not included, likely due to their minimal contribution to increasing the adjusted R-squared. However, we chose to proceed with the additive model that retains these thickness terms for comparison.

Result of Step-wise Model Selection as image shown here, [Figure 3.10]

## **3.6 All-Possible-Regressions Selection Procedure:**

Based on output show in the image [Figure 3.24], The models in your output show improvement in fit as you progress from model 1 to model 13. Specifically, model with all variables provides the best balance of fit (high R-squared, low AIC, and BIC) with the smallest Mallows' Cp value, indicating that it has a good selection of predictor variables without excessive over-fitting. Therefore, model with all variables would likely be the most optimal model in this context.

### **3.7 Interaction model Result:**

For the interaction model, we began by including all pairwise interaction terms and iteratively removed insignificant terms until all remaining interaction terms were statistically significant. However, we decided to proceed with the additive model. Although the adjusted R squared of the final interaction model (0.9921) was slightly higher than that of the additive model (0.9826), the improvement was minimal. Considering the risk of over-fitting with the interaction model, we chose the additive model for its simplicity and robustness.

Result of Interaction Model Summary as image shown here,

[Figure 3.11]

[Figure 3.12]

### **3.8 Higher order Result:**

For the higher-order model, we examined the correlation matrix and identified highly correlated terms, specifically Adult\_mortality and Infant\_deaths. Incorporating second-order terms for these variables yielded adjusted R squared values of 0.9844 and 0.9835 , respectively. While these values show a slight improvement compared to the additive model (adjusted R squared = 0.9826), the increase is minimal. To avoid over fitting and maintain model simplicity, we decided not to proceed with the higher-order model and retained the additive model.

Result of Higher Order Model Summary as image shown here, [Figure 3.13]

### **3.9 Residual Checking:**

#### **3.9.1 Linearity Assumption Result:**

The linearity assumption was assessed using Residuals vs Fitted Values plots as show below,

[Figure 3.14] [Figure 3.15] [Figure 3.16] [Figure 3.17] [Figure 3.18]

Adjustments were made to address initial non-linear patterns by integrating second-order and third-order terms for highly correlated predictors, Adult\_mortality and Infant\_deaths, respectively. After these modifications, the residuals from the plot showed no discernible pattern, indicating the linearity assumption was satisfied. The final model, incorporating these higher-order terms, achieved an adjusted R squared value of 0.9846 and an RMSE of 1.167, demonstrating strong predictive accuracy.

#### **3.9.2 Independence Assumption Result:**

The independence assumption is satisfied as our data is not related to time, space, or group, ensuring that the residuals are independent of each other.

#### **3.9.3 Equal Variance Assumption Result:**

A significant result, p-value < 2.2e-16 which is less than 0.05 from the Breusch-Pagan test suggests heteroscedasticity, meaning the variance of the residuals is not constant across levels of the independent variables. We reject null hypothesis.

[Figure 3.19]

After applying the Box-Cox transformation in an attempt to resolve the issue of heteroscedasticity, the Breusch-Pagan test confirmed that heteroscedasticity still persists in the residuals, indicating that the transformation was not sufficient to address the variance instability.

[Figure 3.19]

[Figure 3.20]

### 3.10 Normality Assumption:

Plotted Q-Q plot [Figure 3.21], indicate that the residuals follow a normal distribution. This suggests that the normality assumption of the regression model is satisfied.

The Shapiro-Wilk normality test further supports that the residuals are normally distributed, as the p-value (0.06246) is greater than 0.05. Therefore, we fail to reject the null hypothesis, indicating that the residuals follow a normal distribution.

[Figure 3.22]

### 3.11 Outliers Result:

Based on the graph, there are no outliers identified using Cook's Distance with a threshold of 0.5. This indicates that no observations exceed this threshold and are deemed influential in the context of the model.

[Figure 3.23]

#### Final Model Equation Result:

$$\hat{LifeExpectancy} = 8.385 + 0.5985 * Region_{Asia} + 2.134 * Region_{Central America and Caribbean} - 0.5379 * Region_{European Union} + 0.07193 * Region_{Middle East} + 0.7183 * Region_{North America} - 0.4468 * Region_{Oceania} + 0.3035 * Region_{Rest of Europe} - 1.885 * Region_{South America} + 0.06593 * Year_{Y2001} + 0.06393 * Year_{Y2002} + 0.004886 * Year_{Y2003} + 0.05015 * Year_{Y2004} + 0.01471 * Year_{Y2005} + 0.04960 * Year_{Y2006} + 0.08880 * Year_{Y2007} + 0.1522 * Year_{Y2008} + 0.2178 * Year_{Y2009} + 0.2926 * Year_{Y2010} + 0.3463 * Year_{Y2011} + 0.3679 * Year_{Y2012} + 0.4794 * Year_{Y2013} + 0.5691 * Year_{Y2014} + 0.5864 * Year_{Y2015} - 0.1189 * InfantDeaths - 0.0003900 * InfantDeaths^2 + 0.000003453 * InfantDeaths^3 - 0.06159 * AdultMortality + 0.00002649 * AdultMortality^2 + 0.01159 * HepatitisB - 0.1046 * BMI + 0.01180 * Polio - 0.03977 * IncidentsHIV + 0.000007030 * GDP_per_capita - 0.04017 * ThinnnessTenNineteenYears + 0.04967 * ThinnessFiveNineYears + 0.1097 * Schooling + 2.084 * EconomyStatusDevelopedYes$$

#### Interpretation:

**Intercept:** This is the baseline life expectancy when all the other variables are zero life expectancy would be 8.385 years. It's the starting point of the model.

**Region:** Each coefficient for a specific region (e.g., Region\_{Asia}, Region\_{Central America and Caribbean}) represents the change in life expectancy relative to the baseline region (which is Africa). A positive coefficient indicates that life expectancy is higher in that region compared to the baseline region, while a negative coefficient means life expectancy is lower. For example, Region\_{Asia} = 0.5985 indicates life expectancy in Asia is 0.5985 years higher than the baseline region. And Region\_{Oceania} = - 0.4468 indicates life expectancy in Oceania is 0.5985 years lower than the baseline region.

**Year:** Each coefficient for a year (e.g., Year\_{Y2001}, Year\_{Y2002}) represents the change in life expectancy relative to the baseline year (usually the year not included in the model, such as Y2000). A positive coefficient indicates that life expectancy has increased in that particular year compared to the baseline year, while a negative coefficient suggests a decrease. For instance, Year\_{Y2001} = 0.06593 means life expectancy in 2001 is 0.06593 years higher than in the baseline year.

**InfantDeaths:** The negative coefficient for InfantDeaths (-0.1189) suggests that an increase in infant deaths decreases life expectancy. If InfantDeaths increases by one unit, the life expectancy decreases by 0.1189 years, assuming all other factors are constant. This suggests that higher infant death rates are negatively associated with life expectancy, meaning that as infant deaths increase, the overall life expectancy in the population decreases.

**InfantDeaths<sup>2</sup>:** The negative coefficient for the square of The Quadratic term (-0.0003900 \* InfantDeaths<sup>2</sup>) increase in infant deaths increase life expectancy. If InfantDeaths<sup>2</sup> increases by one unit, the life expectancy decreases by 0.0003900 years, assuming all other factors are constant. This suggests that as infant deaths increase, the negative impact on life expectancy accelerates in a non-linear way. The quadratic term captures the increasing severity of infant mortality's effect on life expectancy as the number of infant deaths rises.

**InfantDeaths<sup>3</sup>:** The negative coefficient for the square of The Cubic term increase in infant deaths decreases life expectancy. If InfantDeaths<sup>3</sup> increases by one unit, the life expectancy increases by 0.000003453 years, assuming all other factors are constant. Although this term represents a non-linear relationship, the small positive coefficient suggests that while the impact of infant deaths accelerates as the number of deaths increases, the overall effect on life expectancy remains relatively minimal compared to the quadratic and linear terms.

**AdultMortality:** The negative coefficient for AdultMortality suggests that higher adult mortality decreases life expectancy. If AdultMortality increases by one unit, the life expectancy decreases by 0.06159 years, assuming all other factors are constant. This suggests that higher adult mortality rates are negatively associated with life expectancy, meaning as more adults die, the overall life expectancy in the population decreases.

**AdultMortality<sup>2</sup>:** The positive coefficient for the square of AdultMortality indicates that as adult mortality increases, its impact on life expectancy accelerates. If AdultMortality<sup>2</sup> increases by one unit, life expectancy increases by 0.00002649 years, assuming all other factors are constant. This suggests that the relationship between adult mortality and life expectancy is non-linear. In other words, as adult mortality rises, its impact on life expectancy accelerates, but at a diminishing rate due to the small coefficient.

**Hepatitis B:** The coefficient 0.01159 suggests a positive relationship, meaning that higher levels of Hepatitis B increase life expectancy. If Hepatitis B increases by one unit, the interpretation based on the coefficient would be that life expectancy increases by 0.01159 years, assuming all other factors are constant which is counterintuitive. Hepatitis B typically reduces life expectancy, so this could be a model result artifact.

**BMI:** The negative coefficient for BMI (-0.1046) suggests that higher BMI (indicating obesity) decreases life expectancy. If BMI increases by one unit, the interpretation based on the coefficient -0.1046 would be that life expectancy decreases by 0.1046 years, assuming all other factors are constant.

**Polio:** The positive coefficient (+0.01180) means that higher polio vaccination rates increase life expectancy. If Polio increases by one unit, life expectancy increases by 0.01180 years, assuming all other factors are constant. This suggests that higher rates of polio vaccination or the presence of polio control measures are positively associated with life expectancy, likely due to improved public health outcomes resulting from vaccination efforts.

**IncidentsHIV:** The negative coefficient (-0.03977) indicates that higher rates of HIV incidents are associated with lower life expectancy. If IncidentsHIV increases by one unit, life expectancy decreases by 0.03977 years, assuming all other factors are constant. This suggests that higher rates of HIV incidents are negatively associated with life expectancy.

**GDP\_per\_capita:** A positive coefficient here suggests that increases in GDP per capita are associated with higher life expectancy. If GDP\_per\_capita increases by one unit, the life expectancy increases by 0.000007030 years, assuming all other factors are constant. This suggests that higher GDP per capita, which typically indicates a stronger economy and better access to healthcare, is positively associated with life expectancy.

**ThinnessTenNineteenYears:** These coefficients show the relationship between malnutrition in certain age groups and life expectancy. For the terms -0.04017 \* ThinnessTenNineteenYears a negative coefficient for ThinnessTenNineteenYears indicates that higher thinness rates in this age group (10-19 years) are associated with a decrease in life expectancy. If ThinnessTenNineteenYears increases by one unit, the life expectancy decreases by 0.04017 years, assuming all other factors are constant. This suggests that higher thinness (indicating malnutrition or poor health) in the 10-19 age group is negatively associated with life expectancy.

**ThinnessFiveNineYears:** These coefficients show the relationship between malnutrition in certain age groups and life expectancy. For the terms 0.04967 \* ThinnessFiveNineYears A positive coefficient for ThinnessFiveNineYears suggests that higher thinness rates in the 5-9 age group are linked to an increase in life expectancy. If ThinnessFiveNineYears increases by one unit, the life expectancy increases by 0.04967 years, assuming all other factors are constant. This suggests that higher thinness rates (indicating malnutrition) in the 5-9 age group are positively associated with life expectancy, which could be counterintuitive.

**Schooling:** More years of schooling are associated with higher life expectancy, as expected from the positive coefficient (0.1097). If Schooling increases by one unit, the life expectancy increases by 0.1097 years, assuming all other factors are constant. This suggests that more years of schooling are positively associated with life expectancy

**EconomyStatusDeveloped:** This binary variable indicates whether a country is considered developed. If developed, life expectancy is increased by 2.084 years. If EconomyStatusDeveloped increases by one unit, the life expectancy increases by 2.084 years, assuming all other factors are constant. This suggests that being in a developed country, characterized by higher economic status, is positively associated with life expectancy.

Lets derive some sub-models:

1. For Region = Asia, Year = 2002 and developed countries Life expectancy,

$$Lifeexpectancy = 11.13143 - 0.1189 * InfantDeaths - 0.0003900 * InfantDeaths^2 + 0.000003453 * InfantDeaths^3 - 0.06159 * AdultMortality + 0.00002649 * AdultMortality^2 + 0.01159 * HepatitisB - 0.1046 * BMI + 0.01180 * Polio - 0.03977 * IncidentsHIV + 0.000007030 * GDP_{per\_capita} - 0.04017 * ThinnessTenNineteenYears + 0.04967 * ThinnessFiveNineYears + 0.1097 * Schooling$$

2. For Region = North America, Year = 2010 and developed countries Life expectancy,

$$Lifeexpectancy = 11.4799 - 0.1189 * InfantDeaths - 0.0003900 * InfantDeaths^2 + 0.000003453 * InfantDeaths^3 - 0.06159 * AdultMortality + 0.00002649 * AdultMortality^2 + 0.01159 * HepatitisB - 0.1046 * BMI + 0.01180 * Polio - 0.03977 * IncidentsHIV + 0.000007030 * GDP_{per\_capita} - 0.04017 * ThinnessTenNineteenYears + 0.04967 * ThinnessFiveNineYears + 0.1097 * Schooling$$

2. For Region = North America, Year = 2010 and developed countries Life expectancy,

$$Lifeexpectancy = 11.4799 - 0.1189 * InfantDeaths - 0.0003900 * InfantDeaths^2 + 0.000003453 * InfantDeaths^3 - 0.06159 * AdultMortality + 0.00002649 * AdultMortality^2 + 0.01159 * HepatitisB - 0.1046 * BMI + 0.01180 * Polio - 0.03977 * IncidentsHIV + 0.000007030 * GDP_{per\_capita} - 0.04017 * ThinnessTenNineteenYears + 0.04967 * ThinnessFiveNineYears + 0.1097 * Schooling$$

3. For Region = Africa, Year = 2007 and developing countries Life expectancy,

$$\hat{Life\_expectancy} = 8.4738 - 0.1189 * InfantDeaths - 0.0003900 * InfantDeaths^2 + 0.000003453 * InfantDeaths^3 - 0.06159 * AdultMortality + 0.00002649 * AdultMortality^2 + 0.01159 * HepatitisB - 0.1046 * BMI + 0.01180 * Polio - 0.03977 * IncidentsHIV + 0.000007030 * GDP_{per\_capita} - 0.04017 * ThinnessTenNineteenYears + 0.04967 * ThinnessFiveNineYears + 0.1097 * Schooling$$

## 4 CONCLUSION AND DISCUSSION

### 4.1 Approach

The approach used in this analysis demonstrates a systematic and effective framework for understanding the determinants of life expectancy globally. The key steps, from initial data cleaning to higher-order model refinement, ensured both the robustness and interpretability of the findings.

#### 4.1.1 Effectiveness of the Approach:

- **Data Simplification:** The decision to use the Region variable instead of the Country variable reduced the complexity of handling 193 unique country entries while still allowing for meaningful regional insights.
- **Multicollinearity Resolution:** The rigorous application of VIF to identify and address multicollinearity enhanced the model's stability and interpretability. Removing highly collinear variables, such as Under\_five\_deaths and Diphtheria, allowed for a more robust model.
- **Model Refinement:** The use of stepwise regression and evaluation criteria like AIC, BIC, and Mallows' Cp ensured the selection of the most parsimonious model.
- **Higher-order and Interaction Models:** These advanced modeling techniques captured non-linear relationships and synergies between predictors, providing a more nuanced understanding of the factors influencing life expectancy.
- **Validation of Residual Assumptions:** The adherence to key statistical assumptions, including normality and homoscedasticity, further bolstered the reliability of the findings.

#### 4.1.2 Challenges and Trade-offs:

- The exclusion of country-specific details, while necessary to simplify the analysis, limited the ability to identify unique country-level characteristics national trends or outliers.
- The refinement process, especially testing interaction and higher-order terms, was resource-intensive and required careful attention to ensure statistical validity.
- Despite these challenges, the rigorous validation of assumptions (normality, homoscedasticity, and independence) strengthened the model's reliability.

## 4.2 Future Work

### 1. Granular Data Analysis:

- Include additional country-specific variables, such as healthcare expenditure, literacy rates, or environmental indices, to uncover country-level insights.
- Extend the dataset to include more recent years or incorporate data from specific events, such as the COVID-19 pandemic, to analyze temporal changes in life expectancy determinants.

### 2. Advanced Modeling Techniques:

- Explore machine learning approaches, such as Random Forest, XGBoost, or Neural Networks, to handle interactions and non-linear relationships more efficiently.

## **2. Policy Simulation and Impact Assessment:**

- Use the refined models to simulate the impact of targeted interventions, such as reducing infant mortality or increasing vaccination rates, on life expectancy.
- Compare life expectancy determinants between developed and developing regions to identify specific strategies that could improve outcomes in each context.

## **3. Interactive Reporting and Visualization:**

- Develop interactive dashboards using tools like R Shiny to visualize results and allow stakeholders to explore data dynamically.
- Create regional or country-specific visualizations to highlight disparities and suggest actionable recommendations.

## **4. Validation and Generalization:**

- Validate the model using external datasets to assess its robustness and generalizability.

By addressing these areas, future studies can deepen the understanding of life expectancy determinants and further enhance the impact of this work on global health policies and interventions.

## 5 REFERENCES

- [1] L. Gochia, “Life expectancy (WHO) fixed dataset,” Kaggle, 2023. [Online]. Available: <https://www.kaggle.com/datasets/lashagoch/life-expectancy-who-updated>. [Accessed: Nov, 30, 2024].



## 6 APPENDIX

### 6.1 Images

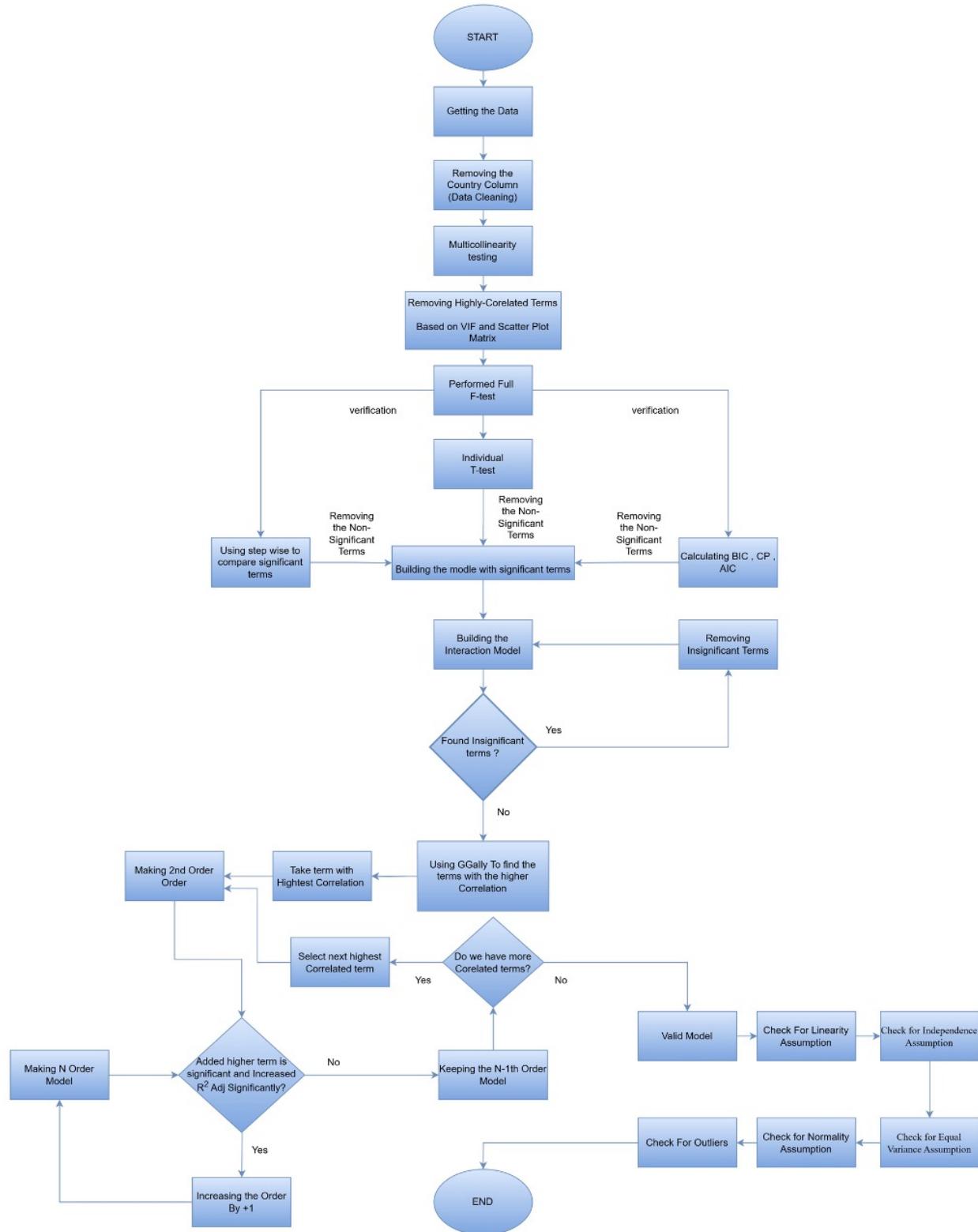


Figure 2.1 Work Flow Diagram

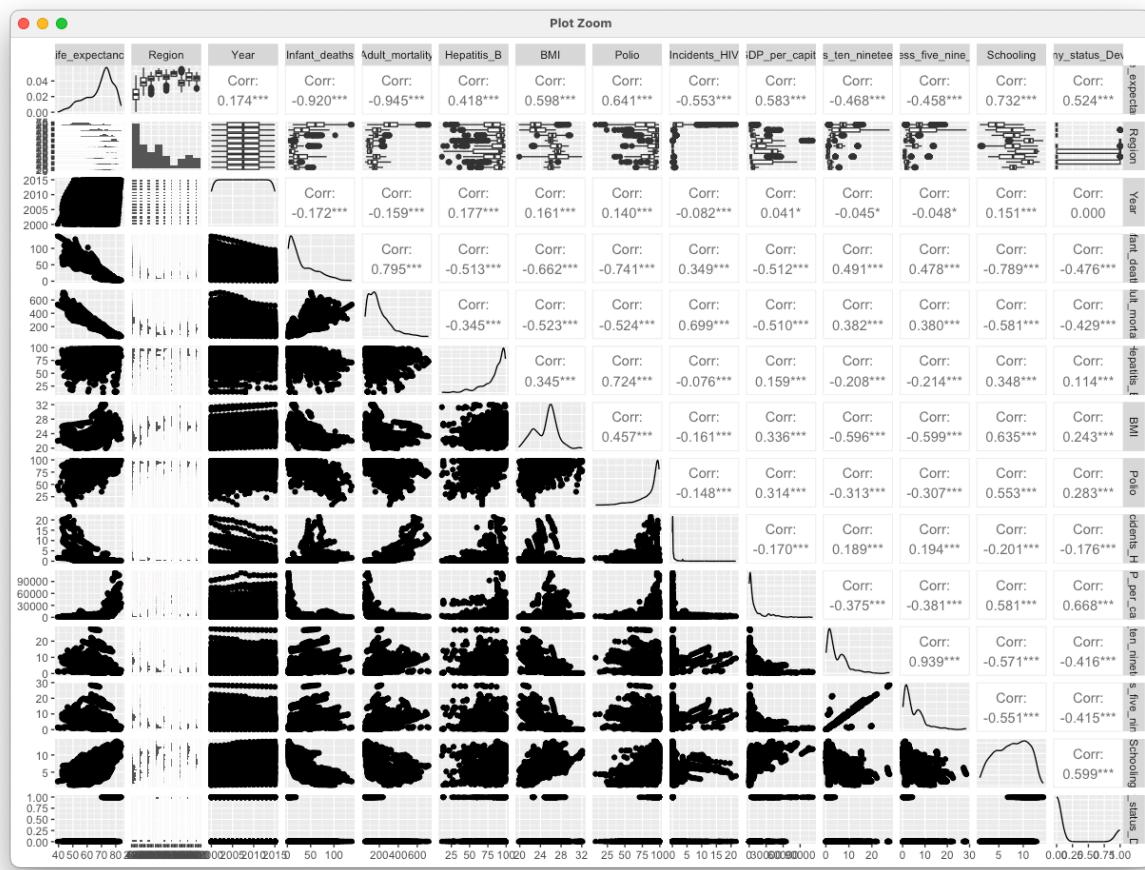


Figure3.1CorrelationMatrix

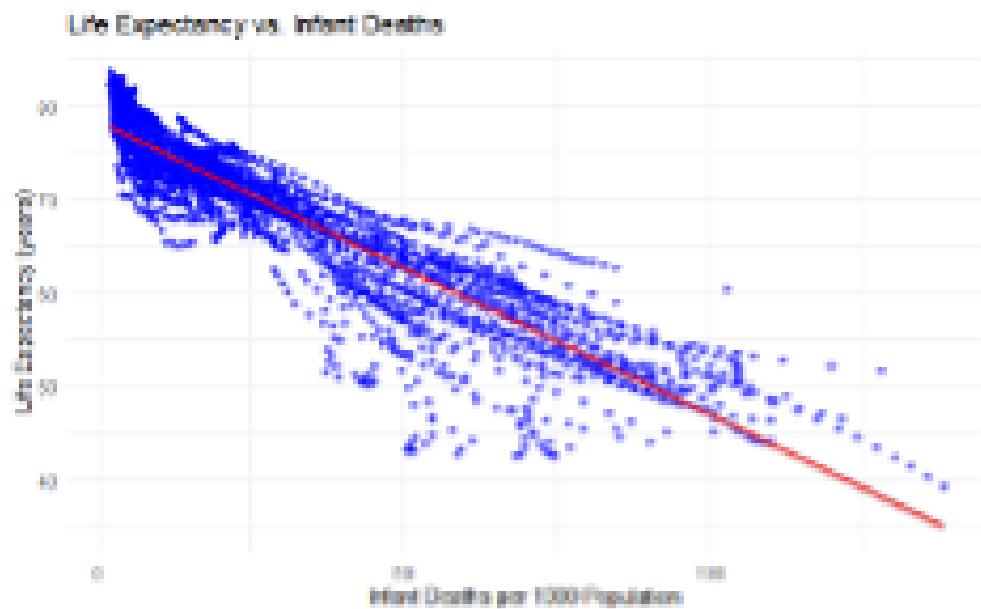


Figure 3.2 EDA Infants Death

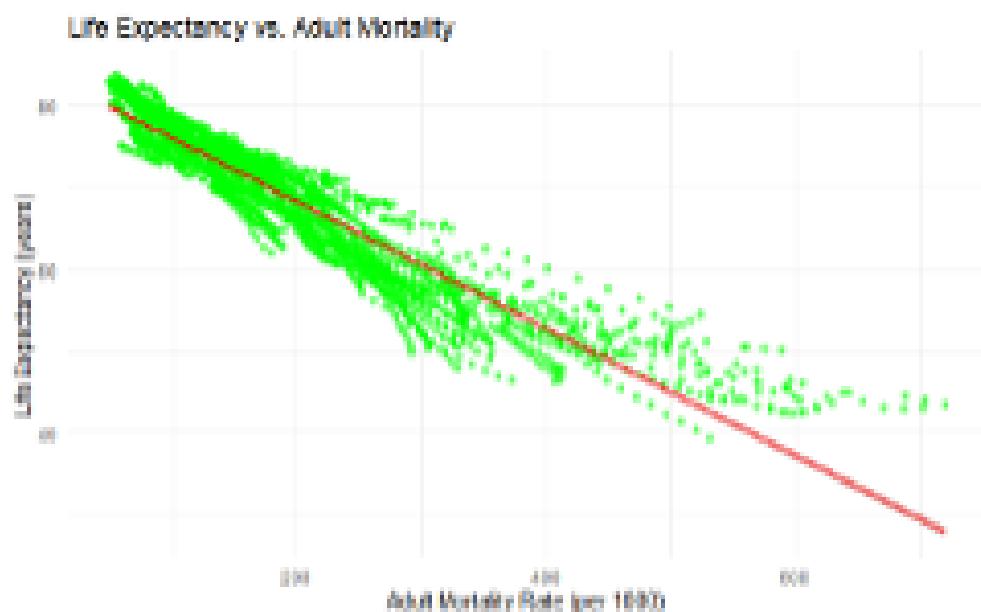


Figure 3.3 EDA Adult Mortality Rate

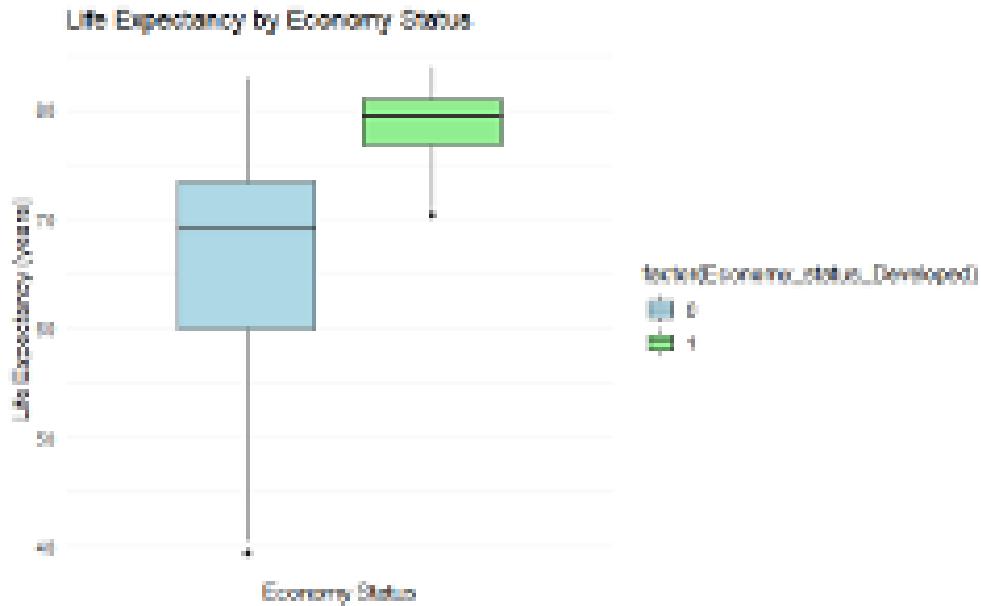


Figure 3.4 EDA Economy Status

VIF Multicollinearity Diagnostics		
RegionAsia	2.6230	0
RegionCentral America and Caribbean	2.2181	0
RegionEuropean Union	6.6208	0
RegionSouth East Asia	1.1048	0
RegionNorth America	1.5346	0
RegionOceania	1.9782	0
RegionRest of Europe	2.4437	0
RegionSouth America	1.9035	0
Year1900	1.8761	0
Year1902	1.8810	0
Year1903	1.8815	0
Year1904	1.8852	0
Year1905	1.8911	0
Year1906	1.8967	0
Year1907	1.9024	0
Year1908	1.9066	0
Year1909	1.9137	0
Year1910	1.9186	0
Year1911	1.9262	0
Year1912	1.9340	0
Year1913	1.9357	0
Year1914	1.9519	0
Year1915	1.9588	0
Infant_deaths	48.2026	1
Under_five_deaths	50.0525	1
Adult_mortality	8.1421	0
Hepatitis_B	1.45	0
Alcohol_consumption	3.3884	0
Measles	1.6634	0
BMI	3.9027	0
Polio	12.2016	1
Diphtheria	13.2644	1
Infectious_HIV	1.11	0
GDP_per_capita	2.6502	0
Population_mln	1.2131	0
Thinness_ten_nineteen_years	9.0115	0
Thinness_five_nine_years	9.2297	0
Schooling	5.5301	0
Economy_Status_DevelopedYes	7.2835	0

Figure 3.5 Multicollinearity for Full Model

VIF Multicollinearity Diagnostics		
	VIF	detection
RegionAsia	2.4534	0
RegionCentral America and Caribbean	2.1513	0
RegionEuropean Union	6.5419	0
RegionMiddle East	2.2283	0
RegionNorth America	1.5147	0
RegionOceania	1.9019	0
RegionRest of Europe	2.4140	0
RegionSouth America	1.8480	0
YearY2001	1.8761	0
YearY2002	1.8794	0
YearY2003	1.8813	0
YearY2004	1.8851	0
YearY2005	1.8909	0
YearY2006	1.8967	0
YearY2007	1.9020	0
YearY2008	1.9064	0
YearY2009	1.9135	0
YearY2010	1.9185	0
YearY2011	1.9251	0
YearY2012	1.9334	0
YearY2013	1.9430	0
YearY2014	1.9510	0
YearY2015	1.9580	0
Infant_deaths	8.6365	0
Adult_mortality	8.0123	0
Hepatitis_B	2.3251	0
Alcohol_consumption	3.3720	0
Measles	1.6604	0
BMI	3.8322	0
Polio	3.7884	0
Incidents_HIV	3.0380	0
GDP_per_capita	2.6070	0
Population_mln	1.2126	0
Thinness_ten_nineteen_years	8.9921	0
Thinness_five_nine_years	9.2034	0
Schooling	5.4809	0
Economy_status_DevelopedYes	7.2274	0

Figure 3.6 Multicollinearity for Revised Model

Analysis of Variance Table						
Model 1: Life_expectancy ~ 1						
Model 2: Life_expectancy ~ Region + Year + Infant_deaths + Adult_mortality + Hepatitis_B + Alcohol_consumption + Measles + BMI + Polio + Incidents_HIV + GDP_per_capita + Population_mln + Thinness_ten_nineteen_years + Thinness_five_nine_years + Schooling + Economy_status_Developed						
Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)	
1	2863	253277				
2	2826	4336	37	248940 4384.9 < 0.0000000000000022 ***		
---						
Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1						

Figure 3.7 Anova Table

Coefficients:	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	82.104978482	0.592335707	138.612	< 0.0000000000000002 ***	
RegionAsia	0.743246105	0.101301040	7.337	0.00000000000284 ***	
RegionCentral America and Caribbean	2.209487890	0.110215061	20.047	< 0.0000000000000002 ***	
RegionEuropean Union	-0.408489184	0.165417105	-2.469	0.013591 *	
RegionMiddle East	0.417905791	0.128681655	3.248	0.000171 **	
RegionNorth America	0.446217726	0.129215979	3.359	0.000177 **	
RegionOceania	0.446217763	0.129215975	3.357	0.000178 ***	
RegionRest of Europe	0.477875335	0.129788495	3.682	0.000236 ***	
RegionSouth America	2.030134268	0.125816860	16.136	< 0.0000000000000002 ***	
YearY2001	0.076533155	0.130973777	0.584	0.559039	
YearY2002	0.091212838	0.131089634	0.696	0.486608	
YearY2003	0.091212838	0.131089634	0.692	0.493393	
YearY2004	0.042126997	0.131286565	0.321	0.748566	
YearY2005	0.001204410	0.131489300	0.009	0.992692	
YearY2006	0.024415205	0.131688382	0.185	0.852928	
YearY2007	0.057544475	0.131874824	0.436	0.662611	
YearY2008	0.113774122	0.132025995	0.862	0.388895	
YearY2009	0.249177636	0.132270164	1.313	0.189129	
YearY2010	0.249177636	0.132270164	1.301	0.190133	
YearY2011	0.298265159	0.132672946	2.248	0.024645 *	
YearY2012	0.325882484	0.132957816	2.451	0.014305 *	
YearY2013	0.443183971	0.133286420	3.325	0.000895 ***	
YearY2014	0.541712333	0.133560220	4.056	0.000051283649973 ***	
YearY2015	0.563851933	0.133799385	4.214	0.000025856670242 ***	
Infant_deaths	-0.047582684	0.000570263	-8.440	< 0.0000000000000002 ***	
Adult_mortality	-0.011618685	0.022066868	-5.265	0.000000150882495 ***	
Hepatitis_B	-0.013998097	0.010675858	-1.311	0.189900	
Alcohol_consumption	0.001778407	0.001598650	1.112	0.266042	
Measles	0.010425993	0.020656784	5.047	0.000000476636691 ***	
BMI	-0.10425993	0.020656784	3.499	0.000000476636691 ***	
Polio	0.096399867	0.016804166	5.799	0.000000014066735 ***	
Incidents_HIV	0.000016317	0.000002307	3.393	0.0000000000000002 ***	
GDP_per_capita	Population_mln	-0.000265264	0.000186777	-1.420	0.155654
Population_mln	-0.036657176	0.015641383	-2.344	0.019167 *	
Thinness_ten_nineteen_years	-0.033840966	0.015519944	2.180	0.029304 *	
Thinness_five_nine_years	0.123170779	0.017088638	7.208	0.0000000000000027 ***	
Schooling	Economy_status_DevelopedYes	2.335417458	0.153665907	15.198 < 0.0000000000000002 ***	
---	Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
Residual standard error: 1.239 on 2826 degrees of freedom					
Multiple R-squared: 0.9829,	Adjusted R-squared: 0.9827				
F-statistic: 4385 on 37 and 2826 DF, p-value: < 0.0000000000000022					

Figure3.8ModelbasedonFullF – TestOutput

Coefficients:	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	82.066222240	0.587989314	139.571	< 0.0000000000000002 ***
RegionAsia	0.734062617	0.099347408	7.389	0.000000000000194 ***
RegionCentral America and Caribbean	2.177344688	0.107674866	20.221	< 0.0000000000000002 ***
RegionEuropean Union	-0.455863848	0.160787845	-2.835	0.004612 **
RegionMiddle East	0.455190549	0.126107923	3.610	0.000312 ***
RegionNorth America	0.793349667	0.220032322	3.606	0.000317 ***
RegionOceania	-0.452897448	0.132076369	-3.429	0.000614 ***
RegionRest of Europe	0.450803583	0.127535967	3.535	0.000415 ***
RegionSouth America	1.972877201	0.122508164	16.104	< 0.0000000000000002 ***
YearY2001	0.076320202	0.131025854	0.582	0.560288
YearY2002	0.091497598	0.131139484	0.698	0.485415
YearY2003	0.013585460	0.131196761	0.103	0.917697
YearY2004	0.042216826	0.131325032	0.321	0.747879
YearY2005	-0.000861437	0.131520171	-0.007	0.994774
YearY2006	0.023134335	0.131735331	0.176	0.860611
YearY2007	0.053914612	0.131914435	0.409	0.682784
YearY2008	0.109759593	0.132052920	0.831	0.405943
YearY2009	0.171316429	0.132264166	1.295	0.195336
YearY2010	0.246157554	0.132417236	1.859	0.063137 *
YearY2011	0.296416418	0.132674818	2.234	0.025551 *
YearY2012	0.322993856	0.132940109	2.430	0.015177 *
YearY2013	0.441606717	0.133255710	3.314	0.000931 ***
YearY2014	0.542028872	0.133535733	4.059	0.000050607058674 ***
YearY2015	0.565357295	0.133768060	4.226	0.000024497685880 ***
Infant_deaths	-0.125707354	0.002460972	-51.080	< 0.0000000000000002 ***
Adult_mortality	-0.047707246	0.000558212	-85.464	< 0.0000000000000002 ***
Hepatitis_B	-0.011201606	0.002186708	-5.123	0.000000321615890 ***
BMI	-0.100427770	0.020597420	-4.876	0.000001143881240 ***
Polio	0.011082724	0.002966152	3.736	0.000190 ***
Incidents_HIV	0.096466797	0.016924461	5.700	0.000000013229075 ***
GDP_per_capita	0.000016251	0.000002201	7.382	0.000000000000204 ***
Thinness_ten_nineteen_years	-0.036282729	0.015544778	-2.334	0.019661 *
Thinness_five_nine_years	0.030349029	0.015390212	1.972	0.048710 *
Schooling	0.118805537	0.016434978	7.229	0.000000000000624 ***
Economy_status_DevelopedYes	2.293441075	0.151476407	15.141	< 0.0000000000000002 ***
---	Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1			
Residual standard error: 1.239 on 2829 degrees of freedom				
Multiple R-squared: 0.9828,	Adjusted R-squared: 0.9826			
F-statistic: 4768 on 34 and 2829 DF, p-value: < 0.0000000000000022				

Figure3.9ModelAfter performingIndividualt – testandRemovingInsignificantterms

```

Coefficients:
Estimate Std. Error t value Pr(>|t|)
(Intercept) 81.96549190 0.545806962 150.17 < 0.0000000000000002 ***
Adult_mortality -0.047681271 0.000558089 -85.437 < 0.0000000000000002 ***
Infant_deaths -0.125821225 0.002459639 -51.154 < 0.0000000000000002 ***
Economy_status_DevelopedYes 2.294812967 0.151054334 15.192 < 0.0000000000000002 ***
GDP_per_capita 0.000016173 0.000002198 7.356 0.0000000000002464 ***
RegionAsia 0.730038623 0.09570838 7.628 0.0000000000000325 ***
RegionCentral America and Caribbean 2.183309642 0.117638774 20.280 < 0.0000000000000002 ***
RegionEuropean Union -0.100000000 0.160033862 -2.500 0.0000000000000002 ***
RegionMiddle East 0.443489301 0.124399945 3.565 0.0000000000000002 ***
RegionNorth America 0.795967204 0.220144618 3.616 0.0000000000000002 ***
RegionOceania -0.438750738 0.131908712 -3.326 0.0000000000000002 ***
RegionRest of Europe 0.455491023 0.127556544 3.571 0.0000000000000002 ***
Regionsouth America 1.983318339 0.121751435 16.290 < 0.0000000000000002 ***
Schooling 0.095666200 0.0167538409 7.589 0.0000000000000002 ***
Incidents_HIV 0.09516620 0.019743029 -4.19 0.00000000113632 ***
BMI -0.098181094 0.019743029 -4.973 0.00000002374270972 ***
Hepatitis_B -0.011327512 0.002186768 -5.180 0.00000002374270972 ***
Polio 0.011074379 0.002967132 3.732 0.000193 ***
YearY2001 0.076832108 0.131104131 0.586 0.557896
YearY2002 0.085618731 0.1311194098 0.653 0.5114060
YearY2003 0.090065625 0.131124229 0.100 0.519987
YearY2004 0.041028749 0.131394111 0.112 0.751568
YearY2005 -0.003393630 0.131543086 -0.026 0.973420
YearY2006 0.018341541 0.131732616 0.139 0.889276
YearY2007 0.046028884 0.131904983 0.349 0.727149
YearY2008 0.104907586 0.132055475 0.794 0.427017
YearY2009 0.163549129 0.1322771832 1.236 0.216389
YearY2010 0.240872108 0.132491669 1.814 0.070041
YearY2011 0.000065647 0.132694059 2.186 0.028899 *
YearY2012 0.317558071 0.132943962 2.389 0.016975 *
YearY2013 0.433527440 0.133221179 3.254 0.001151 **
YearY2014 0.539750374 0.133488173 4.043 0.0000540800007735 ***
YearY2015 0.559486474 0.133711955 4.184 0.0000294795183714 ***
---
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 1.24 on 2831 degrees of freedom
Multiple R-squared: 0.9828, Adjusted R-squared: 0.9826
F-statistic: 5059 on 32 and 2831 DF, p-value: < 0.0000000000000022

```

Figure3.10 Result of Step – wise Model Selection

	rsquare	AdjustedR	cp	AIC	BIC
[1,]	0.8937062	0.8936691	14671.03495	14551.086	-6403.875
[2,]	0.9710178	0.9709976	1922.03201	10831.245	-10117.756
[3,]	0.9751387	0.9751126	1244.38250	10287.362	-10549.039
[4,]	0.9772792	0.9772474	893.33732	9619.966	-10798.939
[5,]	0.9787456	0.9787084	653.49103	9530.695	-10982.050
[6,]	0.9797976	0.9797552	481.97571	9500.560	-11119.482
[7,]	0.9807825	0.9807354	321.54992	9464.634	-11254.652
[8,]	0.9812176	0.9811650	251.77972	9443.244	-11312.289
[9,]	0.9816077	0.9815497	189.44460	9418.419	-11364.436
[10,]	0.9819913	0.9819281	128.18101	9406.586	-11416.837
[11,]	0.9821105	0.9820415	110.50941	9394.528	-11427.909
[12,]	0.9822325	0.9821577	92.39530	9394.943	-11439.540
[13,]	0.9823265	0.9822459	78.88395	9393.009	-11446.780

Figure3.24 All – Possible – Regressions Selection Procedure

Coefficients: (4 not defined because of singularities)	Estimate	Std. Error	t value
(Intercept)	97.92390861528	2.88366457770	33.958
RegionAsia	9.04837715987	1.80999648523	4.999
RegionCentral America and Caribbean	-3.29198462010	2.44894620697	-1.344
RegionEuropean Union	23.00000000000	3.07400000000	7.441
RegionMiddle East	7.77284547073	3.177463006875	-0.735
RegionNorth America	5.72495239902	57.73241734544	0.099
RegionOceania	1.88289012618	2.88712735250	0.652
RegionRest of Europe	24.25529654099	5.03474446853	4.818
RegionSouth America	13.05484076869	6.07494853367	2.149
YearY2001	-0.72519347882	1.55004486363	-0.468
YearY2002	0.92319933073	1.59535650649	0.579
YearY2003	0.63313541502	1.58053660170	0.401
YearY2004	0.59313541502	1.60053660170	0.381
YearY2005	0.38090227475	1.65320186768	0.230
YearY2006	0.39471427719	1.9764992179	0.233
YearY2007	0.30425644386	1.71029772524	0.178
YearY2008	1.10154618874	1.72954835553	0.637
YearY2009	2.28049643366	1.72221558870	1.324
YearY2010	2.25477836720	1.71284304502	1.316
YearY2011	2.99505356149	1.71287728910	1.749
YearY2012	2.33328835738	1.73091383973	1.348
YearY2013	3.14428835738	1.74881383973	1.878
YearY2014	4.44357307274	1.700662244775	2.512
YearY2015	4.39068997118	1.75737626591	2.498
Infant_deaths	-0.58033367499	0.034377338787	-16.881
Adult_mortality	0.02675008978	0.00784963223	-3.408
Hepatitis_B	0.058140696938	0.01068132164	-5.443
BMI	0.46714700503	0.11719507813	-3.986
Polio	0.00344440659	0.01261237792	0.273
Incidents_HIV	0.57414891110	0.12189254867	4.710
GDP_per_capita	0.0003333493	0.00002954644	1.179
Thickness_ten_nineteen_years	1.00000000000	0.00000000000	3.689
Thickness_Five_nine_years	-1.37884361974	0.26614123977	-5.181
Schooling	1.71762542079	0.26026907784	6.599
Economy_status_DevelopedYes	2.17113688056	0.66437387606	3.268
RegionAsia:YearY2001	-0.15430526821	0.32672044515	-0.472
RegionCentral America and Caribbean:YearY2001	0.03156674206	0.38872789207	0.081
RegionEuropean Union:YearY2001	0.18785954137	0.37145692334	0.506
RegionMiddle East:YearY2001	-0.11302493696	0.45910335705	-0.246
RegionNorth America:YearY2001	0.44763273210	0.92208427063	0.485
RegionOceania:YearY2001	-0.05189700033	0.48830036526	-0.106
RegionRest of Europe:YearY2001	0.17113688056	0.57300036526	0.377
RegionSouth America:YearY2001	0.08303116102	0.44069960627	-0.188
RegionAsia:YearY2002	0.08835682969	0.32261474920	0.274
RegionCentral America and Caribbean:YearY2002	0.21332001107	0.38843387209	0.549
RegionEuropean Union:YearY2002	0.47917753228	0.37425263120	1.280
RegionMiddle East:YearY2002	0.25065892574	0.46008233438	0.545
RegionNorth America:YearY2002	1.07276145020	1.16268369668	0.923
RegionOceania:YearY2002	0.35833523067	0.48982440852	0.732
RegionRest of Europe:YearY2002	0.34560196552	0.42296870248	0.817
RegionSouth America:YearY2002	0.19291068103	0.44626518545	0.432
RegionAsia:YearY2003	0.21251394445	0.37727047035	0.525
RegionCentral America and Caribbean:YearY2003	0.18827398572	0.39129957666	0.481
RegionEuropean Union:YearY2003	0.49818178340	0.37609263161	1.325
RegionMiddle East:YearY2003	0.25196694445	0.46167539862	0.546
RegionNorth America:YearY2003	1.42145195883	1.45756064938	0.975
RegionOceania:YearY2003	0.42170064064	0.49256068132	0.856
RegionRest of Europe:YearY2003	0.44646157222	0.43070310093	1.037
RegionSouth America:YearY2003	0.15244364809	0.45160801386	0.338
RegionAsia:YearY2004	0.28245784760	0.32246591473	0.876

Figure 3.11 Result of Interaction Model Summary – I

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.8377 on 2546 degrees of freedom  
 Multiple R-squared: 0.9929, Adjusted R-squared: 0.9921  
 F-statistic: 1131 on 317 and 2546 DF, p-value: < 0.0000000000000022

Figure 3.12 Result of Interaction Model Summary – II

Coefficients:	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	83.037877808	0.579942168	143.183	< 0.0000000000000002
RegionAsia	0.793856446	0.097130062	8.173	0.0000000000000448
RegionCentral America and Caribbean	2.139812269	0.105176715	20.345	< 0.0000000000000002
RegionEuropean Union	-0.652816000	0.157867780	-4.135	0.00003649598157787
RegionMiddle East	0.376136702	0.123307492	3.050	0.002307
RegionNorth America	0.770926679	0.214837769	3.588	0.000338
RegionOceania	-0.328878824	0.129380101	-2.541	0.011098
RegionRest of Europe	0.276177965	0.125393720	2.202	0.027711
RegionSouth America	1.963435212	0.119613978	16.415	< 0.0000000000000002
YearY2001	0.092216705	0.127934660	0.721	0.471085
YearY2002	0.116351837	0.128055800	0.909	0.363637
YearY2003	0.051796603	0.128135306	0.404	0.686071
YearY2004	0.095650707	0.128299373	0.746	0.456015
YearY2005	0.052963207	0.128490947	0.412	0.680228
YearY2006	0.086392935	0.128731603	0.671	0.502206
YearY2007	0.122072587	0.128924197	0.947	0.343793
YearY2008	0.178122692	0.129060050	1.380	0.167648
YearY2009	0.241979532	0.129274947	1.872	0.061335
YearY2010	0.312417862	0.129407565	2.414	0.015832
YearY2011	0.370129818	0.129687624	2.854	0.004349
YearY2012	0.396968742	0.129947399	3.055	0.002273
YearY2013	0.516682623	0.130259690	3.967	0.000074727981777795
YearY2014	0.615635082	0.130526775	4.717	0.000002515238022471
YearY2015	0.636277295	0.130742725	4.867	0.000001197391618502
Infant_deaths	-0.174639259	0.004786824	-36.483	< 0.0000000000000002
I(Infant_deaths^2)	0.000429168	0.000036312	11.819	< 0.0000000000000002
Adult_mortality	-0.046962864	0.000548639	-85.599	< 0.0000000000000002
Hepatitis_B	-0.014081551	0.002148860	-6.553	0.0000000066750978
BMI	-0.108873515	0.020123067	-5.410	0.00000068111381028
Polio	0.015904668	0.002924610	5.438	0.00000058409751742
Incidents_HIV	0.103763206	0.016535790	6.275	0.00000000403065572
GDP_per_capita	0.000011181	0.000002192	5.101	0.00000359626151974
Thinness_ten_nineteen_years	-0.039366001	0.015179445	-2.593	0.009553
Thinness_five_nine_years	0.040145034	0.015049133	2.668	0.007683
Schooling	0.081332191	0.016355691	4.972	0.000000700641224527
Economy_Status_DevelopedYes	2.174066426	0.148239051	14.666	< 0.0000000000000002
---				
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
Residual standard error: 1.21 on 2828 degrees of freedom				
Multiple R-squared: 0.9837, Adjusted R-squared: 0.9835				
F-statistic: 4863 on 35 and 2828 DF, p-value: < 0.0000000000000002				

*Figure 3.13 Result of Higher Order Model Summary*

### Residuals vs Fitted Values

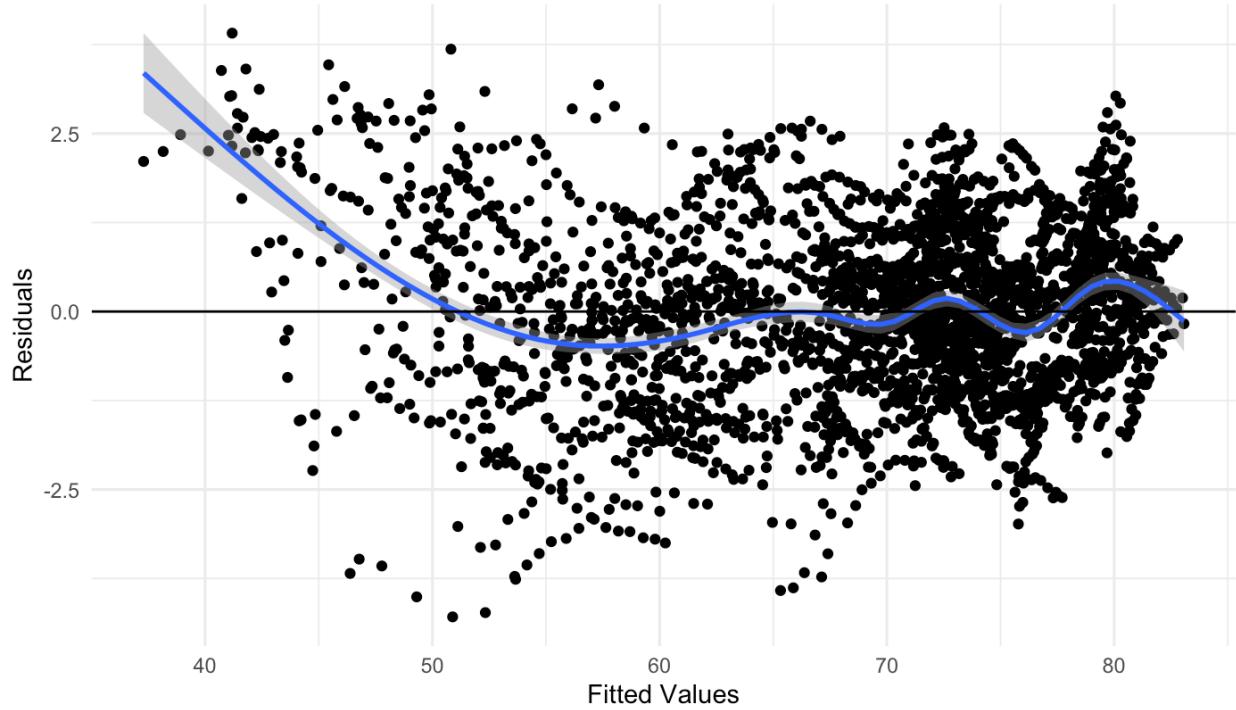


Figure 3.14 Result of Residuals vs Fitted Values – I

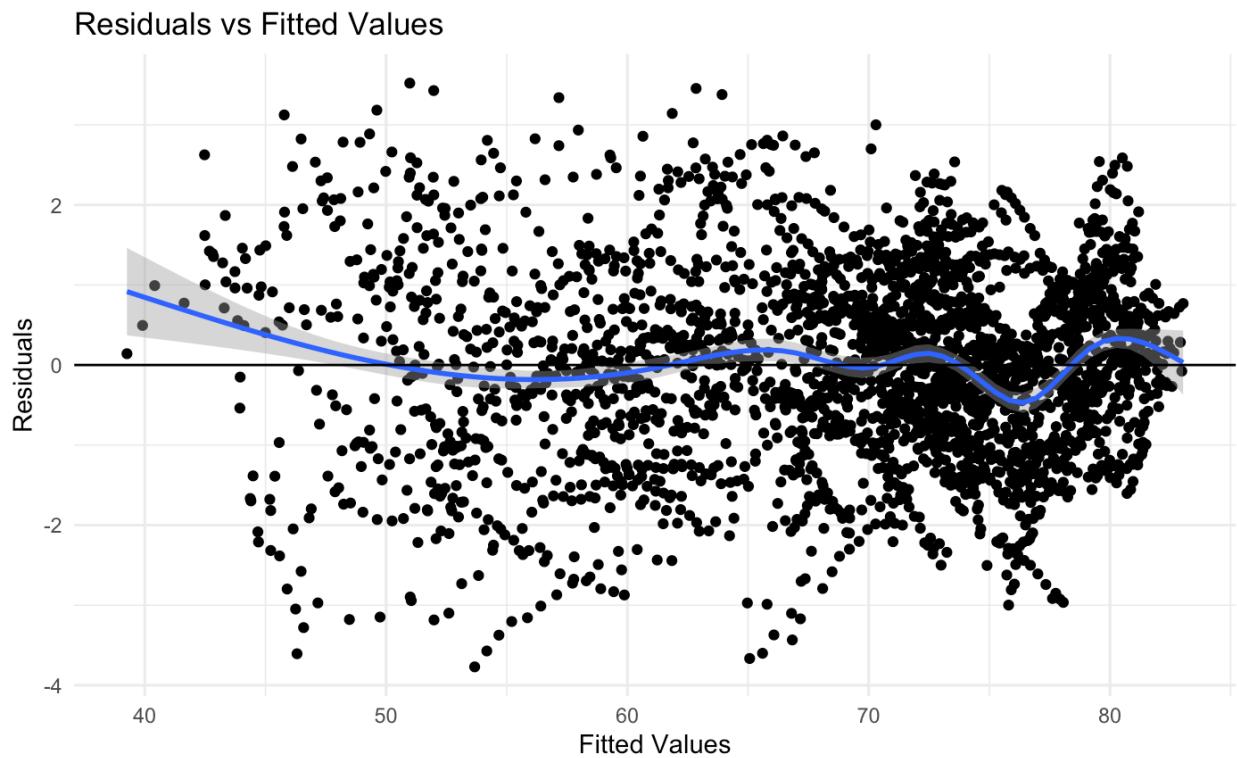


Figure 3.15 Result of Residuals vs Fitted Values – II

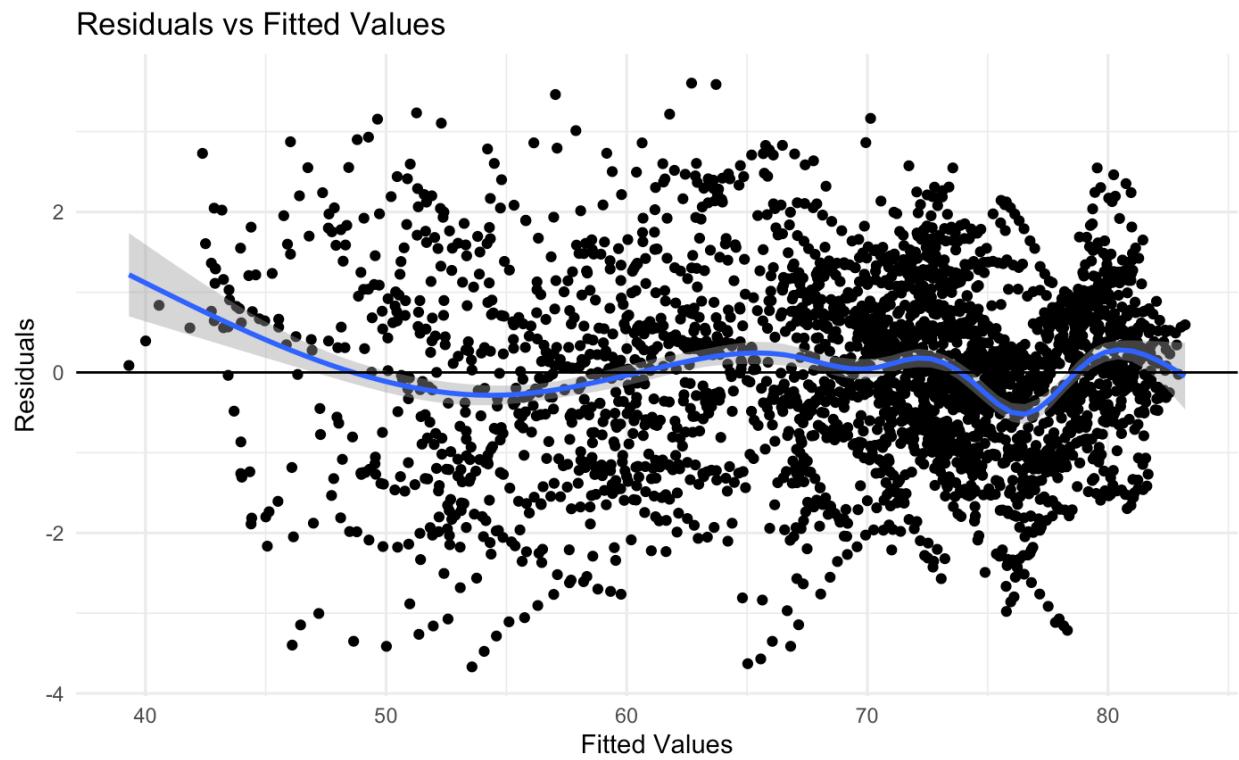


Figure 3.16 Result of Residuals vs Fitted Values – III

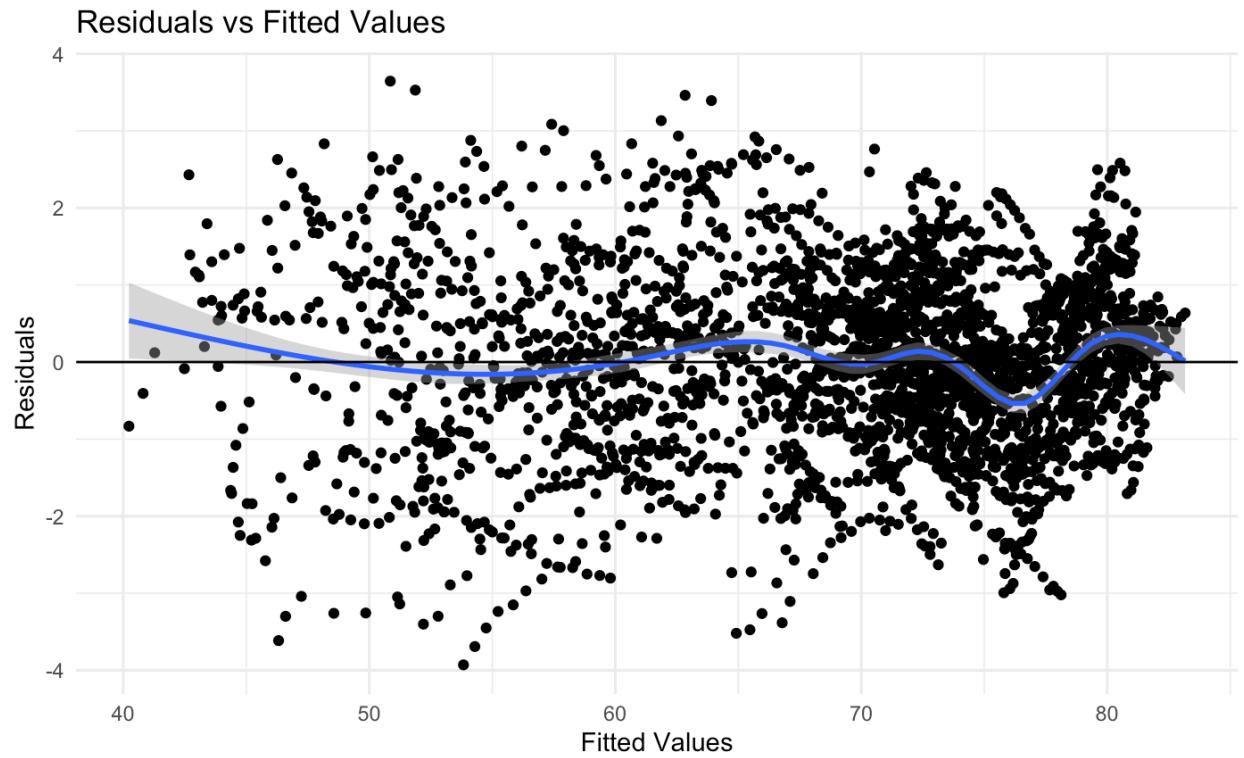
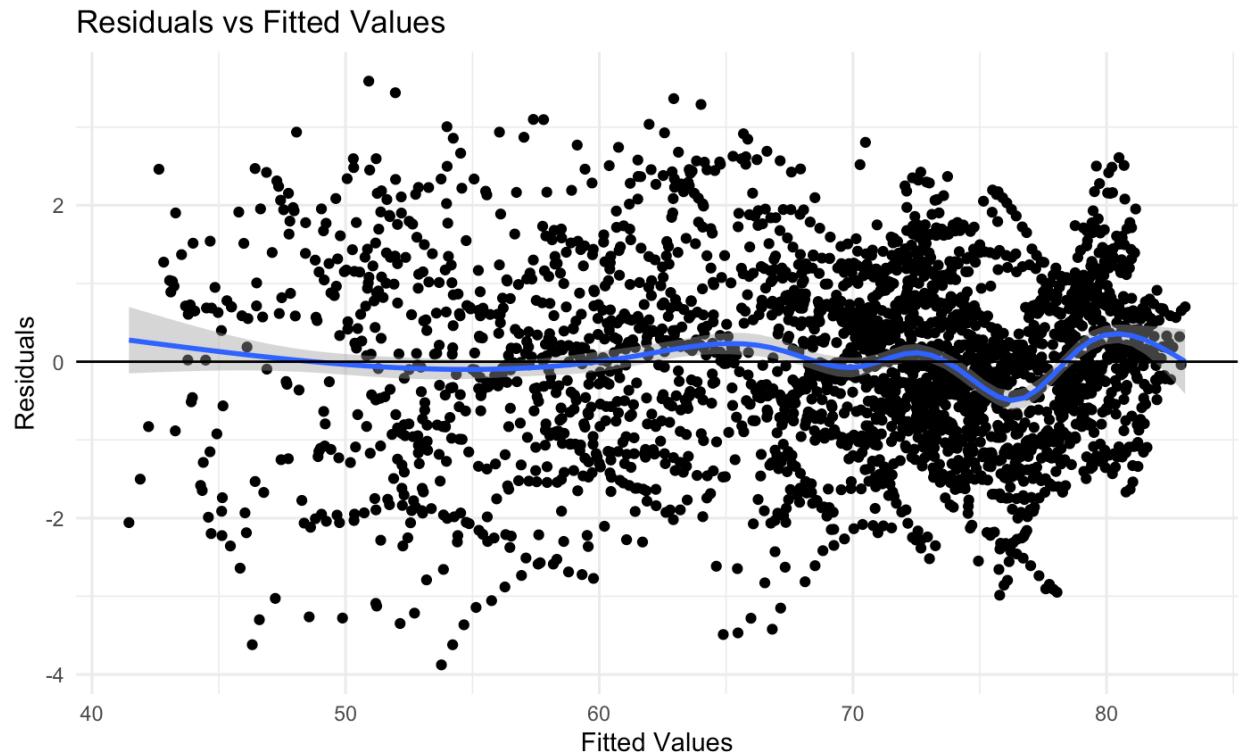


Figure 3.17 Result of Residuals vs Fitted Values – IV



*Figure 3.18 Result of Residuals vs Fitted Values – V*

### studentized Breusch-Pagan test

```
data: valid_model
BP = 530.63, df = 37, p-value < 0.0000000000000022
```

*Figure 3.19 Breusch – Pagan Test1*

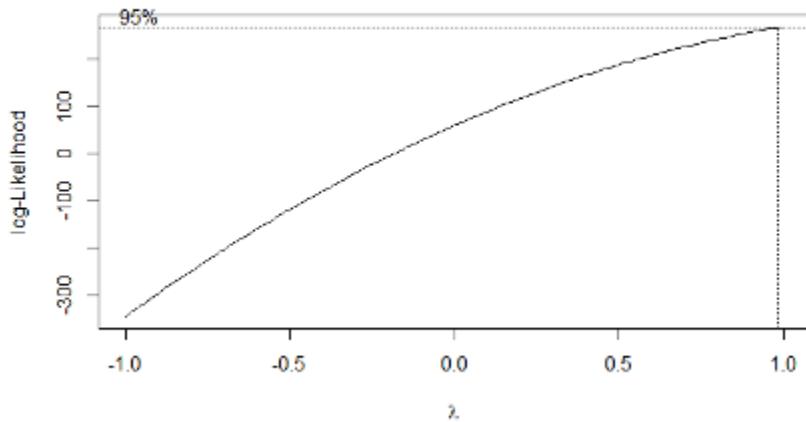


Figure 3.20 BoxCox Plot

studentized Breusch-Pagan test

```
data: model_transformed  
BP = 679.85, df = 37, p-value < 0.000000000000022
```

Figure 3.21 Breusch – Pagan Test2

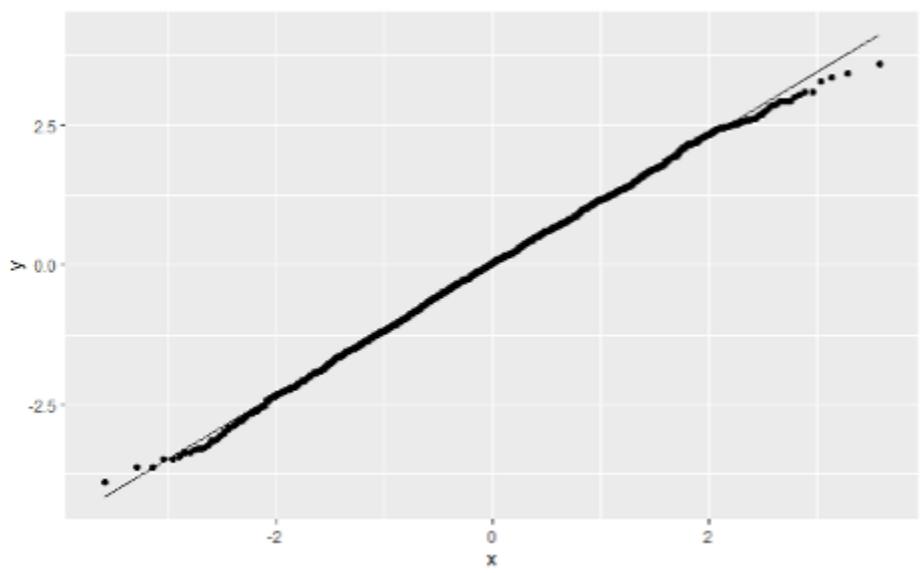


Figure 3.22 QQ Plot 2

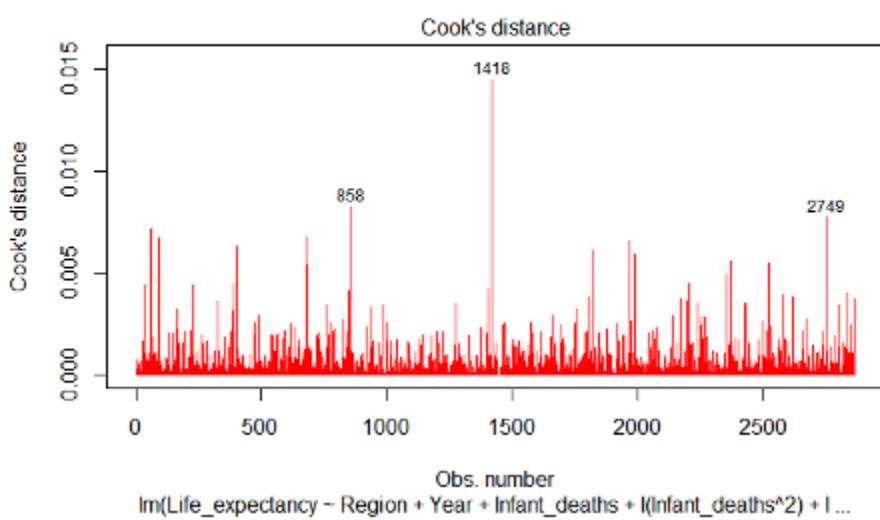


Figure 3.23 Cooks Distance Plot

## 6.2 Code

```
##  
## Attaching package: 'dplyr'
```

```

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union

##          Country             Region Year Infant_deaths
## 1        Turkiye      Middle East Y2015    11.1
## 2         Spain   European Union Y2015     2.7
## 3         India            Asia Y2007    51.5
## 4        Guyana  South America Y2006    32.8
## 5        Israel      Middle East Y2012     3.4
## 6 Costa Rica Central America and Caribbean Y2006    9.8
## 7 Russian Federation           Rest of Europe Y2015    6.6
## 8       Hungary   European Union Y2000    8.7
## 9       Jordan            Middle East Y2001   22.0
## 10      Moldova           Rest of Europe Y2008   15.3
##          Under_five_deaths Adult_mortality Alcohol_consumption Hepatitis_B Measles
## 1            13.0          105.8240            1.32        97       65
## 2            3.3           57.9025            10.35       97       94
## 3            67.9          201.0765            1.57        60       35
## 4            40.5          222.1965            5.68        93       74
## 5            4.3           57.9510            2.89        97       89
## 6            11.2          95.2200            4.19        88       86
## 7            8.2           223.0000            8.06        97       97
## 8            10.1          192.9690            12.23       88       99
## 9            26.1          129.7640            0.52        97       87
## 10           17.8          217.8570            7.72        97       92
##          BMI Polio Diphtheria Incidents_HIV GDP_per_capita Population_mln
## 1  27.8    97      97      0.08      11006      78.53
## 2  26.0    97      97      0.09     25742      46.44
## 3  21.2    67      64      0.13      1076     1183.21
## 4  25.3    92      93      0.79      4146       0.75
## 5  27.0    94      94      0.08     33995      7.91
## 6  26.4    89      89      0.16      9110      4.35
## 7  26.2    97      97      0.08     9313     144.10
## 8  25.9    99      99      0.08     8971      10.21
## 9  27.9    97      99      0.13     3708      5.22
## 10 26.5    96      90      0.43     2235      2.87
##          Thinness_ten_nineteen_years Thinness_five_nine_years Schooling
## 1                  4.9                 4.8      7.8
## 2                  0.6                 0.5      9.7
## 3                  27.1                28.0      5.0
## 4                  5.7                 5.5      7.9
## 5                  1.2                 1.1     12.8
## 6                  2.0                 1.9      7.9
## 7                  2.3                 2.3     12.0
## 8                  2.3                 2.3     10.2
## 9                  4.0                 3.9      9.6
## 10                 2.9                 3.1     10.9
##          Economy_status_Developed Economy_status_Developing Life_expectancy
## 1                   No                           1              76.5

```

```

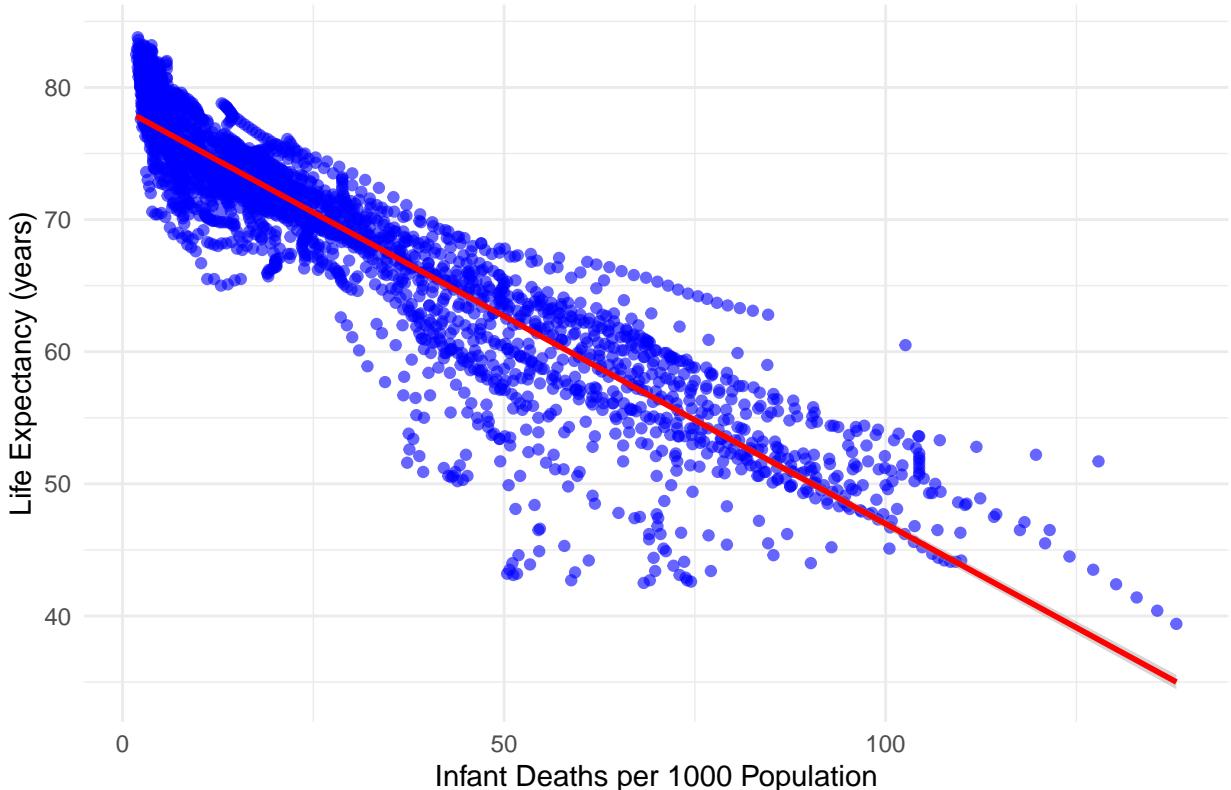
## 2 Yes 0 82.8
## 3 No 1 65.4
## 4 No 1 67.0
## 5 Yes 0 81.7
## 6 No 1 78.2
## 7 No 1 71.2
## 8 Yes 0 71.2
## 9 No 1 71.9
## 10 No 1 68.7

## Life_expectancy Infant_deaths Adult_mortality Economy_status_Developed
## Min. :39.40 Min. : 1.80 Min. :49.38 Length:2864
## 1st Qu.:62.70 1st Qu.: 8.10 1st Qu.:106.91 Class :character
## Median :71.40 Median :19.60 Median :163.84 Mode :character
## Mean :68.86 Mean :30.36 Mean :192.25
## 3rd Qu.:75.40 3rd Qu.:47.35 3rd Qu.:246.79
## Max. :83.80 Max. :138.10 Max. :719.36

## `geom_smooth()` using formula = 'y ~ x'

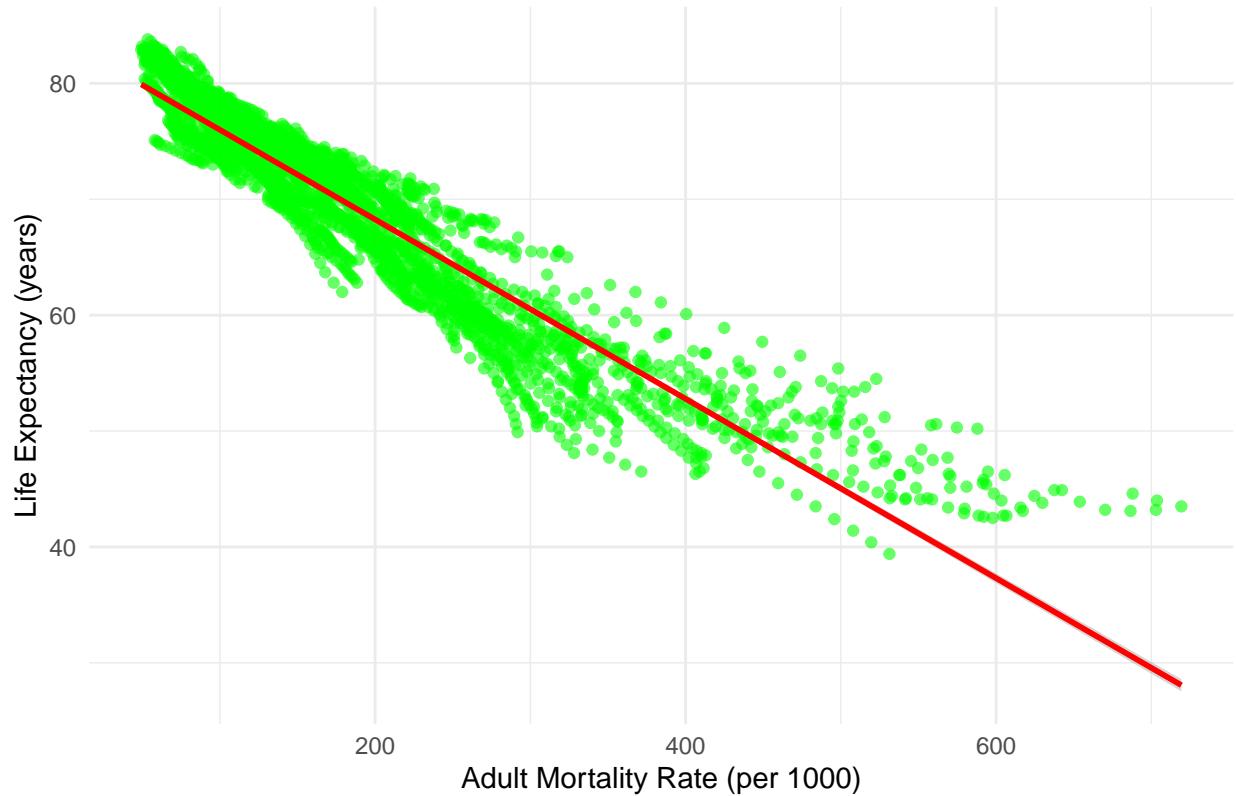
```

### Life Expectancy vs. Infant Deaths

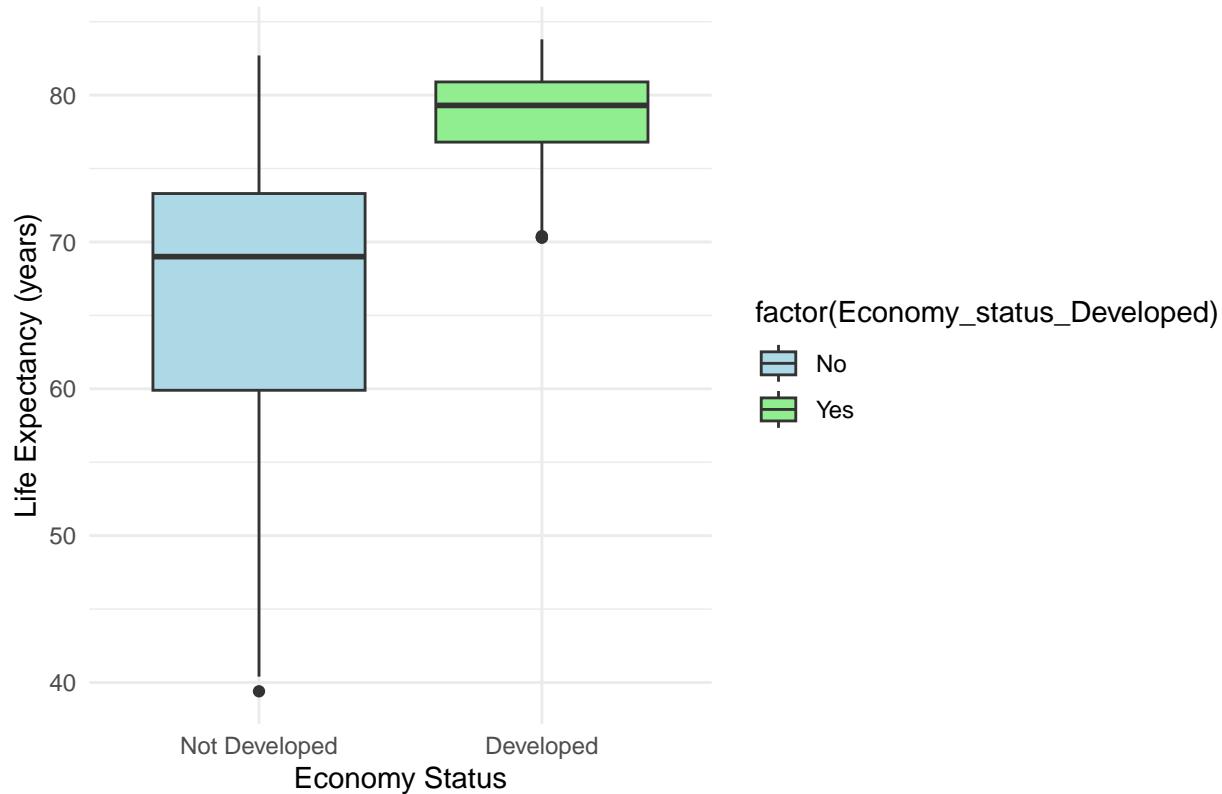


```
## `geom_smooth()` using formula = 'y ~ x'
```

## Life Expectancy vs. Adult Mortality



## Life Expectancy by Economy Status

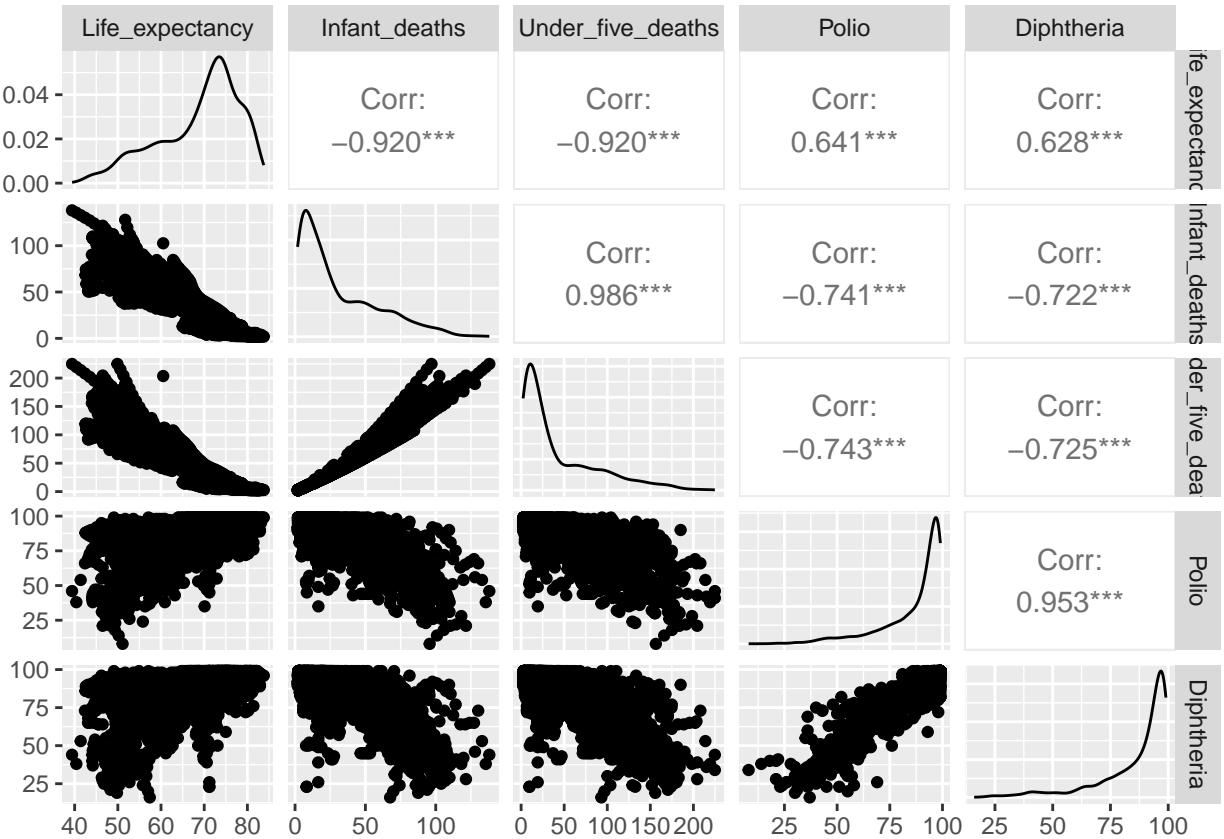


```
##
## Call:
## imcdiag(mod = model, method = "VIF")
##
## VIF Multicollinearity Diagnostics
##
##                                     VIF detection
## RegionAsia                      2.6230      0
## RegionCentral America and Caribbean 2.2181      0
## RegionEuropean Union                6.6204      0
## RegionMiddle East                  2.2448      0
## RegionNorth America                 1.5346      0
## RegionOceania                     1.9782      0
## RegionRest of Europe                2.4437      0
## RegionSouth America                 1.9035      0
## YearY2001                          1.8761      0
## YearY2002                          1.8801      0
## YearY2003                          1.8815      0
## YearY2004                          1.8852      0
## YearY2005                          1.8911      0
## YearY2006                          1.8967      0
## YearY2007                          1.9024      0
## YearY2008                          1.9066      0
## YearY2009                          1.9137      0
## YearY2010                          1.9186      0
```

```

## YearY2011          1.9262    0
## YearY2012          1.9340    0
## YearY2013          1.9437    0
## YearY2014          1.9519    0
## YearY2015          1.9588    0
## Infant_deaths      48.2026   1
## Under_five_deaths  50.0525   1
## Adult_mortality    8.1421    0
## Hepatitis_B         2.7445    0
## Alcohol_consumption 3.3884    0
## Measles             1.6634    0
## BMI                3.9027    0
## Polio               12.2016   1
## Diphtheria          13.2644   1
## Incidents_HIV       3.0411    0
## GDP_per_capita      2.6502    0
## Population_mln       1.2131    0
## Thinness_ten_nineteen_years 9.0115    0
## Thinness_five_nine_years    9.2297    0
## Schooling            5.5301    0
## Economy_status_DevelopedYes 7.2835    0
##
## Multicollinearity may be due to Infant_deaths Under_five_deaths Polio Diphtheria regressors
##
## 1 --> COLLINEARITY is detected by the test
## 0 --> COLLINEARITY is not detected by the test
##
## =====
## Registered S3 method overwritten by 'GGally':
##   method from
##     +.gg   ggplot2

```



```

##
## Call:
## imcdiag(mod = model, method = "VIF")
##
##
## VIF Multicollinearity Diagnostics
##
##                                     VIF detection
## RegionAsia                  2.4534      0
## RegionCentral America and Caribbean 2.1513      0
## RegionEuropean Union          6.5419      0
## RegionMiddle East             2.2283      0
## RegionNorth America           1.5147      0
## RegionOceania                 1.9019      0
## RegionRest of Europe          2.4140      0
## RegionSouth America            1.8480      0
## YearY2001                     1.8761      0
## YearY2002                     1.8794      0
## YearY2003                     1.8813      0
## YearY2004                     1.8851      0
## YearY2005                     1.8909      0
## YearY2006                     1.8967      0
## YearY2007                     1.9020      0
## YearY2008                     1.9064      0
## YearY2009                     1.9135      0
## YearY2010                     1.9185      0

```

```

## YearY2011          1.9251      0
## YearY2012          1.9334      0
## YearY2013          1.9430      0
## YearY2014          1.9510      0
## YearY2015          1.9580      0
## Infant_deaths      8.6365      0
## Adult_mortality    8.0123      0
## Hepatitis_B         2.3251      0
## Alcohol_consumption 3.3720      0
## Measles             1.6604      0
## BMI                 3.8322      0
## Polio               3.7884      0
## Incidents_HIV       3.0380      0
## GDP_per_capita      2.6070      0
## Population_mln       1.2126      0
## Thinness_ten_nineteen_years 8.9921      0
## Thinness_five_nine_years   9.2034      0
## Schooling            5.4809      0
## Economy_status_DevelopedYes 7.2274      0
##
## NOTE: VIF Method Failed to detect multicollinearity
##
##
## 0 --> COLLINEARITY is not detected by the test
##
## =====

## Analysis of Variance Table
##
## Model 1: Life_expectancy ~ 1
## Model 2: Life_expectancy ~ Region + Year + Infant_deaths + Adult_mortality +
##           Hepatitis_B + Alcohol_consumption + Measles + BMI + Polio +
##           Incidents_HIV + GDP_per_capita + Population_mln + Thinness_ten_nineteen_years +
##           Thinness_five_nine_years + Schooling + Economy_status_Developed
##   Res.Df   RSS Df Sum of Sq   F   Pr(>F)
## 1   2863 253277
## 2   2826  4336 37   248940 4384.9 < 2.2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

*FullF – Test(AnovaTest)*

```

##
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     Adult_mortality + Hepatitis_B + Alcohol_consumption + Measles +
##     BMI + Polio + Incidents_HIV + GDP_per_capita + Population_mln +
##     Thinness_ten_nineteen_years + Thinness_five_nine_years +
##     Schooling + Economy_status_Developed, data = data)
##
## Residuals:
##   Min     1Q   Median     3Q    Max

```

```

## -4.3028 -0.8304 -0.0081  0.8192  3.8779
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                8.210e+01  5.923e-01 138.612 < 2e-16 ***
## RegionAsia                 7.432e-01  1.013e-01   7.337 2.84e-13 ***
## RegionCentral America and Caribbean 2.209e+00  1.102e-01  20.047 < 2e-16 ***
## RegionEuropean Union       -4.085e-01  1.654e-01  -2.469 0.013591 *
## RegionMiddle East          4.179e-01  1.287e-01   3.248 0.001177 **
## RegionNorth America        8.398e-01  2.219e-01   3.785 0.000157 ***
## RegionOceania               -4.462e-01  1.329e-01  -3.357 0.000798 ***
## RegionRest of Europe       4.779e-01  1.298e-01   3.682 0.000236 ***
## RegionSouth America         2.030e+00  1.258e-01  16.136 < 2e-16 ***
## YearY2001                  7.653e-02  1.310e-01   0.584 0.559039
## YearY2002                  9.121e-02  1.311e-01   0.696 0.486608
## YearY2003                  1.344e-02  1.312e-01   0.102 0.918393
## YearY2004                  4.213e-02  1.313e-01   0.321 0.748326
## YearY2005                  1.204e-03  1.315e-01   0.009 0.992692
## YearY2006                  2.442e-02  1.317e-01   0.185 0.852928
## YearY2007                  5.754e-02  1.319e-01   0.436 0.662611
## YearY2008                  1.138e-01  1.320e-01   0.862 0.388895
## YearY2009                  1.737e-01  1.323e-01   1.313 0.189129
## YearY2010                  2.492e-01  1.324e-01   1.881 0.060043 .
## YearY2011                  2.983e-01  1.327e-01   2.248 0.024645 *
## YearY2012                  3.259e-01  1.330e-01   2.451 0.014305 *
## YearY2013                  4.432e-01  1.333e-01   3.325 0.000895 ***
## YearY2014                  5.417e-01  1.336e-01   4.056 5.13e-05 ***
## YearY2015                  5.639e-01  1.338e-01   4.214 2.59e-05 ***
## Infant_deaths              -1.261e-01  2.471e-03 -51.059 < 2e-16 ***
## Adult_mortality             -4.758e-02  5.703e-04 -83.440 < 2e-16 ***
## Hepatitis_B                 -1.162e-02  2.207e-03  -5.265 1.51e-07 ***
## Alcohol_consumption         -1.400e-02  1.068e-02  -1.311 0.189900
## Measles                      1.778e-03  1.599e-03   1.112 0.266042
## BMI                          -1.043e-01  2.066e-02  -5.047 4.77e-07 ***
## Polio                         1.045e-02  2.988e-03   3.499 0.000475 ***
## Incidents_HIV                9.640e-02  1.694e-02   5.689 1.41e-08 ***
## GDP_per_capita                1.632e-05  2.207e-06   7.393 1.88e-13 ***
## Population_mln                -2.653e-04  1.868e-04  -1.420 0.155654
## Thinness_ten_nineteen_years   -3.666e-02  1.564e-02  -2.344 0.019167 *
## Thinness_five_nine_years      3.384e-02  1.552e-02   2.180 0.029304 *
## Schooling                     1.232e-01  1.709e-02   7.208 7.27e-13 ***
## Economy_status_DevelopedYes  2.335e+00  1.537e-01  15.198 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.239 on 2826 degrees of freedom
## Multiple R-squared:  0.9829, Adjusted R-squared:  0.9827
## F-statistic:  4385 on 37 and 2826 DF,  p-value: < 2.2e-16

##
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     Adult_mortality + Hepatitis_B + BMI + Polio + Incidents_HIV +
##     GDP_per_capita + Thinness_ten_nineteen_years + Thinness_five_nine_years +

```

```

##      Schooling + Economy_status_Developed, data = data)
##
## Residuals:
##      Min     1Q   Median     3Q    Max
## -4.2893 -0.8378 -0.0017  0.8299  3.9110
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                8.207e+01  5.880e-01 139.571 < 2e-16 ***
## RegionAsia                 7.341e-01  9.935e-02   7.389 1.94e-13 ***
## RegionCentral America and Caribbean 2.177e+00  1.077e-01 20.221 < 2e-16 ***
## RegionEuropean Union        -4.559e-01  1.608e-01  -2.835 0.004612 **
## RegionMiddle East           4.552e-01  1.261e-01   3.610 0.000312 ***
## RegionNorth America          7.933e-01  2.200e-01   3.606 0.000317 ***
## RegionOceania                -4.529e-01  1.321e-01  -3.429 0.000614 ***
## RegionRest of Europe         4.508e-01  1.275e-01   3.535 0.000415 ***
## RegionSouth America          1.973e+00  1.225e-01 16.104 < 2e-16 ***
## YearY2001                    7.632e-02  1.310e-01   0.582 0.560288
## YearY2002                    9.150e-02  1.311e-01   0.698 0.485415
## YearY2003                    1.356e-02  1.312e-01   0.103 0.917697
## YearY2004                    4.222e-02  1.313e-01   0.321 0.747879
## YearY2005                    -8.614e-04 1.315e-01  -0.007 0.994774
## YearY2006                    2.313e-02  1.317e-01   0.176 0.860611
## YearY2007                    5.391e-02  1.319e-01   0.409 0.682784
## YearY2008                    1.098e-01  1.321e-01   0.831 0.405943
## YearY2009                    1.713e-01  1.323e-01   1.295 0.195336
## YearY2010                    2.462e-01  1.324e-01   1.859 0.063137 .
## YearY2011                    2.964e-01  1.327e-01   2.234 0.025551 *
## YearY2012                    3.230e-01  1.329e-01   2.430 0.015177 *
## YearY2013                    4.416e-01  1.333e-01   3.314 0.000931 ***
## YearY2014                    5.420e-01  1.335e-01   4.059 5.06e-05 ***
## YearY2015                    5.654e-01  1.338e-01   4.226 2.45e-05 ***
## Infant_deaths                -1.257e-01 2.461e-03 -51.080 < 2e-16 ***
## Adult_mortality              -4.771e-02 5.582e-04 -85.464 < 2e-16 ***
## Hepatitis_B                  -1.120e-02 2.187e-03 -5.123 3.22e-07 ***
## BMI                          -1.004e-01 2.060e-02 -4.876 1.14e-06 ***
## Polio                         1.108e-02 2.966e-03   3.736 0.000190 ***
## Incidents_HIV                9.647e-02 1.692e-02   5.700 1.32e-08 ***
## GDP_per_capita                1.625e-05 2.201e-06   7.382 2.04e-13 ***
## Thinness_ten_nineteen_years  -3.628e-02 1.554e-02  -2.334 0.019661 *
## Thinness_five_nine_years       3.035e-02 1.539e-02   1.972 0.048710 *
## Schooling                     1.188e-01 1.643e-02   7.229 6.24e-13 ***
## Economy_status_DevelopedYes  2.293e+00 1.515e-01 15.141 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.239 on 2829 degrees of freedom
## Multiple R-squared:  0.9828, Adjusted R-squared:  0.9826
## F-statistic:  4768 on 34 and 2829 DF,  p-value: < 2.2e-16

##
## Attaching package: 'olsrr'

## The following object is masked from 'package:datasets':

```

```

## rivers

## Call:
## lm(formula = paste(response, "~", paste(preds, collapse = " + ")),
##      data = 1)
## Residuals:
##    Min     1Q Median     3Q    Max 
## -4.2748 -0.8392 -0.0013  0.8338  3.9131 
## 
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)               8.197e+01  5.458e-01 150.175 < 2e-16 ***
## Adult_mortality          -4.768e-02  5.581e-04 -85.437 < 2e-16 *** 
## Infant_deaths            -1.258e-01  2.460e-03 -51.154 < 2e-16 *** 
## Economy_status_DevelopedYes 2.295e+00  1.511e-01 15.192 < 2e-16 *** 
## GDP_per_capita           1.617e-05  2.198e-06  7.356 2.46e-13 *** 
## RegionAsia                7.300e-01  9.571e-02  7.628 3.25e-14 *** 
## RegionCentral America and Caribbean 2.183e+00  1.077e-01 20.280 < 2e-16 *** 
## RegionEuropean Union       -4.495e-01  1.608e-01 -2.795 0.005225 ** 
## RegionMiddle East          4.435e-01  1.244e-01  3.565 0.000370 *** 
## RegionNorth America         7.960e-01  2.201e-01  3.616 0.000305 *** 
## RegionOceania              -4.388e-01  1.319e-01 -3.326 0.000892 *** 
## RegionRest of Europe        4.555e-01  1.276e-01  3.571 0.000362 *** 
## RegionSouth America         1.983e+00  1.218e-01 16.290 < 2e-16 *** 
## Schooling                  1.226e-01  1.616e-02  7.584 4.52e-14 *** 
## Incidents_HIV              9.585e-02  1.676e-02  5.719 1.18e-08 *** 
## BMI                         -9.818e-02  1.974e-02 -4.973 6.99e-07 *** 
## Hepatitis_B                 -1.133e-02  2.187e-03 -5.180 2.37e-07 *** 
## Polio                        1.107e-02  2.967e-03  3.732 0.000193 *** 
## YearY2001                   7.683e-02  1.311e-01  0.586 0.557896 
## YearY2002                   8.562e-02  1.312e-01  0.653 0.514060 
## YearY2003                   1.319e-02  1.313e-01  0.100 0.919967 
## YearY2004                   4.103e-02  1.314e-01  0.312 0.754868 
## YearY2005                   -3.394e-03  1.315e-01 -0.026 0.979420 
## YearY2006                   1.834e-02  1.317e-01  0.139 0.889276 
## YearY2007                   4.603e-02  1.319e-01  0.349 0.727149 
## YearY2008                   1.049e-01  1.321e-01  0.794 0.427017 
## YearY2009                   1.635e-01  1.323e-01  1.236 0.216389 
## YearY2010                   2.402e-01  1.324e-01  1.814 0.069821 . 
## YearY2011                   2.901e-01  1.327e-01  2.186 0.028899 * 
## YearY2012                   3.176e-01  1.329e-01  2.389 0.016975 * 
## YearY2013                   4.335e-01  1.332e-01  3.254 0.001151 ** 
## YearY2014                   5.398e-01  1.335e-01  4.043 5.41e-05 *** 
## YearY2015                   5.595e-01  1.337e-01  4.184 2.95e-05 *** 
## --- 
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1 
## 
## Residual standard error: 1.24 on 2831 degrees of freedom 
## Multiple R-squared:  0.9828, Adjusted R-squared:  0.9826 
## F-statistic:  5059 on 32 and 2831 DF,  p-value: < 2.2e-16

```

```

## 
## Call:
## lm(formula = Life_expectancy ~ (Region + Year + Infant_deaths +
##     Adult_mortality + Hepatitis_B + BMI + Polio + Incidents_HIV +
##     GDP_per_capita + Thinness_ten_nineteen_years + Thinness_five_nine_years +
##     Schooling + Economy_status_Developed)^2, data = data)
##
## Residuals:
##      Min        1Q    Median        3Q       Max
## -3.01068 -0.48196 -0.01241  0.45843  2.66540
##
## Coefficients: (4 not defined because of singularities)
##                                     Estimate
## (Intercept)                      1.018e+02
## RegionAsia                       5.743e+00
## RegionCentral America and Caribbean -4.756e+00
## RegionEuropean Union                2.840e+01
## RegionMiddle East                  -9.743e+00
## RegionNorth America                 -8.056e+00
## RegionOceania                      1.510e+00
## RegionRest of Europe                 2.196e+01
## RegionSouth America                  1.350e+01
## YearY2001                          -9.320e-01
## YearY2002                          -1.814e-01
## YearY2003                          2.070e+00
## YearY2004                          3.426e+00
## YearY2005                          2.946e+00
## YearY2006                          2.175e+00
## YearY2007                          2.860e+00
## YearY2008                          3.491e+00
## YearY2009                          5.049e+00
## YearY2010                          4.552e+00
## YearY2011                          3.994e+00
## YearY2012                          3.227e+00
## YearY2013                          3.926e+00
## YearY2014                          4.674e+00
## YearY2015                          3.737e+00
## Infant_deaths                     -6.111e-01
## Adult_mortality                   -3.096e-02
## Hepatitis_B                        -9.361e-02
## BMI                                -4.821e-01
## Polio                               -7.093e-02
## Incidents_HIV                      3.129e-01
## GDP_per_capita                     1.005e-04
## Thinness_ten_nineteen_years          1.357e+00
## Thinness_five_nine_years              -1.478e+00
## Schooling                           -1.356e+00
## Economy_status_DevelopedYes         -7.913e+00
## RegionAsia:YearY2001                 -1.707e-01
## RegionCentral America and Caribbean:YearY2001 -1.618e-02
## RegionEuropean Union:YearY2001        -8.529e-02
## RegionMiddle East:YearY2001           -9.587e-02
## RegionNorth America:YearY2001          4.796e-01
## RegionOceania:YearY2001                 -9.376e-02

```

## RegionRest of Europe:YearY2001	3.776e-02
## RegionSouth America:YearY2001	-9.538e-02
## RegionAsia:YearY2002	1.234e-01
## RegionCentral America and Caribbean:YearY2002	1.576e-01
## RegionEuropean Union:YearY2002	2.472e-01
## RegionMiddle East:YearY2002	2.152e-01
## RegionNorth America:YearY2002	1.447e+00
## RegionOceania:YearY2002	1.943e-01
## RegionRest of Europe:YearY2002	3.288e-01
## RegionSouth America:YearY2002	1.866e-01
## RegionAsia:YearY2003	3.812e-03
## RegionCentral America and Caribbean:YearY2003	1.614e-02
## RegionEuropean Union:YearY2003	-7.526e-02
## RegionMiddle East:YearY2003	1.764e-01
## RegionNorth America:YearY2003	1.901e+00
## RegionOceania:YearY2003	3.611e-01
## RegionRest of Europe:YearY2003	2.151e-01
## RegionSouth America:YearY2003	-3.103e-02
## RegionAsia:YearY2004	-1.958e-01
## RegionCentral America and Caribbean:YearY2004	-2.981e-01
## RegionEuropean Union:YearY2004	-3.260e-05
## RegionMiddle East:YearY2004	-7.009e-02
## RegionNorth America:YearY2004	2.475e+00
## RegionOceania:YearY2004	2.386e-01
## RegionRest of Europe:YearY2004	1.326e-02
## RegionSouth America:YearY2004	-1.293e-01
## RegionAsia:YearY2005	-3.950e-01
## RegionCentral America and Caribbean:YearY2005	-4.067e-01
## RegionEuropean Union:YearY2005	-1.536e-01
## RegionMiddle East:YearY2005	-1.413e-01
## RegionNorth America:YearY2005	3.066e+00
## RegionOceania:YearY2005	1.900e-01
## RegionRest of Europe:YearY2005	4.686e-02
## RegionSouth America:YearY2005	-1.193e-01
## RegionAsia:YearY2006	-4.496e-01
## RegionCentral America and Caribbean:YearY2006	-4.496e-01
## RegionEuropean Union:YearY2006	2.470e-02
## RegionMiddle East:YearY2006	-1.749e-01
## RegionNorth America:YearY2006	3.550e+00
## RegionOceania:YearY2006	3.027e-01
## RegionRest of Europe:YearY2006	1.660e-01
## RegionSouth America:YearY2006	5.928e-02
## RegionAsia:YearY2007	-4.762e-01
## RegionCentral America and Caribbean:YearY2007	-7.416e-01
## RegionEuropean Union:YearY2007	-6.383e-02
## RegionMiddle East:YearY2007	-3.616e-01
## RegionNorth America:YearY2007	3.944e+00
## RegionOceania:YearY2007	2.375e-01
## RegionRest of Europe:YearY2007	2.730e-01
## RegionSouth America:YearY2007	-1.431e-01
## RegionAsia:YearY2008	-2.417e-01
## RegionCentral America and Caribbean:YearY2008	-6.940e-01
## RegionEuropean Union:YearY2008	2.787e-01
## RegionMiddle East:YearY2008	-1.872e-01

## RegionNorth America:YearY2008	4.331e+00
## RegionOceania:YearY2008	3.988e-01
## RegionRest of Europe:YearY2008	5.090e-01
## RegionSouth America:YearY2008	1.297e-01
## RegionAsia:YearY2009	-1.032e-01
## RegionCentral America and Caribbean:YearY2009	-8.259e-01
## RegionEuropean Union:YearY2009	1.990e-01
## RegionMiddle East:YearY2009	-1.971e-01
## RegionNorth America:YearY2009	3.799e+00
## RegionOceania:YearY2009	4.327e-01
## RegionRest of Europe:YearY2009	4.103e-01
## RegionSouth America:YearY2009	1.510e-01
## RegionAsia:YearY2010	9.902e-02
## RegionCentral America and Caribbean:YearY2010	-5.728e-01
## RegionEuropean Union:YearY2010	6.885e-01
## RegionMiddle East:YearY2010	-8.730e-02
## RegionNorth America:YearY2010	4.657e+00
## RegionOceania:YearY2010	6.348e-01
## RegionRest of Europe:YearY2010	9.230e-01
## RegionSouth America:YearY2010	4.593e-01
## RegionAsia:YearY2011	6.138e-02
## RegionCentral America and Caribbean:YearY2011	-7.774e-01
## RegionEuropean Union:YearY2011	1.011e+00
## RegionMiddle East:YearY2011	-7.987e-02
## RegionNorth America:YearY2011	4.911e+00
## RegionOceania:YearY2011	7.375e-01
## RegionRest of Europe:YearY2011	1.142e+00
## RegionSouth America:YearY2011	5.195e-01
## RegionAsia:YearY2012	8.572e-02
## RegionCentral America and Caribbean:YearY2012	-9.097e-01
## RegionEuropean Union:YearY2012	9.558e-01
## RegionMiddle East:YearY2012	-2.749e-01
## RegionNorth America:YearY2012	5.374e+00
## RegionOceania:YearY2012	8.292e-01
## RegionRest of Europe:YearY2012	1.178e+00
## RegionSouth America:YearY2012	5.635e-01
## RegionAsia:YearY2013	2.317e-01
## RegionCentral America and Caribbean:YearY2013	-9.045e-01
## RegionEuropean Union:YearY2013	1.288e+00
## RegionMiddle East:YearY2013	7.432e-03
## RegionNorth America:YearY2013	5.831e+00
## RegionOceania:YearY2013	9.477e-01
## RegionRest of Europe:YearY2013	1.439e+00
## RegionSouth America:YearY2013	6.867e-01
## RegionAsia:YearY2014	3.692e-01
## RegionCentral America and Caribbean:YearY2014	-8.285e-01
## RegionEuropean Union:YearY2014	1.528e+00
## RegionMiddle East:YearY2014	1.035e-01
## RegionNorth America:YearY2014	6.132e+00
## RegionOceania:YearY2014	1.339e+00
## RegionRest of Europe:YearY2014	1.714e+00
## RegionSouth America:YearY2014	8.972e-01
## RegionAsia:YearY2015	2.690e-01
## RegionCentral America and Caribbean:YearY2015	-9.099e-01

## RegionEuropean Union:YearY2015	1.507e+00
## RegionMiddle East:YearY2015	1.082e-01
## RegionNorth America:YearY2015	6.617e+00
## RegionOceania:YearY2015	1.411e+00
## RegionRest of Europe:YearY2015	1.731e+00
## RegionSouth America:YearY2015	8.288e-01
## RegionAsia:Infant_deaths	-1.758e-02
## RegionCentral America and Caribbean:Infant_deaths	3.362e-02
## RegionEuropean Union:Infant_deaths	3.122e-01
## RegionMiddle East:Infant_deaths	-7.524e-02
## RegionNorth America:Infant_deaths	1.669e-01
## RegionOceania:Infant_deaths	-1.793e-02
## RegionRest of Europe:Infant_deaths	2.346e-02
## RegionSouth America:Infant_deaths	-3.688e-02
## RegionAsia:Adult_mortality	1.146e-02
## RegionCentral America and Caribbean:Adult_mortality	-1.759e-02
## RegionEuropean Union:Adult_mortality	-2.036e-02
## RegionMiddle East:Adult_mortality	3.373e-02
## RegionNorth America:Adult_mortality	8.493e-02
## RegionOceania:Adult_mortality	8.112e-03
## RegionRest of Europe:Adult_mortality	1.773e-02
## RegionSouth America:Adult_mortality	-1.671e-02
## RegionAsia:Hepatitis_B	3.501e-02
## RegionCentral America and Caribbean:Hepatitis_B	4.849e-02
## RegionEuropean Union:Hepatitis_B	-8.149e-03
## RegionMiddle East:Hepatitis_B	2.753e-02
## RegionNorth America:Hepatitis_B	3.194e-02
## RegionOceania:Hepatitis_B	4.934e-02
## RegionRest of Europe:Hepatitis_B	3.984e-02
## RegionSouth America:Hepatitis_B	5.062e-02
## RegionAsia:BM <sup>I</sup>	-2.514e-01
## RegionCentral America and Caribbean:BM <sup>I</sup>	5.471e-01
## RegionEuropean Union:BM <sup>I</sup>	-8.348e-01
## RegionMiddle East:BM <sup>I</sup>	3.872e-01
## RegionNorth America:BM <sup>I</sup>	-3.992e-01
## RegionOceania:BM <sup>I</sup>	1.998e-02
## RegionRest of Europe:BM <sup>I</sup>	-7.356e-01
## RegionSouth America:BM <sup>I</sup>	-2.153e-01
## RegionAsia:Polio	-3.767e-02
## RegionCentral America and Caribbean:Polio	-6.554e-02
## RegionEuropean Union:Polio	-3.904e-02
## RegionMiddle East:Polio	-4.186e-02
## RegionNorth America:Polio	3.184e-03
## RegionOceania:Polio	-3.910e-02
## RegionRest of Europe:Polio	-4.302e-02
## RegionSouth America:Polio	-3.355e-02
## RegionAsia:Incidents_HIV	-9.842e-01
## RegionCentral America and Caribbean:Incidents_HIV	-1.347e+00
## RegionEuropean Union:Incidents_HIV	-2.890e+00
## RegionMiddle East:Incidents_HIV	-2.046e+01
## RegionNorth America:Incidents_HIV	-4.320e+00
## RegionOceania:Incidents_HIV	-4.761e+00
## RegionRest of Europe:Incidents_HIV	-6.145e-01
## RegionSouth America:Incidents_HIV	-2.388e-01

## RegionAsia:GDP_per_capita	4.469e-05
## RegionCentral America and Caribbean:GDP_per_capita	6.647e-05
## RegionEuropean Union:GDP_per_capita	-1.054e-04
## RegionMiddle East:GDP_per_capita	5.548e-05
## RegionNorth America:GDP_per_capita	-5.262e-04
## RegionOceania:GDP_per_capita	-1.301e-04
## RegionRest of Europe:GDP_per_capita	-1.049e-04
## RegionSouth America:GDP_per_capita	-9.580e-06
## RegionAsia:Thinness_ten_nineteen_years	5.037e-02
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	-7.408e-01
## RegionEuropean Union:Thinness_ten_nineteen_years	-2.435e+00
## RegionMiddle East:Thinness_ten_nineteen_years	2.113e-02
## RegionNorth America:Thinness_ten_nineteen_years	3.193e+00
## RegionOceania:Thinness_ten_nineteen_years	1.716e-02
## RegionRest of Europe:Thinness_ten_nineteen_years	1.467e+00
## RegionSouth America:Thinness_ten_nineteen_years	3.534e+00
## RegionAsia:Thinness_five_nine_years	8.737e-02
## RegionCentral America and Caribbean:Thinness_five_nine_years	6.382e-01
## RegionEuropean Union:Thinness_five_nine_years	7.579e-01
## RegionMiddle East:Thinness_five_nine_years	1.885e-01
## RegionNorth America:Thinness_five_nine_years	3.718e+00
## RegionOceania:Thinness_five_nine_years	2.338e-01
## RegionRest of Europe:Thinness_five_nine_years	-2.505e+00
## RegionSouth America:Thinness_five_nine_years	-3.327e+00
## RegionAsia:Schooling	-3.148e-01
## RegionCentral America and Caribbean:Schooling	-5.111e-01
## RegionEuropean Union:Schooling	-2.993e-01
## RegionMiddle East:Schooling	-3.554e-01
## RegionNorth America:Schooling	-8.578e-01
## RegionOceania:Schooling	-8.876e-01
## RegionRest of Europe:Schooling	-5.037e-01
## RegionSouth America:Schooling	-7.925e-01
## RegionAsia:Economy_status_DevelopedYes	-3.566e+00
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	-2.905e+00
## RegionNorth America:Economy_status_DevelopedYes	2.903e+01
## RegionOceania:Economy_status_DevelopedYes	6.731e+00
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:Infant_deaths	-2.572e-03
## YearY2002:Infant_deaths	-4.516e-03
## YearY2003:Infant_deaths	-8.307e-03
## YearY2004:Infant_deaths	-1.230e-02
## YearY2005:Infant_deaths	-1.231e-02
## YearY2006:Infant_deaths	-7.589e-03
## YearY2007:Infant_deaths	-1.452e-02
## YearY2008:Infant_deaths	-1.105e-02
## YearY2009:Infant_deaths	-6.286e-03
## YearY2010:Infant_deaths	-2.043e-03
## YearY2011:Infant_deaths	6.922e-04
## YearY2012:Infant_deaths	-7.407e-05
## YearY2013:Infant_deaths	-2.667e-05
## YearY2014:Infant_deaths	5.471e-03

## YearY2015:Infant_deaths	6.988e-03
## YearY2001:Adult_mortality	8.872e-04
## YearY2002:Adult_mortality	2.062e-03
## YearY2003:Adult_mortality	7.774e-04
## YearY2004:Adult_mortality	-1.724e-04
## YearY2005:Adult_mortality	-1.834e-04
## YearY2006:Adult_mortality	-2.379e-04
## YearY2007:Adult_mortality	3.494e-04
## YearY2008:Adult_mortality	5.045e-05
## YearY2009:Adult_mortality	-1.819e-03
## YearY2010:Adult_mortality	-2.444e-03
## YearY2011:Adult_mortality	-2.012e-03
## YearY2012:Adult_mortality	-2.637e-03
## YearY2013:Adult_mortality	-1.898e-03
## YearY2014:Adult_mortality	-2.352e-03
## YearY2015:Adult_mortality	-1.468e-03
## YearY2001:Hepatitis_B	-1.594e-03
## YearY2002:Hepatitis_B	3.896e-03
## YearY2003:Hepatitis_B	1.468e-04
## YearY2004:Hepatitis_B	-1.987e-03
## YearY2005:Hepatitis_B	-1.864e-03
## YearY2006:Hepatitis_B	-4.606e-03
## YearY2007:Hepatitis_B	-1.541e-02
## YearY2008:Hepatitis_B	-1.427e-02
## YearY2009:Hepatitis_B	-1.422e-02
## YearY2010:Hepatitis_B	-5.875e-03
## YearY2011:Hepatitis_B	-7.362e-03
## YearY2012:Hepatitis_B	2.760e-03
## YearY2013:Hepatitis_B	-1.658e-02
## YearY2014:Hepatitis_B	-1.730e-02
## YearY2015:Hepatitis_B	2.523e-03
## YearY2001:BM $I$	4.177e-02
## YearY2002:BM $I$	3.853e-03
## YearY2003:BM $I$	-7.894e-02
## YearY2004:BM $I$	-1.020e-01
## YearY2005:BM $I$	-7.464e-02
## YearY2006:BM $I$	-7.868e-02
## YearY2007:BM $I$	-7.709e-02
## YearY2008:BM $I$	-1.102e-01
## YearY2009:BM $I$	-1.513e-01
## YearY2010:BM $I$	-1.229e-01
## YearY2011:BM $I$	-1.400e-01
## YearY2012:BM $I$	-1.201e-01
## YearY2013:BM $I$	-1.442e-01
## YearY2014:BM $I$	-1.965e-01
## YearY2015:BM $I$	-2.000e-01
## YearY2001:Polio	-1.178e-03
## YearY2002:Polio	-6.604e-03
## YearY2003:Polio	-2.926e-03
## YearY2004:Polio	-7.972e-03
## YearY2005:Polio	-1.126e-02
## YearY2006:Polio	-2.765e-03
## YearY2007:Polio	2.324e-03
## YearY2008:Polio	2.786e-03

## YearY2009:Polio	1.002e-03
## YearY2010:Polio	-1.165e-02
## YearY2011:Polio	1.065e-03
## YearY2012:Polio	-3.955e-03
## YearY2013:Polio	1.555e-02
## YearY2014:Polio	1.945e-02
## YearY2015:Polio	8.213e-03
## YearY2001:Incidents_HIV	-4.181e-02
## YearY2002:Incidents_HIV	-5.802e-02
## YearY2003:Incidents_HIV	-6.663e-02
## YearY2004:Incidents_HIV	-1.015e-01
## YearY2005:Incidents_HIV	-1.203e-01
## YearY2006:Incidents_HIV	-1.581e-01
## YearY2007:Incidents_HIV	-1.513e-01
## YearY2008:Incidents_HIV	-1.458e-01
## YearY2009:Incidents_HIV	-1.173e-01
## YearY2010:Incidents_HIV	-7.220e-02
## YearY2011:Incidents_HIV	-6.628e-02
## YearY2012:Incidents_HIV	-8.982e-03
## YearY2013:Incidents_HIV	5.453e-02
## YearY2014:Incidents_HIV	1.442e-01
## YearY2015:Incidents_HIV	1.375e-01
## YearY2001:GDP_per_capita	-3.851e-06
## YearY2002:GDP_per_capita	-2.275e-07
## YearY2003:GDP_per_capita	-8.665e-06
## YearY2004:GDP_per_capita	-5.480e-06
## YearY2005:GDP_per_capita	-6.026e-06
## YearY2006:GDP_per_capita	-3.958e-06
## YearY2007:GDP_per_capita	-6.062e-06
## YearY2008:GDP_per_capita	-3.382e-06
## YearY2009:GDP_per_capita	-2.918e-06
## YearY2010:GDP_per_capita	-1.845e-06
## YearY2011:GDP_per_capita	-1.605e-06
## YearY2012:GDP_per_capita	-3.848e-07
## YearY2013:GDP_per_capita	-2.327e-06
## YearY2014:GDP_per_capita	-1.668e-06
## YearY2015:GDP_per_capita	-1.678e-07
## YearY2001:Thinness_ten_nineteen_years	3.929e-02
## YearY2002:Thinness_ten_nineteen_years	4.869e-02
## YearY2003:Thinness_ten_nineteen_years	2.123e-01
## YearY2004:Thinness_ten_nineteen_years	2.199e-01
## YearY2005:Thinness_ten_nineteen_years	2.039e-01
## YearY2006:Thinness_ten_nineteen_years	2.265e-01
## YearY2007:Thinness_ten_nineteen_years	2.113e-01
## YearY2008:Thinness_ten_nineteen_years	1.835e-01
## YearY2009:Thinness_ten_nineteen_years	8.128e-02
## YearY2010:Thinness_ten_nineteen_years	1.675e-01
## YearY2011:Thinness_ten_nineteen_years	1.290e-01
## YearY2012:Thinness_ten_nineteen_years	2.545e-01
## YearY2013:Thinness_ten_nineteen_years	2.778e-01
## YearY2014:Thinness_ten_nineteen_years	2.850e-01
## YearY2015:Thinness_ten_nineteen_years	2.315e-01
## YearY2001:Thinness_five_nine_years	-1.243e-02
## YearY2002:Thinness_five_nine_years	-4.499e-02

## YearY2003:Thinness_five_nine_years	-2.100e-01
## YearY2004:Thinness_five_nine_years	-1.978e-01
## YearY2005:Thinness_five_nine_years	-1.857e-01
## YearY2006:Thinness_five_nine_years	-1.933e-01
## YearY2007:Thinness_five_nine_years	-1.808e-01
## YearY2008:Thinness_five_nine_years	-1.651e-01
## YearY2009:Thinness_five_nine_years	-9.590e-02
## YearY2010:Thinness_five_nine_years	-1.730e-01
## YearY2011:Thinness_five_nine_years	-1.383e-01
## YearY2012:Thinness_five_nine_years	-2.554e-01
## YearY2013:Thinness_five_nine_years	-3.004e-01
## YearY2014:Thinness_five_nine_years	-3.156e-01
## YearY2015:Thinness_five_nine_years	-2.604e-01
## YearY2001:Schooling	6.488e-03
## YearY2002:Schooling	-1.125e-02
## YearY2003:Schooling	2.989e-02
## YearY2004:Schooling	6.022e-02
## YearY2005:Schooling	7.059e-02
## YearY2006:Schooling	8.465e-02
## YearY2007:Schooling	7.948e-02
## YearY2008:Schooling	7.247e-02
## YearY2009:Schooling	7.441e-02
## YearY2010:Schooling	6.310e-02
## YearY2011:Schooling	4.386e-02
## YearY2012:Schooling	2.985e-02
## YearY2013:Schooling	5.183e-03
## YearY2014:Schooling	2.775e-02
## YearY2015:Schooling	4.554e-02
## YearY2001:Economy_status_DevelopedYes	3.153e-01
## YearY2002:Economy_status_DevelopedYes	2.808e-01
## YearY2003:Economy_status_DevelopedYes	3.850e-01
## YearY2004:Economy_status_DevelopedYes	2.365e-01
## YearY2005:Economy_status_DevelopedYes	3.632e-01
## YearY2006:Economy_status_DevelopedYes	4.376e-01
## YearY2007:Economy_status_DevelopedYes	3.915e-01
## YearY2008:Economy_status_DevelopedYes	2.454e-01
## YearY2009:Economy_status_DevelopedYes	2.768e-01
## YearY2010:Economy_status_DevelopedYes	2.199e-01
## YearY2011:Economy_status_DevelopedYes	3.161e-01
## YearY2012:Economy_status_DevelopedYes	2.626e-01
## YearY2013:Economy_status_DevelopedYes	2.529e-01
## YearY2014:Economy_status_DevelopedYes	2.422e-01
## YearY2015:Economy_status_DevelopedYes	4.201e-02
## Infant_deaths:Adult_mortality	2.905e-04
## Infant_deaths:Hepatitis_B	-3.665e-04
## Infant_deaths:BMI	1.962e-02
## Infant_deaths:Polio	-1.402e-04
## Infant_deaths:Incidents_HIV	7.246e-04
## Infant_deaths:GDP_per_capita	-1.647e-06
## Infant_deaths:Thinness_ten_nineteen_years	-2.912e-04
## Infant_deaths:Thinness_five_nine_years	1.497e-03
## Infant_deaths:Schooling	-1.395e-03
## Infant_deaths:Economy_status_DevelopedYes	-4.285e-01
## Adult_mortality:Hepatitis_B	2.184e-04

## Adult_mortality:BMI	-2.639e-03
## Adult_mortality:Polio	1.906e-04
## Adult_mortality:Incidents_HIV	6.815e-04
## Adult_mortality:GDP_per_capita	-6.155e-07
## Adult_mortality:Thinness_ten_nineteen_years	-5.892e-04
## Adult_mortality:Thinness_five_nine_years	2.508e-04
## Adult_mortality:Schooling	7.185e-04
## Adult_mortality:Economy_status_DevelopedYes	3.265e-02
## Hepatitis_B:BMI	1.709e-05
## Hepatitis_B:Polio	2.965e-04
## Hepatitis_B:Incidents_HIV	-4.707e-03
## Hepatitis_B:GDP_per_capita	2.144e-07
## Hepatitis_B:Thinness_ten_nineteen_years	-4.762e-04
## Hepatitis_B:Thinness_five_nine_years	2.547e-03
## Hepatitis_B:Schooling	-1.053e-03
## Hepatitis_B:Economy_status_DevelopedYes	4.921e-02
## BMI:Polio	1.722e-03
## BMI:Incidents_HIV	1.080e-02
## BMI:GDP_per_capita	-6.383e-06
## BMI:Thinness_ten_nineteen_years	-5.381e-02
## BMI:Thinness_five_nine_years	5.393e-02
## BMI:Schooling	6.405e-02
## BMI:Economy_status_DevelopedYes	2.987e-01
## Polio:Incidents_HIV	-1.100e-02
## Polio:GDP_per_capita	5.598e-07
## Polio:Thinness_ten_nineteen_years	-1.892e-03
## Polio:Thinness_five_nine_years	1.248e-03
## Polio:Schooling	2.105e-03
## Polio:Economy_status_DevelopedYes	-2.285e-02
## Incidents_HIV:GDP_per_capita	7.785e-05
## Incidents_HIV:Thinness_ten_nineteen_years	4.456e-02
## Incidents_HIV:Thinness_five_nine_years	-3.606e-02
## Incidents_HIV:Schooling	1.350e-02
## Incidents_HIV:Economy_status_DevelopedYes	7.173e+00
## GDP_per_capita:Thinness_ten_nineteen_years	-1.783e-05
## GDP_per_capita:Thinness_five_nine_years	1.389e-05
## GDP_per_capita:Schooling	3.001e-06
## GDP_per_capita:Economy_status_DevelopedYes	1.217e-04
## Thinness_ten_nineteen_years:Thinness_five_nine_years	-2.339e-03
## Thinness_ten_nineteen_years:Schooling	-7.727e-03
## Thinness_ten_nineteen_years:Economy_status_DevelopedYes	1.857e+00
## Thinness_five_nine_years:Schooling	6.775e-03
## Thinness_five_nine_years:Economy_status_DevelopedYes	-7.211e-01
## Schooling:Economy_status_DevelopedYes	-3.207e-01
##	Std. Error
## (Intercept)	7.058e+00
## RegionAsia	2.218e+00
## RegionCentral America and Caribbean	2.757e+00
## RegionEuropean Union	1.332e+01
## RegionMiddle East	4.247e+00
## RegionNorth America	6.304e+01
## RegionOceania	3.278e+00
## RegionRest of Europe	6.981e+00
## RegionSouth America	6.230e+00

## YearY2001	2.357e+00
## YearY2002	2.370e+00
## YearY2003	2.340e+00
## YearY2004	2.352e+00
## YearY2005	2.360e+00
## YearY2006	2.424e+00
## YearY2007	2.421e+00
## YearY2008	2.473e+00
## YearY2009	2.454e+00
## YearY2010	2.407e+00
## YearY2011	2.378e+00
## YearY2012	2.415e+00
## YearY2013	2.408e+00
## YearY2014	2.419e+00
## YearY2015	2.424e+00
## Infant_deaths	5.034e-02
## Adult_mortality	1.263e-02
## Hepatitis_B	5.891e-02
## BMI	2.912e-01
## Polio	6.707e-02
## Incidents_HIV	3.721e-01
## GDP_per_capita	1.182e-04
## Thinness_ten_nineteen_years	4.597e-01
## Thinness_five_nine_years	4.460e-01
## Schooling	4.152e-01
## Economy_status_DevelopedYes	1.362e+01
## RegionAsia:YearY2001	3.956e-01
## RegionCentral America and Caribbean:YearY2001	4.207e-01
## RegionEuropean Union:YearY2001	6.653e-01
## RegionMiddle East:YearY2001	4.856e-01
## RegionNorth America:YearY2001	1.009e+00
## RegionOceania:YearY2001	5.124e-01
## RegionRest of Europe:YearY2001	4.987e-01
## RegionSouth America:YearY2001	4.783e-01
## RegionAsia:YearY2002	4.006e-01
## RegionCentral America and Caribbean:YearY2002	4.233e-01
## RegionEuropean Union:YearY2002	6.847e-01
## RegionMiddle East:YearY2002	4.906e-01
## RegionNorth America:YearY2002	1.289e+00
## RegionOceania:YearY2002	5.223e-01
## RegionRest of Europe:YearY2002	5.048e-01
## RegionSouth America:YearY2002	4.853e-01
## RegionAsia:YearY2003	3.982e-01
## RegionCentral America and Caribbean:YearY2003	4.244e-01
## RegionEuropean Union:YearY2003	7.654e-01
## RegionMiddle East:YearY2003	4.941e-01
## RegionNorth America:YearY2003	1.630e+00
## RegionOceania:YearY2003	5.199e-01
## RegionRest of Europe:YearY2003	5.177e-01
## RegionSouth America:YearY2003	4.889e-01
## RegionAsia:YearY2004	4.007e-01
## RegionCentral America and Caribbean:YearY2004	4.258e-01
## RegionEuropean Union:YearY2004	8.479e-01
## RegionMiddle East:YearY2004	4.986e-01

## RegionNorth America:YearY2004	2.211e+00
## RegionOceania:YearY2004	5.279e-01
## RegionRest of Europe:YearY2004	5.259e-01
## RegionSouth America:YearY2004	4.980e-01
## RegionAsia:YearY2005	4.010e-01
## RegionCentral America and Caribbean:YearY2005	4.255e-01
## RegionEuropean Union:YearY2005	8.951e-01
## RegionMiddle East:YearY2005	4.995e-01
## RegionNorth America:YearY2005	2.564e+00
## RegionOceania:YearY2005	5.299e-01
## RegionRest of Europe:YearY2005	5.323e-01
## RegionSouth America:YearY2005	5.088e-01
## RegionAsia:YearY2006	4.045e-01
## RegionCentral America and Caribbean:YearY2006	4.303e-01
## RegionEuropean Union:YearY2006	9.567e-01
## RegionMiddle East:YearY2006	5.031e-01
## RegionNorth America:YearY2006	2.926e+00
## RegionOceania:YearY2006	5.335e-01
## RegionRest of Europe:YearY2006	5.483e-01
## RegionSouth America:YearY2006	5.078e-01
## RegionAsia:YearY2007	4.075e-01
## RegionCentral America and Caribbean:YearY2007	4.332e-01
## RegionEuropean Union:YearY2007	1.048e+00
## RegionMiddle East:YearY2007	5.073e-01
## RegionNorth America:YearY2007	3.474e+00
## RegionOceania:YearY2007	5.431e-01
## RegionRest of Europe:YearY2007	5.696e-01
## RegionSouth America:YearY2007	5.139e-01
## RegionAsia:YearY2008	4.139e-01
## RegionCentral America and Caribbean:YearY2008	4.351e-01
## RegionEuropean Union:YearY2008	1.159e+00
## RegionMiddle East:YearY2008	5.130e-01
## RegionNorth America:YearY2008	3.774e+00
## RegionOceania:YearY2008	5.462e-01
## RegionRest of Europe:YearY2008	5.815e-01
## RegionSouth America:YearY2008	5.196e-01
## RegionAsia:YearY2009	4.113e-01
## RegionCentral America and Caribbean:YearY2009	4.381e-01
## RegionEuropean Union:YearY2009	1.249e+00
## RegionMiddle East:YearY2009	5.152e-01
## RegionNorth America:YearY2009	3.927e+00
## RegionOceania:YearY2009	5.495e-01
## RegionRest of Europe:YearY2009	5.939e-01
## RegionSouth America:YearY2009	5.328e-01
## RegionAsia:YearY2010	4.147e-01
## RegionCentral America and Caribbean:YearY2010	4.442e-01
## RegionEuropean Union:YearY2010	1.343e+00
## RegionMiddle East:YearY2010	5.178e-01
## RegionNorth America:YearY2010	4.329e+00
## RegionOceania:YearY2010	5.536e-01
## RegionRest of Europe:YearY2010	6.118e-01
## RegionSouth America:YearY2010	5.336e-01
## RegionAsia:YearY2011	4.166e-01
## RegionCentral America and Caribbean:YearY2011	4.472e-01

## RegionEuropean Union:YearY2011	1.404e+00
## RegionMiddle East:YearY2011	5.300e-01
## RegionNorth America:YearY2011	4.819e+00
## RegionOceania:YearY2011	5.634e-01
## RegionRest of Europe:YearY2011	6.354e-01
## RegionSouth America:YearY2011	5.507e-01
## RegionAsia:YearY2012	4.210e-01
## RegionCentral America and Caribbean:YearY2012	4.474e-01
## RegionEuropean Union:YearY2012	1.515e+00
## RegionMiddle East:YearY2012	5.336e-01
## RegionNorth America:YearY2012	5.185e+00
## RegionOceania:YearY2012	5.705e-01
## RegionRest of Europe:YearY2012	6.495e-01
## RegionSouth America:YearY2012	5.579e-01
## RegionAsia:YearY2013	4.202e-01
## RegionCentral America and Caribbean:YearY2013	4.506e-01
## RegionEuropean Union:YearY2013	1.549e+00
## RegionMiddle East:YearY2013	5.407e-01
## RegionNorth America:YearY2013	5.409e+00
## RegionOceania:YearY2013	5.768e-01
## RegionRest of Europe:YearY2013	6.633e-01
## RegionSouth America:YearY2013	5.724e-01
## RegionAsia:YearY2014	4.267e-01
## RegionCentral America and Caribbean:YearY2014	4.591e-01
## RegionEuropean Union:YearY2014	1.620e+00
## RegionMiddle East:YearY2014	5.480e-01
## RegionNorth America:YearY2014	5.760e+00
## RegionOceania:YearY2014	5.993e-01
## RegionRest of Europe:YearY2014	6.907e-01
## RegionSouth America:YearY2014	5.800e-01
## RegionAsia:YearY2015	4.238e-01
## RegionCentral America and Caribbean:YearY2015	4.637e-01
## RegionEuropean Union:YearY2015	1.672e+00
## RegionMiddle East:YearY2015	5.520e-01
## RegionNorth America:YearY2015	5.982e+00
## RegionOceania:YearY2015	6.068e-01
## RegionRest of Europe:YearY2015	7.092e-01
## RegionSouth America:YearY2015	5.904e-01
## RegionAsia:Infant_deaths	9.300e-03
## RegionCentral America and Caribbean:Infant_deaths	1.416e-02
## RegionEuropean Union:Infant_deaths	5.111e-01
## RegionMiddle East:Infant_deaths	2.889e-02
## RegionNorth America:Infant_deaths	5.515e-01
## RegionOceania:Infant_deaths	1.841e-02
## RegionRest of Europe:Infant_deaths	2.051e-02
## RegionSouth America:Infant_deaths	3.139e-02
## RegionAsia:Adult_mortality	1.976e-03
## RegionCentral America and Caribbean:Adult_mortality	3.081e-03
## RegionEuropean Union:Adult_mortality	3.987e-02
## RegionMiddle East:Adult_mortality	7.198e-03
## RegionNorth America:Adult_mortality	1.604e-01
## RegionOceania:Adult_mortality	5.648e-03
## RegionRest of Europe:Adult_mortality	3.023e-03
## RegionSouth America:Adult_mortality	1.005e-02

## RegionAsia:Hepatitis_B	8.842e-03
## RegionCentral America and Caribbean:Hepatitis_B	1.263e-02
## RegionEuropean Union:Hepatitis_B	7.617e-02
## RegionMiddle East:Hepatitis_B	1.405e-02
## RegionNorth America:Hepatitis_B	7.161e-02
## RegionOceania:Hepatitis_B	1.511e-02
## RegionRest of Europe:Hepatitis_B	1.249e-02
## RegionSouth America:Hepatitis_B	1.305e-02
## RegionAsia:BMI	9.554e-02
## RegionCentral America and Caribbean: BMI	9.255e-02
## RegionEuropean Union: BMI	5.210e-01
## RegionMiddle East: BMI	1.375e-01
## RegionNorth America: BMI	2.662e+00
## RegionOceania: BMI	1.350e-01
## RegionRest of Europe: BMI	2.837e-01
## RegionSouth America: BMI	2.464e-01
## RegionAsia: Polio	1.036e-02
## RegionCentral America and Caribbean: Polio	1.358e-02
## RegionEuropean Union: Polio	4.801e-02
## RegionMiddle East: Polio	1.742e-02
## RegionNorth America: Polio	1.087e-01
## RegionOceania: Polio	1.570e-02
## RegionRest of Europe: Polio	1.743e-02
## RegionSouth America: Polio	1.603e-02
## RegionAsia: Incidents_HIV	4.558e-01
## RegionCentral America and Caribbean: Incidents_HIV	3.095e-01
## RegionEuropean Union: Incidents_HIV	8.362e+00
## RegionMiddle East: Incidents_HIV	2.778e+00
## RegionNorth America: Incidents_HIV	7.300e+01
## RegionOceania: Incidents_HIV	1.221e+00
## RegionRest of Europe: Incidents_HIV	8.575e-01
## RegionSouth America: Incidents_HIV	8.837e-01
## RegionAsia: GDP_per_capita	3.172e-05
## RegionCentral America and Caribbean: GDP_per_capita	3.124e-05
## RegionEuropean Union: GDP_per_capita	7.484e-05
## RegionMiddle East: GDP_per_capita	3.099e-05
## RegionNorth America: GDP_per_capita	3.122e-04
## RegionOceania: GDP_per_capita	7.174e-05
## RegionRest of Europe: GDP_per_capita	7.103e-05
## RegionSouth America: GDP_per_capita	4.143e-05
## RegionAsia: Thinnness_ten_nineteen_years	6.613e-02
## RegionCentral America and Caribbean: Thinnness_ten_nineteen_years	6.337e-01
## RegionEuropean Union: Thinnness_ten_nineteen_years	2.040e+00
## RegionMiddle East: Thinnness_ten_nineteen_years	7.881e-01
## RegionNorth America: Thinnness_ten_nineteen_years	5.703e+00
## RegionOceania: Thinnness_ten_nineteen_years	1.197e-01
## RegionRest of Europe: Thinnness_ten_nineteen_years	1.234e+00
## RegionSouth America: Thinnness_ten_nineteen_years	9.219e-01
## RegionAsia: Thinnness_five_nine_years	6.848e-02
## RegionCentral America and Caribbean: Thinnness_five_nine_years	6.082e-01
## RegionEuropean Union: Thinnness_five_nine_years	2.239e+00
## RegionMiddle East: Thinnness_five_nine_years	7.649e-01
## RegionNorth America: Thinnness_five_nine_years	6.340e+00
## RegionOceania: Thinnness_five_nine_years	1.381e-01

## RegionRest of Europe:Thinness_five_nine_years	1.258e+00
## RegionSouth America:Thinness_five_nine_years	9.508e-01
## RegionAsia:Schooling	6.925e-02
## RegionCentral America and Caribbean:Schooling	8.810e-02
## RegionEuropean Union:Schooling	3.913e-01
## RegionMiddle East:Schooling	1.135e-01
## RegionNorth America:Schooling	1.223e+00
## RegionOceania:Schooling	1.395e-01
## RegionRest of Europe:Schooling	1.088e-01
## RegionSouth America:Schooling	1.359e-01
## RegionAsia:Economy_status_DevelopedYes	2.760e+00
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	2.203e+00
## RegionNorth America:Economy_status_DevelopedYes	1.891e+01
## RegionOceania:Economy_status_DevelopedYes	2.143e+00
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:Infant_deaths	8.078e-03
## YearY2002:Infant_deaths	8.165e-03
## YearY2003:Infant_deaths	8.435e-03
## YearY2004:Infant_deaths	8.638e-03
## YearY2005:Infant_deaths	8.811e-03
## YearY2006:Infant_deaths	9.127e-03
## YearY2007:Infant_deaths	9.358e-03
## YearY2008:Infant_deaths	9.778e-03
## YearY2009:Infant_deaths	9.796e-03
## YearY2010:Infant_deaths	9.582e-03
## YearY2011:Infant_deaths	1.015e-02
## YearY2012:Infant_deaths	1.070e-02
## YearY2013:Infant_deaths	1.119e-02
## YearY2014:Infant_deaths	1.106e-02
## YearY2015:Infant_deaths	1.120e-02
## YearY2001:Adult_mortality	2.004e-03
## YearY2002:Adult_mortality	1.997e-03
## YearY2003:Adult_mortality	2.004e-03
## YearY2004:Adult_mortality	2.020e-03
## YearY2005:Adult_mortality	2.052e-03
## YearY2006:Adult_mortality	2.084e-03
## YearY2007:Adult_mortality	2.105e-03
## YearY2008:Adult_mortality	2.163e-03
## YearY2009:Adult_mortality	2.249e-03
## YearY2010:Adult_mortality	2.294e-03
## YearY2011:Adult_mortality	2.396e-03
## YearY2012:Adult_mortality	2.475e-03
## YearY2013:Adult_mortality	2.538e-03
## YearY2014:Adult_mortality	2.531e-03
## YearY2015:Adult_mortality	2.567e-03
## YearY2001:Hepatitis_B	6.274e-03
## YearY2002:Hepatitis_B	6.359e-03
## YearY2003:Hepatitis_B	6.890e-03
## YearY2004:Hepatitis_B	7.508e-03
## YearY2005:Hepatitis_B	7.270e-03
## YearY2006:Hepatitis_B	8.225e-03

## YearY2007:Hepatitis_B	9.327e-03
## YearY2008:Hepatitis_B	9.034e-03
## YearY2009:Hepatitis_B	9.771e-03
## YearY2010:Hepatitis_B	1.082e-02
## YearY2011:Hepatitis_B	1.023e-02
## YearY2012:Hepatitis_B	1.176e-02
## YearY2013:Hepatitis_B	1.126e-02
## YearY2014:Hepatitis_B	1.237e-02
## YearY2015:Hepatitis_B	1.243e-02
## YearY2001:BM1	8.723e-02
## YearY2002:BM1	8.838e-02
## YearY2003:BM1	8.629e-02
## YearY2004:BM1	8.679e-02
## YearY2005:BM1	8.673e-02
## YearY2006:BM1	8.722e-02
## YearY2007:BM1	8.768e-02
## YearY2008:BM1	8.765e-02
## YearY2009:BM1	8.756e-02
## YearY2010:BM1	8.739e-02
## YearY2011:BM1	8.786e-02
## YearY2012:BM1	8.786e-02
## YearY2013:BM1	8.774e-02
## YearY2014:BM1	8.863e-02
## YearY2015:BM1	8.846e-02
## YearY2001:Polio	9.511e-03
## YearY2002:Polio	9.538e-03
## YearY2003:Polio	9.888e-03
## YearY2004:Polio	9.958e-03
## YearY2005:Polio	1.051e-02
## YearY2006:Polio	1.080e-02
## YearY2007:Polio	1.279e-02
## YearY2008:Polio	1.311e-02
## YearY2009:Polio	1.276e-02
## YearY2010:Polio	1.388e-02
## YearY2011:Polio	1.308e-02
## YearY2012:Polio	1.510e-02
## YearY2013:Polio	1.346e-02
## YearY2014:Polio	1.445e-02
## YearY2015:Polio	1.541e-02
## YearY2001:Incidents_HIV	5.610e-02
## YearY2002:Incidents_HIV	5.887e-02
## YearY2003:Incidents_HIV	6.051e-02
## YearY2004:Incidents_HIV	5.955e-02
## YearY2005:Incidents_HIV	6.144e-02
## YearY2006:Incidents_HIV	6.306e-02
## YearY2007:Incidents_HIV	6.363e-02
## YearY2008:Incidents_HIV	6.452e-02
## YearY2009:Incidents_HIV	6.727e-02
## YearY2010:Incidents_HIV	6.869e-02
## YearY2011:Incidents_HIV	7.288e-02
## YearY2012:Incidents_HIV	7.347e-02
## YearY2013:Incidents_HIV	7.479e-02
## YearY2014:Incidents_HIV	7.637e-02
## YearY2015:Incidents_HIV	7.924e-02

## YearY2001:GDP_per_capita	8.846e-06
## YearY2002:GDP_per_capita	9.016e-06
## YearY2003:GDP_per_capita	9.131e-06
## YearY2004:GDP_per_capita	9.196e-06
## YearY2005:GDP_per_capita	9.497e-06
## YearY2006:GDP_per_capita	9.479e-06
## YearY2007:GDP_per_capita	9.598e-06
## YearY2008:GDP_per_capita	1.012e-05
## YearY2009:GDP_per_capita	1.042e-05
## YearY2010:GDP_per_capita	1.039e-05
## YearY2011:GDP_per_capita	1.061e-05
## YearY2012:GDP_per_capita	1.079e-05
## YearY2013:GDP_per_capita	1.110e-05
## YearY2014:GDP_per_capita	1.127e-05
## YearY2015:GDP_per_capita	1.154e-05
## YearY2001:Thinness_ten_nineteen_years	5.727e-02
## YearY2002:Thinness_ten_nineteen_years	5.568e-02
## YearY2003:Thinness_ten_nineteen_years	8.751e-02
## YearY2004:Thinness_ten_nineteen_years	9.756e-02
## YearY2005:Thinness_ten_nineteen_years	6.129e-02
## YearY2006:Thinness_ten_nineteen_years	6.292e-02
## YearY2007:Thinness_ten_nineteen_years	6.307e-02
## YearY2008:Thinness_ten_nineteen_years	6.811e-02
## YearY2009:Thinness_ten_nineteen_years	8.096e-02
## YearY2010:Thinness_ten_nineteen_years	8.806e-02
## YearY2011:Thinness_ten_nineteen_years	9.329e-02
## YearY2012:Thinness_ten_nineteen_years	7.621e-02
## YearY2013:Thinness_ten_nineteen_years	7.641e-02
## YearY2014:Thinness_ten_nineteen_years	7.954e-02
## YearY2015:Thinness_ten_nineteen_years	1.053e-01
## YearY2001:Thinness_five_nine_years	5.623e-02
## YearY2002:Thinness_five_nine_years	5.467e-02
## YearY2003:Thinness_five_nine_years	8.689e-02
## YearY2004:Thinness_five_nine_years	9.598e-02
## YearY2005:Thinness_five_nine_years	6.208e-02
## YearY2006:Thinness_five_nine_years	6.205e-02
## YearY2007:Thinness_five_nine_years	6.101e-02
## YearY2008:Thinness_five_nine_years	6.607e-02
## YearY2009:Thinness_five_nine_years	7.821e-02
## YearY2010:Thinness_five_nine_years	8.650e-02
## YearY2011:Thinness_five_nine_years	9.281e-02
## YearY2012:Thinness_five_nine_years	7.612e-02
## YearY2013:Thinness_five_nine_years	7.669e-02
## YearY2014:Thinness_five_nine_years	8.162e-02
## YearY2015:Thinness_five_nine_years	1.053e-01
## YearY2001:Schooling	6.112e-02
## YearY2002:Schooling	6.194e-02
## YearY2003:Schooling	6.272e-02
## YearY2004:Schooling	6.334e-02
## YearY2005:Schooling	6.442e-02
## YearY2006:Schooling	6.498e-02
## YearY2007:Schooling	6.593e-02
## YearY2008:Schooling	6.676e-02
## YearY2009:Schooling	6.682e-02

## YearY2010:Schooling	6.718e-02
## YearY2011:Schooling	6.753e-02
## YearY2012:Schooling	6.872e-02
## YearY2013:Schooling	6.877e-02
## YearY2014:Schooling	6.936e-02
## YearY2015:Schooling	6.863e-02
## YearY2001:Economy_status_DevelopedYes	6.272e-01
## YearY2002:Economy_status_DevelopedYes	6.502e-01
## YearY2003:Economy_status_DevelopedYes	7.413e-01
## YearY2004:Economy_status_DevelopedYes	8.251e-01
## YearY2005:Economy_status_DevelopedYes	8.819e-01
## YearY2006:Economy_status_DevelopedYes	9.416e-01
## YearY2007:Economy_status_DevelopedYes	1.042e+00
## YearY2008:Economy_status_DevelopedYes	1.160e+00
## YearY2009:Economy_status_DevelopedYes	1.253e+00
## YearY2010:Economy_status_DevelopedYes	1.350e+00
## YearY2011:Economy_status_DevelopedYes	1.416e+00
## YearY2012:Economy_status_DevelopedYes	1.528e+00
## YearY2013:Economy_status_DevelopedYes	1.564e+00
## YearY2014:Economy_status_DevelopedYes	1.632e+00
## YearY2015:Economy_status_DevelopedYes	1.685e+00
## Infant_deaths:Adult_mortality	2.710e-05
## Infant_deaths:Hepatitis_B	1.830e-04
## Infant_deaths:BMI	2.233e-03
## Infant_deaths:Polio	1.640e-04
## Infant_deaths:Incidents_HIV	1.460e-03
## Infant_deaths:GDP_per_capita	7.738e-07
## Infant_deaths:Thinness_ten_nineteen_years	1.247e-03
## Infant_deaths:Thinness_five_nine_years	1.257e-03
## Infant_deaths:Schooling	1.543e-03
## Infant_deaths:Economy_status_DevelopedYes	5.110e-01
## Adult_mortality:Hepatitis_B	5.186e-05
## Adult_mortality:BMI	5.192e-04
## Adult_mortality:Polio	5.932e-05
## Adult_mortality:Incidents_HIV	1.522e-04
## Adult_mortality:GDP_per_capita	1.340e-07
## Adult_mortality:Thinness_ten_nineteen_years	4.557e-04
## Adult_mortality:Thinness_five_nine_years	4.443e-04
## Adult_mortality:Schooling	3.558e-04
## Adult_mortality:Economy_status_DevelopedYes	3.996e-02
## Hepatitis_B:BMI	2.236e-03
## Hepatitis_B:Polio	1.309e-04
## Hepatitis_B:Incidents_HIV	1.952e-03
## Hepatitis_B:GDP_per_capita	3.969e-07
## Hepatitis_B:Thinness_ten_nineteen_years	1.203e-03
## Hepatitis_B:Thinness_five_nine_years	1.197e-03
## Hepatitis_B:Schooling	1.500e-03
## Hepatitis_B:Economy_status_DevelopedYes	7.684e-02
## BMI:Polio	2.598e-03
## BMI:Incidents_HIV	1.349e-02
## BMI:GDP_per_capita	3.638e-06
## BMI:Thinness_ten_nineteen_years	1.880e-02
## BMI:Thinness_five_nine_years	1.869e-02
## BMI:Schooling	1.456e-02

## BMI:Economy_status_DevelopedYes	5.324e-01
## Polio:Incidents_HIV	2.199e-03
## Polio:GDP_per_capita	5.673e-07
## Polio:Thinness_ten_nineteen_years	1.446e-03
## Polio:Thinness_five_nine_years	1.428e-03
## Polio:Schooling	1.952e-03
## Polio:Economy_status_DevelopedYes	4.967e-02
## Incidents_HIV:GDP_per_capita	9.806e-06
## Incidents_HIV:Thinness_ten_nineteen_years	1.324e-02
## Incidents_HIV:Thinness_five_nine_years	1.318e-02
## Incidents_HIV:Schooling	1.217e-02
## Incidents_HIV:Economy_status_DevelopedYes	8.278e+00
## GDP_per_capita:Thinness_ten_nineteen_years	1.576e-05
## GDP_per_capita:Thinness_five_nine_years	1.595e-05
## GDP_per_capita:Schooling	2.731e-06
## GDP_per_capita:Economy_status_DevelopedYes	6.812e-05
## Thinness_ten_nineteen_years:Thinness_five_nine_years	1.099e-03
## Thinness_ten_nineteen_years:Schooling	1.243e-02
## Thinness_ten_nineteen_years:Economy_status_DevelopedYes	2.043e+00
## Thinness_five_nine_years:Schooling	1.270e-02
## Thinness_five_nine_years:Economy_status_DevelopedYes	2.296e+00
## Schooling:Economy_status_DevelopedYes	3.983e-01
##	
## (Intercept)	14.420
## RegionAsia	2.590
## RegionCentral America and Caribbean	-1.725
## RegionEuropean Union	2.133
## RegionMiddle East	-2.294
## RegionNorth America	-0.128
## RegionOceania	0.461
## RegionRest of Europe	3.146
## RegionSouth America	2.167
## YearY2001	-0.395
## YearY2002	-0.077
## YearY2003	0.884
## YearY2004	1.457
## YearY2005	1.248
## YearY2006	0.897
## YearY2007	1.181
## YearY2008	1.411
## YearY2009	2.058
## YearY2010	1.892
## YearY2011	1.680
## YearY2012	1.336
## YearY2013	1.630
## YearY2014	1.933
## YearY2015	1.542
## Infant_deaths	-12.140
## Adult_mortality	-2.451
## Hepatitis_B	-1.589
## BMI	-1.656
## Polio	-1.058
## Incidents_HIV	0.841
## GDP_per_capita	0.850

## Thinness_ten_nineteen_years	2.952
## Thinness_five_nine_years	-3.315
## Schooling	-3.265
## Economy_status_DevelopedYes	-0.581
## RegionAsia:YearY2001	-0.432
## RegionCentral America and Caribbean:YearY2001	-0.038
## RegionEuropean Union:YearY2001	-0.128
## RegionMiddle East:YearY2001	-0.197
## RegionNorth America:YearY2001	0.476
## RegionOceania:YearY2001	-0.183
## RegionRest of Europe:YearY2001	0.076
## RegionSouth America:YearY2001	-0.199
## RegionAsia:YearY2002	0.308
## RegionCentral America and Caribbean:YearY2002	0.372
## RegionEuropean Union:YearY2002	0.361
## RegionMiddle East:YearY2002	0.439
## RegionNorth America:YearY2002	1.122
## RegionOceania:YearY2002	0.372
## RegionRest of Europe:YearY2002	0.651
## RegionSouth America:YearY2002	0.384
## RegionAsia:YearY2003	0.010
## RegionCentral America and Caribbean:YearY2003	0.038
## RegionEuropean Union:YearY2003	-0.098
## RegionMiddle East:YearY2003	0.357
## RegionNorth America:YearY2003	1.166
## RegionOceania:YearY2003	0.695
## RegionRest of Europe:YearY2003	0.415
## RegionSouth America:YearY2003	-0.063
## RegionAsia:YearY2004	-0.489
## RegionCentral America and Caribbean:YearY2004	-0.700
## RegionEuropean Union:YearY2004	0.000
## RegionMiddle East:YearY2004	-0.141
## RegionNorth America:YearY2004	1.120
## RegionOceania:YearY2004	0.452
## RegionRest of Europe:YearY2004	0.025
## RegionSouth America:YearY2004	-0.260
## RegionAsia:YearY2005	-0.985
## RegionCentral America and Caribbean:YearY2005	-0.956
## RegionEuropean Union:YearY2005	-0.172
## RegionMiddle East:YearY2005	-0.283
## RegionNorth America:YearY2005	1.196
## RegionOceania:YearY2005	0.359
## RegionRest of Europe:YearY2005	0.088
## RegionSouth America:YearY2005	-0.235
## RegionAsia:YearY2006	-1.111
## RegionCentral America and Caribbean:YearY2006	-1.045
## RegionEuropean Union:YearY2006	0.026
## RegionMiddle East:YearY2006	-0.348
## RegionNorth America:YearY2006	1.214
## RegionOceania:YearY2006	0.567
## RegionRest of Europe:YearY2006	0.303
## RegionSouth America:YearY2006	0.117
## RegionAsia:YearY2007	-1.169
## RegionCentral America and Caribbean:YearY2007	-1.712

## RegionEuropean Union:YearY2007	-0.061
## RegionMiddle East:YearY2007	-0.713
## RegionNorth America:YearY2007	1.135
## RegionOceania:YearY2007	0.437
## RegionRest of Europe:YearY2007	0.479
## RegionSouth America:YearY2007	-0.278
## RegionAsia:YearY2008	-0.584
## RegionCentral America and Caribbean:YearY2008	-1.595
## RegionEuropean Union:YearY2008	0.241
## RegionMiddle East:YearY2008	-0.365
## RegionNorth America:YearY2008	1.148
## RegionOceania:YearY2008	0.730
## RegionRest of Europe:YearY2008	0.875
## RegionSouth America:YearY2008	0.250
## RegionAsia:YearY2009	-0.251
## RegionCentral America and Caribbean:YearY2009	-1.885
## RegionEuropean Union:YearY2009	0.159
## RegionMiddle East:YearY2009	-0.382
## RegionNorth America:YearY2009	0.967
## RegionOceania:YearY2009	0.787
## RegionRest of Europe:YearY2009	0.691
## RegionSouth America:YearY2009	0.283
## RegionAsia:YearY2010	0.239
## RegionCentral America and Caribbean:YearY2010	-1.290
## RegionEuropean Union:YearY2010	0.513
## RegionMiddle East:YearY2010	-0.169
## RegionNorth America:YearY2010	1.076
## RegionOceania:YearY2010	1.147
## RegionRest of Europe:YearY2010	1.509
## RegionSouth America:YearY2010	0.861
## RegionAsia:YearY2011	0.147
## RegionCentral America and Caribbean:YearY2011	-1.738
## RegionEuropean Union:YearY2011	0.720
## RegionMiddle East:YearY2011	-0.151
## RegionNorth America:YearY2011	1.019
## RegionOceania:YearY2011	1.309
## RegionRest of Europe:YearY2011	1.797
## RegionSouth America:YearY2011	0.943
## RegionAsia:YearY2012	0.204
## RegionCentral America and Caribbean:YearY2012	-2.033
## RegionEuropean Union:YearY2012	0.631
## RegionMiddle East:YearY2012	-0.515
## RegionNorth America:YearY2012	1.036
## RegionOceania:YearY2012	1.454
## RegionRest of Europe:YearY2012	1.814
## RegionSouth America:YearY2012	1.010
## RegionAsia:YearY2013	0.551
## RegionCentral America and Caribbean:YearY2013	-2.008
## RegionEuropean Union:YearY2013	0.831
## RegionMiddle East:YearY2013	0.014
## RegionNorth America:YearY2013	1.078
## RegionOceania:YearY2013	1.643
## RegionRest of Europe:YearY2013	2.170
## RegionSouth America:YearY2013	1.200

## RegionAsia:YearY2014	0.865
## RegionCentral America and Caribbean:YearY2014	-1.804
## RegionEuropean Union:YearY2014	0.943
## RegionMiddle East:YearY2014	0.189
## RegionNorth America:YearY2014	1.065
## RegionOceania:YearY2014	2.235
## RegionRest of Europe:YearY2014	2.482
## RegionSouth America:YearY2014	1.547
## RegionAsia:YearY2015	0.635
## RegionCentral America and Caribbean:YearY2015	-1.962
## RegionEuropean Union:YearY2015	0.901
## RegionMiddle East:YearY2015	0.196
## RegionNorth America:YearY2015	1.106
## RegionOceania:YearY2015	2.324
## RegionRest of Europe:YearY2015	2.440
## RegionSouth America:YearY2015	1.404
## RegionAsia:Infant_deaths	-1.891
## RegionCentral America and Caribbean:Infant_deaths	2.375
## RegionEuropean Union:Infant_deaths	0.611
## RegionMiddle East:Infant_deaths	-2.605
## RegionNorth America:Infant_deaths	0.303
## RegionOceania:Infant_deaths	-0.974
## RegionRest of Europe:Infant_deaths	1.144
## RegionSouth America:Infant_deaths	-1.175
## RegionAsia:Adult_mortality	5.800
## RegionCentral America and Caribbean:Adult_mortality	-5.710
## RegionEuropean Union:Adult_mortality	-0.511
## RegionMiddle East:Adult_mortality	4.687
## RegionNorth America:Adult_mortality	0.530
## RegionOceania:Adult_mortality	1.436
## RegionRest of Europe:Adult_mortality	5.866
## RegionSouth America:Adult_mortality	-1.663
## RegionAsia:Hepatitis_B	3.960
## RegionCentral America and Caribbean:Hepatitis_B	3.840
## RegionEuropean Union:Hepatitis_B	-0.107
## RegionMiddle East:Hepatitis_B	1.959
## RegionNorth America:Hepatitis_B	0.446
## RegionOceania:Hepatitis_B	3.266
## RegionRest of Europe:Hepatitis_B	3.189
## RegionSouth America:Hepatitis_B	3.878
## RegionAsia:BMI	-2.631
## RegionCentral America and Caribbean:BMI	5.911
## RegionEuropean Union:BMI	-1.602
## RegionMiddle East:BMI	2.815
## RegionNorth America:BMI	-0.150
## RegionOceania:BMI	0.148
## RegionRest of Europe:BMI	-2.593
## RegionSouth America:BMI	-0.874
## RegionAsia:Polio	-3.636
## RegionCentral America and Caribbean:Polio	-4.825
## RegionEuropean Union:Polio	-0.813
## RegionMiddle East:Polio	-2.403
## RegionNorth America:Polio	0.029
## RegionOceania:Polio	-2.491

## RegionRest of Europe:Polio	-2.469
## RegionSouth America:Polio	-2.093
## RegionAsia:Incidents_HIV	-2.159
## RegionCentral America and Caribbean:Incidents_HIV	-4.353
## RegionEuropean Union:Incidents_HIV	-0.346
## RegionMiddle East:Incidents_HIV	-7.365
## RegionNorth America:Incidents_HIV	-0.059
## RegionOceania:Incidents_HIV	-3.900
## RegionRest of Europe:Incidents_HIV	-0.717
## RegionSouth America:Incidents_HIV	-0.270
## RegionAsia:GDP_per_capita	1.409
## RegionCentral America and Caribbean:GDP_per_capita	2.127
## RegionEuropean Union:GDP_per_capita	-1.409
## RegionMiddle East:GDP_per_capita	1.790
## RegionNorth America:GDP_per_capita	-1.685
## RegionOceania:GDP_per_capita	-1.813
## RegionRest of Europe:GDP_per_capita	-1.477
## RegionSouth America:GDP_per_capita	-0.231
## RegionAsia:Thinness_ten_nineteen_years	0.762
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	-1.169
## RegionEuropean Union:Thinness_ten_nineteen_years	-1.194
## RegionMiddle East:Thinness_ten_nineteen_years	0.027
## RegionNorth America:Thinness_ten_nineteen_years	0.560
## RegionOceania:Thinness_ten_nineteen_years	0.143
## RegionRest of Europe:Thinness_ten_nineteen_years	1.188
## RegionSouth America:Thinness_ten_nineteen_years	3.833
## RegionAsia:Thinness_five_nine_years	1.276
## RegionCentral America and Caribbean:Thinness_five_nine_years	1.049
## RegionEuropean Union:Thinness_five_nine_years	0.338
## RegionMiddle East:Thinness_five_nine_years	0.246
## RegionNorth America:Thinness_five_nine_years	0.586
## RegionOceania:Thinness_five_nine_years	1.693
## RegionRest of Europe:Thinness_five_nine_years	-1.991
## RegionSouth America:Thinness_five_nine_years	-3.500
## RegionAsia:Schooling	-4.547
## RegionCentral America and Caribbean:Schooling	-5.801
## RegionEuropean Union:Schooling	-0.765
## RegionMiddle East:Schooling	-3.131
## RegionNorth America:Schooling	-0.701
## RegionOceania:Schooling	-6.361
## RegionRest of Europe:Schooling	-4.632
## RegionSouth America:Schooling	-5.830
## RegionAsia:Economy_status_DevelopedYes	-1.292
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	-1.319
## RegionNorth America:Economy_status_DevelopedYes	1.535
## RegionOceania:Economy_status_DevelopedYes	3.141
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:Infant_deaths	-0.318
## YearY2002:Infant_deaths	-0.553
## YearY2003:Infant_deaths	-0.985
## YearY2004:Infant_deaths	-1.424

## YearY2005:Infant_deaths	-1.397
## YearY2006:Infant_deaths	-0.831
## YearY2007:Infant_deaths	-1.552
## YearY2008:Infant_deaths	-1.130
## YearY2009:Infant_deaths	-0.642
## YearY2010:Infant_deaths	-0.213
## YearY2011:Infant_deaths	0.068
## YearY2012:Infant_deaths	-0.007
## YearY2013:Infant_deaths	-0.002
## YearY2014:Infant_deaths	0.495
## YearY2015:Infant_deaths	0.624
## YearY2001:Adult_mortality	0.443
## YearY2002:Adult_mortality	1.033
## YearY2003:Adult_mortality	0.388
## YearY2004:Adult_mortality	-0.085
## YearY2005:Adult_mortality	-0.089
## YearY2006:Adult_mortality	-0.114
## YearY2007:Adult_mortality	0.166
## YearY2008:Adult_mortality	0.023
## YearY2009:Adult_mortality	-0.809
## YearY2010:Adult_mortality	-1.065
## YearY2011:Adult_mortality	-0.839
## YearY2012:Adult_mortality	-1.066
## YearY2013:Adult_mortality	-0.748
## YearY2014:Adult_mortality	-0.930
## YearY2015:Adult_mortality	-0.572
## YearY2001:Hepatitis_B	-0.254
## YearY2002:Hepatitis_B	0.613
## YearY2003:Hepatitis_B	0.021
## YearY2004:Hepatitis_B	-0.265
## YearY2005:Hepatitis_B	-0.256
## YearY2006:Hepatitis_B	-0.560
## YearY2007:Hepatitis_B	-1.652
## YearY2008:Hepatitis_B	-1.580
## YearY2009:Hepatitis_B	-1.456
## YearY2010:Hepatitis_B	-0.543
## YearY2011:Hepatitis_B	-0.720
## YearY2012:Hepatitis_B	0.235
## YearY2013:Hepatitis_B	-1.473
## YearY2014:Hepatitis_B	-1.398
## YearY2015:Hepatitis_B	0.203
## YearY2001:BMI	0.479
## YearY2002:BMI	0.044
## YearY2003:BMI	-0.915
## YearY2004:BMI	-1.175
## YearY2005:BMI	-0.861
## YearY2006:BMI	-0.902
## YearY2007:BMI	-0.879
## YearY2008:BMI	-1.257
## YearY2009:BMI	-1.728
## YearY2010:BMI	-1.406
## YearY2011:BMI	-1.594
## YearY2012:BMI	-1.366
## YearY2013:BMI	-1.643

## YearY2014:BMI	-2.217
## YearY2015:BMI	-2.261
## YearY2001:Polio	-0.124
## YearY2002:Polio	-0.692
## YearY2003:Polio	-0.296
## YearY2004:Polio	-0.801
## YearY2005:Polio	-1.072
## YearY2006:Polio	-0.256
## YearY2007:Polio	0.182
## YearY2008:Polio	0.213
## YearY2009:Polio	0.079
## YearY2010:Polio	-0.839
## YearY2011:Polio	0.081
## YearY2012:Polio	-0.262
## YearY2013:Polio	1.156
## YearY2014:Polio	1.346
## YearY2015:Polio	0.533
## YearY2001:Incidents_HIV	-0.745
## YearY2002:Incidents_HIV	-0.986
## YearY2003:Incidents_HIV	-1.101
## YearY2004:Incidents_HIV	-1.704
## YearY2005:Incidents_HIV	-1.957
## YearY2006:Incidents_HIV	-2.507
## YearY2007:Incidents_HIV	-2.378
## YearY2008:Incidents_HIV	-2.259
## YearY2009:Incidents_HIV	-1.744
## YearY2010:Incidents_HIV	-1.051
## YearY2011:Incidents_HIV	-0.909
## YearY2012:Incidents_HIV	-0.122
## YearY2013:Incidents_HIV	0.729
## YearY2014:Incidents_HIV	1.888
## YearY2015:Incidents_HIV	1.736
## YearY2001:GDP_per_capita	-0.435
## YearY2002:GDP_per_capita	-0.025
## YearY2003:GDP_per_capita	-0.949
## YearY2004:GDP_per_capita	-0.596
## YearY2005:GDP_per_capita	-0.635
## YearY2006:GDP_per_capita	-0.418
## YearY2007:GDP_per_capita	-0.632
## YearY2008:GDP_per_capita	-0.334
## YearY2009:GDP_per_capita	-0.280
## YearY2010:GDP_per_capita	-0.178
## YearY2011:GDP_per_capita	-0.151
## YearY2012:GDP_per_capita	-0.036
## YearY2013:GDP_per_capita	-0.210
## YearY2014:GDP_per_capita	-0.148
## YearY2015:GDP_per_capita	-0.015
## YearY2001:Thinness_ten_nineteen_years	0.686
## YearY2002:Thinness_ten_nineteen_years	0.875
## YearY2003:Thinness_ten_nineteen_years	2.427
## YearY2004:Thinness_ten_nineteen_years	2.254
## YearY2005:Thinness_ten_nineteen_years	3.327
## YearY2006:Thinness_ten_nineteen_years	3.600
## YearY2007:Thinness_ten_nineteen_years	3.351

## YearY2008:Thinness_ten_nineteen_years	2.694
## YearY2009:Thinness_ten_nineteen_years	1.004
## YearY2010:Thinness_ten_nineteen_years	1.902
## YearY2011:Thinness_ten_nineteen_years	1.383
## YearY2012:Thinness_ten_nineteen_years	3.339
## YearY2013:Thinness_ten_nineteen_years	3.636
## YearY2014:Thinness_ten_nineteen_years	3.584
## YearY2015:Thinness_ten_nineteen_years	2.199
## YearY2001:Thinness_five_nine_years	-0.221
## YearY2002:Thinness_five_nine_years	-0.823
## YearY2003:Thinness_five_nine_years	-2.417
## YearY2004:Thinness_five_nine_years	-2.060
## YearY2005:Thinness_five_nine_years	-2.992
## YearY2006:Thinness_five_nine_years	-3.116
## YearY2007:Thinness_five_nine_years	-2.963
## YearY2008:Thinness_five_nine_years	-2.499
## YearY2009:Thinness_five_nine_years	-1.226
## YearY2010:Thinness_five_nine_years	-1.999
## YearY2011:Thinness_five_nine_years	-1.490
## YearY2012:Thinness_five_nine_years	-3.355
## YearY2013:Thinness_five_nine_years	-3.918
## YearY2014:Thinness_five_nine_years	-3.867
## YearY2015:Thinness_five_nine_years	-2.474
## YearY2001:Schooling	0.106
## YearY2002:Schooling	-0.182
## YearY2003:Schooling	0.477
## YearY2004:Schooling	0.951
## YearY2005:Schooling	1.096
## YearY2006:Schooling	1.303
## YearY2007:Schooling	1.206
## YearY2008:Schooling	1.086
## YearY2009:Schooling	1.114
## YearY2010:Schooling	0.939
## YearY2011:Schooling	0.650
## YearY2012:Schooling	0.434
## YearY2013:Schooling	0.075
## YearY2014:Schooling	0.400
## YearY2015:Schooling	0.664
## YearY2001:Economy_status_DevelopedYes	0.503
## YearY2002:Economy_status_DevelopedYes	0.432
## YearY2003:Economy_status_DevelopedYes	0.519
## YearY2004:Economy_status_DevelopedYes	0.287
## YearY2005:Economy_status_DevelopedYes	0.412
## YearY2006:Economy_status_DevelopedYes	0.465
## YearY2007:Economy_status_DevelopedYes	0.376
## YearY2008:Economy_status_DevelopedYes	0.211
## YearY2009:Economy_status_DevelopedYes	0.221
## YearY2010:Economy_status_DevelopedYes	0.163
## YearY2011:Economy_status_DevelopedYes	0.223
## YearY2012:Economy_status_DevelopedYes	0.172
## YearY2013:Economy_status_DevelopedYes	0.162
## YearY2014:Economy_status_DevelopedYes	0.148
## YearY2015:Economy_status_DevelopedYes	0.025
## Infant_deaths:Adult_mortality	10.718

## Infant_deaths:Hepatitis_B	-2.003
## Infant_deaths:BMI	8.786
## Infant_deaths:Polio	-0.855
## Infant_deaths:Incidents_HIV	0.496
## Infant_deaths:GDP_per_capita	-2.129
## Infant_deaths:Thinness_ten_nineteen_years	-0.234
## Infant_deaths:Thinness_five_nine_years	1.191
## Infant_deaths:Schooling	-0.904
## Infant_deaths:Economy_status_DevelopedYes	-0.838
## Adult_mortality:Hepatitis_B	4.211
## Adult_mortality:BMI	-5.082
## Adult_mortality:Polio	3.214
## Adult_mortality:Incidents_HIV	4.477
## Adult_mortality:GDP_per_capita	-4.594
## Adult_mortality:Thinness_ten_nineteen_years	-1.293
## Adult_mortality:Thinness_five_nine_years	0.564
## Adult_mortality:Schooling	2.020
## Adult_mortality:Economy_status_DevelopedYes	0.817
## Hepatitis_B:BMI	0.008
## Hepatitis_B:Polio	2.266
## Hepatitis_B:Incidents_HIV	-2.411
## Hepatitis_B:GDP_per_capita	0.540
## Hepatitis_B:Thinness_ten_nineteen_years	-0.396
## Hepatitis_B:Thinness_five_nine_years	2.128
## Hepatitis_B:Schooling	-0.702
## Hepatitis_B:Economy_status_DevelopedYes	0.640
## BMI:Polio	0.663
## BMI:Incidents_HIV	0.800
## BMI:GDP_per_capita	-1.755
## BMI:Thinness_ten_nineteen_years	-2.862
## BMI:Thinness_five_nine_years	2.886
## BMI:Schooling	4.400
## BMI:Economy_status_DevelopedYes	0.561
## Polio:Incidents_HIV	-5.002
## Polio:GDP_per_capita	0.987
## Polio:Thinness_ten_nineteen_years	-1.308
## Polio:Thinness_five_nine_years	0.874
## Polio:Schooling	1.078
## Polio:Economy_status_DevelopedYes	-0.460
## Incidents_HIV:GDP_per_capita	7.939
## Incidents_HIV:Thinness_ten_nineteen_years	3.367
## Incidents_HIV:Thinness_five_nine_years	-2.736
## Incidents_HIV:Schooling	1.109
## Incidents_HIV:Economy_status_DevelopedYes	0.866
## GDP_per_capita:Thinness_ten_nineteen_years	-1.131
## GDP_per_capita:Thinness_five_nine_years	0.871
## GDP_per_capita:Schooling	1.099
## GDP_per_capita:Economy_status_DevelopedYes	1.786
## Thinness_ten_nineteen_years:Thinness_five_nine_years	-2.129
## Thinness_ten_nineteen_years:Schooling	-0.622
## Thinness_ten_nineteen_years:Economy_status_DevelopedYes	0.909
## Thinness_five_nine_years:Schooling	0.534
## Thinness_five_nine_years:Economy_status_DevelopedYes	-0.314
## Schooling:Economy_status_DevelopedYes	-0.805

	Pr(> t )
##	< 2e-16 ***
## (Intercept)	0.009661 **
## RegionAsia	0.084668 .
## RegionCentral America and Caribbean	0.033045 *
## RegionEuropean Union	0.021881 *
## RegionMiddle East	0.898328
## RegionNorth America	0.644980
## RegionOceania	0.001673 **
## RegionRest of Europe	0.030336 *
## RegionSouth America	0.692576
## YearY2001	0.939001
## YearY2002	0.376624
## YearY2003	0.145318
## YearY2004	0.212044
## YearY2005	0.369595
## YearY2006	0.237578
## YearY2007	0.158254
## YearY2008	0.039724 *
## YearY2009	0.058672 .
## YearY2010	0.093179 .
## YearY2011	0.181553
## YearY2012	0.103187
## YearY2013	0.053407 .
## YearY2014	0.123311
## YearY2015	< 2e-16 ***
## Infant_deaths	0.014306 *
## Adult_mortality	0.112173
## Hepatitis_B	0.097906 .
## BMI	0.290325
## Polio	0.400414
## Incidents_HIV	0.395469
## GDP_per_capita	0.003192 **
## Thinness_ten_nineteen_years	0.000931 ***
## Thinness_five_nine_years	0.001109 **
## Schooling	0.561145
## Economy_status_DevelopedYes	0.666108
## RegionAsia:YearY2001	0.969318
## RegionCentral America and Caribbean:YearY2001	0.898006
## RegionEuropean Union:YearY2001	0.843499
## RegionMiddle East:YearY2001	0.634455
## RegionNorth America:YearY2001	0.854829
## RegionOceania:YearY2001	0.939640
## RegionRest of Europe:YearY2001	0.841955
## RegionSouth America:YearY2001	0.758138
## RegionAsia:YearY2002	0.709696
## RegionCentral America and Caribbean:YearY2002	0.718069
## RegionEuropean Union:YearY2002	0.660912
## RegionMiddle East:YearY2002	0.261970
## RegionNorth America:YearY2002	0.709916
## RegionOceania:YearY2002	0.514923
## RegionRest of Europe:YearY2002	0.700713
## RegionSouth America:YearY2002	0.992362
## RegionAsia:YearY2003	0.969672
## RegionCentral America and Caribbean:YearY2003	

## RegionEuropean Union:YearY2003	0.921682
## RegionMiddle East:YearY2003	0.721165
## RegionNorth America:YearY2003	0.243615
## RegionOceania:YearY2003	0.487382
## RegionRest of Europe:YearY2003	0.677872
## RegionSouth America:YearY2003	0.949410
## RegionAsia:YearY2004	0.625203
## RegionCentral America and Caribbean:YearY2004	0.483953
## RegionEuropean Union:YearY2004	0.999969
## RegionMiddle East:YearY2004	0.888210
## RegionNorth America:YearY2004	0.263009
## RegionOceania:YearY2004	0.651394
## RegionRest of Europe:YearY2004	0.979893
## RegionSouth America:YearY2004	0.795162
## RegionAsia:YearY2005	0.324653
## RegionCentral America and Caribbean:YearY2005	0.339248
## RegionEuropean Union:YearY2005	0.863736
## RegionMiddle East:YearY2005	0.777371
## RegionNorth America:YearY2005	0.231902
## RegionOceania:YearY2005	0.719939
## RegionRest of Europe:YearY2005	0.929853
## RegionSouth America:YearY2005	0.814554
## RegionAsia:YearY2006	0.266518
## RegionCentral America and Caribbean:YearY2006	0.296249
## RegionEuropean Union:YearY2006	0.979404
## RegionMiddle East:YearY2006	0.728171
## RegionNorth America:YearY2006	0.225042
## RegionOceania:YearY2006	0.570480
## RegionRest of Europe:YearY2006	0.762131
## RegionSouth America:YearY2006	0.907066
## RegionAsia:YearY2007	0.242677
## RegionCentral America and Caribbean:YearY2007	0.087028 .
## RegionEuropean Union:YearY2007	0.951449
## RegionMiddle East:YearY2007	0.476098
## RegionNorth America:YearY2007	0.256372
## RegionOceania:YearY2007	0.661957
## RegionRest of Europe:YearY2007	0.631729
## RegionSouth America:YearY2007	0.780744
## RegionAsia:YearY2008	0.559245
## RegionCentral America and Caribbean:YearY2008	0.110798
## RegionEuropean Union:YearY2008	0.809963
## RegionMiddle East:YearY2008	0.715268
## RegionNorth America:YearY2008	0.251270
## RegionOceania:YearY2008	0.465407
## RegionRest of Europe:YearY2008	0.381432
## RegionSouth America:YearY2008	0.802986
## RegionAsia:YearY2009	0.801943
## RegionCentral America and Caribbean:YearY2009	0.059551 .
## RegionEuropean Union:YearY2009	0.873398
## RegionMiddle East:YearY2009	0.702156
## RegionNorth America:YearY2009	0.333437
## RegionOceania:YearY2009	0.431097
## RegionRest of Europe:YearY2009	0.489730
## RegionSouth America:YearY2009	0.776848

## RegionAsia:YearY2010	0.811276
## RegionCentral America and Caribbean:YearY2010	0.197325
## RegionEuropean Union:YearY2010	0.608108
## RegionMiddle East:YearY2010	0.866119
## RegionNorth America:YearY2010	0.282138
## RegionOceania:YearY2010	0.251618
## RegionRest of Europe:YearY2010	0.131469
## RegionSouth America:YearY2010	0.389531
## RegionAsia:YearY2011	0.882881
## RegionCentral America and Caribbean:YearY2011	0.082270 .
## RegionEuropean Union:YearY2011	0.471777
## RegionMiddle East:YearY2011	0.880220
## RegionNorth America:YearY2011	0.308289
## RegionOceania:YearY2011	0.190706
## RegionRest of Europe:YearY2011	0.072432 .
## RegionSouth America:YearY2011	0.345636
## RegionAsia:YearY2012	0.838681
## RegionCentral America and Caribbean:YearY2012	0.042131 *
## RegionEuropean Union:YearY2012	0.528220
## RegionMiddle East:YearY2012	0.606449
## RegionNorth America:YearY2012	0.300090
## RegionOceania:YearY2012	0.146177
## RegionRest of Europe:YearY2012	0.069824 .
## RegionSouth America:YearY2012	0.312589
## RegionAsia:YearY2013	0.581457
## RegionCentral America and Caribbean:YearY2013	0.044804 *
## RegionEuropean Union:YearY2013	0.405799
## RegionMiddle East:YearY2013	0.989035
## RegionNorth America:YearY2013	0.281081
## RegionOceania:YearY2013	0.100499
## RegionRest of Europe:YearY2013	0.030131 *
## RegionSouth America:YearY2013	0.230356
## RegionAsia:YearY2014	0.386955
## RegionCentral America and Caribbean:YearY2014	0.071281 .
## RegionEuropean Union:YearY2014	0.345714
## RegionMiddle East:YearY2014	0.850248
## RegionNorth America:YearY2014	0.287151
## RegionOceania:YearY2014	0.025531 *
## RegionRest of Europe:YearY2014	0.013139 *
## RegionSouth America:YearY2014	0.122024
## RegionAsia:YearY2015	0.525762
## RegionCentral America and Caribbean:YearY2015	0.049837 *
## RegionEuropean Union:YearY2015	0.367607
## RegionMiddle East:YearY2015	0.844577
## RegionNorth America:YearY2015	0.268766
## RegionOceania:YearY2015	0.020184 *
## RegionRest of Europe:YearY2015	0.014742 *
## RegionSouth America:YearY2015	0.160488
## RegionAsia:Infant_deaths	0.058799 .
## RegionCentral America and Caribbean:Infant_deaths	0.017650 *
## RegionEuropean Union:Infant_deaths	0.541320
## RegionMiddle East:Infant_deaths	0.009255 **
## RegionNorth America:Infant_deaths	0.762209
## RegionOceania:Infant_deaths	0.330259

## RegionRest of Europe:Infant_deaths	0.252944
## RegionSouth America:Infant_deaths	0.240075
## RegionAsia:Adult_mortality	7.48e-09 ***
## RegionCentral America and Caribbean:Adult_mortality	1.27e-08 ***
## RegionEuropean Union:Adult_mortality	0.609579
## RegionMiddle East:Adult_mortality	2.93e-06 ***
## RegionNorth America:Adult_mortality	0.596438
## RegionOceania:Adult_mortality	0.151042
## RegionRest of Europe:Adult_mortality	5.09e-09 ***
## RegionSouth America:Adult_mortality	0.096389 .
## RegionAsia:Hepatitis_B	7.72e-05 ***
## RegionCentral America and Caribbean:Hepatitis_B	0.000126 ***
## RegionEuropean Union:Hepatitis_B	0.914810
## RegionMiddle East:Hepatitis_B	0.050234 .
## RegionNorth America:Hepatitis_B	0.655609
## RegionOceania:Hepatitis_B	0.001105 **
## RegionRest of Europe:Hepatitis_B	0.001447 **
## RegionSouth America:Hepatitis_B	0.000108 ***
## RegionAsia:BMI	0.008561 **
## RegionCentral America and Caribbean:BMI	3.87e-09 ***
## RegionEuropean Union:BMI	0.109226
## RegionMiddle East:BMI	0.004916 **
## RegionNorth America:BMI	0.880807
## RegionOceania:BMI	0.882390
## RegionRest of Europe:BMI	0.009573 **
## RegionSouth America:BMI	0.382321
## RegionAsia:Polio	0.000283 ***
## RegionCentral America and Caribbean:Polio	1.49e-06 ***
## RegionEuropean Union:Polio	0.416246
## RegionMiddle East:Polio	0.016341 *
## RegionNorth America:Polio	0.976640
## RegionOceania:Polio	0.012801 *
## RegionRest of Europe:Polio	0.013620 *
## RegionSouth America:Polio	0.036498 *
## RegionAsia:Incidents_HIV	0.030949 *
## RegionCentral America and Caribbean:Incidents_HIV	1.40e-05 ***
## RegionEuropean Union:Incidents_HIV	0.729617
## RegionMiddle East:Incidents_HIV	2.42e-13 ***
## RegionNorth America:Incidents_HIV	0.952815
## RegionOceania:Incidents_HIV	9.87e-05 ***
## RegionRest of Europe:Incidents_HIV	0.473664
## RegionSouth America:Incidents_HIV	0.787016
## RegionAsia:GDP_per_capita	0.158983
## RegionCentral America and Caribbean:GDP_per_capita	0.033489 *
## RegionEuropean Union:GDP_per_capita	0.159044
## RegionMiddle East:GDP_per_capita	0.073555 .
## RegionNorth America:GDP_per_capita	0.092064 .
## RegionOceania:GDP_per_capita	0.069913 .
## RegionRest of Europe:GDP_per_capita	0.139928
## RegionSouth America:GDP_per_capita	0.817136
## RegionAsia:Thinness_ten_nineteen_years	0.446352
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	0.242533
## RegionEuropean Union:Thinness_ten_nineteen_years	0.232675
## RegionMiddle East:Thinness_ten_nineteen_years	0.978617

## RegionNorth America:Thinness_ten_nineteen_years	0.575605
## RegionOceania:Thinness_ten_nineteen_years	0.886044
## RegionRest of Europe:Thinness_ten_nineteen_years	0.234801
## RegionSouth America:Thinness_ten_nineteen_years	0.000130 ***
## RegionAsia:Thinness_five_nine_years	0.202092
## RegionCentral America and Caribbean:Thinness_five_nine_years	0.294100
## RegionEuropean Union:Thinness_five_nine_years	0.735070
## RegionMiddle East:Thinness_five_nine_years	0.805391
## RegionNorth America:Thinness_five_nine_years	0.557677
## RegionOceania:Thinness_five_nine_years	0.090549 .
## RegionRest of Europe:Thinness_five_nine_years	0.046555 *
## RegionSouth America:Thinness_five_nine_years	0.000474 ***
## RegionAsia:Schooling	5.72e-06 ***
## RegionCentral America and Caribbean:Schooling	7.44e-09 ***
## RegionEuropean Union:Schooling	0.444407
## RegionMiddle East:Schooling	0.001762 **
## RegionNorth America:Schooling	0.483144
## RegionOceania:Schooling	2.39e-10 ***
## RegionRest of Europe:Schooling	3.82e-06 ***
## RegionSouth America:Schooling	6.28e-09 ***
## RegionAsia:Economy_status_DevelopedYes	0.196511
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	0.187417
## RegionNorth America:Economy_status_DevelopedYes	0.124829
## RegionOceania:Economy_status_DevelopedYes	0.001706 **
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:Infant_deaths	0.750170
## YearY2002:Infant_deaths	0.580235
## YearY2003:Infant_deaths	0.324853
## YearY2004:Infant_deaths	0.154638
## YearY2005:Infant_deaths	0.162551
## YearY2006:Infant_deaths	0.405814
## YearY2007:Infant_deaths	0.120900
## YearY2008:Infant_deaths	0.258475
## YearY2009:Infant_deaths	0.521113
## YearY2010:Infant_deaths	0.831205
## YearY2011:Infant_deaths	0.945656
## YearY2012:Infant_deaths	0.994476
## YearY2013:Infant_deaths	0.998098
## YearY2014:Infant_deaths	0.620847
## YearY2015:Infant_deaths	0.532852
## YearY2001:Adult_mortality	0.657983
## YearY2002:Adult_mortality	0.301768
## YearY2003:Adult_mortality	0.698157
## YearY2004:Adult_mortality	0.931992
## YearY2005:Adult_mortality	0.928777
## YearY2006:Adult_mortality	0.909144
## YearY2007:Adult_mortality	0.868198
## YearY2008:Adult_mortality	0.981396
## YearY2009:Adult_mortality	0.418738
## YearY2010:Adult_mortality	0.286851
## YearY2011:Adult_mortality	0.401274

## YearY2012:Adult_mortality	0.286752
## YearY2013:Adult_mortality	0.454727
## YearY2014:Adult_mortality	0.352700
## YearY2015:Adult_mortality	0.567564
## YearY2001:Hepatitis_B	0.799478
## YearY2002:Hepatitis_B	0.540192
## YearY2003:Hepatitis_B	0.983002
## YearY2004:Hepatitis_B	0.791305
## YearY2005:Hepatitis_B	0.797708
## YearY2006:Hepatitis_B	0.575584
## YearY2007:Hepatitis_B	0.098630 .
## YearY2008:Hepatitis_B	0.114281
## YearY2009:Hepatitis_B	0.145607
## YearY2010:Hepatitis_B	0.587321
## YearY2011:Hepatitis_B	0.471669
## YearY2012:Hepatitis_B	0.814453
## YearY2013:Hepatitis_B	0.140913
## YearY2014:Hepatitis_B	0.162162
## YearY2015:Hepatitis_B	0.839113
## YearY2001:BMl	0.632148
## YearY2002:BMl	0.965230
## YearY2003:BMl	0.360334
## YearY2004:BMl	0.240198
## YearY2005:BMl	0.389555
## YearY2006:BMl	0.367092
## YearY2007:BMl	0.379366
## YearY2008:BMl	0.208928
## YearY2009:BMl	0.084179 .
## YearY2010:BMl	0.159738
## YearY2011:BMl	0.111154
## YearY2012:BMl	0.171926
## YearY2013:BMl	0.100501
## YearY2014:BMl	0.026689 *
## YearY2015:BMl	0.023856 *
## YearY2001:Polio	0.901468
## YearY2002:Polio	0.488781
## YearY2003:Polio	0.767365
## YearY2004:Polio	0.423433
## YearY2005:Polio	0.283827
## YearY2006:Polio	0.797991
## YearY2007:Polio	0.855899
## YearY2008:Polio	0.831720
## YearY2009:Polio	0.937423
## YearY2010:Polio	0.401532
## YearY2011:Polio	0.935150
## YearY2012:Polio	0.793382
## YearY2013:Polio	0.247893
## YearY2014:Polio	0.178348
## YearY2015:Polio	0.594088
## YearY2001:Incidents_HIV	0.456190
## YearY2002:Incidents_HIV	0.324395
## YearY2003:Incidents_HIV	0.270979
## YearY2004:Incidents_HIV	0.088424 .
## YearY2005:Incidents_HIV	0.050406 .

## YearY2006:Incidents_HIV	0.012239 *
## YearY2007:Incidents_HIV	0.017462 *
## YearY2008:Incidents_HIV	0.023967 *
## YearY2009:Incidents_HIV	0.081258 .
## YearY2010:Incidents_HIV	0.293320
## YearY2011:Incidents_HIV	0.363240
## YearY2012:Incidents_HIV	0.902707
## YearY2013:Incidents_HIV	0.466000
## YearY2014:Incidents_HIV	0.059161 .
## YearY2015:Incidents_HIV	0.082760 .
## YearY2001:GDP_per_capita	0.663341
## YearY2002:GDP_per_capita	0.979874
## YearY2003:GDP_per_capita	0.342733
## YearY2004:GDP_per_capita	0.551281
## YearY2005:GDP_per_capita	0.525785
## YearY2006:GDP_per_capita	0.676342
## YearY2007:GDP_per_capita	0.527721
## YearY2008:GDP_per_capita	0.738388
## YearY2009:GDP_per_capita	0.779570
## YearY2010:GDP_per_capita	0.859099
## YearY2011:GDP_per_capita	0.879736
## YearY2012:GDP_per_capita	0.971564
## YearY2013:GDP_per_capita	0.833978
## YearY2014:GDP_per_capita	0.882393
## YearY2015:GDP_per_capita	0.988397
## YearY2001:Thinness_ten_nineteen_years	0.492746
## YearY2002:Thinness_ten_nineteen_years	0.381929
## YearY2003:Thinness_ten_nineteen_years	0.015317 *
## YearY2004:Thinness_ten_nineteen_years	0.024303 *
## YearY2005:Thinness_ten_nineteen_years	0.000891 ***
## YearY2006:Thinness_ten_nineteen_years	0.000324 ***
## YearY2007:Thinness_ten_nineteen_years	0.000818 ***
## YearY2008:Thinness_ten_nineteen_years	0.007114 **
## YearY2009:Thinness_ten_nineteen_years	0.315524
## YearY2010:Thinness_ten_nineteen_years	0.057325 .
## YearY2011:Thinness_ten_nineteen_years	0.166759
## YearY2012:Thinness_ten_nineteen_years	0.000854 ***
## YearY2013:Thinness_ten_nineteen_years	0.000283 ***
## YearY2014:Thinness_ten_nineteen_years	0.000346 ***
## YearY2015:Thinness_ten_nineteen_years	0.027982 *
## YearY2001:Thinness_five_nine_years	0.825005
## YearY2002:Thinness_five_nine_years	0.410672
## YearY2003:Thinness_five_nine_years	0.015725 *
## YearY2004:Thinness_five_nine_years	0.039470 *
## YearY2005:Thinness_five_nine_years	0.002803 **
## YearY2006:Thinness_five_nine_years	0.001857 **
## YearY2007:Thinness_five_nine_years	0.003080 **
## YearY2008:Thinness_five_nine_years	0.012525 *
## YearY2009:Thinness_five_nine_years	0.220250
## YearY2010:Thinness_five_nine_years	0.045674 *
## YearY2011:Thinness_five_nine_years	0.136470
## YearY2012:Thinness_five_nine_years	0.000806 ***
## YearY2013:Thinness_five_nine_years	9.19e-05 ***
## YearY2014:Thinness_five_nine_years	0.000113 ***

## YearY2015:Thinness_five_nine_years	0.013442 *
## YearY2001:Schooling	0.915470
## YearY2002:Schooling	0.855825
## YearY2003:Schooling	0.633726
## YearY2004:Schooling	0.341854
## YearY2005:Schooling	0.273286
## YearY2006:Schooling	0.192813
## YearY2007:Schooling	0.228121
## YearY2008:Schooling	0.277798
## YearY2009:Schooling	0.265545
## YearY2010:Schooling	0.347697
## YearY2011:Schooling	0.516048
## YearY2012:Schooling	0.664016
## YearY2013:Schooling	0.939936
## YearY2014:Schooling	0.689097
## YearY2015:Schooling	0.507014
## YearY2001:Economy_status_DevelopedYes	0.615204
## YearY2002:Economy_status_DevelopedYes	0.665923
## YearY2003:Economy_status_DevelopedYes	0.603531
## YearY2004:Economy_status_DevelopedYes	0.774465
## YearY2005:Economy_status_DevelopedYes	0.680454
## YearY2006:Economy_status_DevelopedYes	0.642176
## YearY2007:Economy_status_DevelopedYes	0.707091
## YearY2008:Economy_status_DevelopedYes	0.832533
## YearY2009:Economy_status_DevelopedYes	0.825189
## YearY2010:Economy_status_DevelopedYes	0.870559
## YearY2011:Economy_status_DevelopedYes	0.823361
## YearY2012:Economy_status_DevelopedYes	0.863539
## YearY2013:Economy_status_DevelopedYes	0.871536
## YearY2014:Economy_status_DevelopedYes	0.882049
## YearY2015:Economy_status_DevelopedYes	0.980116
## Infant_deaths:Adult_mortality	< 2e-16 ***
## Infant_deaths:Hepatitis_B	0.045310 *
## Infant_deaths:BMI	< 2e-16 ***
## Infant_deaths:Polio	0.392688
## Infant_deaths:Incidents_HIV	0.619824
## Infant_deaths:GDP_per_capita	0.033397 *
## Infant_deaths:Thinness_ten_nineteen_years	0.815323
## Infant_deaths:Thinness_five_nine_years	0.233610
## Infant_deaths:Schooling	0.366182
## Infant_deaths:Economy_status_DevelopedYes	0.401851
## Adult_mortality:Hepatitis_B	2.63e-05 ***
## Adult_mortality:BMI	4.02e-07 ***
## Adult_mortality:Polio	0.001328 **
## Adult_mortality:Incidents_HIV	7.92e-06 ***
## Adult_mortality:GDP_per_capita	4.56e-06 ***
## Adult_mortality:Thinness_ten_nineteen_years	0.196110
## Adult_mortality:Thinness_five_nine_years	0.572518
## Adult_mortality:Schooling	0.043543 *
## Adult_mortality:Economy_status_DevelopedYes	0.413957
## Hepatitis_B:BMI	0.993901
## Hepatitis_B:Polio	0.023552 *
## Hepatitis_B:Incidents_HIV	0.015978 *
## Hepatitis_B:GDP_per_capita	0.589157

```

## Hepatitis_B:Thinness_ten_nineteen_years          0.692329
## Hepatitis_B:Thinness_five_nine_years            0.033407 *
## Hepatitis_B:Schooling                          0.482773
## Hepatitis_B:Economy_status_DevelopedYes       0.521963
## BMI:Polio                                    0.507623
## BMI:Incidents_HIV                           0.423560
## BMI:GDP_per_capita                         0.079438 .
## BMI:Thinness_ten_nineteen_years              0.004247 **
## BMI:Thinness_five_nine_years                 0.003938 **
## BMI:Schooling                                1.13e-05 ***
## BMI:Economy_status_DevelopedYes             0.574842
## Polio:Incidents_HIV                        6.09e-07 ***
## Polio:GDP_per_capita                      0.323837
## Polio:Thinness_ten_nineteen_years           0.190958
## Polio:Thinness_five_nine_years              0.382433
## Polio:Schooling                            0.280930
## Polio:Economy_status_DevelopedYes          0.645609
## Incidents_HIV:GDP_per_capita               3.10e-15 ***
## Incidents_HIV:Thinness_ten_nineteen_years   0.000773 ***
## Incidents_HIV:Thinness_five_nine_years      0.006273 **
## Incidents_HIV:Schooling                   0.267350
## Incidents_HIV:Economy_status_DevelopedYes  0.386306
## GDP_per_capita:Thinness_ten_nineteen_years  0.258086
## GDP_per_capita:Thinness_five_nine_years     0.383704
## GDP_per_capita:Schooling                  0.271824
## GDP_per_capita:Economy_status_DevelopedYes 0.074158 .
## Thinness_ten_nineteen_years:Thinness_five_nine_years 0.033359 *
## Thinness_ten_nineteen_years:Schooling        0.534205
## Thinness_ten_nineteen_years:Economy_status_DevelopedYes 0.363411
## Thinness_five_nine_years:Schooling          0.593723
## Thinness_five_nine_years:Economy_status_DevelopedYes 0.753470
## Schooling:Economy_status_DevelopedYes      0.420785
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8388 on 2405 degrees of freedom
## Multiple R-squared:  0.9933, Adjusted R-squared:  0.992
## F-statistic: 780.7 on 458 and 2405 DF,  p-value: < 2.2e-16

##
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     Adult_mortality + Hepatitis_B + BMI + Polio + Incidents_HIV +
##     GDP_per_capita + Thinness_ten_nineteen_years + Thinness_five_nine_years +
##     Schooling + Economy_status_Developed + Region:Year + Region:Infant_deaths +
##     Region:Adult_mortality + Region:Hepatitis_B + Region:BMI +
##     Region:Polio + Region:Incidents_HIV + Region:GDP_per_capita +
##     Region:Thinness_ten_nineteen_years + Region:Thinness_five_nine_years +
##     Region:Schooling + Region:Economy_status_Developed + Year:BMI +
##     Year:Incidents_HIV + Year:Thinness_ten_nineteen_years + Year:Thinness_five_nine_years +
##     Infant_deaths:Adult_mortality + Infant_deaths:Hepatitis_B +
##     Infant_deaths:BMI + Infant_deaths:GDP_per_capita + Adult_mortality:Hepatitis_B +
##     Adult_mortality:BMI + Adult_mortality:Polio + Adult_mortality:Incidents_HIV +
##     Adult_mortality:GDP_per_capita + Adult_mortality:Schooling +

```

```

##   Hepatitis_B:Polio + Hepatitis_B:Incidents_HIV + Hepatitis_B:Thinness_five_nine_years +
##   BMI:Thinness_ten_nineteen_years + BMI:Thinness_five_nine_years +
##   BMI:Schooling + Polio:Incidents_HIV + Incidents_HIV:GDP_per_capita +
##   Incidents_HIV:Thinness_ten_nineteen_years + Incidents_HIV:Thinness_five_nine_years +
##   Thinness_ten_nineteen_years:Thinness_five_nine_years, data = data)
##
## Residuals:
##      Min       1Q     Median      3Q      Max
## -2.68690 -0.47715  0.00361  0.46853  3.12442
##
## Coefficients: (4 not defined because of singularities)
##                               Estimate
## (Intercept)                   9.976e+01
## RegionAsia                    8.619e+00
## RegionCentral America and Caribbean -3.531e+00
## RegionEuropean Union            2.104e+01
## RegionMiddle East                -3.728e+00
## RegionNorth America               7.492e+00
## RegionOceania                     1.460e+00
## RegionRest of Europe              2.313e+01
## RegionSouth America                1.319e+01
## YearY2001                      -6.925e-01
## YearY2002                      8.999e-01
## YearY2003                      6.548e-01
## YearY2004                      3.761e-01
## YearY2005                      3.174e-01
## YearY2006                      4.182e-01
## YearY2007                      2.461e-01
## YearY2008                      1.122e+00
## YearY2009                      2.275e+00
## YearY2010                      2.291e+00
## YearY2011                      2.953e+00
## YearY2012                      2.243e+00
## YearY2013                      3.205e+00
## YearY2014                      4.366e+00
## YearY2015                      4.333e+00
## Infant_deaths                  -5.858e-01
## Adult_mortality                 -3.003e-02
## Hepatitis_B                      -8.161e-02
## BMI                            -4.532e-01
## Polio                           -1.656e-02
## Incidents_HIV                  6.417e-01
## GDP_per_capita                  3.640e-05
## Thinness_ten_nineteen_years        1.018e+00
## Thinness_five_nine_years          -1.312e+00
## Schooling                       -1.676e+00
## Economy_status_DevelopedYes      2.177e+00
## RegionAsia:YearY2001             -1.526e-01
## RegionCentral America and Caribbean:YearY2001 2.320e-02
## RegionEuropean Union:YearY2001    1.911e-01
## RegionMiddle East:YearY2001      -1.156e-01
## RegionNorth America:YearY2001     4.433e-01
## RegionOceania:YearY2001           -4.469e-02
## RegionRest of Europe:YearY2001    1.122e-01

```

## RegionSouth America:YearY2001	-8.145e-02
## RegionAsia:YearY2002	6.870e-02
## RegionCentral America and Caribbean:YearY2002	2.004e-01
## RegionEuropean Union:YearY2002	4.780e-01
## RegionMiddle East:YearY2002	2.328e-01
## RegionNorth America:YearY2002	1.034e+00
## RegionOceania:YearY2002	3.592e-01
## RegionRest of Europe:YearY2002	3.323e-01
## RegionSouth America:YearY2002	1.880e-01
## RegionAsia:YearY2003	1.851e-01
## RegionCentral America and Caribbean:YearY2003	1.931e-01
## RegionEuropean Union:YearY2003	5.064e-01
## RegionMiddle East:YearY2003	2.464e-01
## RegionNorth America:YearY2003	1.371e+00
## RegionOceania:YearY2003	4.322e-01
## RegionRest of Europe:YearY2003	4.473e-01
## RegionSouth America:YearY2003	1.637e-01
## RegionAsia:YearY2004	2.890e-01
## RegionCentral America and Caribbean:YearY2004	3.382e-02
## RegionEuropean Union:YearY2004	8.097e-01
## RegionMiddle East:YearY2004	2.411e-01
## RegionNorth America:YearY2004	1.712e+00
## RegionOceania:YearY2004	3.809e-01
## RegionRest of Europe:YearY2004	5.122e-01
## RegionSouth America:YearY2004	2.208e-01
## RegionAsia:YearY2005	1.798e-01
## RegionCentral America and Caribbean:YearY2005	-7.897e-02
## RegionEuropean Union:YearY2005	7.747e-01
## RegionMiddle East:YearY2005	2.736e-01
## RegionNorth America:YearY2005	2.000e+00
## RegionOceania:YearY2005	3.471e-01
## RegionRest of Europe:YearY2005	5.472e-01
## RegionSouth America:YearY2005	2.346e-01
## RegionAsia:YearY2006	1.232e-01
## RegionCentral America and Caribbean:YearY2006	-1.957e-01
## RegionEuropean Union:YearY2006	9.941e-01
## RegionMiddle East:YearY2006	2.009e-01
## RegionNorth America:YearY2006	2.190e+00
## RegionOceania:YearY2006	3.263e-01
## RegionRest of Europe:YearY2006	6.608e-01
## RegionSouth America:YearY2006	2.868e-01
## RegionAsia:YearY2007	1.786e-01
## RegionCentral America and Caribbean:YearY2007	-4.204e-01
## RegionEuropean Union:YearY2007	9.493e-01
## RegionMiddle East:YearY2007	1.029e-01
## RegionNorth America:YearY2007	2.341e+00
## RegionOceania:YearY2007	2.964e-01
## RegionRest of Europe:YearY2007	7.563e-01
## RegionSouth America:YearY2007	1.625e-01
## RegionAsia:YearY2008	3.895e-01
## RegionCentral America and Caribbean:YearY2008	-4.745e-01
## RegionEuropean Union:YearY2008	1.057e+00
## RegionMiddle East:YearY2008	1.971e-01
## RegionNorth America:YearY2008	2.519e+00

## RegionOceania:YearY2008	3.857e-01
## RegionRest of Europe:YearY2008	8.897e-01
## RegionSouth America:YearY2008	3.583e-01
## RegionAsia:YearY2009	5.146e-01
## RegionCentral America and Caribbean:YearY2009	-6.132e-01
## RegionEuropean Union:YearY2009	1.031e+00
## RegionMiddle East:YearY2009	2.372e-01
## RegionNorth America:YearY2009	2.542e+00
## RegionOceania:YearY2009	4.321e-01
## RegionRest of Europe:YearY2009	8.273e-01
## RegionSouth America:YearY2009	3.321e-01
## RegionAsia:YearY2010	5.865e-01
## RegionCentral America and Caribbean:YearY2010	-4.570e-01
## RegionEuropean Union:YearY2010	1.273e+00
## RegionMiddle East:YearY2010	3.244e-01
## RegionNorth America:YearY2010	2.777e+00
## RegionOceania:YearY2010	6.069e-01
## RegionRest of Europe:YearY2010	1.105e+00
## RegionSouth America:YearY2010	5.702e-01
## RegionAsia:YearY2011	5.201e-01
## RegionCentral America and Caribbean:YearY2011	-6.634e-01
## RegionEuropean Union:YearY2011	1.569e+00
## RegionMiddle East:YearY2011	2.936e-01
## RegionNorth America:YearY2011	2.819e+00
## RegionOceania:YearY2011	6.695e-01
## RegionRest of Europe:YearY2011	1.242e+00
## RegionSouth America:YearY2011	5.700e-01
## RegionAsia:YearY2012	6.384e-01
## RegionCentral America and Caribbean:YearY2012	-7.677e-01
## RegionEuropean Union:YearY2012	1.500e+00
## RegionMiddle East:YearY2012	1.823e-01
## RegionNorth America:YearY2012	2.973e+00
## RegionOceania:YearY2012	6.455e-01
## RegionRest of Europe:YearY2012	1.288e+00
## RegionSouth America:YearY2012	6.255e-01
## RegionAsia:YearY2013	7.335e-01
## RegionCentral America and Caribbean:YearY2013	-8.207e-01
## RegionEuropean Union:YearY2013	1.683e+00
## RegionMiddle East:YearY2013	3.491e-01
## RegionNorth America:YearY2013	3.088e+00
## RegionOceania:YearY2013	7.646e-01
## RegionRest of Europe:YearY2013	1.464e+00
## RegionSouth America:YearY2013	6.263e-01
## RegionAsia:YearY2014	9.021e-01
## RegionCentral America and Caribbean:YearY2014	-8.131e-01
## RegionEuropean Union:YearY2014	1.920e+00
## RegionMiddle East:YearY2014	4.793e-01
## RegionNorth America:YearY2014	3.282e+00
## RegionOceania:YearY2014	1.087e+00
## RegionRest of Europe:YearY2014	1.685e+00
## RegionSouth America:YearY2014	8.159e-01
## RegionAsia:YearY2015	8.119e-01
## RegionCentral America and Caribbean:YearY2015	-9.131e-01
## RegionEuropean Union:YearY2015	1.643e+00

## RegionMiddle East:YearY2015	4.035e-01
## RegionNorth America:YearY2015	3.270e+00
## RegionOceania:YearY2015	1.017e+00
## RegionRest of Europe:YearY2015	1.588e+00
## RegionSouth America:YearY2015	7.619e-01
## RegionAsia:Infant_deaths	-1.841e-02
## RegionCentral America and Caribbean:Infant_deaths	3.208e-02
## RegionEuropean Union:Infant_deaths	-1.210e-01
## RegionMiddle East:Infant_deaths	-7.336e-02
## RegionNorth America:Infant_deaths	5.290e-02
## RegionOceania:Infant_deaths	-1.205e-02
## RegionRest of Europe:Infant_deaths	1.784e-02
## RegionSouth America:Infant_deaths	-4.988e-02
## RegionAsia:Adult_mortality	1.486e-02
## RegionCentral America and Caribbean:Adult_mortality	-1.379e-02
## RegionEuropean Union:Adult_mortality	1.609e-02
## RegionMiddle East:Adult_mortality	3.169e-02
## RegionNorth America:Adult_mortality	4.042e-02
## RegionOceania:Adult_mortality	7.117e-03
## RegionRest of Europe:Adult_mortality	1.976e-02
## RegionSouth America:Adult_mortality	-1.312e-02
## RegionAsia:Hepatitis_B	3.324e-02
## RegionCentral America and Caribbean:Hepatitis_B	4.136e-02
## RegionEuropean Union:Hepatitis_B	2.737e-02
## RegionMiddle East:Hepatitis_B	2.187e-02
## RegionNorth America:Hepatitis_B	4.829e-02
## RegionOceania:Hepatitis_B	2.906e-02
## RegionRest of Europe:Hepatitis_B	2.196e-02
## RegionSouth America:Hepatitis_B	3.732e-02
## RegionAsia:BMI	-4.351e-01
## RegionCentral America and Caribbean:BMI	4.362e-01
## RegionEuropean Union:BMI	-7.809e-01
## RegionMiddle East:BMI	1.487e-01
## RegionNorth America:BMI	-6.414e-01
## RegionOceania:BMI	1.743e-02
## RegionRest of Europe:BMI	-8.030e-01
## RegionSouth America:BMI	-2.309e-01
## RegionAsia:Polio	-3.616e-02
## RegionCentral America and Caribbean:Polio	-4.708e-02
## RegionEuropean Union:Polio	-2.354e-02
## RegionMiddle East:Polio	-2.808e-02
## RegionNorth America:Polio	-2.818e-05
## RegionOceania:Polio	-1.115e-02
## RegionRest of Europe:Polio	-2.133e-02
## RegionSouth America:Polio	-1.320e-02
## RegionAsia:Incidents_HIV	-1.177e+00
## RegionCentral America and Caribbean:Incidents_HIV	-1.478e+00
## RegionEuropean Union:Incidents_HIV	3.936e+00
## RegionMiddle East:Incidents_HIV	-1.769e+01
## RegionNorth America:Incidents_HIV	-1.082e+01
## RegionOceania:Incidents_HIV	-4.870e+00
## RegionRest of Europe:Incidents_HIV	-1.280e-01
## RegionSouth America:Incidents_HIV	-3.550e-01
## RegionAsia:GDP_per_capita	6.145e-05

## RegionCentral America and Caribbean:GDP_per_capita	7.318e-05
## RegionEuropean Union:GDP_per_capita	2.704e-05
## RegionMiddle East:GDP_per_capita	2.647e-05
## RegionNorth America:GDP_per_capita	-1.997e-05
## RegionOceania:GDP_per_capita	3.777e-05
## RegionRest of Europe:GDP_per_capita	1.295e-05
## RegionSouth America:GDP_per_capita	-3.803e-06
## RegionAsia:Thinness_ten_nineteen_years	4.309e-02
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	-8.078e-01
## RegionEuropean Union:Thinness_ten_nineteen_years	-6.106e-01
## RegionMiddle East:Thinness_ten_nineteen_years	5.777e-01
## RegionNorth America:Thinness_ten_nineteen_years	2.351e+00
## RegionOceania:Thinness_ten_nineteen_years	3.130e-02
## RegionRest of Europe:Thinness_ten_nineteen_years	3.488e-01
## RegionSouth America:Thinness_ten_nineteen_years	3.517e+00
## RegionAsia:Thinness_five_nine_years	6.622e-02
## RegionCentral America and Caribbean:Thinness_five_nine_years	5.952e-01
## RegionEuropean Union:Thinness_five_nine_years	-4.842e-02
## RegionMiddle East:Thinness_five_nine_years	-4.663e-01
## RegionNorth America:Thinness_five_nine_years	1.840e+00
## RegionOceania:Thinness_five_nine_years	2.257e-01
## RegionRest of Europe:Thinness_five_nine_years	-1.429e+00
## RegionSouth America:Thinness_five_nine_years	-3.361e+00
## RegionAsia:Schooling	-2.067e-01
## RegionCentral America and Caribbean:Schooling	-4.450e-01
## RegionEuropean Union:Schooling	-5.024e-01
## RegionMiddle East:Schooling	-3.532e-01
## RegionNorth America:Schooling	-8.520e-01
## RegionOceania:Schooling	-9.876e-01
## RegionRest of Europe:Schooling	-5.334e-01
## RegionSouth America:Schooling	-7.869e-01
## RegionAsia:Economy_status_DevelopedYes	6.942e-01
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	6.537e-01
## RegionNorth America:Economy_status_DevelopedYes	8.469e+00
## RegionOceania:Economy_status_DevelopedYes	3.930e+00
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:BMI	2.703e-02
## YearY2002:BMI	-4.360e-02
## YearY2003:BMI	-3.686e-02
## YearY2004:BMI	-2.546e-02
## YearY2005:BMI	-2.205e-02
## YearY2006:BMI	-2.653e-02
## YearY2007:BMI	-1.734e-02
## YearY2008:BMI	-5.198e-02
## YearY2009:BMI	-9.001e-02
## YearY2010:BMI	-9.649e-02
## YearY2011:BMI	-1.208e-01
## YearY2012:BMI	-9.430e-02
## YearY2013:BMI	-1.302e-01
## YearY2014:BMI	-1.774e-01
## YearY2015:BMI	-1.728e-01

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## YearY2001:Incidents_HIV -1.965e-02
## YearY2002:Incidents_HIV -1.418e-02
## YearY2003:Incidents_HIV -6.255e-02
## YearY2004:Incidents_HIV -1.110e-01
## YearY2005:Incidents_HIV -1.155e-01
## YearY2006:Incidents_HIV -1.487e-01
## YearY2007:Incidents_HIV -1.283e-01
## YearY2008:Incidents_HIV -1.333e-01
## YearY2009:Incidents_HIV -1.425e-01
## YearY2010:Incidents_HIV -1.114e-01
## YearY2011:Incidents_HIV -9.220e-02
## YearY2012:Incidents_HIV -4.986e-02
## YearY2013:Incidents_HIV 3.249e-02
## YearY2014:Incidents_HIV 1.231e-01
## YearY2015:Incidents_HIV 1.342e-01
## YearY2001:Thinness_ten_nineteen_years 3.057e-02
## YearY2002:Thinness_ten_nineteen_years 7.194e-02
## YearY2003:Thinness_ten_nineteen_years 1.776e-01
## YearY2004:Thinness_ten_nineteen_years 1.951e-01
## YearY2005:Thinness_ten_nineteen_years 1.714e-01
## YearY2006:Thinness_ten_nineteen_years 1.781e-01
## YearY2007:Thinness_ten_nineteen_years 1.703e-01
## YearY2008:Thinness_ten_nineteen_years 1.890e-01
## YearY2009:Thinness_ten_nineteen_years 7.694e-02
## YearY2010:Thinness_ten_nineteen_years 1.515e-01
## YearY2011:Thinness_ten_nineteen_years 8.086e-02
## YearY2012:Thinness_ten_nineteen_years 2.645e-01
## YearY2013:Thinness_ten_nineteen_years 3.002e-01
## YearY2014:Thinness_ten_nineteen_years 2.745e-01
## YearY2015:Thinness_ten_nineteen_years 2.289e-01
## YearY2001:Thinness_five_nine_years -1.013e-02
## YearY2002:Thinness_five_nine_years -7.015e-02
## YearY2003:Thinness_five_nine_years -1.765e-01
## YearY2004:Thinness_five_nine_years -1.881e-01
## YearY2005:Thinness_five_nine_years -1.780e-01
## YearY2006:Thinness_five_nine_years -1.790e-01
## YearY2007:Thinness_five_nine_years -1.822e-01
## YearY2008:Thinness_five_nine_years -2.089e-01
## YearY2009:Thinness_five_nine_years -1.284e-01
## YearY2010:Thinness_five_nine_years -1.948e-01
## YearY2011:Thinness_five_nine_years -1.280e-01
## YearY2012:Thinness_five_nine_years -3.062e-01
## YearY2013:Thinness_five_nine_years -3.581e-01
## YearY2014:Thinness_five_nine_years -3.418e-01
## YearY2015:Thinness_five_nine_years -2.971e-01
## Infant_deaths:Adult_mortality 2.823e-04
## Infant_deaths:Hepatitis_B -5.370e-04
## Infant_deaths:BM 1.882e-02
## Infant_deaths:GDP_per_capita -2.514e-06
## Adult_mortality:Hepatitis_B 2.472e-04
## Adult_mortality:BM -2.652e-03
## Adult_mortality:Polio 1.126e-04
## Adult_mortality:Incidents_HIV 7.966e-04
## Adult_mortality:GDP_per_capita -7.417e-07

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## Adult_mortality:Schooling	7.719e-04
## Hepatitis_B:Polio	2.224e-04
## Hepatitis_B:Incidents_HIV	-6.730e-03
## Hepatitis_B:Thinness_five_nine_years	1.420e-03
## BMI:Thinness_ten_nineteen_years	-5.501e-02
## BMI:Thinness_five_nine_years	6.297e-02
## BMI:Schooling	8.031e-02
## Polio:Incidents_HIV	-7.770e-03
## Incidents_HIV:GDP_per_capita	8.795e-05
## Incidents_HIV:Thinness_ten_nineteen_years	1.842e-02
## Incidents_HIV:Thinness_five_nine_years	-2.468e-02
## Thinness_ten_nineteen_years:Thinness_five_nine_years	-1.135e-03
##	Std. Error
## (Intercept)	3.066e+00
## RegionAsia	1.834e+00
## RegionCentral America and Caribbean	2.450e+00
## RegionEuropean Union	3.283e+00
## RegionMiddle East	3.801e+00
## RegionNorth America	5.771e+01
## RegionOceania	2.897e+00
## RegionRest of Europe	5.063e+00
## RegionSouth America	6.073e+00
## YearY2001	1.549e+00
## YearY2002	1.595e+00
## YearY2003	1.581e+00
## YearY2004	1.604e+00
## YearY2005	1.653e+00
## YearY2006	1.697e+00
## YearY2007	1.710e+00
## YearY2008	1.729e+00
## YearY2009	1.721e+00
## YearY2010	1.712e+00
## YearY2011	1.712e+00
## YearY2012	1.731e+00
## YearY2013	1.749e+00
## YearY2014	1.768e+00
## YearY2015	1.757e+00
## Infant_deaths	3.452e-02
## Adult_mortality	7.994e-03
## Hepatitis_B	1.698e-02
## BMI	1.173e-01
## Polio	1.637e-02
## Incidents_HIV	1.266e-01
## GDP_per_capita	2.957e-05
## Thinness_ten_nineteen_years	2.777e-01
## Thinness_five_nine_years	2.693e-01
## Schooling	2.610e-01
## Economy_status_DevelopedYes	6.641e-01
## RegionAsia:YearY2001	3.266e-01
## RegionCentral America and Caribbean:YearY2001	3.886e-01
## RegionEuropean Union:YearY2001	3.713e-01
## RegionMiddle East:YearY2001	4.589e-01
## RegionNorth America:YearY2001	9.216e-01
## RegionOceania:YearY2001	4.881e-01

## RegionRest of Europe:YearY2001	4.193e-01
## RegionSouth America:YearY2001	4.405e-01
## RegionAsia:YearY2002	3.227e-01
## RegionCentral America and Caribbean:YearY2002	3.883e-01
## RegionEuropean Union:YearY2002	3.741e-01
## RegionMiddle East:YearY2002	4.599e-01
## RegionNorth America:YearY2002	1.162e+00
## RegionOceania:YearY2002	4.896e-01
## RegionRest of Europe:YearY2002	4.228e-01
## RegionSouth America:YearY2002	4.454e-01
## RegionAsia:YearY2003	3.278e-01
## RegionCentral America and Caribbean:YearY2003	3.911e-01
## RegionEuropean Union:YearY2003	3.759e-01
## RegionMiddle East:YearY2003	4.616e-01
## RegionNorth America:YearY2003	1.457e+00
## RegionOceania:YearY2003	4.924e-01
## RegionRest of Europe:YearY2003	4.305e-01
## RegionSouth America:YearY2003	4.514e-01
## RegionAsia:YearY2004	3.224e-01
## RegionCentral America and Caribbean:YearY2004	3.912e-01
## RegionEuropean Union:YearY2004	3.788e-01
## RegionMiddle East:YearY2004	4.622e-01
## RegionNorth America:YearY2004	1.981e+00
## RegionOceania:YearY2004	4.949e-01
## RegionRest of Europe:YearY2004	4.371e-01
## RegionSouth America:YearY2004	4.612e-01
## RegionAsia:YearY2005	3.223e-01
## RegionCentral America and Caribbean:YearY2005	3.937e-01
## RegionEuropean Union:YearY2005	3.838e-01
## RegionMiddle East:YearY2005	4.656e-01
## RegionNorth America:YearY2005	2.285e+00
## RegionOceania:YearY2005	4.991e-01
## RegionRest of Europe:YearY2005	4.416e-01
## RegionSouth America:YearY2005	4.734e-01
## RegionAsia:YearY2006	3.252e-01
## RegionCentral America and Caribbean:YearY2006	3.982e-01
## RegionEuropean Union:YearY2006	3.854e-01
## RegionMiddle East:YearY2006	4.682e-01
## RegionNorth America:YearY2006	2.643e+00
## RegionOceania:YearY2006	5.034e-01
## RegionRest of Europe:YearY2006	4.511e-01
## RegionSouth America:YearY2006	4.728e-01
## RegionAsia:YearY2007	3.281e-01
## RegionCentral America and Caribbean:YearY2007	3.991e-01
## RegionEuropean Union:YearY2007	3.874e-01
## RegionMiddle East:YearY2007	4.690e-01
## RegionNorth America:YearY2007	3.114e+00
## RegionOceania:YearY2007	5.069e-01
## RegionRest of Europe:YearY2007	4.614e-01
## RegionSouth America:YearY2007	4.744e-01
## RegionAsia:YearY2008	3.323e-01
## RegionCentral America and Caribbean:YearY2008	4.012e-01
## RegionEuropean Union:YearY2008	3.879e-01
## RegionMiddle East:YearY2008	4.734e-01

## RegionNorth America:YearY2008	3.401e+00
## RegionOceania:YearY2008	5.100e-01
## RegionRest of Europe:YearY2008	4.653e-01
## RegionSouth America:YearY2008	4.791e-01
## RegionAsia:YearY2009	3.343e-01
## RegionCentral America and Caribbean:YearY2009	4.043e-01
## RegionEuropean Union:YearY2009	3.903e-01
## RegionMiddle East:YearY2009	4.767e-01
## RegionNorth America:YearY2009	3.540e+00
## RegionOceania:YearY2009	5.132e-01
## RegionRest of Europe:YearY2009	4.729e-01
## RegionSouth America:YearY2009	4.939e-01
## RegionAsia:YearY2010	3.357e-01
## RegionCentral America and Caribbean:YearY2010	4.112e-01
## RegionEuropean Union:YearY2010	3.908e-01
## RegionMiddle East:YearY2010	4.786e-01
## RegionNorth America:YearY2010	3.923e+00
## RegionOceania:YearY2010	5.159e-01
## RegionRest of Europe:YearY2010	4.818e-01
## RegionSouth America:YearY2010	4.942e-01
## RegionAsia:YearY2011	3.378e-01
## RegionCentral America and Caribbean:YearY2011	4.098e-01
## RegionEuropean Union:YearY2011	3.945e-01
## RegionMiddle East:YearY2011	4.845e-01
## RegionNorth America:YearY2011	4.318e+00
## RegionOceania:YearY2011	5.223e-01
## RegionRest of Europe:YearY2011	4.885e-01
## RegionSouth America:YearY2011	5.066e-01
## RegionAsia:YearY2012	3.363e-01
## RegionCentral America and Caribbean:YearY2012	4.109e-01
## RegionEuropean Union:YearY2012	3.949e-01
## RegionMiddle East:YearY2012	4.863e-01
## RegionNorth America:YearY2012	4.647e+00
## RegionOceania:YearY2012	5.282e-01
## RegionRest of Europe:YearY2012	4.971e-01
## RegionSouth America:YearY2012	5.143e-01
## RegionAsia:YearY2013	3.360e-01
## RegionCentral America and Caribbean:YearY2013	4.121e-01
## RegionEuropean Union:YearY2013	3.980e-01
## RegionMiddle East:YearY2013	4.908e-01
## RegionNorth America:YearY2013	4.844e+00
## RegionOceania:YearY2013	5.313e-01
## RegionRest of Europe:YearY2013	5.035e-01
## RegionSouth America:YearY2013	5.250e-01
## RegionAsia:YearY2014	3.395e-01
## RegionCentral America and Caribbean:YearY2014	4.188e-01
## RegionEuropean Union:YearY2014	4.037e-01
## RegionMiddle East:YearY2014	4.940e-01
## RegionNorth America:YearY2014	5.142e+00
## RegionOceania:YearY2014	5.461e-01
## RegionRest of Europe:YearY2014	5.174e-01
## RegionSouth America:YearY2014	5.339e-01
## RegionAsia:YearY2015	3.410e-01
## RegionCentral America and Caribbean:YearY2015	4.234e-01

## RegionEuropean Union:YearY2015	4.070e-01
## RegionMiddle East:YearY2015	4.986e-01
## RegionNorth America:YearY2015	5.319e+00
## RegionOceania:YearY2015	5.517e-01
## RegionRest of Europe:YearY2015	5.269e-01
## RegionSouth America:YearY2015	5.460e-01
## RegionAsia:Infant_deaths	7.042e-03
## RegionCentral America and Caribbean:Infant_deaths	1.283e-02
## RegionEuropean Union:Infant_deaths	2.962e-02
## RegionMiddle East:Infant_deaths	2.549e-02
## RegionNorth America:Infant_deaths	5.074e-01
## RegionOceania:Infant_deaths	1.433e-02
## RegionRest of Europe:Infant_deaths	1.674e-02
## RegionSouth America:Infant_deaths	3.046e-02
## RegionAsia:Adult_mortality	1.442e-03
## RegionCentral America and Caribbean:Adult_mortality	2.650e-03
## RegionEuropean Union:Adult_mortality	2.735e-03
## RegionMiddle East:Adult_mortality	6.489e-03
## RegionNorth America:Adult_mortality	1.441e-01
## RegionOceania:Adult_mortality	4.858e-03
## RegionRest of Europe:Adult_mortality	2.305e-03
## RegionSouth America:Adult_mortality	9.883e-03
## RegionAsia:Hepatitis_B	6.684e-03
## RegionCentral America and Caribbean:Hepatitis_B	1.165e-02
## RegionEuropean Union:Hepatitis_B	9.523e-03
## RegionMiddle East:Hepatitis_B	1.238e-02
## RegionNorth America:Hepatitis_B	2.522e-02
## RegionOceania:Hepatitis_B	1.178e-02
## RegionRest of Europe:Hepatitis_B	9.301e-03
## RegionSouth America:Hepatitis_B	1.171e-02
## RegionAsia:BMI	7.494e-02
## RegionCentral America and Caribbean:BMI	8.457e-02
## RegionEuropean Union:BMI	1.103e-01
## RegionMiddle East:BMI	1.217e-01
## RegionNorth America:BMI	2.446e+00
## RegionOceania:BMI	1.125e-01
## RegionRest of Europe:BMI	2.013e-01
## RegionSouth America:BMI	2.404e-01
## RegionAsia:Polio	8.248e-03
## RegionCentral America and Caribbean:Polio	1.189e-02
## RegionEuropean Union:Polio	1.381e-02
## RegionMiddle East:Polio	1.530e-02
## RegionNorth America:Polio	7.646e-02
## RegionOceania:Polio	1.232e-02
## RegionRest of Europe:Polio	1.254e-02
## RegionSouth America:Polio	1.418e-02
## RegionAsia:Incidents_HIV	4.218e-01
## RegionCentral America and Caribbean:Incidents_HIV	2.975e-01
## RegionEuropean Union:Incidents_HIV	1.123e+00
## RegionMiddle East:Incidents_HIV	2.640e+00
## RegionNorth America:Incidents_HIV	6.741e+01
## RegionOceania:Incidents_HIV	1.141e+00
## RegionRest of Europe:Incidents_HIV	6.438e-01
## RegionSouth America:Incidents_HIV	8.746e-01

## RegionAsia:GDP_per_capita	2.750e-05
## RegionCentral America and Caribbean:GDP_per_capita	2.632e-05
## RegionEuropean Union:GDP_per_capita	2.810e-05
## RegionMiddle East:GDP_per_capita	2.699e-05
## RegionNorth America:GDP_per_capita	2.504e-04
## RegionOceania:GDP_per_capita	3.326e-05
## RegionRest of Europe:GDP_per_capita	2.942e-05
## RegionSouth America:GDP_per_capita	3.792e-05
## RegionAsia:Thinness_ten_nineteen_years	3.093e-02
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	5.915e-01
## RegionEuropean Union:Thinness_ten_nineteen_years	5.299e-01
## RegionMiddle East:Thinness_ten_nineteen_years	6.838e-01
## RegionNorth America:Thinness_ten_nineteen_years	5.229e+00
## RegionOceania:Thinness_ten_nineteen_years	9.852e-02
## RegionRest of Europe:Thinness_ten_nineteen_years	8.540e-01
## RegionSouth America:Thinness_ten_nineteen_years	9.087e-01
## RegionAsia:Thinness_five_nine_years	3.092e-02
## RegionCentral America and Caribbean:Thinness_five_nine_years	5.660e-01
## RegionEuropean Union:Thinness_five_nine_years	4.631e-01
## RegionMiddle East:Thinness_five_nine_years	6.647e-01
## RegionNorth America:Thinness_five_nine_years	5.847e+00
## RegionOceania:Thinness_five_nine_years	1.162e-01
## RegionRest of Europe:Thinness_five_nine_years	8.475e-01
## RegionSouth America:Thinness_five_nine_years	9.373e-01
## RegionAsia:Schooling	4.955e-02
## RegionCentral America and Caribbean:Schooling	7.320e-02
## RegionEuropean Union:Schooling	7.554e-02
## RegionMiddle East:Schooling	8.720e-02
## RegionNorth America:Schooling	1.108e+00
## RegionOceania:Schooling	1.167e-01
## RegionRest of Europe:Schooling	9.086e-02
## RegionSouth America:Schooling	1.251e-01
## RegionAsia:Economy_status_DevelopedYes	7.257e-01
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	7.826e-01
## RegionNorth America:Economy_status_DevelopedYes	1.560e+01
## RegionOceania:Economy_status_DevelopedYes	1.150e+00
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:BMI	6.546e-02
## YearY2002:BMI	6.656e-02
## YearY2003:BMI	6.624e-02
## YearY2004:BMI	6.706e-02
## YearY2005:BMI	6.830e-02
## YearY2006:BMI	6.972e-02
## YearY2007:BMI	6.999e-02
## YearY2008:BMI	7.080e-02
## YearY2009:BMI	7.059e-02
## YearY2010:BMI	7.035e-02
## YearY2011:BMI	7.054e-02
## YearY2012:BMI	7.104e-02
## YearY2013:BMI	7.156e-02
## YearY2014:BMI	7.250e-02

## YearY2015:BMI	7.222e-02
## YearY2001:Incidents_HIV	3.520e-02
## YearY2002:Incidents_HIV	3.688e-02
## YearY2003:Incidents_HIV	3.863e-02
## YearY2004:Incidents_HIV	3.828e-02
## YearY2005:Incidents_HIV	3.999e-02
## YearY2006:Incidents_HIV	4.147e-02
## YearY2007:Incidents_HIV	4.248e-02
## YearY2008:Incidents_HIV	4.427e-02
## YearY2009:Incidents_HIV	4.652e-02
## YearY2010:Incidents_HIV	4.869e-02
## YearY2011:Incidents_HIV	5.189e-02
## YearY2012:Incidents_HIV	5.331e-02
## YearY2013:Incidents_HIV	5.461e-02
## YearY2014:Incidents_HIV	5.653e-02
## YearY2015:Incidents_HIV	5.894e-02
## YearY2001:Thinness_ten_nineteen_years	5.660e-02
## YearY2002:Thinness_ten_nineteen_years	5.164e-02
## YearY2003:Thinness_ten_nineteen_years	8.196e-02
## YearY2004:Thinness_ten_nineteen_years	8.667e-02
## YearY2005:Thinness_ten_nineteen_years	5.602e-02
## YearY2006:Thinness_ten_nineteen_years	5.782e-02
## YearY2007:Thinness_ten_nineteen_years	5.586e-02
## YearY2008:Thinness_ten_nineteen_years	6.353e-02
## YearY2009:Thinness_ten_nineteen_years	7.376e-02
## YearY2010:Thinness_ten_nineteen_years	8.147e-02
## YearY2011:Thinness_ten_nineteen_years	8.594e-02
## YearY2012:Thinness_ten_nineteen_years	6.486e-02
## YearY2013:Thinness_ten_nineteen_years	6.705e-02
## YearY2014:Thinness_ten_nineteen_years	7.297e-02
## YearY2015:Thinness_ten_nineteen_years	9.676e-02
## YearY2001:Thinness_five_nine_years	5.507e-02
## YearY2002:Thinness_five_nine_years	4.992e-02
## YearY2003:Thinness_five_nine_years	8.134e-02
## YearY2004:Thinness_five_nine_years	8.534e-02
## YearY2005:Thinness_five_nine_years	5.582e-02
## YearY2006:Thinness_five_nine_years	5.697e-02
## YearY2007:Thinness_five_nine_years	5.356e-02
## YearY2008:Thinness_five_nine_years	6.090e-02
## YearY2009:Thinness_five_nine_years	7.133e-02
## YearY2010:Thinness_five_nine_years	7.976e-02
## YearY2011:Thinness_five_nine_years	8.486e-02
## YearY2012:Thinness_five_nine_years	6.497e-02
## YearY2013:Thinness_five_nine_years	6.709e-02
## YearY2014:Thinness_five_nine_years	7.426e-02
## YearY2015:Thinness_five_nine_years	9.653e-02
## Infant_deaths:Adult_mortality	1.986e-05
## Infant_deaths:Hepatitis_B	1.219e-04
## Infant_deaths:BMl	1.485e-03
## Infant_deaths:GDP_per_capita	5.399e-07
## Adult_mortality:Hepatitis_B	3.934e-05
## Adult_mortality:BMl	3.089e-04
## Adult_mortality:Polio	4.176e-05
## Adult_mortality:Incidents_HIV	1.259e-04

## Adult_mortality:GDP_per_capita	9.596e-08
## Adult_mortality:Schooling	1.900e-04
## Hepatitis_B:Polio	1.198e-04
## Hepatitis_B:Incidents_HIV	1.636e-03
## Hepatitis_B:Thinness_five_nine_years	3.385e-04
## BMI:Thinness_ten_nineteen_years	1.344e-02
## BMI:Thinness_five_nine_years	1.310e-02
## BMI:Schooling	1.097e-02
## Polio:Incidents_HIV	1.681e-03
## Incidents_HIV:GDP_per_capita	6.089e-06
## Incidents_HIV:Thinness_ten_nineteen_years	8.301e-03
## Incidents_HIV:Thinness_five_nine_years	8.337e-03
## Thinness_ten_nineteen_years:Thinness_five_nine_years	9.527e-04
##	t value
## (Intercept)	32.536
## RegionAsia	4.699
## RegionCentral America and Caribbean	-1.441
## RegionEuropean Union	6.410
## RegionMiddle East	-0.981
## RegionNorth America	0.130
## RegionOceania	0.504
## RegionRest of Europe	4.569
## RegionSouth America	2.173
## YearY2001	-0.447
## YearY2002	0.564
## YearY2003	0.414
## YearY2004	0.234
## YearY2005	0.192
## YearY2006	0.246
## YearY2007	0.144
## YearY2008	0.649
## YearY2009	1.322
## YearY2010	1.338
## YearY2011	1.725
## YearY2012	1.296
## YearY2013	1.833
## YearY2014	2.469
## YearY2015	2.466
## Infant_deaths	-16.971
## Adult_mortality	-3.756
## Hepatitis_B	-4.806
## BMI	-3.863
## Polio	-1.012
## Incidents_HIV	5.068
## GDP_per_capita	1.231
## Thinness_ten_nineteen_years	3.666
## Thinness_five_nine_years	-4.873
## Schooling	-6.424
## Economy_status_DevelopedYes	3.278
## RegionAsia:YearY2001	-0.467
## RegionCentral America and Caribbean:YearY2001	0.060
## RegionEuropean Union:YearY2001	0.515
## RegionMiddle East:YearY2001	-0.252
## RegionNorth America:YearY2001	0.481

## RegionOceania:YearY2001	-0.092
## RegionRest of Europe:YearY2001	0.268
## RegionSouth America:YearY2001	-0.185
## RegionAsia:YearY2002	0.213
## RegionCentral America and Caribbean:YearY2002	0.516
## RegionEuropean Union:YearY2002	1.278
## RegionMiddle East:YearY2002	0.506
## RegionNorth America:YearY2002	0.890
## RegionOceania:YearY2002	0.734
## RegionRest of Europe:YearY2002	0.786
## RegionSouth America:YearY2002	0.422
## RegionAsia:YearY2003	0.565
## RegionCentral America and Caribbean:YearY2003	0.494
## RegionEuropean Union:YearY2003	1.347
## RegionMiddle East:YearY2003	0.534
## RegionNorth America:YearY2003	0.941
## RegionOceania:YearY2003	0.878
## RegionRest of Europe:YearY2003	1.039
## RegionSouth America:YearY2003	0.363
## RegionAsia:YearY2004	0.896
## RegionCentral America and Caribbean:YearY2004	0.086
## RegionEuropean Union:YearY2004	2.138
## RegionMiddle East:YearY2004	0.522
## RegionNorth America:YearY2004	0.865
## RegionOceania:YearY2004	0.770
## RegionRest of Europe:YearY2004	1.172
## RegionSouth America:YearY2004	0.479
## RegionAsia:YearY2005	0.558
## RegionCentral America and Caribbean:YearY2005	-0.201
## RegionEuropean Union:YearY2005	2.019
## RegionMiddle East:YearY2005	0.588
## RegionNorth America:YearY2005	0.875
## RegionOceania:YearY2005	0.695
## RegionRest of Europe:YearY2005	1.239
## RegionSouth America:YearY2005	0.496
## RegionAsia:YearY2006	0.379
## RegionCentral America and Caribbean:YearY2006	-0.491
## RegionEuropean Union:YearY2006	2.579
## RegionMiddle East:YearY2006	0.429
## RegionNorth America:YearY2006	0.829
## RegionOceania:YearY2006	0.648
## RegionRest of Europe:YearY2006	1.465
## RegionSouth America:YearY2006	0.607
## RegionAsia:YearY2007	0.544
## RegionCentral America and Caribbean:YearY2007	-1.053
## RegionEuropean Union:YearY2007	2.450
## RegionMiddle East:YearY2007	0.219
## RegionNorth America:YearY2007	0.752
## RegionOceania:YearY2007	0.585
## RegionRest of Europe:YearY2007	1.639
## RegionSouth America:YearY2007	0.343
## RegionAsia:YearY2008	1.172
## RegionCentral America and Caribbean:YearY2008	-1.183
## RegionEuropean Union:YearY2008	2.724

## RegionMiddle East:YearY2008	0.416
## RegionNorth America:YearY2008	0.741
## RegionOceania:YearY2008	0.756
## RegionRest of Europe:YearY2008	1.912
## RegionSouth America:YearY2008	0.748
## RegionAsia:YearY2009	1.539
## RegionCentral America and Caribbean:YearY2009	-1.516
## RegionEuropean Union:YearY2009	2.641
## RegionMiddle East:YearY2009	0.498
## RegionNorth America:YearY2009	0.718
## RegionOceania:YearY2009	0.842
## RegionRest of Europe:YearY2009	1.749
## RegionSouth America:YearY2009	0.672
## RegionAsia:YearY2010	1.747
## RegionCentral America and Caribbean:YearY2010	-1.111
## RegionEuropean Union:YearY2010	3.258
## RegionMiddle East:YearY2010	0.678
## RegionNorth America:YearY2010	0.708
## RegionOceania:YearY2010	1.176
## RegionRest of Europe:YearY2010	2.294
## RegionSouth America:YearY2010	1.154
## RegionAsia:YearY2011	1.540
## RegionCentral America and Caribbean:YearY2011	-1.619
## RegionEuropean Union:YearY2011	3.976
## RegionMiddle East:YearY2011	0.606
## RegionNorth America:YearY2011	0.653
## RegionOceania:YearY2011	1.282
## RegionRest of Europe:YearY2011	2.543
## RegionSouth America:YearY2011	1.125
## RegionAsia:YearY2012	1.898
## RegionCentral America and Caribbean:YearY2012	-1.868
## RegionEuropean Union:YearY2012	3.798
## RegionMiddle East:YearY2012	0.375
## RegionNorth America:YearY2012	0.640
## RegionOceania:YearY2012	1.222
## RegionRest of Europe:YearY2012	2.592
## RegionSouth America:YearY2012	1.216
## RegionAsia:YearY2013	2.183
## RegionCentral America and Caribbean:YearY2013	-1.992
## RegionEuropean Union:YearY2013	4.229
## RegionMiddle East:YearY2013	0.711
## RegionNorth America:YearY2013	0.637
## RegionOceania:YearY2013	1.439
## RegionRest of Europe:YearY2013	2.907
## RegionSouth America:YearY2013	1.193
## RegionAsia:YearY2014	2.657
## RegionCentral America and Caribbean:YearY2014	-1.942
## RegionEuropean Union:YearY2014	4.756
## RegionMiddle East:YearY2014	0.970
## RegionNorth America:YearY2014	0.638
## RegionOceania:YearY2014	1.991
## RegionRest of Europe:YearY2014	3.258
## RegionSouth America:YearY2014	1.528
## RegionAsia:YearY2015	2.381

## RegionCentral America and Caribbean:YearY2015	-2.156
## RegionEuropean Union:YearY2015	4.036
## RegionMiddle East:YearY2015	0.809
## RegionNorth America:YearY2015	0.615
## RegionOceania:YearY2015	1.844
## RegionRest of Europe:YearY2015	3.014
## RegionSouth America:YearY2015	1.395
## RegionAsia:Infant_deaths	-2.614
## RegionCentral America and Caribbean:Infant_deaths	2.499
## RegionEuropean Union:Infant_deaths	-4.085
## RegionMiddle East:Infant_deaths	-2.878
## RegionNorth America:Infant_deaths	0.104
## RegionOceania:Infant_deaths	-0.841
## RegionRest of Europe:Infant_deaths	1.066
## RegionSouth America:Infant_deaths	-1.637
## RegionAsia:Adult_mortality	10.304
## RegionCentral America and Caribbean:Adult_mortality	-5.205
## RegionEuropean Union:Adult_mortality	5.884
## RegionMiddle East:Adult_mortality	4.883
## RegionNorth America:Adult_mortality	0.280
## RegionOceania:Adult_mortality	1.465
## RegionRest of Europe:Adult_mortality	8.571
## RegionSouth America:Adult_mortality	-1.328
## RegionAsia:Hepatitis_B	4.973
## RegionCentral America and Caribbean:Hepatitis_B	3.551
## RegionEuropean Union:Hepatitis_B	2.874
## RegionMiddle East:Hepatitis_B	1.767
## RegionNorth America:Hepatitis_B	1.914
## RegionOceania:Hepatitis_B	2.467
## RegionRest of Europe:Hepatitis_B	2.361
## RegionSouth America:Hepatitis_B	3.187
## RegionAsia:BMI	-5.807
## RegionCentral America and Caribbean:BMI	5.157
## RegionEuropean Union:BMI	-7.083
## RegionMiddle East:BMI	1.222
## RegionNorth America:BMI	-0.262
## RegionOceania:BMI	0.155
## RegionRest of Europe:BMI	-3.990
## RegionSouth America:BMI	-0.960
## RegionAsia:Polio	-4.384
## RegionCentral America and Caribbean:Polio	-3.958
## RegionEuropean Union:Polio	-1.705
## RegionMiddle East:Polio	-1.836
## RegionNorth America:Polio	0.000
## RegionOceania:Polio	-0.905
## RegionRest of Europe:Polio	-1.702
## RegionSouth America:Polio	-0.931
## RegionAsia:Incidents_HIV	-2.790
## RegionCentral America and Caribbean:Incidents_HIV	-4.969
## RegionEuropean Union:Incidents_HIV	3.504
## RegionMiddle East:Incidents_HIV	-6.701
## RegionNorth America:Incidents_HIV	-0.161
## RegionOceania:Incidents_HIV	-4.269
## RegionRest of Europe:Incidents_HIV	-0.199

## RegionSouth America:Incidents_HIV	-0.406
## RegionAsia:GDP_per_capita	2.234
## RegionCentral America and Caribbean:GDP_per_capita	2.780
## RegionEuropean Union:GDP_per_capita	0.962
## RegionMiddle East:GDP_per_capita	0.981
## RegionNorth America:GDP_per_capita	-0.080
## RegionOceania:GDP_per_capita	1.136
## RegionRest of Europe:GDP_per_capita	0.440
## RegionSouth America:GDP_per_capita	-0.100
## RegionAsia:Thinness_ten_nineteen_years	1.393
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	-1.366
## RegionEuropean Union:Thinness_ten_nineteen_years	-1.152
## RegionMiddle East:Thinness_ten_nineteen_years	0.845
## RegionNorth America:Thinness_ten_nineteen_years	0.450
## RegionOceania:Thinness_ten_nineteen_years	0.318
## RegionRest of Europe:Thinness_ten_nineteen_years	0.408
## RegionSouth America:Thinness_ten_nineteen_years	3.870
## RegionAsia:Thinness_five_nine_years	2.141
## RegionCentral America and Caribbean:Thinness_five_nine_years	1.052
## RegionEuropean Union:Thinness_five_nine_years	-0.105
## RegionMiddle East:Thinness_five_nine_years	-0.701
## RegionNorth America:Thinness_five_nine_years	0.315
## RegionOceania:Thinness_five_nine_years	1.942
## RegionRest of Europe:Thinness_five_nine_years	-1.687
## RegionSouth America:Thinness_five_nine_years	-3.586
## RegionAsia:Schooling	-4.172
## RegionCentral America and Caribbean:Schooling	-6.079
## RegionEuropean Union:Schooling	-6.650
## RegionMiddle East:Schooling	-4.051
## RegionNorth America:Schooling	-0.769
## RegionOceania:Schooling	-8.465
## RegionRest of Europe:Schooling	-5.870
## RegionSouth America:Schooling	-6.291
## RegionAsia:Economy_status_DevelopedYes	0.957
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	0.835
## RegionNorth America:Economy_status_DevelopedYes	0.543
## RegionOceania:Economy_status_DevelopedYes	3.418
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:BMI	0.413
## YearY2002:BMI	-0.655
## YearY2003:BMI	-0.556
## YearY2004:BMI	-0.380
## YearY2005:BMI	-0.323
## YearY2006:BMI	-0.381
## YearY2007:BMI	-0.248
## YearY2008:BMI	-0.734
## YearY2009:BMI	-1.275
## YearY2010:BMI	-1.371
## YearY2011:BMI	-1.712
## YearY2012:BMI	-1.327
## YearY2013:BMI	-1.820

## YearY2014:BMI	-2.447
## YearY2015:BMI	-2.393
## YearY2001:Incidents_HIV	-0.558
## YearY2002:Incidents_HIV	-0.385
## YearY2003:Incidents_HIV	-1.619
## YearY2004:Incidents_HIV	-2.899
## YearY2005:Incidents_HIV	-2.889
## YearY2006:Incidents_HIV	-3.585
## YearY2007:Incidents_HIV	-3.020
## YearY2008:Incidents_HIV	-3.010
## YearY2009:Incidents_HIV	-3.063
## YearY2010:Incidents_HIV	-2.289
## YearY2011:Incidents_HIV	-1.777
## YearY2012:Incidents_HIV	-0.935
## YearY2013:Incidents_HIV	0.595
## YearY2014:Incidents_HIV	2.177
## YearY2015:Incidents_HIV	2.278
## YearY2001:Thinness_ten_nineteen_years	0.540
## YearY2002:Thinness_ten_nineteen_years	1.393
## YearY2003:Thinness_ten_nineteen_years	2.167
## YearY2004:Thinness_ten_nineteen_years	2.251
## YearY2005:Thinness_ten_nineteen_years	3.060
## YearY2006:Thinness_ten_nineteen_years	3.079
## YearY2007:Thinness_ten_nineteen_years	3.048
## YearY2008:Thinness_ten_nineteen_years	2.975
## YearY2009:Thinness_ten_nineteen_years	1.043
## YearY2010:Thinness_ten_nineteen_years	1.859
## YearY2011:Thinness_ten_nineteen_years	0.941
## YearY2012:Thinness_ten_nineteen_years	4.077
## YearY2013:Thinness_ten_nineteen_years	4.478
## YearY2014:Thinness_ten_nineteen_years	3.762
## YearY2015:Thinness_ten_nineteen_years	2.365
## YearY2001:Thinness_five_nine_years	-0.184
## YearY2002:Thinness_five_nine_years	-1.405
## YearY2003:Thinness_five_nine_years	-2.170
## YearY2004:Thinness_five_nine_years	-2.204
## YearY2005:Thinness_five_nine_years	-3.189
## YearY2006:Thinness_five_nine_years	-3.141
## YearY2007:Thinness_five_nine_years	-3.402
## YearY2008:Thinness_five_nine_years	-3.431
## YearY2009:Thinness_five_nine_years	-1.800
## YearY2010:Thinness_five_nine_years	-2.443
## YearY2011:Thinness_five_nine_years	-1.509
## YearY2012:Thinness_five_nine_years	-4.713
## YearY2013:Thinness_five_nine_years	-5.337
## YearY2014:Thinness_five_nine_years	-4.603
## YearY2015:Thinness_five_nine_years	-3.077
## Infant_deaths:Adult_mortality	14.216
## Infant_deaths:Hepatitis_B	-4.407
## Infant_deaths:BMI	12.673
## Infant_deaths:GDP_per_capita	-4.656
## Adult_mortality:Hepatitis_B	6.285
## Adult_mortality:BMI	-8.586
## Adult_mortality:Polio	2.697

## Adult_mortality:Incidents_HIV	6.325
## Adult_mortality:GDP_per_capita	-7.729
## Adult_mortality:Schooling	4.062
## Hepatitis_B:Polio	1.856
## Hepatitis_B:Incidents_HIV	-4.115
## Hepatitis_B:Thinness_five_nine_years	4.196
## BMI:Thinness_ten_nineteen_years	-4.092
## BMI:Thinness_five_nine_years	4.807
## BMI:Schooling	7.319
## Polio:Incidents_HIV	-4.621
## Incidents_HIV:GDP_per_capita	14.444
## Incidents_HIV:Thinness_ten_nineteen_years	2.219
## Incidents_HIV:Thinness_five_nine_years	-2.960
## Thinness_ten_nineteen_years:Thinness_five_nine_years	-1.191
##	Pr(> t )
## (Intercept)	< 2e-16 ***
## RegionAsia	2.76e-06 ***
## RegionCentral America and Caribbean	0.149658
## RegionEuropean Union	1.73e-10 ***
## RegionMiddle East	0.326763
## RegionNorth America	0.896716
## RegionOceania	0.614410
## RegionRest of Europe	5.13e-06 ***
## RegionSouth America	0.029889 *
## YearY2001	0.654936
## YearY2002	0.572558
## YearY2003	0.678863
## YearY2004	0.814648
## YearY2005	0.847721
## YearY2006	0.805351
## YearY2007	0.885533
## YearY2008	0.516202
## YearY2009	0.186434
## YearY2010	0.180983
## YearY2011	0.084689 .
## YearY2012	0.195097
## YearY2013	0.066992 .
## YearY2014	0.013602 *
## YearY2015	0.013723 *
## Infant_deaths	< 2e-16 ***
## Adult_mortality	0.000176 ***
## Hepatitis_B	1.63e-06 ***
## BMI	0.000115 ***
## Polio	0.311866
## Incidents_HIV	4.30e-07 ***
## GDP_per_capita	0.218478
## Thinness_ten_nineteen_years	0.000251 ***
## Thinness_five_nine_years	1.17e-06 ***
## Schooling	1.58e-10 ***
## Economy_status_DevelopedYes	0.001059 **
## RegionAsia:YearY2001	0.640253
## RegionCentral America and Caribbean:YearY2001	0.952393
## RegionEuropean Union:YearY2001	0.606887
## RegionMiddle East:YearY2001	0.801143

## RegionNorth America:YearY2001	0.630537
## RegionOceania:YearY2001	0.927043
## RegionRest of Europe:YearY2001	0.788957
## RegionSouth America:YearY2001	0.853317
## RegionAsia:YearY2002	0.831418
## RegionCentral America and Caribbean:YearY2002	0.605801
## RegionEuropean Union:YearY2002	0.201450
## RegionMiddle East:YearY2002	0.612830
## RegionNorth America:YearY2002	0.373608
## RegionOceania:YearY2002	0.463190
## RegionRest of Europe:YearY2002	0.432001
## RegionSouth America:YearY2002	0.672989
## RegionAsia:YearY2003	0.572395
## RegionCentral America and Caribbean:YearY2003	0.621510
## RegionEuropean Union:YearY2003	0.178032
## RegionMiddle East:YearY2003	0.593534
## RegionNorth America:YearY2003	0.346720
## RegionOceania:YearY2003	0.380145
## RegionRest of Europe:YearY2003	0.298930
## RegionSouth America:YearY2003	0.716863
## RegionAsia:YearY2004	0.370246
## RegionCentral America and Caribbean:YearY2004	0.931123
## RegionEuropean Union:YearY2004	0.032652 *
## RegionMiddle East:YearY2004	0.601878
## RegionNorth America:YearY2004	0.387345
## RegionOceania:YearY2004	0.441559
## RegionRest of Europe:YearY2004	0.241393
## RegionSouth America:YearY2004	0.632100
## RegionAsia:YearY2005	0.576925
## RegionCentral America and Caribbean:YearY2005	0.841044
## RegionEuropean Union:YearY2005	0.043643 *
## RegionMiddle East:YearY2005	0.556824
## RegionNorth America:YearY2005	0.381579
## RegionOceania:YearY2005	0.486848
## RegionRest of Europe:YearY2005	0.215456
## RegionSouth America:YearY2005	0.620260
## RegionAsia:YearY2006	0.704758
## RegionCentral America and Caribbean:YearY2006	0.623196
## RegionEuropean Union:YearY2006	0.009965 **
## RegionMiddle East:YearY2006	0.667849
## RegionNorth America:YearY2006	0.407409
## RegionOceania:YearY2006	0.516927
## RegionRest of Europe:YearY2006	0.143065
## RegionSouth America:YearY2006	0.544184
## RegionAsia:YearY2007	0.586211
## RegionCentral America and Caribbean:YearY2007	0.292252
## RegionEuropean Union:YearY2007	0.014340 *
## RegionMiddle East:YearY2007	0.826306
## RegionNorth America:YearY2007	0.452241
## RegionOceania:YearY2007	0.558738
## RegionRest of Europe:YearY2007	0.101340
## RegionSouth America:YearY2007	0.731970
## RegionAsia:YearY2008	0.241136
## RegionCentral America and Caribbean:YearY2008	0.237005

## RegionEuropean Union:YearY2008	0.006498 **
## RegionMiddle East:YearY2008	0.677116
## RegionNorth America:YearY2008	0.458956
## RegionOceania:YearY2008	0.449620
## RegionRest of Europe:YearY2008	0.055988 .
## RegionSouth America:YearY2008	0.454574
## RegionAsia:YearY2009	0.123826
## RegionCentral America and Caribbean:YearY2009	0.129530
## RegionEuropean Union:YearY2009	0.008316 **
## RegionMiddle East:YearY2009	0.618825
## RegionNorth America:YearY2009	0.472843
## RegionOceania:YearY2009	0.399847
## RegionRest of Europe:YearY2009	0.080345 .
## RegionSouth America:YearY2009	0.501386
## RegionAsia:YearY2010	0.080742 .
## RegionCentral America and Caribbean:YearY2010	0.266566
## RegionEuropean Union:YearY2010	0.001136 **
## RegionMiddle East:YearY2010	0.497921
## RegionNorth America:YearY2010	0.478986
## RegionOceania:YearY2010	0.239528
## RegionRest of Europe:YearY2010	0.021872 *
## RegionSouth America:YearY2010	0.248723
## RegionAsia:YearY2011	0.123784
## RegionCentral America and Caribbean:YearY2011	0.105600
## RegionEuropean Union:YearY2011	7.19e-05 ***
## RegionMiddle East:YearY2011	0.544598
## RegionNorth America:YearY2011	0.513988
## RegionOceania:YearY2011	0.200019
## RegionRest of Europe:YearY2011	0.011052 *
## RegionSouth America:YearY2011	0.260675
## RegionAsia:YearY2012	0.057768 .
## RegionCentral America and Caribbean:YearY2012	0.061844 .
## RegionEuropean Union:YearY2012	0.000149 ***
## RegionMiddle East:YearY2012	0.707842
## RegionNorth America:YearY2012	0.522395
## RegionOceania:YearY2012	0.221777
## RegionRest of Europe:YearY2012	0.009609 **
## RegionSouth America:YearY2012	0.224009
## RegionAsia:YearY2013	0.029118 *
## RegionCentral America and Caribbean:YearY2013	0.046530 *
## RegionEuropean Union:YearY2013	2.43e-05 ***
## RegionMiddle East:YearY2013	0.476993
## RegionNorth America:YearY2013	0.523874
## RegionOceania:YearY2013	0.150239
## RegionRest of Europe:YearY2013	0.003679 **
## RegionSouth America:YearY2013	0.233015
## RegionAsia:YearY2014	0.007935 **
## RegionCentral America and Caribbean:YearY2014	0.052293 .
## RegionEuropean Union:YearY2014	2.09e-06 ***
## RegionMiddle East:YearY2014	0.331998
## RegionNorth America:YearY2014	0.523401
## RegionOceania:YearY2014	0.046611 *
## RegionRest of Europe:YearY2014	0.001138 **
## RegionSouth America:YearY2014	0.126592

## RegionAsia:YearY2015	0.017336 *
## RegionCentral America and Caribbean:YearY2015	0.031143 *
## RegionEuropean Union:YearY2015	5.61e-05 ***
## RegionMiddle East:YearY2015	0.418450
## RegionNorth America:YearY2015	0.538777
## RegionOceania:YearY2015	0.065277 .
## RegionRest of Europe:YearY2015	0.002605 **
## RegionSouth America:YearY2015	0.162995
## RegionAsia:Infant_deaths	0.009001 **
## RegionCentral America and Caribbean:Infant_deaths	0.012503 *
## RegionEuropean Union:Infant_deaths	4.54e-05 ***
## RegionMiddle East:Infant_deaths	0.004039 **
## RegionNorth America:Infant_deaths	0.916974
## RegionOceania:Infant_deaths	0.400294
## RegionRest of Europe:Infant_deaths	0.286637
## RegionSouth America:Infant_deaths	0.101696
## RegionAsia:Adult_mortality	< 2e-16 ***
## RegionCentral America and Caribbean:Adult_mortality	2.10e-07 ***
## RegionEuropean Union:Adult_mortality	4.54e-09 ***
## RegionMiddle East:Adult_mortality	1.11e-06 ***
## RegionNorth America:Adult_mortality	0.779151
## RegionOceania:Adult_mortality	0.143018
## RegionRest of Europe:Adult_mortality	< 2e-16 ***
## RegionSouth America:Adult_mortality	0.184460
## RegionAsia:Hepatitis_B	7.04e-07 ***
## RegionCentral America and Caribbean:Hepatitis_B	0.000390 ***
## RegionEuropean Union:Hepatitis_B	0.004082 **
## RegionMiddle East:Hepatitis_B	0.077398 .
## RegionNorth America:Hepatitis_B	0.055675 .
## RegionOceania:Hepatitis_B	0.013677 *
## RegionRest of Europe:Hepatitis_B	0.018318 *
## RegionSouth America:Hepatitis_B	0.001457 **
## RegionAsia:BMI	7.17e-09 ***
## RegionCentral America and Caribbean:BMI	2.70e-07 ***
## RegionEuropean Union:BMI	1.82e-12 ***
## RegionMiddle East:BMI	0.221763
## RegionNorth America:BMI	0.793178
## RegionOceania:BMI	0.876877
## RegionRest of Europe:BMI	6.80e-05 ***
## RegionSouth America:BMI	0.336947
## RegionAsia:Polio	1.21e-05 ***
## RegionCentral America and Caribbean:Polio	7.77e-05 ***
## RegionEuropean Union:Polio	0.088357 .
## RegionMiddle East:Polio	0.066468 .
## RegionNorth America:Polio	0.999706
## RegionOceania:Polio	0.365459
## RegionRest of Europe:Polio	0.088946 .
## RegionSouth America:Polio	0.352085
## RegionAsia:Incidents_HIV	0.005311 **
## RegionCentral America and Caribbean:Incidents_HIV	7.17e-07 ***
## RegionEuropean Union:Incidents_HIV	0.000467 ***
## RegionMiddle East:Incidents_HIV	2.54e-11 ***
## RegionNorth America:Incidents_HIV	0.872446
## RegionOceania:Incidents_HIV	2.04e-05 ***

## RegionRest of Europe:Incidents_HIV	0.842422
## RegionSouth America:Incidents_HIV	0.684869
## RegionAsia:GDP_per_capita	0.025546 *
## RegionCentral America and Caribbean:GDP_per_capita	0.005472 **
## RegionEuropean Union:GDP_per_capita	0.335977
## RegionMiddle East:GDP_per_capita	0.326730
## RegionNorth America:GDP_per_capita	0.936456
## RegionOceania:GDP_per_capita	0.256240
## RegionRest of Europe:GDP_per_capita	0.659696
## RegionSouth America:GDP_per_capita	0.920122
## RegionAsia:Thinness_ten_nineteen_years	0.163692
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	0.172116
## RegionEuropean Union:Thinness_ten_nineteen_years	0.249302
## RegionMiddle East:Thinness_ten_nineteen_years	0.398245
## RegionNorth America:Thinness_ten_nineteen_years	0.652992
## RegionOceania:Thinness_ten_nineteen_years	0.750752
## RegionRest of Europe:Thinness_ten_nineteen_years	0.682992
## RegionSouth America:Thinness_ten_nineteen_years	0.000111 ***
## RegionAsia:Thinness_five_nine_years	0.032329 *
## RegionCentral America and Caribbean:Thinness_five_nine_years	0.293061
## RegionEuropean Union:Thinness_five_nine_years	0.916744
## RegionMiddle East:Thinness_five_nine_years	0.483065
## RegionNorth America:Thinness_five_nine_years	0.753001
## RegionOceania:Thinness_five_nine_years	0.052205 .
## RegionRest of Europe:Thinness_five_nine_years	0.091787 .
## RegionSouth America:Thinness_five_nine_years	0.000342 ***
## RegionAsia:Schooling	3.13e-05 ***
## RegionCentral America and Caribbean:Schooling	1.39e-09 ***
## RegionEuropean Union:Schooling	3.57e-11 ***
## RegionMiddle East:Schooling	5.25e-05 ***
## RegionNorth America:Schooling	0.442088
## RegionOceania:Schooling	< 2e-16 ***
## RegionRest of Europe:Schooling	4.91e-09 ***
## RegionSouth America:Schooling	3.71e-10 ***
## RegionAsia:Economy_status_DevelopedYes	0.338852
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	0.403603
## RegionNorth America:Economy_status_DevelopedYes	0.587159
## RegionOceania:Economy_status_DevelopedYes	0.000642 ***
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:BMI	0.679697
## YearY2002:BMI	0.512484
## YearY2003:BMI	0.577997
## YearY2004:BMI	0.704290
## YearY2005:BMI	0.746885
## YearY2006:BMI	0.703544
## YearY2007:BMI	0.804357
## YearY2008:BMI	0.462881
## YearY2009:BMI	0.202369
## YearY2010:BMI	0.170343
## YearY2011:BMI	0.086953 .
## YearY2012:BMI	0.184469

## YearY2013:BMI	0.068899 .
## YearY2014:BMI	0.014489 *
## YearY2015:BMI	0.016781 *
## YearY2001:Incidents_HIV	0.576819
## YearY2002:Incidents_HIV	0.700541
## YearY2003:Incidents_HIV	0.105518
## YearY2004:Incidents_HIV	0.003770 **
## YearY2005:Incidents_HIV	0.003892 **
## YearY2006:Incidents_HIV	0.000344 ***
## YearY2007:Incidents_HIV	0.002555 **
## YearY2008:Incidents_HIV	0.002635 **
## YearY2009:Incidents_HIV	0.002214 **
## YearY2010:Incidents_HIV	0.022163 *
## YearY2011:Incidents_HIV	0.075725 .
## YearY2012:Incidents_HIV	0.349740
## YearY2013:Incidents_HIV	0.551905
## YearY2014:Incidents_HIV	0.029563 *
## YearY2015:Incidents_HIV	0.022825 *
## YearY2001:Thinness_ten_nineteen_years	0.589116
## YearY2002:Thinness_ten_nineteen_years	0.163711
## YearY2003:Thinness_ten_nineteen_years	0.030358 *
## YearY2004:Thinness_ten_nineteen_years	0.024472 *
## YearY2005:Thinness_ten_nineteen_years	0.002240 **
## YearY2006:Thinness_ten_nineteen_years	0.002096 **
## YearY2007:Thinness_ten_nineteen_years	0.002328 **
## YearY2008:Thinness_ten_nineteen_years	0.002958 **
## YearY2009:Thinness_ten_nineteen_years	0.297010
## YearY2010:Thinness_ten_nineteen_years	0.063091 .
## YearY2011:Thinness_ten_nineteen_years	0.346821
## YearY2012:Thinness_ten_nineteen_years	4.69e-05 ***
## YearY2013:Thinness_ten_nineteen_years	7.87e-06 ***
## YearY2014:Thinness_ten_nineteen_years	0.000172 ***
## YearY2015:Thinness_ten_nineteen_years	0.018094 *
## YearY2001:Thinness_five_nine_years	0.854087
## YearY2002:Thinness_five_nine_years	0.160107
## YearY2003:Thinness_five_nine_years	0.030133 *
## YearY2004:Thinness_five_nine_years	0.027648 *
## YearY2005:Thinness_five_nine_years	0.001446 **
## YearY2006:Thinness_five_nine_years	0.001702 **
## YearY2007:Thinness_five_nine_years	0.000678 ***
## YearY2008:Thinness_five_nine_years	0.000611 ***
## YearY2009:Thinness_five_nine_years	0.072054 .
## YearY2010:Thinness_five_nine_years	0.014642 *
## YearY2011:Thinness_five_nine_years	0.131481
## YearY2012:Thinness_five_nine_years	2.57e-06 ***
## YearY2013:Thinness_five_nine_years	1.03e-07 ***
## YearY2014:Thinness_five_nine_years	4.38e-06 ***
## YearY2015:Thinness_five_nine_years	0.002110 **
## Infant_deaths:Adult_mortality	< 2e-16 ***
## Infant_deaths:Hepatitis_B	1.09e-05 ***
## Infant_deaths:BMI	< 2e-16 ***
## Infant_deaths:GDP_per_capita	3.39e-06 ***
## Adult_mortality:Hepatitis_B	3.86e-10 ***
## Adult_mortality:BMI	< 2e-16 ***

```

## Adult_mortality:Polio          0.007037 **
## Adult_mortality:Incidents_HIV 2.99e-10 ***
## Adult_mortality:GDP_per_capita 1.55e-14 ***
## Adult_mortality:Schooling     5.02e-05 ***
## Hepatitis_B:Polio             0.063606 .
## Hepatitis_B:Incidents_HIV    4.00e-05 ***
## Hepatitis_B:Thinness_five_nine_years 2.82e-05 ***
## BMI:Thinness_ten_nineteen_years 4.41e-05 ***
## BMI:Thinness_five_nine_years   1.62e-06 ***
## BMI:Schooling                 3.32e-13 ***
## Polio:Incidents_HIV           4.00e-06 ***
## Incidents_HIV:GDP_per_capita < 2e-16 ***
## Incidents_HIV:Thinness_ten_nineteen_years 0.026580 *
## Incidents_HIV:Thinness_five_nine_years   0.003108 **
## Thinness_ten_nineteen_years:Thinness_five_nine_years 0.233817
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8373 on 2544 degrees of freedom
## Multiple R-squared: 0.993, Adjusted R-squared: 0.9921
## F-statistic: 1125 on 319 and 2544 DF, p-value: < 2.2e-16

##
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     Adult_mortality + Hepatitis_B + BMI + Polio + Incidents_HIV +
##     GDP_per_capita + Thinness_ten_nineteen_years + Thinness_five_nine_years +
##     Schooling + Economy_status_Developed + Region:Year + Region:Infant_deaths +
##     Region:Adult_mortality + Region:Hepatitis_B + Region:BMI +
##     Region:Polio + Region:Incidents_HIV + Region:GDP_per_capita +
##     Region:Thinness_ten_nineteen_years + Region:Thinness_five_nine_years +
##     Region:Schooling + Region:Economy_status_Developed + Year:BMI +
##     Year:Incidents_HIV + Year:Thinness_ten_nineteen_years + Year:Thinness_five_nine_years +
##     Infant_deaths:Adult_mortality + Infant_deaths:Hepatitis_B +
##     Infant_deaths:BMI + Infant_deaths:GDP_per_capita + Adult_mortality:Hepatitis_B +
##     Adult_mortality:BMI + Adult_mortality:Polio + Adult_mortality:Incidents_HIV +
##     Adult_mortality:GDP_per_capita + Adult_mortality:Schooling +
##     Hepatitis_B:Incidents_HIV + Hepatitis_B:Thinness_five_nine_years +
##     BMI:Thinness_ten_nineteen_years + BMI:Thinness_five_nine_years +
##     BMI:Schooling + Polio:Incidents_HIV + Incidents_HIV:GDP_per_capita +
##     Incidents_HIV:Thinness_ten_nineteen_years + Incidents_HIV:Thinness_five_nine_years,
##     data = data)
##
## Residuals:
##      Min        1Q      Median        3Q       Max
## -2.777786 -0.48311  0.00041  0.47212  2.99156
##
## Coefficients: (4 not defined because of singularities)
##                               Estimate
## (Intercept)                  9.792e+01
## RegionAsia                   9.048e+00
## RegionCentral America and Caribbean -3.292e+00
## RegionEuropean Union          2.143e+01
## RegionMiddle East             -2.773e+00

```

## RegionNorth America	5.725e+00
## RegionOceania	1.883e+00
## RegionRest of Europe	2.426e+01
## RegionSouth America	1.305e+01
## YearY2001	-7.252e-01
## YearY2002	9.232e-01
## YearY2003	6.331e-01
## YearY2004	3.067e-01
## YearY2005	3.809e-01
## YearY2006	3.947e-01
## YearY2007	3.043e-01
## YearY2008	1.102e+00
## YearY2009	2.280e+00
## YearY2010	2.255e+00
## YearY2011	2.995e+00
## YearY2012	2.333e+00
## YearY2013	3.328e+00
## YearY2014	4.444e+00
## YearY2015	4.391e+00
## Infant_deaths	-5.803e-01
## Adult_mortality	-2.675e-02
## Hepatitis_B	-5.814e-02
## BMI	-4.671e-01
## Polio	3.444e-03
## Incidents_HIV	5.741e-01
## GDP_per_capita	3.336e-05
## Thinness_ten_nineteen_years	1.021e+00
## Thinness_five_nine_years	-1.379e+00
## Schooling	-1.718e+00
## Economy_status_DevelopedYes	2.171e+00
## RegionAsia:YearY2001	-1.543e-01
## RegionCentral America and Caribbean:YearY2001	3.157e-02
## RegionEuropean Union:YearY2001	1.879e-01
## RegionMiddle East:YearY2001	-1.130e-01
## RegionNorth America:YearY2001	4.476e-01
## RegionOceania:YearY2001	-5.190e-02
## RegionRest of Europe:YearY2001	1.136e-01
## RegionSouth America:YearY2001	-8.303e-02
## RegionAsia:YearY2002	8.836e-02
## RegionCentral America and Caribbean:YearY2002	2.133e-01
## RegionEuropean Union:YearY2002	4.792e-01
## RegionMiddle East:YearY2002	2.507e-01
## RegionNorth America:YearY2002	1.073e+00
## RegionOceania:YearY2002	3.583e-01
## RegionRest of Europe:YearY2002	3.456e-01
## RegionSouth America:YearY2002	1.924e-01
## RegionAsia:YearY2003	1.722e-01
## RegionCentral America and Caribbean:YearY2003	1.883e-01
## RegionEuropean Union:YearY2003	4.982e-01
## RegionMiddle East:YearY2003	2.520e-01
## RegionNorth America:YearY2003	1.421e+00
## RegionOceania:YearY2003	4.217e-01
## RegionRest of Europe:YearY2003	4.465e-01
## RegionSouth America:YearY2003	1.524e-01

## RegionAsia:YearY2004	2.825e-01
## RegionCentral America and Caribbean:YearY2004	1.855e-02
## RegionEuropean Union:YearY2004	7.921e-01
## RegionMiddle East:YearY2004	2.282e-01
## RegionNorth America:YearY2004	1.774e+00
## RegionOceania:YearY2004	3.787e-01
## RegionRest of Europe:YearY2004	5.156e-01
## RegionSouth America:YearY2004	2.064e-01
## RegionAsia:YearY2005	1.692e-01
## RegionCentral America and Caribbean:YearY2005	-8.770e-02
## RegionEuropean Union:YearY2005	7.564e-01
## RegionMiddle East:YearY2005	2.708e-01
## RegionNorth America:YearY2005	2.090e+00
## RegionOceania:YearY2005	3.432e-01
## RegionRest of Europe:YearY2005	5.447e-01
## RegionSouth America:YearY2005	2.183e-01
## RegionAsia:YearY2006	1.070e-01
## RegionCentral America and Caribbean:YearY2006	-2.145e-01
## RegionEuropean Union:YearY2006	9.709e-01
## RegionMiddle East:YearY2006	1.840e-01
## RegionNorth America:YearY2006	2.290e+00
## RegionOceania:YearY2006	3.408e-01
## RegionRest of Europe:YearY2006	6.573e-01
## RegionSouth America:YearY2006	2.689e-01
## RegionAsia:YearY2007	1.772e-01
## RegionCentral America and Caribbean:YearY2007	-4.212e-01
## RegionEuropean Union:YearY2007	9.403e-01
## RegionMiddle East:YearY2007	1.021e-01
## RegionNorth America:YearY2007	2.480e+00
## RegionOceania:YearY2007	3.110e-01
## RegionRest of Europe:YearY2007	7.597e-01
## RegionSouth America:YearY2007	1.631e-01
## RegionAsia:YearY2008	3.713e-01
## RegionCentral America and Caribbean:YearY2008	-4.717e-01
## RegionEuropean Union:YearY2008	1.054e+00
## RegionMiddle East:YearY2008	1.881e-01
## RegionNorth America:YearY2008	2.667e+00
## RegionOceania:YearY2008	3.981e-01
## RegionRest of Europe:YearY2008	9.104e-01
## RegionSouth America:YearY2008	3.600e-01
## RegionAsia:YearY2009	4.866e-01
## RegionCentral America and Caribbean:YearY2009	-6.145e-01
## RegionEuropean Union:YearY2009	1.025e+00
## RegionMiddle East:YearY2009	2.244e-01
## RegionNorth America:YearY2009	2.663e+00
## RegionOceania:YearY2009	4.355e-01
## RegionRest of Europe:YearY2009	8.349e-01
## RegionSouth America:YearY2009	3.262e-01
## RegionAsia:YearY2010	5.565e-01
## RegionCentral America and Caribbean:YearY2010	-4.582e-01
## RegionEuropean Union:YearY2010	1.271e+00
## RegionMiddle East:YearY2010	3.129e-01
## RegionNorth America:YearY2010	2.925e+00
## RegionOceania:YearY2010	6.063e-01

## RegionRest of Europe:YearY2010	1.126e+00
## RegionSouth America:YearY2010	5.634e-01
## RegionAsia:YearY2011	4.918e-01
## RegionCentral America and Caribbean:YearY2011	-6.607e-01
## RegionEuropean Union:YearY2011	1.565e+00
## RegionMiddle East:YearY2011	2.920e-01
## RegionNorth America:YearY2011	2.993e+00
## RegionOceania:YearY2011	6.794e-01
## RegionRest of Europe:YearY2011	1.285e+00
## RegionSouth America:YearY2011	5.644e-01
## RegionAsia:YearY2012	6.075e-01
## RegionCentral America and Caribbean:YearY2012	-7.696e-01
## RegionEuropean Union:YearY2012	1.489e+00
## RegionMiddle East:YearY2012	1.958e-01
## RegionNorth America:YearY2012	3.156e+00
## RegionOceania:YearY2012	6.385e-01
## RegionRest of Europe:YearY2012	1.310e+00
## RegionSouth America:YearY2012	6.118e-01
## RegionAsia:YearY2013	7.030e-01
## RegionCentral America and Caribbean:YearY2013	-8.242e-01
## RegionEuropean Union:YearY2013	1.671e+00
## RegionMiddle East:YearY2013	3.508e-01
## RegionNorth America:YearY2013	3.307e+00
## RegionOceania:YearY2013	7.553e-01
## RegionRest of Europe:YearY2013	1.491e+00
## RegionSouth America:YearY2013	6.106e-01
## RegionAsia:YearY2014	8.665e-01
## RegionCentral America and Caribbean:YearY2014	-8.150e-01
## RegionEuropean Union:YearY2014	1.905e+00
## RegionMiddle East:YearY2014	4.917e-01
## RegionNorth America:YearY2014	3.517e+00
## RegionOceania:YearY2014	1.062e+00
## RegionRest of Europe:YearY2014	1.721e+00
## RegionSouth America:YearY2014	8.014e-01
## RegionAsia:YearY2015	7.723e-01
## RegionCentral America and Caribbean:YearY2015	-9.170e-01
## RegionEuropean Union:YearY2015	1.628e+00
## RegionMiddle East:YearY2015	4.254e-01
## RegionNorth America:YearY2015	3.527e+00
## RegionOceania:YearY2015	9.894e-01
## RegionRest of Europe:YearY2015	1.620e+00
## RegionSouth America:YearY2015	7.449e-01
## RegionAsia:Infant_deaths	-1.876e-02
## RegionCentral America and Caribbean:Infant_deaths	3.084e-02
## RegionEuropean Union:Infant_deaths	-1.232e-01
## RegionMiddle East:Infant_deaths	-7.970e-02
## RegionNorth America:Infant_deaths	6.877e-02
## RegionOceania:Infant_deaths	-1.348e-02
## RegionRest of Europe:Infant_deaths	1.825e-02
## RegionSouth America:Infant_deaths	-5.236e-02
## RegionAsia:Adult_mortality	1.492e-02
## RegionCentral America and Caribbean:Adult_mortality	-1.346e-02
## RegionEuropean Union:Adult_mortality	1.637e-02
## RegionMiddle East:Adult_mortality	3.293e-02

## RegionNorth America:Adult_mortality	4.460e-02
## RegionOceania:Adult_mortality	7.484e-03
## RegionRest of Europe:Adult_mortality	2.040e-02
## RegionSouth America:Adult_mortality	-1.224e-02
## RegionAsia:Hepatitis_B	3.422e-02
## RegionCentral America and Caribbean:Hepatitis_B	4.166e-02
## RegionEuropean Union:Hepatitis_B	2.601e-02
## RegionMiddle East:Hepatitis_B	2.059e-02
## RegionNorth America:Hepatitis_B	4.850e-02
## RegionOceania:Hepatitis_B	2.663e-02
## RegionRest of Europe:Hepatitis_B	2.056e-02
## RegionSouth America:Hepatitis_B	3.564e-02
## RegionAsia:BMI	-4.525e-01
## RegionCentral America and Caribbean:BMI	4.286e-01
## RegionEuropean Union:BMI	-7.863e-01
## RegionMiddle East:BMI	1.296e-01
## RegionNorth America:BMI	-5.913e-01
## RegionOceania:BMI	1.509e-02
## RegionRest of Europe:BMI	-8.100e-01
## RegionSouth America:BMI	-2.238e-01
## RegionAsia:Polio	-3.545e-02
## RegionCentral America and Caribbean:Polio	-4.742e-02
## RegionEuropean Union:Polio	-2.400e-02
## RegionMiddle East:Polio	-3.044e-02
## RegionNorth America:Polio	8.937e-04
## RegionOceania:Polio	-1.325e-02
## RegionRest of Europe:Polio	-2.753e-02
## RegionSouth America:Polio	-1.205e-02
## RegionAsia:Incidents_HIV	-1.184e+00
## RegionCentral America and Caribbean:Incidents_HIV	-1.473e+00
## RegionEuropean Union:Incidents_HIV	3.913e+00
## RegionMiddle East:Incidents_HIV	-1.753e+01
## RegionNorth America:Incidents_HIV	-9.316e+00
## RegionOceania:Incidents_HIV	-5.035e+00
## RegionRest of Europe:Incidents_HIV	-8.713e-02
## RegionSouth America:Incidents_HIV	-4.013e-01
## RegionAsia:GDP_per_capita	6.274e-05
## RegionCentral America and Caribbean:GDP_per_capita	7.492e-05
## RegionEuropean Union:GDP_per_capita	3.020e-05
## RegionMiddle East:GDP_per_capita	2.873e-05
## RegionNorth America:GDP_per_capita	-4.726e-05
## RegionOceania:GDP_per_capita	4.131e-05
## RegionRest of Europe:GDP_per_capita	1.580e-05
## RegionSouth America:GDP_per_capita	-1.703e-06
## RegionAsia:Thinness_ten_nineteen_years	3.522e-02
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	-7.611e-01
## RegionEuropean Union:Thinness_ten_nineteen_years	-6.190e-01
## RegionMiddle East:Thinness_ten_nineteen_years	5.020e-01
## RegionNorth America:Thinness_ten_nineteen_years	2.331e+00
## RegionOceania:Thinness_ten_nineteen_years	2.408e-02
## RegionRest of Europe:Thinness_ten_nineteen_years	2.144e-01
## RegionSouth America:Thinness_ten_nineteen_years	3.491e+00
## RegionAsia:Thinness_five_nine_years	5.735e-02
## RegionCentral America and Caribbean:Thinness_five_nine_years	5.424e-01

## RegionEuropean Union:Thinness_five_nine_years	-3.207e-02
## RegionMiddle East:Thinness_five_nine_years	-4.129e-01
## RegionNorth America:Thinness_five_nine_years	1.790e+00
## RegionOceania:Thinness_five_nine_years	2.281e-01
## RegionRest of Europe:Thinness_five_nine_years	-1.352e+00
## RegionSouth America:Thinness_five_nine_years	-3.333e+00
## RegionAsia:Schooling	-2.125e-01
## RegionCentral America and Caribbean:Schooling	-4.519e-01
## RegionEuropean Union:Schooling	-5.147e-01
## RegionMiddle East:Schooling	-3.601e-01
## RegionNorth America:Schooling	-9.141e-01
## RegionOceania:Schooling	-9.815e-01
## RegionRest of Europe:Schooling	-5.568e-01
## RegionSouth America:Schooling	-7.961e-01
## RegionAsia:Economy_status_DevelopedYes	6.819e-01
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	5.457e-01
## RegionNorth America:Economy_status_DevelopedYes	1.020e+01
## RegionOceania:Economy_status_DevelopedYes	3.803e+00
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:BMI	2.822e-02
## YearY2002:BMI	-4.480e-02
## YearY2003:BMI	-3.592e-02
## YearY2004:BMI	-2.225e-02
## YearY2005:BMI	-2.377e-02
## YearY2006:BMI	-2.473e-02
## YearY2007:BMI	-1.922e-02
## YearY2008:BMI	-5.121e-02
## YearY2009:BMI	-9.008e-02
## YearY2010:BMI	-9.508e-02
## YearY2011:BMI	-1.223e-01
## YearY2012:BMI	-9.733e-02
## YearY2013:BMI	-1.345e-01
## YearY2014:BMI	-1.798e-01
## YearY2015:BMI	-1.745e-01
## YearY2001:Incidents_HIV	-2.067e-02
## YearY2002:Incidents_HIV	-1.576e-02
## YearY2003:Incidents_HIV	-6.443e-02
## YearY2004:Incidents_HIV	-1.123e-01
## YearY2005:Incidents_HIV	-1.159e-01
## YearY2006:Incidents_HIV	-1.491e-01
## YearY2007:Incidents_HIV	-1.294e-01
## YearY2008:Incidents_HIV	-1.329e-01
## YearY2009:Incidents_HIV	-1.428e-01
## YearY2010:Incidents_HIV	-1.107e-01
## YearY2011:Incidents_HIV	-9.054e-02
## YearY2012:Incidents_HIV	-4.813e-02
## YearY2013:Incidents_HIV	3.295e-02
## YearY2014:Incidents_HIV	1.231e-01
## YearY2015:Incidents_HIV	1.372e-01
## YearY2001:Thinness_ten_nineteen_years	3.182e-02
## YearY2002:Thinness_ten_nineteen_years	8.001e-02

## YearY2003:Thinness_ten_nineteen_years	1.817e-01
## YearY2004:Thinness_ten_nineteen_years	2.033e-01
## YearY2005:Thinness_ten_nineteen_years	1.767e-01
## YearY2006:Thinness_ten_nineteen_years	1.896e-01
## YearY2007:Thinness_ten_nineteen_years	1.801e-01
## YearY2008:Thinness_ten_nineteen_years	1.954e-01
## YearY2009:Thinness_ten_nineteen_years	8.689e-02
## YearY2010:Thinness_ten_nineteen_years	1.609e-01
## YearY2011:Thinness_ten_nineteen_years	9.401e-02
## YearY2012:Thinness_ten_nineteen_years	2.816e-01
## YearY2013:Thinness_ten_nineteen_years	3.186e-01
## YearY2014:Thinness_ten_nineteen_years	2.812e-01
## YearY2015:Thinness_ten_nineteen_years	2.356e-01
## YearY2001:Thinness_five_nine_years	-1.053e-02
## YearY2002:Thinness_five_nine_years	-7.761e-02
## YearY2003:Thinness_five_nine_years	-1.796e-01
## YearY2004:Thinness_five_nine_years	-1.959e-01
## YearY2005:Thinness_five_nine_years	-1.848e-01
## YearY2006:Thinness_five_nine_years	-1.905e-01
## YearY2007:Thinness_five_nine_years	-1.922e-01
## YearY2008:Thinness_five_nine_years	-2.129e-01
## YearY2009:Thinness_five_nine_years	-1.361e-01
## YearY2010:Thinness_five_nine_years	-2.019e-01
## YearY2011:Thinness_five_nine_years	-1.399e-01
## YearY2012:Thinness_five_nine_years	-3.229e-01
## YearY2013:Thinness_five_nine_years	-3.759e-01
## YearY2014:Thinness_five_nine_years	-3.483e-01
## YearY2015:Thinness_five_nine_years	-3.034e-01
## Infant_deaths:Adult_mortality	2.767e-04
## Infant_deaths:Hepatitis_B	-6.437e-04
## Infant_deaths:BMI	1.900e-02
## Infant_deaths:GDP_per_capita	-2.336e-06
## Adult_mortality:Hepatitis_B	2.418e-04
## Adult_mortality:BMI	-2.706e-03
## Adult_mortality:Polio	1.006e-04
## Adult_mortality:Incidents_HIV	8.071e-04
## Adult_mortality:GDP_per_capita	-7.475e-07
## Adult_mortality:Schooling	7.366e-04
## Hepatitis_B:Incidents_HIV	-6.319e-03
## Hepatitis_B:Thinness_five_nine_years	1.469e-03
## BMI:Thinness_ten_nineteen_years	-5.594e-02
## BMI:Thinness_five_nine_years	6.599e-02
## BMI:Schooling	8.235e-02
## Polio:Incidents_HIV	-7.367e-03
## Incidents_HIV:GDP_per_capita	8.731e-05
## Incidents_HIV:Thinness_ten_nineteen_years	1.882e-02
## Incidents_HIV:Thinness_five_nine_years	-2.577e-02
##	Std. Error
## (Intercept)	2.884e+00
## RegionAsia	1.810e+00
## RegionCentral America and Caribbean	2.449e+00
## RegionEuropean Union	3.277e+00
## RegionMiddle East	3.775e+00
## RegionNorth America	5.773e+01

## RegionOceania	2.887e+00
## RegionRest of Europe	5.035e+00
## RegionSouth America	6.075e+00
## YearY2001	1.550e+00
## YearY2002	1.595e+00
## YearY2003	1.581e+00
## YearY2004	1.603e+00
## YearY2005	1.653e+00
## YearY2006	1.698e+00
## YearY2007	1.710e+00
## YearY2008	1.730e+00
## YearY2009	1.722e+00
## YearY2010	1.713e+00
## YearY2011	1.713e+00
## YearY2012	1.731e+00
## YearY2013	1.749e+00
## YearY2014	1.769e+00
## YearY2015	1.757e+00
## Infant_deaths	3.438e-02
## Adult_mortality	7.850e-03
## Hepatitis_B	1.068e-02
## BMI	1.172e-01
## Polio	1.261e-02
## Incidents_HIV	1.219e-01
## GDP_per_capita	2.955e-05
## Thinness_ten_nineteen_years	2.773e-01
## Thinness_five_nine_years	2.661e-01
## Schooling	2.603e-01
## Economy_status_DevelopedYes	6.644e-01
## RegionAsia:YearY2001	3.267e-01
## RegionCentral America and Caribbean:YearY2001	3.887e-01
## RegionEuropean Union:YearY2001	3.715e-01
## RegionMiddle East:YearY2001	4.591e-01
## RegionNorth America:YearY2001	9.221e-01
## RegionOceania:YearY2001	4.883e-01
## RegionRest of Europe:YearY2001	4.195e-01
## RegionSouth America:YearY2001	4.407e-01
## RegionAsia:YearY2002	3.226e-01
## RegionCentral America and Caribbean:YearY2002	3.884e-01
## RegionEuropean Union:YearY2002	3.743e-01
## RegionMiddle East:YearY2002	4.601e-01
## RegionNorth America:YearY2002	1.163e+00
## RegionOceania:YearY2002	4.898e-01
## RegionRest of Europe:YearY2002	4.230e-01
## RegionSouth America:YearY2002	4.456e-01
## RegionAsia:YearY2003	3.279e-01
## RegionCentral America and Caribbean:YearY2003	3.913e-01
## RegionEuropean Union:YearY2003	3.761e-01
## RegionMiddle East:YearY2003	4.617e-01
## RegionNorth America:YearY2003	1.458e+00
## RegionOceania:YearY2003	4.926e-01
## RegionRest of Europe:YearY2003	4.307e-01
## RegionSouth America:YearY2003	4.516e-01
## RegionAsia:YearY2004	3.225e-01

## RegionCentral America and Caribbean:YearY2004	3.914e-01
## RegionEuropean Union:YearY2004	3.789e-01
## RegionMiddle East:YearY2004	4.623e-01
## RegionNorth America:YearY2004	1.981e+00
## RegionOceania:YearY2004	4.951e-01
## RegionRest of Europe:YearY2004	4.373e-01
## RegionSouth America:YearY2004	4.614e-01
## RegionAsia:YearY2005	3.224e-01
## RegionCentral America and Caribbean:YearY2005	3.939e-01
## RegionEuropean Union:YearY2005	3.839e-01
## RegionMiddle East:YearY2005	4.658e-01
## RegionNorth America:YearY2005	2.285e+00
## RegionOceania:YearY2005	4.993e-01
## RegionRest of Europe:YearY2005	4.418e-01
## RegionSouth America:YearY2005	4.735e-01
## RegionAsia:YearY2006	3.252e-01
## RegionCentral America and Caribbean:YearY2006	3.983e-01
## RegionEuropean Union:YearY2006	3.855e-01
## RegionMiddle East:YearY2006	4.684e-01
## RegionNorth America:YearY2006	2.644e+00
## RegionOceania:YearY2006	5.035e-01
## RegionRest of Europe:YearY2006	4.513e-01
## RegionSouth America:YearY2006	4.730e-01
## RegionAsia:YearY2007	3.281e-01
## RegionCentral America and Caribbean:YearY2007	3.993e-01
## RegionEuropean Union:YearY2007	3.876e-01
## RegionMiddle East:YearY2007	4.692e-01
## RegionNorth America:YearY2007	3.114e+00
## RegionOceania:YearY2007	5.070e-01
## RegionRest of Europe:YearY2007	4.617e-01
## RegionSouth America:YearY2007	4.746e-01
## RegionAsia:YearY2008	3.323e-01
## RegionCentral America and Caribbean:YearY2008	4.014e-01
## RegionEuropean Union:YearY2008	3.881e-01
## RegionMiddle East:YearY2008	4.736e-01
## RegionNorth America:YearY2008	3.402e+00
## RegionOceania:YearY2008	5.101e-01
## RegionRest of Europe:YearY2008	4.654e-01
## RegionSouth America:YearY2008	4.793e-01
## RegionAsia:YearY2009	3.342e-01
## RegionCentral America and Caribbean:YearY2009	4.045e-01
## RegionEuropean Union:YearY2009	3.905e-01
## RegionMiddle East:YearY2009	4.770e-01
## RegionNorth America:YearY2009	3.541e+00
## RegionOceania:YearY2009	5.134e-01
## RegionRest of Europe:YearY2009	4.731e-01
## RegionSouth America:YearY2009	4.941e-01
## RegionAsia:YearY2010	3.356e-01
## RegionCentral America and Caribbean:YearY2010	4.114e-01
## RegionEuropean Union:YearY2010	3.910e-01
## RegionMiddle East:YearY2010	4.788e-01
## RegionNorth America:YearY2010	3.924e+00
## RegionOceania:YearY2010	5.161e-01
## RegionRest of Europe:YearY2010	4.820e-01

## RegionSouth America:YearY2010	4.944e-01
## RegionAsia:YearY2011	3.377e-01
## RegionCentral America and Caribbean:YearY2011	4.100e-01
## RegionEuropean Union:YearY2011	3.947e-01
## RegionMiddle East:YearY2011	4.848e-01
## RegionNorth America:YearY2011	4.319e+00
## RegionOceania:YearY2011	5.224e-01
## RegionRest of Europe:YearY2011	4.883e-01
## RegionSouth America:YearY2011	5.069e-01
## RegionAsia:YearY2012	3.361e-01
## RegionCentral America and Caribbean:YearY2012	4.111e-01
## RegionEuropean Union:YearY2012	3.951e-01
## RegionMiddle East:YearY2012	4.864e-01
## RegionNorth America:YearY2012	4.648e+00
## RegionOceania:YearY2012	5.282e-01
## RegionRest of Europe:YearY2012	4.972e-01
## RegionSouth America:YearY2012	5.145e-01
## RegionAsia:YearY2013	3.358e-01
## RegionCentral America and Caribbean:YearY2013	4.123e-01
## RegionEuropean Union:YearY2013	3.982e-01
## RegionMiddle East:YearY2013	4.911e-01
## RegionNorth America:YearY2013	4.845e+00
## RegionOceania:YearY2013	5.315e-01
## RegionRest of Europe:YearY2013	5.035e-01
## RegionSouth America:YearY2013	5.252e-01
## RegionAsia:YearY2014	3.393e-01
## RegionCentral America and Caribbean:YearY2014	4.189e-01
## RegionEuropean Union:YearY2014	4.038e-01
## RegionMiddle East:YearY2014	4.942e-01
## RegionNorth America:YearY2014	5.143e+00
## RegionOceania:YearY2014	5.461e-01
## RegionRest of Europe:YearY2014	5.171e-01
## RegionSouth America:YearY2014	5.341e-01
## RegionAsia:YearY2015	3.406e-01
## RegionCentral America and Caribbean:YearY2015	4.235e-01
## RegionEuropean Union:YearY2015	4.071e-01
## RegionMiddle East:YearY2015	4.986e-01
## RegionNorth America:YearY2015	5.320e+00
## RegionOceania:YearY2015	5.516e-01
## RegionRest of Europe:YearY2015	5.267e-01
## RegionSouth America:YearY2015	5.462e-01
## RegionAsia:Infant_deaths	7.042e-03
## RegionCentral America and Caribbean:Infant_deaths	1.283e-02
## RegionEuropean Union:Infant_deaths	2.962e-02
## RegionMiddle East:Infant_deaths	2.530e-02
## RegionNorth America:Infant_deaths	5.076e-01
## RegionOceania:Infant_deaths	1.431e-02
## RegionRest of Europe:Infant_deaths	1.674e-02
## RegionSouth America:Infant_deaths	3.046e-02
## RegionAsia:Adult_mortality	1.438e-03
## RegionCentral America and Caribbean:Adult_mortality	2.647e-03
## RegionEuropean Union:Adult_mortality	2.733e-03
## RegionMiddle East:Adult_mortality	6.457e-03
## RegionNorth America:Adult_mortality	1.442e-01

## RegionOceania:Adult_mortality	4.852e-03
## RegionRest of Europe:Adult_mortality	2.286e-03
## RegionSouth America:Adult_mortality	9.878e-03
## RegionAsia:Hepatitis_B	6.670e-03
## RegionCentral America and Caribbean:Hepatitis_B	1.165e-02
## RegionEuropean Union:Hepatitis_B	9.426e-03
## RegionMiddle East:Hepatitis_B	1.237e-02
## RegionNorth America:Hepatitis_B	2.522e-02
## RegionOceania:Hepatitis_B	1.164e-02
## RegionRest of Europe:Hepatitis_B	9.244e-03
## RegionSouth America:Hepatitis_B	1.163e-02
## RegionAsia:BMI	7.416e-02
## RegionCentral America and Caribbean:BMI	8.454e-02
## RegionEuropean Union:BMI	1.102e-01
## RegionMiddle East:BMI	1.214e-01
## RegionNorth America:BMI	2.447e+00
## RegionOceania:BMI	1.125e-01
## RegionRest of Europe:BMI	2.013e-01
## RegionSouth America:BMI	2.405e-01
## RegionAsia:Polio	8.182e-03
## RegionCentral America and Caribbean:Polio	1.190e-02
## RegionEuropean Union:Polio	1.381e-02
## RegionMiddle East:Polio	1.524e-02
## RegionNorth America:Polio	7.650e-02
## RegionOceania:Polio	1.228e-02
## RegionRest of Europe:Polio	1.211e-02
## RegionSouth America:Polio	1.416e-02
## RegionAsia:Incidents_HIV	4.194e-01
## RegionCentral America and Caribbean:Incidents_HIV	2.976e-01
## RegionEuropean Union:Incidents_HIV	1.124e+00
## RegionMiddle East:Incidents_HIV	2.640e+00
## RegionNorth America:Incidents_HIV	6.744e+01
## RegionOceania:Incidents_HIV	1.138e+00
## RegionRest of Europe:Incidents_HIV	6.438e-01
## RegionSouth America:Incidents_HIV	8.746e-01
## RegionAsia:GDP_per_capita	2.751e-05
## RegionCentral America and Caribbean:GDP_per_capita	2.632e-05
## RegionEuropean Union:GDP_per_capita	2.808e-05
## RegionMiddle East:GDP_per_capita	2.698e-05
## RegionNorth America:GDP_per_capita	2.501e-04
## RegionOceania:GDP_per_capita	3.324e-05
## RegionRest of Europe:GDP_per_capita	2.940e-05
## RegionSouth America:GDP_per_capita	3.793e-05
## RegionAsia:Thinness_ten_nineteen_years	3.003e-02
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	5.913e-01
## RegionEuropean Union:Thinness_ten_nineteen_years	5.301e-01
## RegionMiddle East:Thinness_ten_nineteen_years	6.829e-01
## RegionNorth America:Thinness_ten_nineteen_years	5.232e+00
## RegionOceania:Thinness_ten_nineteen_years	9.849e-02
## RegionRest of Europe:Thinness_ten_nineteen_years	8.516e-01
## RegionSouth America:Thinness_ten_nineteen_years	9.091e-01
## RegionAsia:Thinness_five_nine_years	3.025e-02
## RegionCentral America and Caribbean:Thinness_five_nine_years	5.656e-01
## RegionEuropean Union:Thinness_five_nine_years	4.632e-01

## RegionMiddle East:Thinness_five_nine_years	6.641e-01
## RegionNorth America:Thinness_five_nine_years	5.850e+00
## RegionOceania:Thinness_five_nine_years	1.162e-01
## RegionRest of Europe:Thinness_five_nine_years	8.470e-01
## RegionSouth America:Thinness_five_nine_years	9.376e-01
## RegionAsia:Schooling	4.908e-02
## RegionCentral America and Caribbean:Schooling	7.312e-02
## RegionEuropean Union:Schooling	7.530e-02
## RegionMiddle East:Schooling	8.708e-02
## RegionNorth America:Schooling	1.108e+00
## RegionOceania:Schooling	1.165e-01
## RegionRest of Europe:Schooling	9.024e-02
## RegionSouth America:Schooling	1.250e-01
## RegionAsia:Economy_status_DevelopedYes	7.229e-01
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	7.812e-01
## RegionNorth America:Economy_status_DevelopedYes	1.558e+01
## RegionOceania:Economy_status_DevelopedYes	1.149e+00
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:BMI	6.549e-02
## YearY2002:BMI	6.659e-02
## YearY2003:BMI	6.621e-02
## YearY2004:BMI	6.703e-02
## YearY2005:BMI	6.832e-02
## YearY2006:BMI	6.975e-02
## YearY2007:BMI	7.002e-02
## YearY2008:BMI	7.083e-02
## YearY2009:BMI	7.062e-02
## YearY2010:BMI	7.038e-02
## YearY2011:BMI	7.057e-02
## YearY2012:BMI	7.106e-02
## YearY2013:BMI	7.156e-02
## YearY2014:BMI	7.253e-02
## YearY2015:BMI	7.224e-02
## YearY2001:Incidents_HIV	3.521e-02
## YearY2002:Incidents_HIV	3.686e-02
## YearY2003:Incidents_HIV	3.860e-02
## YearY2004:Incidents_HIV	3.829e-02
## YearY2005:Incidents_HIV	4.000e-02
## YearY2006:Incidents_HIV	4.147e-02
## YearY2007:Incidents_HIV	4.249e-02
## YearY2008:Incidents_HIV	4.428e-02
## YearY2009:Incidents_HIV	4.654e-02
## YearY2010:Incidents_HIV	4.871e-02
## YearY2011:Incidents_HIV	5.191e-02
## YearY2012:Incidents_HIV	5.334e-02
## YearY2013:Incidents_HIV	5.464e-02
## YearY2014:Incidents_HIV	5.656e-02
## YearY2015:Incidents_HIV	5.895e-02
## YearY2001:Thinness_ten_nineteen_years	5.662e-02
## YearY2002:Thinness_ten_nineteen_years	5.131e-02
## YearY2003:Thinness_ten_nineteen_years	8.194e-02

## YearY2004:Thinness_ten_nineteen_years	8.660e-02
## YearY2005:Thinness_ten_nineteen_years	5.572e-02
## YearY2006:Thinness_ten_nineteen_years	5.746e-02
## YearY2007:Thinness_ten_nineteen_years	5.562e-02
## YearY2008:Thinness_ten_nineteen_years	6.349e-02
## YearY2009:Thinness_ten_nineteen_years	7.354e-02
## YearY2010:Thinness_ten_nineteen_years	8.132e-02
## YearY2011:Thinness_ten_nineteen_years	8.572e-02
## YearY2012:Thinness_ten_nineteen_years	6.416e-02
## YearY2013:Thinness_ten_nineteen_years	6.624e-02
## YearY2014:Thinness_ten_nineteen_years	7.293e-02
## YearY2015:Thinness_ten_nineteen_years	9.676e-02
## YearY2001:Thinness_five_nine_years	5.510e-02
## YearY2002:Thinness_five_nine_years	4.964e-02
## YearY2003:Thinness_five_nine_years	8.136e-02
## YearY2004:Thinness_five_nine_years	8.530e-02
## YearY2005:Thinness_five_nine_years	5.553e-02
## YearY2006:Thinness_five_nine_years	5.659e-02
## YearY2007:Thinness_five_nine_years	5.332e-02
## YearY2008:Thinness_five_nine_years	6.090e-02
## YearY2009:Thinness_five_nine_years	7.114e-02
## YearY2010:Thinness_five_nine_years	7.964e-02
## YearY2011:Thinness_five_nine_years	8.468e-02
## YearY2012:Thinness_five_nine_years	6.424e-02
## YearY2013:Thinness_five_nine_years	6.625e-02
## YearY2014:Thinness_five_nine_years	7.420e-02
## YearY2015:Thinness_five_nine_years	9.653e-02
## Infant_deaths:Adult_mortality	1.970e-05
## Infant_deaths:Hepatitis_B	1.061e-04
## Infant_deaths:BMI	1.484e-03
## Infant_deaths:GDP_per_capita	5.315e-07
## Adult_mortality:Hepatitis_B	3.918e-05
## Adult_mortality:BMI	3.076e-04
## Adult_mortality:Polio	4.140e-05
## Adult_mortality:Incidents_HIV	1.258e-04
## Adult_mortality:GDP_per_capita	9.556e-08
## Adult_mortality:Schooling	1.890e-04
## Hepatitis_B:Incidents_HIV	1.615e-03
## Hepatitis_B:Thinness_five_nine_years	3.310e-04
## BMI:Thinness_ten_nineteen_years	1.344e-02
## BMI:Thinness_five_nine_years	1.300e-02
## BMI:Schooling	1.094e-02
## Polio:Incidents_HIV	1.671e-03
## Incidents_HIV:GDP_per_capita	6.085e-06
## Incidents_HIV:Thinness_ten_nineteen_years	8.302e-03
## Incidents_HIV:Thinness_five_nine_years	8.309e-03
##	t value
## (Intercept)	33.958
## RegionAsia	4.999
## RegionCentral America and Caribbean	-1.344
## RegionEuropean Union	6.541
## RegionMiddle East	-0.735
## RegionNorth America	0.099
## RegionOceania	0.652

## RegionRest of Europe	4.818
## RegionSouth America	2.149
## YearY2001	-0.468
## YearY2002	0.579
## YearY2003	0.401
## YearY2004	0.191
## YearY2005	0.230
## YearY2006	0.233
## YearY2007	0.178
## YearY2008	0.637
## YearY2009	1.324
## YearY2010	1.316
## YearY2011	1.749
## YearY2012	1.348
## YearY2013	1.903
## YearY2014	2.512
## YearY2015	2.498
## Infant_deaths	-16.881
## Adult_mortality	-3.408
## Hepatitis_B	-5.443
## BMI	-3.986
## Polio	0.273
## Incidents_HIV	4.710
## GDP_per_capita	1.129
## Thinness_ten_nineteen_years	3.683
## Thinness_five_nine_years	-5.181
## Schooling	-6.599
## Economy_status_DevelopedYes	3.268
## RegionAsia:YearY2001	-0.472
## RegionCentral America and Caribbean:YearY2001	0.081
## RegionEuropean Union:YearY2001	0.506
## RegionMiddle East:YearY2001	-0.246
## RegionNorth America:YearY2001	0.485
## RegionOceania:YearY2001	-0.106
## RegionRest of Europe:YearY2001	0.271
## RegionSouth America:YearY2001	-0.188
## RegionAsia:YearY2002	0.274
## RegionCentral America and Caribbean:YearY2002	0.549
## RegionEuropean Union:YearY2002	1.280
## RegionMiddle East:YearY2002	0.545
## RegionNorth America:YearY2002	0.923
## RegionOceania:YearY2002	0.732
## RegionRest of Europe:YearY2002	0.817
## RegionSouth America:YearY2002	0.432
## RegionAsia:YearY2003	0.525
## RegionCentral America and Caribbean:YearY2003	0.481
## RegionEuropean Union:YearY2003	1.325
## RegionMiddle East:YearY2003	0.546
## RegionNorth America:YearY2003	0.975
## RegionOceania:YearY2003	0.856
## RegionRest of Europe:YearY2003	1.037
## RegionSouth America:YearY2003	0.338
## RegionAsia:YearY2004	0.876
## RegionCentral America and Caribbean:YearY2004	0.047

## RegionEuropean Union:YearY2004	2.091
## RegionMiddle East:YearY2004	0.494
## RegionNorth America:YearY2004	0.896
## RegionOceania:YearY2004	0.765
## RegionRest of Europe:YearY2004	1.179
## RegionSouth America:YearY2004	0.447
## RegionAsia:YearY2005	0.525
## RegionCentral America and Caribbean:YearY2005	-0.223
## RegionEuropean Union:YearY2005	1.970
## RegionMiddle East:YearY2005	0.581
## RegionNorth America:YearY2005	0.914
## RegionOceania:YearY2005	0.687
## RegionRest of Europe:YearY2005	1.233
## RegionSouth America:YearY2005	0.461
## RegionAsia:YearY2006	0.329
## RegionCentral America and Caribbean:YearY2006	-0.538
## RegionEuropean Union:YearY2006	2.519
## RegionMiddle East:YearY2006	0.393
## RegionNorth America:YearY2006	0.866
## RegionOceania:YearY2006	0.677
## RegionRest of Europe:YearY2006	1.457
## RegionSouth America:YearY2006	0.568
## RegionAsia:YearY2007	0.540
## RegionCentral America and Caribbean:YearY2007	-1.055
## RegionEuropean Union:YearY2007	2.426
## RegionMiddle East:YearY2007	0.218
## RegionNorth America:YearY2007	0.796
## RegionOceania:YearY2007	0.613
## RegionRest of Europe:YearY2007	1.646
## RegionSouth America:YearY2007	0.344
## RegionAsia:YearY2008	1.117
## RegionCentral America and Caribbean:YearY2008	-1.175
## RegionEuropean Union:YearY2008	2.715
## RegionMiddle East:YearY2008	0.397
## RegionNorth America:YearY2008	0.784
## RegionOceania:YearY2008	0.781
## RegionRest of Europe:YearY2008	1.956
## RegionSouth America:YearY2008	0.751
## RegionAsia:YearY2009	1.456
## RegionCentral America and Caribbean:YearY2009	-1.519
## RegionEuropean Union:YearY2009	2.625
## RegionMiddle East:YearY2009	0.471
## RegionNorth America:YearY2009	0.752
## RegionOceania:YearY2009	0.848
## RegionRest of Europe:YearY2009	1.765
## RegionSouth America:YearY2009	0.660
## RegionAsia:YearY2010	1.659
## RegionCentral America and Caribbean:YearY2010	-1.114
## RegionEuropean Union:YearY2010	3.252
## RegionMiddle East:YearY2010	0.654
## RegionNorth America:YearY2010	0.745
## RegionOceania:YearY2010	1.175
## RegionRest of Europe:YearY2010	2.335
## RegionSouth America:YearY2010	1.139

## RegionAsia:YearY2011	1.456
## RegionCentral America and Caribbean:YearY2011	-1.612
## RegionEuropean Union:YearY2011	3.965
## RegionMiddle East:YearY2011	0.602
## RegionNorth America:YearY2011	0.693
## RegionOceania:YearY2011	1.301
## RegionRest of Europe:YearY2011	2.632
## RegionSouth America:YearY2011	1.114
## RegionAsia:YearY2012	1.807
## RegionCentral America and Caribbean:YearY2012	-1.872
## RegionEuropean Union:YearY2012	3.769
## RegionMiddle East:YearY2012	0.403
## RegionNorth America:YearY2012	0.679
## RegionOceania:YearY2012	1.209
## RegionRest of Europe:YearY2012	2.634
## RegionSouth America:YearY2012	1.189
## RegionAsia:YearY2013	2.094
## RegionCentral America and Caribbean:YearY2013	-1.999
## RegionEuropean Union:YearY2013	4.196
## RegionMiddle East:YearY2013	0.714
## RegionNorth America:YearY2013	0.683
## RegionOceania:YearY2013	1.421
## RegionRest of Europe:YearY2013	2.962
## RegionSouth America:YearY2013	1.163
## RegionAsia:YearY2014	2.554
## RegionCentral America and Caribbean:YearY2014	-1.945
## RegionEuropean Union:YearY2014	4.718
## RegionMiddle East:YearY2014	0.995
## RegionNorth America:YearY2014	0.684
## RegionOceania:YearY2014	1.945
## RegionRest of Europe:YearY2014	3.328
## RegionSouth America:YearY2014	1.500
## RegionAsia:YearY2015	2.267
## RegionCentral America and Caribbean:YearY2015	-2.165
## RegionEuropean Union:YearY2015	3.999
## RegionMiddle East:YearY2015	0.853
## RegionNorth America:YearY2015	0.663
## RegionOceania:YearY2015	1.794
## RegionRest of Europe:YearY2015	3.075
## RegionSouth America:YearY2015	1.364
## RegionAsia:Infant_deaths	-2.665
## RegionCentral America and Caribbean:Infant_deaths	2.404
## RegionEuropean Union:Infant_deaths	-4.161
## RegionMiddle East:Infant_deaths	-3.151
## RegionNorth America:Infant_deaths	0.135
## RegionOceania:Infant_deaths	-0.942
## RegionRest of Europe:Infant_deaths	1.090
## RegionSouth America:Infant_deaths	-1.719
## RegionAsia:Adult_mortality	10.376
## RegionCentral America and Caribbean:Adult_mortality	-5.086
## RegionEuropean Union:Adult_mortality	5.991
## RegionMiddle East:Adult_mortality	5.099
## RegionNorth America:Adult_mortality	0.309
## RegionOceania:Adult_mortality	1.543

## RegionRest of Europe:Adult_mortality	8.923
## RegionSouth America:Adult_mortality	-1.240
## RegionAsia:Hepatitis_B	5.131
## RegionCentral America and Caribbean:Hepatitis_B	3.576
## RegionEuropean Union:Hepatitis_B	2.759
## RegionMiddle East:Hepatitis_B	1.665
## RegionNorth America:Hepatitis_B	1.923
## RegionOceania:Hepatitis_B	2.288
## RegionRest of Europe:Hepatitis_B	2.224
## RegionSouth America:Hepatitis_B	3.063
## RegionAsia:BMI	-6.102
## RegionCentral America and Caribbean:BMI	5.070
## RegionEuropean Union:BMI	-7.133
## RegionMiddle East:BMI	1.068
## RegionNorth America:BMI	-0.242
## RegionOceania:BMI	0.134
## RegionRest of Europe:BMI	-4.023
## RegionSouth America:BMI	-0.930
## RegionAsia:Polio	-4.332
## RegionCentral America and Caribbean:Polio	-3.985
## RegionEuropean Union:Polio	-1.738
## RegionMiddle East:Polio	-1.998
## RegionNorth America:Polio	0.012
## RegionOceania:Polio	-1.079
## RegionRest of Europe:Polio	-2.273
## RegionSouth America:Polio	-0.851
## RegionAsia:Incidents_HIV	-2.824
## RegionCentral America and Caribbean:Incidents_HIV	-4.950
## RegionEuropean Union:Incidents_HIV	3.482
## RegionMiddle East:Incidents_HIV	-6.639
## RegionNorth America:Incidents_HIV	-0.138
## RegionOceania:Incidents_HIV	-4.424
## RegionRest of Europe:Incidents_HIV	-0.135
## RegionSouth America:Incidents_HIV	-0.459
## RegionAsia:GDP_per_capita	2.281
## RegionCentral America and Caribbean:GDP_per_capita	2.846
## RegionEuropean Union:GDP_per_capita	1.076
## RegionMiddle East:GDP_per_capita	1.065
## RegionNorth America:GDP_per_capita	-0.189
## RegionOceania:GDP_per_capita	1.243
## RegionRest of Europe:GDP_per_capita	0.537
## RegionSouth America:GDP_per_capita	-0.045
## RegionAsia:Thinness_ten_nineteen_years	1.173
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	-1.287
## RegionEuropean Union:Thinness_ten_nineteen_years	-1.168
## RegionMiddle East:Thinness_ten_nineteen_years	0.735
## RegionNorth America:Thinness_ten_nineteen_years	0.446
## RegionOceania:Thinness_ten_nineteen_years	0.244
## RegionRest of Europe:Thinness_ten_nineteen_years	0.252
## RegionSouth America:Thinness_ten_nineteen_years	3.840
## RegionAsia:Thinness_five_nine_years	1.896
## RegionCentral America and Caribbean:Thinness_five_nine_years	0.959
## RegionEuropean Union:Thinness_five_nine_years	-0.069
## RegionMiddle East:Thinness_five_nine_years	-0.622

## RegionNorth America:Thinness_five_nine_years	0.306
## RegionOceania:Thinness_five_nine_years	1.962
## RegionRest of Europe:Thinness_five_nine_years	-1.597
## RegionSouth America:Thinness_five_nine_years	-3.555
## RegionAsia:Schooling	-4.331
## RegionCentral America and Caribbean:Schooling	-6.181
## RegionEuropean Union:Schooling	-6.835
## RegionMiddle East:Schooling	-4.136
## RegionNorth America:Schooling	-0.825
## RegionOceania:Schooling	-8.425
## RegionRest of Europe:Schooling	-6.170
## RegionSouth America:Schooling	-6.368
## RegionAsia:Economy_status_DevelopedYes	0.943
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	0.699
## RegionNorth America:Economy_status_DevelopedYes	0.655
## RegionOceania:Economy_status_DevelopedYes	3.310
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:BM <sup>I</sup>	0.431
## YearY2002:BM <sup>I</sup>	-0.673
## YearY2003:BM <sup>I</sup>	-0.543
## YearY2004:BM <sup>I</sup>	-0.332
## YearY2005:BM <sup>I</sup>	-0.348
## YearY2006:BM <sup>I</sup>	-0.355
## YearY2007:BM <sup>I</sup>	-0.274
## YearY2008:BM <sup>I</sup>	-0.723
## YearY2009:BM <sup>I</sup>	-1.276
## YearY2010:BM <sup>I</sup>	-1.351
## YearY2011:BM <sup>I</sup>	-1.734
## YearY2012:BM <sup>I</sup>	-1.370
## YearY2013:BM <sup>I</sup>	-1.879
## YearY2014:BM <sup>I</sup>	-2.479
## YearY2015:BM <sup>I</sup>	-2.416
## YearY2001:Incidents_HIV	-0.587
## YearY2002:Incidents_HIV	-0.428
## YearY2003:Incidents_HIV	-1.669
## YearY2004:Incidents_HIV	-2.934
## YearY2005:Incidents_HIV	-2.896
## YearY2006:Incidents_HIV	-3.595
## YearY2007:Incidents_HIV	-3.045
## YearY2008:Incidents_HIV	-3.002
## YearY2009:Incidents_HIV	-3.069
## YearY2010:Incidents_HIV	-2.272
## YearY2011:Incidents_HIV	-1.744
## YearY2012:Incidents_HIV	-0.902
## YearY2013:Incidents_HIV	0.603
## YearY2014:Incidents_HIV	2.177
## YearY2015:Incidents_HIV	2.328
## YearY2001:Thinness_ten_nineteen_years	0.562
## YearY2002:Thinness_ten_nineteen_years	1.559
## YearY2003:Thinness_ten_nineteen_years	2.217
## YearY2004:Thinness_ten_nineteen_years	2.348

## YearY2005:Thinness_ten_nineteen_years	3.170
## YearY2006:Thinness_ten_nineteen_years	3.299
## YearY2007:Thinness_ten_nineteen_years	3.237
## YearY2008:Thinness_ten_nineteen_years	3.078
## YearY2009:Thinness_ten_nineteen_years	1.182
## YearY2010:Thinness_ten_nineteen_years	1.979
## YearY2011:Thinness_ten_nineteen_years	1.097
## YearY2012:Thinness_ten_nineteen_years	4.389
## YearY2013:Thinness_ten_nineteen_years	4.809
## YearY2014:Thinness_ten_nineteen_years	3.856
## YearY2015:Thinness_ten_nineteen_years	2.435
## YearY2001:Thinness_five_nine_years	-0.191
## YearY2002:Thinness_five_nine_years	-1.564
## YearY2003:Thinness_five_nine_years	-2.208
## YearY2004:Thinness_five_nine_years	-2.296
## YearY2005:Thinness_five_nine_years	-3.328
## YearY2006:Thinness_five_nine_years	-3.367
## YearY2007:Thinness_five_nine_years	-3.604
## YearY2008:Thinness_five_nine_years	-3.495
## YearY2009:Thinness_five_nine_years	-1.914
## YearY2010:Thinness_five_nine_years	-2.535
## YearY2011:Thinness_five_nine_years	-1.652
## YearY2012:Thinness_five_nine_years	-5.026
## YearY2013:Thinness_five_nine_years	-5.673
## YearY2014:Thinness_five_nine_years	-4.694
## YearY2015:Thinness_five_nine_years	-3.143
## Infant_deaths:Adult_mortality	14.049
## Infant_deaths:Hepatitis_B	-6.064
## Infant_deaths:BMI	12.804
## Infant_deaths:GDP_per_capita	-4.395
## Adult_mortality:Hepatitis_B	6.170
## Adult_mortality:BMI	-8.796
## Adult_mortality:Polio	2.430
## Adult_mortality:Incidents_HIV	6.418
## Adult_mortality:GDP_per_capita	-7.822
## Adult_mortality:Schooling	3.897
## Hepatitis_B:Incidents_HIV	-3.912
## Hepatitis_B:Thinness_five_nine_years	4.438
## BMI:Thinness_ten_nineteen_years	-4.163
## BMI:Thinness_five_nine_years	5.077
## BMI:Schooling	7.530
## Polio:Incidents_HIV	-4.408
## Incidents_HIV:GDP_per_capita	14.349
## Incidents_HIV:Thinness_ten_nineteen_years	2.267
## Incidents_HIV:Thinness_five_nine_years	-3.102
##	Pr(> t )
## (Intercept)	< 2e-16 ***
## RegionAsia	6.15e-07 ***
## RegionCentral America and Caribbean	0.178989
## RegionEuropean Union	7.36e-11 ***
## RegionMiddle East	0.462650
## RegionNorth America	0.921016
## RegionOceania	0.514352
## RegionRest of Europe	1.54e-06 ***

## RegionSouth America	0.031731 *
## YearY2001	0.639930
## YearY2002	0.562857
## YearY2003	0.688761
## YearY2004	0.848279
## YearY2005	0.817797
## YearY2006	0.816163
## YearY2007	0.858818
## YearY2008	0.524248
## YearY2009	0.185567
## YearY2010	0.188160
## YearY2011	0.080489 .
## YearY2012	0.177775
## YearY2013	0.057132 .
## YearY2014	0.012051 *
## YearY2015	0.012537 *
## Infant_deaths	< 2e-16 ***
## Adult_mortality	0.000665 ***
## Hepatitis_B	5.73e-08 ***
## BMI	6.91e-05 ***
## Polio	0.784801
## Incidents_HIV	2.61e-06 ***
## GDP_per_capita	0.258904
## Thinness_ten_nineteen_years	0.000235 ***
## Thinness_five_nine_years	2.38e-07 ***
## Schooling	5.00e-11 ***
## Economy_status_DevelopedYes	0.001098 **
## RegionAsia:YearY2001	0.636764
## RegionCentral America and Caribbean:YearY2001	0.935285
## RegionEuropean Union:YearY2001	0.613085
## RegionMiddle East:YearY2001	0.805558
## RegionNorth America:YearY2001	0.627394
## RegionOceania:YearY2001	0.915368
## RegionRest of Europe:YearY2001	0.786466
## RegionSouth America:YearY2001	0.850572
## RegionAsia:YearY2002	0.784201
## RegionCentral America and Caribbean:YearY2002	0.582930
## RegionEuropean Union:YearY2002	0.200536
## RegionMiddle East:YearY2002	0.585930
## RegionNorth America:YearY2002	0.356272
## RegionOceania:YearY2002	0.464505
## RegionRest of Europe:YearY2002	0.413956
## RegionSouth America:YearY2002	0.665955
## RegionAsia:YearY2003	0.599637
## RegionCentral America and Caribbean:YearY2003	0.630451
## RegionEuropean Union:YearY2003	0.185414
## RegionMiddle East:YearY2003	0.585274
## RegionNorth America:YearY2003	0.329541
## RegionOceania:YearY2003	0.392001
## RegionRest of Europe:YearY2003	0.300026
## RegionSouth America:YearY2003	0.735725
## RegionAsia:YearY2004	0.381150
## RegionCentral America and Caribbean:YearY2004	0.962195
## RegionEuropean Union:YearY2004	0.036663 *

## RegionMiddle East:YearY2004	0.621613
## RegionNorth America:YearY2004	0.370552
## RegionOceania:YearY2004	0.444403
## RegionRest of Europe:YearY2004	0.238446
## RegionSouth America:YearY2004	0.654648
## RegionAsia:YearY2005	0.599837
## RegionCentral America and Caribbean:YearY2005	0.823816
## RegionEuropean Union:YearY2005	0.048918 *
## RegionMiddle East:YearY2005	0.561010
## RegionNorth America:YearY2005	0.360603
## RegionOceania:YearY2005	0.491904
## RegionRest of Europe:YearY2005	0.217747
## RegionSouth America:YearY2005	0.644868
## RegionAsia:YearY2006	0.742240
## RegionCentral America and Caribbean:YearY2006	0.590291
## RegionEuropean Union:YearY2006	0.011842 *
## RegionMiddle East:YearY2006	0.694491
## RegionNorth America:YearY2006	0.386462
## RegionOceania:YearY2006	0.498570
## RegionRest of Europe:YearY2006	0.145372
## RegionSouth America:YearY2006	0.569785
## RegionAsia:YearY2007	0.589296
## RegionCentral America and Caribbean:YearY2007	0.291562
## RegionEuropean Union:YearY2007	0.015332 *
## RegionMiddle East:YearY2007	0.827782
## RegionNorth America:YearY2007	0.425971
## RegionOceania:YearY2007	0.539733
## RegionRest of Europe:YearY2007	0.099976 .
## RegionSouth America:YearY2007	0.731117
## RegionAsia:YearY2008	0.263979
## RegionCentral America and Caribbean:YearY2008	0.240007
## RegionEuropean Union:YearY2008	0.006666 **
## RegionMiddle East:YearY2008	0.691331
## RegionNorth America:YearY2008	0.433139
## RegionOceania:YearY2008	0.435152
## RegionRest of Europe:YearY2008	0.050577 .
## RegionSouth America:YearY2008	0.452627
## RegionAsia:YearY2009	0.145539
## RegionCentral America and Caribbean:YearY2009	0.128890
## RegionEuropean Union:YearY2009	0.008721 **
## RegionMiddle East:YearY2009	0.638018
## RegionNorth America:YearY2009	0.452170
## RegionOceania:YearY2009	0.396370
## RegionRest of Europe:YearY2009	0.077722 .
## RegionSouth America:YearY2009	0.509192
## RegionAsia:YearY2010	0.097339 .
## RegionCentral America and Caribbean:YearY2010	0.265512
## RegionEuropean Union:YearY2010	0.001162 **
## RegionMiddle East:YearY2010	0.513454
## RegionNorth America:YearY2010	0.456068
## RegionOceania:YearY2010	0.240157
## RegionRest of Europe:YearY2010	0.019599 *
## RegionSouth America:YearY2010	0.254630
## RegionAsia:YearY2011	0.145500

## RegionCentral America and Caribbean:YearY2011	0.107173
## RegionEuropean Union:YearY2011	7.56e-05 ***
## RegionMiddle East:YearY2011	0.546948
## RegionNorth America:YearY2011	0.488336
## RegionOceania:YearY2011	0.193507
## RegionRest of Europe:YearY2011	0.008540 **
## RegionSouth America:YearY2011	0.265564
## RegionAsia:YearY2012	0.070817 .
## RegionCentral America and Caribbean:YearY2012	0.061293 .
## RegionEuropean Union:YearY2012	0.000168 ***
## RegionMiddle East:YearY2012	0.687292
## RegionNorth America:YearY2012	0.497190
## RegionOceania:YearY2012	0.226918
## RegionRest of Europe:YearY2012	0.008483 **
## RegionSouth America:YearY2012	0.234530
## RegionAsia:YearY2013	0.036373 *
## RegionCentral America and Caribbean:YearY2013	0.045705 *
## RegionEuropean Union:YearY2013	2.80e-05 ***
## RegionMiddle East:YearY2013	0.475131
## RegionNorth America:YearY2013	0.494848
## RegionOceania:YearY2013	0.155402
## RegionRest of Europe:YearY2013	0.003086 **
## RegionSouth America:YearY2013	0.245062
## RegionAsia:YearY2014	0.010710 *
## RegionCentral America and Caribbean:YearY2014	0.051828 .
## RegionEuropean Union:YearY2014	2.51e-06 ***
## RegionMiddle East:YearY2014	0.319809
## RegionNorth America:YearY2014	0.494135
## RegionOceania:YearY2014	0.051900 .
## RegionRest of Europe:YearY2014	0.000887 ***
## RegionSouth America:YearY2014	0.133633
## RegionAsia:YearY2015	0.023453 *
## RegionCentral America and Caribbean:YearY2015	0.030472 *
## RegionEuropean Union:YearY2015	6.54e-05 ***
## RegionMiddle East:YearY2015	0.393600
## RegionNorth America:YearY2015	0.507393
## RegionOceania:YearY2015	0.072991 .
## RegionRest of Europe:YearY2015	0.002128 **
## RegionSouth America:YearY2015	0.172698
## RegionAsia:Infant_deaths	0.007756 **
## RegionCentral America and Caribbean:Infant_deaths	0.016291 *
## RegionEuropean Union:Infant_deaths	3.27e-05 ***
## RegionMiddle East:Infant_deaths	0.001647 **
## RegionNorth America:Infant_deaths	0.892243
## RegionOceania:Infant_deaths	0.346175
## RegionRest of Europe:Infant_deaths	0.275801
## RegionSouth America:Infant_deaths	0.085693 .
## RegionAsia:Adult_mortality	< 2e-16 ***
## RegionCentral America and Caribbean:Adult_mortality	3.92e-07 ***
## RegionEuropean Union:Adult_mortality	2.38e-09 ***
## RegionMiddle East:Adult_mortality	3.66e-07 ***
## RegionNorth America:Adult_mortality	0.757085
## RegionOceania:Adult_mortality	0.123061
## RegionRest of Europe:Adult_mortality	< 2e-16 ***

## RegionSouth America:Adult_mortality	0.215241
## RegionAsia:Hepatitis_B	3.09e-07 ***
## RegionCentral America and Caribbean:Hepatitis_B	0.000356 ***
## RegionEuropean Union:Hepatitis_B	0.005833 **
## RegionMiddle East:Hepatitis_B	0.096098 .
## RegionNorth America:Hepatitis_B	0.054604 .
## RegionOceania:Hepatitis_B	0.022220 *
## RegionRest of Europe:Hepatitis_B	0.026232 *
## RegionSouth America:Hepatitis_B	0.002213 **
## RegionAsia:BMI	1.21e-09 ***
## RegionCentral America and Caribbean:BMI	4.26e-07 ***
## RegionEuropean Union:BMI	1.28e-12 ***
## RegionMiddle East:BMI	0.285498
## RegionNorth America:BMI	0.809093
## RegionOceania:BMI	0.893296
## RegionRest of Europe:BMI	5.90e-05 ***
## RegionSouth America:BMI	0.352225
## RegionAsia:Polio	1.53e-05 ***
## RegionCentral America and Caribbean:Polio	6.94e-05 ***
## RegionEuropean Union:Polio	0.082309 .
## RegionMiddle East:Polio	0.045842 *
## RegionNorth America:Polio	0.990680
## RegionOceania:Polio	0.280535
## RegionRest of Europe:Polio	0.023086 *
## RegionSouth America:Polio	0.394812
## RegionAsia:Incidents_HIV	0.004783 **
## RegionCentral America and Caribbean:Incidents_HIV	7.89e-07 ***
## RegionEuropean Union:Incidents_HIV	0.000506 ***
## RegionMiddle East:Incidents_HIV	3.85e-11 ***
## RegionNorth America:Incidents_HIV	0.890148
## RegionOceania:Incidents_HIV	1.01e-05 ***
## RegionRest of Europe:Incidents_HIV	0.892361
## RegionSouth America:Incidents_HIV	0.646405
## RegionAsia:GDP_per_capita	0.022628 *
## RegionCentral America and Caribbean:GDP_per_capita	0.004460 **
## RegionEuropean Union:GDP_per_capita	0.282172
## RegionMiddle East:GDP_per_capita	0.287015
## RegionNorth America:GDP_per_capita	0.850148
## RegionOceania:GDP_per_capita	0.213997
## RegionRest of Europe:GDP_per_capita	0.591081
## RegionSouth America:GDP_per_capita	0.964197
## RegionAsia:Thinness_ten_nineteen_years	0.240974
## RegionCentral America and Caribbean:Thinness_ten_nineteen_years	0.198131
## RegionEuropean Union:Thinness_ten_nineteen_years	0.243045
## RegionMiddle East:Thinness_ten_nineteen_years	0.462356
## RegionNorth America:Thinness_ten_nineteen_years	0.655928
## RegionOceania:Thinness_ten_nineteen_years	0.806872
## RegionRest of Europe:Thinness_ten_nineteen_years	0.801234
## RegionSouth America:Thinness_ten_nineteen_years	0.000126 ***
## RegionAsia:Thinness_five_nine_years	0.058085 .
## RegionCentral America and Caribbean:Thinness_five_nine_years	0.337685
## RegionEuropean Union:Thinness_five_nine_years	0.944818
## RegionMiddle East:Thinness_five_nine_years	0.534116
## RegionNorth America:Thinness_five_nine_years	0.759679

## RegionOceania:Thinness_five_nine_years	0.049876 *
## RegionRest of Europe:Thinness_five_nine_years	0.110457
## RegionSouth America:Thinness_five_nine_years	0.000385 ***
## RegionAsia:Schooling	1.54e-05 ***
## RegionCentral America and Caribbean:Schooling	7.39e-10 ***
## RegionEuropean Union:Schooling	1.02e-11 ***
## RegionMiddle East:Schooling	3.66e-05 ***
## RegionNorth America:Schooling	0.409584
## RegionOceania:Schooling	< 2e-16 ***
## RegionRest of Europe:Schooling	7.90e-10 ***
## RegionSouth America:Schooling	2.26e-10 ***
## RegionAsia:Economy_status_DevelopedYes	0.345667
## RegionCentral America and Caribbean:Economy_status_DevelopedYes	NA
## RegionEuropean Union:Economy_status_DevelopedYes	NA
## RegionMiddle East:Economy_status_DevelopedYes	0.484898
## RegionNorth America:Economy_status_DevelopedYes	0.512575
## RegionOceania:Economy_status_DevelopedYes	0.000946 ***
## RegionRest of Europe:Economy_status_DevelopedYes	NA
## RegionSouth America:Economy_status_DevelopedYes	NA
## YearY2001:BM <sup>I</sup>	0.666551
## YearY2002:BM <sup>I</sup>	0.501136
## YearY2003:BM <sup>I</sup>	0.587505
## YearY2004:BM <sup>I</sup>	0.739947
## YearY2005:BM <sup>I</sup>	0.727958
## YearY2006:BM <sup>I</sup>	0.722892
## YearY2007:BM <sup>I</sup>	0.783788
## YearY2008:BM <sup>I</sup>	0.469752
## YearY2009:BM <sup>I</sup>	0.202191
## YearY2010:BM <sup>I</sup>	0.176857
## YearY2011:BM <sup>I</sup>	0.083126 .
## YearY2012:BM <sup>I</sup>	0.170886
## YearY2013:BM <sup>I</sup>	0.060370 .
## YearY2014:BM <sup>I</sup>	0.013249 *
## YearY2015:BM <sup>I</sup>	0.015750 *
## YearY2001:Incidents_HIV	0.557225
## YearY2002:Incidents_HIV	0.668987
## YearY2003:Incidents_HIV	0.095160 .
## YearY2004:Incidents_HIV	0.003381 **
## YearY2005:Incidents_HIV	0.003806 **
## YearY2006:Incidents_HIV	0.000330 ***
## YearY2007:Incidents_HIV	0.002349 **
## YearY2008:Incidents_HIV	0.002708 **
## YearY2009:Incidents_HIV	0.002173 **
## YearY2010:Incidents_HIV	0.023187 *
## YearY2011:Incidents_HIV	0.081285 .
## YearY2012:Incidents_HIV	0.366944
## YearY2013:Incidents_HIV	0.546549
## YearY2014:Incidents_HIV	0.029568 *
## YearY2015:Incidents_HIV	0.019985 *
## YearY2001:Thinness_ten_nineteen_years	0.574153
## YearY2002:Thinness_ten_nineteen_years	0.119032
## YearY2003:Thinness_ten_nineteen_years	0.026684 *
## YearY2004:Thinness_ten_nineteen_years	0.018946 *
## YearY2005:Thinness_ten_nineteen_years	0.001541 **

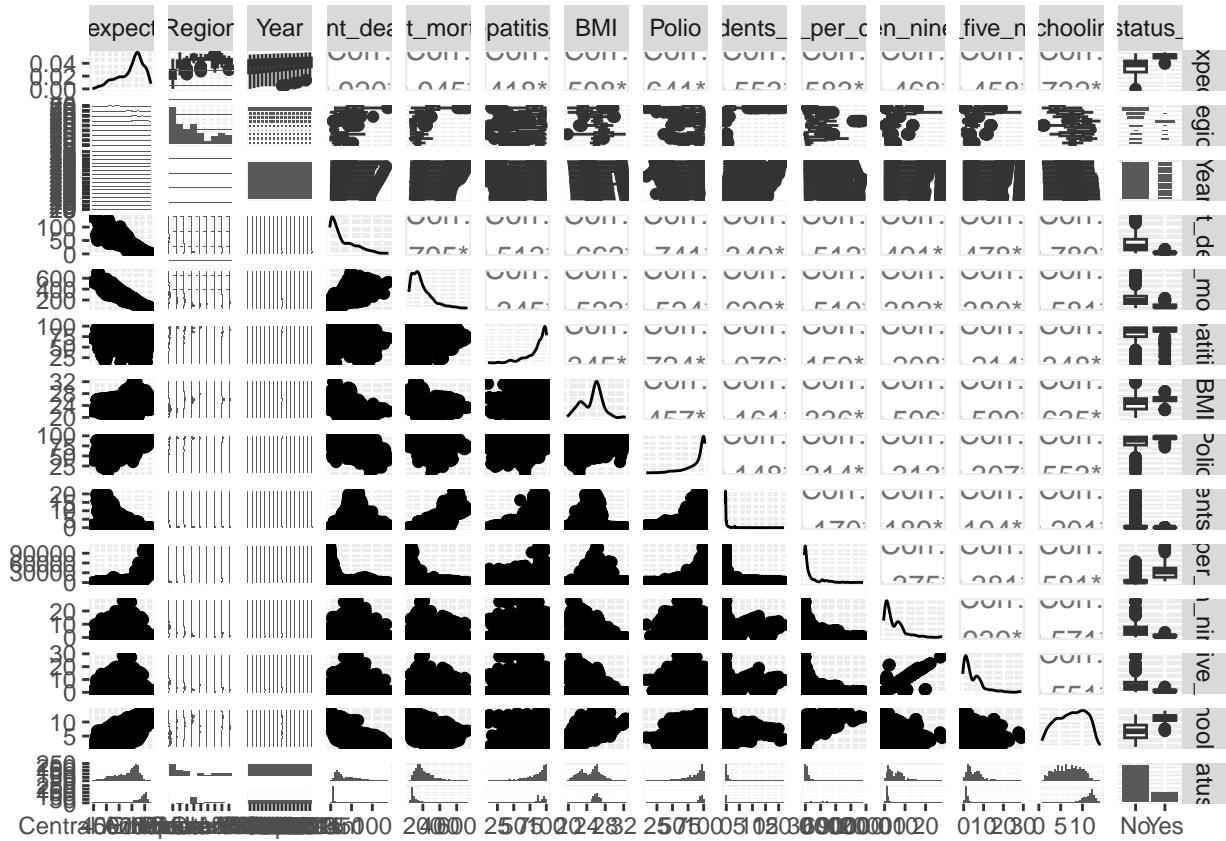
```

## YearY2006:Thinness_ten_nineteen_years          0.000983 ***
## YearY2007:Thinness_ten_nineteen_years          0.001223 **
## YearY2008:Thinness_ten_nineteen_years          0.002109 **
## YearY2009:Thinness_ten_nineteen_years          0.237483
## YearY2010:Thinness_ten_nineteen_years          0.047893 *
## YearY2011:Thinness_ten_nineteen_years          0.272850
## YearY2012:Thinness_ten_nineteen_years          1.19e-05 ***
## YearY2013:Thinness_ten_nineteen_years          1.60e-06 ***
## YearY2014:Thinness_ten_nineteen_years          0.000118 ***
## YearY2015:Thinness_ten_nineteen_years          0.014952 *
## YearY2001:Thinness_five_nine_years             0.848433
## YearY2002:Thinness_five_nine_years             0.118049
## YearY2003:Thinness_five_nine_years             0.027342 *
## YearY2004:Thinness_five_nine_years             0.021735 *
## YearY2005:Thinness_five_nine_years             0.000886 ***
## YearY2006:Thinness_five_nine_years             0.000772 ***
## YearY2007:Thinness_five_nine_years             0.000319 ***
## YearY2008:Thinness_five_nine_years             0.000482 ***
## YearY2009:Thinness_five_nine_years             0.055775 .
## YearY2010:Thinness_five_nine_years             0.011316 *
## YearY2011:Thinness_five_nine_years             0.098596 .
## YearY2012:Thinness_five_nine_years             5.37e-07 ***
## YearY2013:Thinness_five_nine_years             1.56e-08 ***
## YearY2014:Thinness_five_nine_years             2.81e-06 ***
## YearY2015:Thinness_five_nine_years             0.001691 **
## Infant_deaths:Adult_mortality                < 2e-16 ***
## Infant_deaths:Hepatitis_B                    1.52e-09 ***
## Infant_deaths:BMI                           < 2e-16 ***
## Infant_deaths:GDP_per_capita               1.16e-05 ***
## Adult_mortality:Hepatitis_B                7.90e-10 ***
## Adult_mortality:BMI                        < 2e-16 ***
## Adult_mortality:Polio                      0.015149 *
## Adult_mortality:Incidents_HIV              1.64e-10 ***
## Adult_mortality:GDP_per_capita            7.54e-15 ***
## Adult_mortality:Schooling                 9.99e-05 ***
## Hepatitis_B:Incidents_HIV                  9.41e-05 ***
## Hepatitis_B:Thinness_five_nine_years        9.47e-06 ***
## BMI:Thinness_ten_nineteen_years            3.25e-05 ***
## BMI:Thinness_five_nine_years                4.10e-07 ***
## BMI:Schooling                            6.98e-14 ***
## Polio:Incidents_HIV                      1.09e-05 ***
## Incidents_HIV:GDP_per_capita              < 2e-16 ***
## Incidents_HIV:Thinness_ten_nineteen_years  0.023456 *
## Incidents_HIV:Thinness_five_nine_years      0.001945 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8377 on 2546 degrees of freedom
## Multiple R-squared:  0.9929, Adjusted R-squared:  0.9921
## F-statistic:  1131 on 317 and 2546 DF,  p-value: < 2.2e-16

## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.

```





```

## 
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     Adult_mortality + I(Adult_mortality^2) + Hepatitis_B + BMI +
##     Polio + Incidents_HIV + GDP_per_capita + Thinness_ten_nineteen_years +
##     Thinness_five_nine_years + Schooling + Economy_status_Developed,
##     data = data)
## 
## Residuals:
##      Min        1Q        Median       3Q        Max 
## -3.7705 -0.7745   0.0120   0.7747   3.5210 
## 
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)             8.355e+01  5.639e-01 148.165 < 2e-16 ***
## RegionAsia              5.733e-01  9.466e-02   6.057 1.57e-09 ***
## RegionCentral America and Caribbean 2.166e+00  1.021e-01  21.208 < 2e-16 ***
## RegionEuropean Union    -4.839e-01  1.525e-01  -3.173 0.001527 ** 
## RegionMiddle East        6.672e-02  1.216e-01   0.549 0.583208  
## RegionNorth America      7.467e-01  2.087e-01   3.578 0.000352 *** 
## RegionOceania             -4.868e-01  1.253e-01  -3.886 0.000104 *** 
## RegionRest of Europe     3.325e-01  1.211e-01   2.745 0.006097 ** 
## RegionSouth America      1.912e+00  1.162e-01  16.451 < 2e-16 ***
## YearY2001                4.584e-02  1.243e-01   0.369 0.712282  
## YearY2002                2.901e-02  1.244e-01   0.233 0.815660  
## YearY2003                -3.960e-02 1.245e-01  -0.318 0.750410 
## 
```

```

## YearY2004           -2.657e-03  1.246e-01 -0.021  0.982988
## YearY2005           -4.092e-02  1.248e-01 -0.328  0.742933
## YearY2006           -1.068e-02  1.250e-01 -0.085  0.931909
## YearY2007            2.531e-02  1.251e-01  0.202  0.839690
## YearY2008            8.721e-02  1.253e-01  0.696  0.486306
## YearY2009            1.506e-01  1.255e-01  1.201  0.229996
## YearY2010            2.271e-01  1.256e-01  1.808  0.070647 .
## YearY2011            2.769e-01  1.258e-01  2.200  0.027892 *
## YearY2012            2.968e-01  1.261e-01  2.354  0.018644 *
## YearY2013            4.066e-01  1.264e-01  3.217  0.001310 **
## YearY2014            4.951e-01  1.267e-01  3.908  9.52e-05 ***
## YearY2015            5.126e-01  1.269e-01  4.039  5.52e-05 ***
## Infant_deaths         -1.226e-01  2.341e-03 -52.359 < 2e-16 ***
## Adult_mortality       -6.360e-02  1.038e-03 -61.259 < 2e-16 ***
## I(Adult_mortality^2)  3.003e-05  1.688e-06  17.794 < 2e-16 ***
## Hepatitis_B           -9.904e-03  2.075e-03 -4.772  1.91e-06 ***
## BMI                  -9.205e-02  1.954e-02 -4.710  2.59e-06 ***
## Polio                1.037e-02  2.814e-03  3.686  0.000232 ***
## Incidents_HIV         -6.997e-02  1.858e-02 -3.766  0.000169 ***
## GDP_per_capita        6.627e-06  2.157e-06  3.072  0.002144 **
## Thinnness_ten_nineteen_years -4.062e-02  1.475e-02 -2.755  0.005914 **
## Thinnness_five_nine_years   4.851e-02  1.463e-02  3.315  0.000927 ***
## Schooling             1.281e-01  1.560e-02  8.211  3.29e-16 ***
## Economy_status_DevelopedYes 2.026e+00  1.445e-01  14.027 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.175 on 2828 degrees of freedom
## Multiple R-squared:  0.9846, Adjusted R-squared:  0.9844
## F-statistic:  5157 on 35 and 2828 DF,  p-value: < 2.2e-16

##
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     I(Infant_deaths^2) + Adult_mortality + Hepatitis_B + BMI +
##     Polio + Incidents_HIV + GDP_per_capita + Thinnness_ten_nineteen_years +
##     Thinnness_five_nine_years + Schooling + Economy_status_Developed,
##     data = data)
##
## Residuals:
##      Min      1Q      Median      3Q      Max 
## -4.1942 -0.8240  0.0166  0.8391  3.8965 
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)               8.304e+01  5.799e-01 143.183 < 2e-16 ***
## RegionAsia                7.939e-01  9.713e-02   8.173 4.48e-16 ***
## RegionCentral America and Caribbean 2.140e+00  1.052e-01   20.345 < 2e-16 ***
## RegionEuropean Union      -6.528e-01  1.579e-01  -4.135 3.65e-05 ***
## RegionMiddle East          3.761e-01  1.233e-01   3.050 0.002307 ** 
## RegionNorth America        7.709e-01  2.148e-01   3.588 0.000338 *** 
## RegionOceania              -3.288e-01  1.294e-01  -2.541 0.011098 *  
## RegionRest of Europe       2.762e-01  1.254e-01   2.202 0.027711 *  
## RegionSouth America        1.963e+00  1.196e-01   16.415 < 2e-16 ***

```

```

## YearY2001          9.222e-02  1.279e-01  0.721  0.471085
## YearY2002          1.164e-01  1.281e-01  0.909  0.363637
## YearY2003          5.180e-02  1.281e-01  0.404  0.686071
## YearY2004          9.565e-02  1.283e-01  0.746  0.456015
## YearY2005          5.296e-02  1.285e-01  0.412  0.680228
## YearY2006          8.639e-02  1.287e-01  0.671  0.502206
## YearY2007          1.221e-01  1.289e-01  0.947  0.343793
## YearY2008          1.781e-01  1.291e-01  1.380  0.167648
## YearY2009          2.420e-01  1.293e-01  1.872  0.061335 .
## YearY2010          3.124e-01  1.294e-01  2.414  0.015832 *
## YearY2011          3.701e-01  1.297e-01  2.854  0.004349 **
## YearY2012          3.970e-01  1.299e-01  3.055  0.002273 **
## YearY2013          5.167e-01  1.303e-01  3.967  7.47e-05 ***
## YearY2014          6.156e-01  1.305e-01  4.717  2.52e-06 ***
## YearY2015          6.363e-01  1.307e-01  4.867  1.20e-06 ***
## Infant_deaths      -1.746e-01  4.787e-03 -36.483 < 2e-16 ***
## I(Infant_deaths^2)  4.292e-04  3.631e-05 11.819 < 2e-16 ***
## Adult_mortality    -4.696e-02  5.486e-04 -85.599 < 2e-16 ***
## Hepatitis_B         -1.408e-02  2.149e-03 -6.553 6.68e-11 ***
## BMI                -1.089e-01  2.012e-02 -5.410 6.81e-08 ***
## Polio               1.590e-02  2.925e-03 5.438 5.84e-08 ***
## Incidents_HIV      1.038e-01  1.654e-02 6.275 4.03e-10 ***
## GDP_per_capita     1.118e-05  2.192e-06 5.101 3.60e-07 ***
## Thinnness_ten_nineteen_years -3.937e-02  1.518e-02 -2.593 0.009553 **
## Thinnness_five_nine_years   4.015e-02  1.505e-02 2.668 0.007683 **
## Schooling           8.133e-02  1.636e-02 4.972 7.01e-07 ***
## Economy_status_DevelopedYes 2.174e+00  1.482e-01 14.666 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.21 on 2828 degrees of freedom
## Multiple R-squared:  0.9837, Adjusted R-squared:  0.9835
## F-statistic:  4863 on 35 and 2828 DF, p-value: < 2.2e-16

##          rsquare AdjustedR       cp        AIC        BIC
## [1,] 0.8937062 0.8936691 14671.03495 14551.086 -6403.875
## [2,] 0.9710178 0.9709976 1922.03201 10831.245 -10117.756
## [3,] 0.9751387 0.9751126 1244.38250 10287.362 -10549.039
## [4,] 0.9772792 0.9772474  893.33732  9619.966 -10798.939
## [5,] 0.9787456 0.9787084  653.49103  9530.695 -10982.050
## [6,] 0.9797976 0.9797552  481.97571  9500.560 -11119.482
## [7,] 0.9807825 0.9807354  321.54992  9464.634 -11254.652
## [8,] 0.9812176 0.9811650  251.77972  9443.244 -11312.289
## [9,] 0.9816077 0.9815497  189.44460  9418.419 -11364.436
## [10,] 0.9819913 0.9819281  128.18101  9406.586 -11416.837
## [11,] 0.9821105 0.9820415  110.50941  9394.528 -11427.909
## [12,] 0.9822325 0.9821577   92.39530  9394.943 -11439.540
## [13,] 0.9823265 0.9822459   78.88395  9393.009 -11446.780

valid_model = first_order_model

```

### Residual Analysis:

Residual analysis is a critical step in validating and assessing the quality of a regression model. Residuals, which represent the differences between the observed data points and the corresponding values predicted by

the model, provide insights into whether the foundational assumptions of regression analysis are being met. Properly addressing these assumptions is essential to ensure that the model delivers accurate and reliable results.

Key assumptions in regression analysis are given below:

- 1) Linearity Assumption
- 2) Independence Assumption
- 3) Equal Variance Assumption
- 4) Normality Assumption
- 5) Outliers

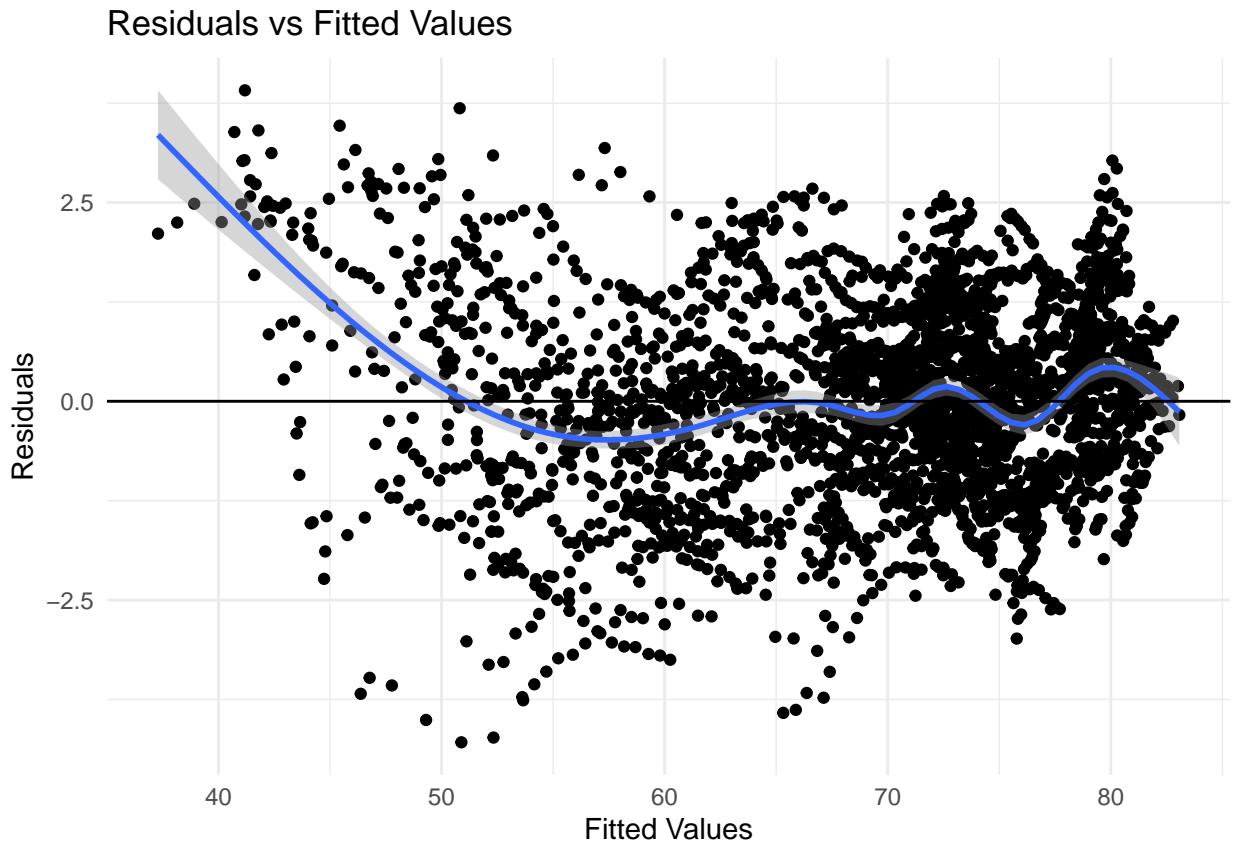
Violations of these assumptions can compromise the model's reliability. Residual analysis involves using visualizations like residual plots and statistical tests to detect issues.

In analyzing life expectancy, residual analysis is crucial due to the intricate relationships between health, economic, and social factors. Ensuring that regression assumptions are satisfied strengthens the model's credibility and enhances the reliability of its predictions. This process provides valuable insights into the key drivers influencing life expectancy, enabling more informed decision-making and targeted interventions.

**1) Linearity Assumption:** In regression analysis, the linearity assumption requires that the dependent variable maintains a straight-line relationship with the independent variables. In other words, the predicted values of the dependent variable should change proportionally with the predictors. If the relationship is non-linear, this assumption is violated, potentially resulting in biased estimates and less reliable predictions.

To assess whether this assumption holds, residual plots are frequently utilized. These plots compare the residuals against fitted values or independent variables. When residuals are randomly dispersed around zero without discernible patterns, it suggests the linearity assumption is met. On the other hand, noticeable patterns—such as curves or trends—signal a non-linear relationship that may require adjustments to the model.

```
## `geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'
```



Based on this we can say that there is some non linear pattern indicate atth relationship between life expectancy and independent variables are not linear, lets add some higher order term.



Based on this We can say that Adult mortality has higher correlation so that we start with it.

```
##
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     Adult_mortality + I(Adult_mortality^2) + Hepatitis_B + BMI +
##     Polio + Incidents_HIV + GDP_per_capita + Thinnness_ten_nineteen_years +
##     Thinnness_five_nine_years + Schooling + Economy_status_Developed,
##     data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max 
## -3.7705 -0.7745  0.0120  0.7747  3.5210 
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)             8.355e+01  5.639e-01 148.165 < 2e-16 ***
## RegionAsia            5.733e-01  9.466e-02   6.057 1.57e-09 ***
## RegionCentral America and Caribbean 2.166e+00  1.021e-01  21.208 < 2e-16 ***
## RegionEuropean Union -4.839e-01  1.525e-01  -3.173 0.001527 ** 
## RegionMiddle East     6.672e-02  1.216e-01   0.549 0.583208  
## RegionNorth America   7.467e-01  2.087e-01   3.578 0.000352 *** 
## RegionOceania          -4.868e-01  1.253e-01  -3.886 0.000104 *** 
## RegionRest of Europe  3.325e-01  1.211e-01   2.745 0.006097 ** 
## RegionSouth America   1.912e+00  1.162e-01  16.451 < 2e-16 ***
## YearY2001              4.584e-02  1.243e-01   0.369 0.712282  
## 
## *** p-value < 2.2e-16
```

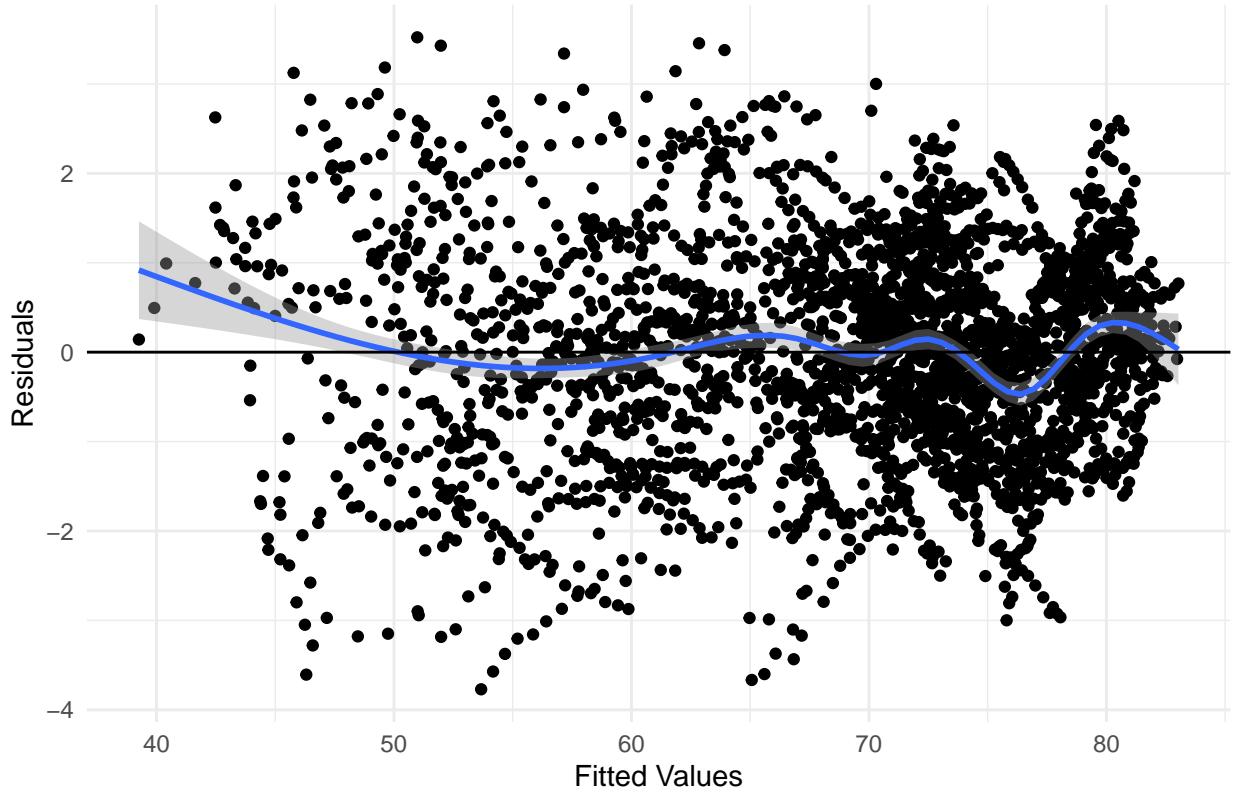
```

## YearY2002          2.901e-02  1.244e-01  0.233  0.815660
## YearY2003          -3.960e-02 1.245e-01 -0.318  0.750410
## YearY2004          -2.657e-03 1.246e-01 -0.021  0.982988
## YearY2005          -4.092e-02 1.248e-01 -0.328  0.742933
## YearY2006          -1.068e-02 1.250e-01 -0.085  0.931909
## YearY2007          2.531e-02 1.251e-01  0.202  0.839690
## YearY2008          8.721e-02 1.253e-01  0.696  0.486306
## YearY2009          1.506e-01 1.255e-01  1.201  0.229996
## YearY2010          2.271e-01 1.256e-01  1.808  0.070647 .
## YearY2011          2.769e-01 1.258e-01  2.200  0.027892 *
## YearY2012          2.968e-01 1.261e-01  2.354  0.018644 *
## YearY2013          4.066e-01 1.264e-01  3.217  0.001310 **
## YearY2014          4.951e-01 1.267e-01  3.908  9.52e-05 ***
## YearY2015          5.126e-01 1.269e-01  4.039  5.52e-05 ***
## Infant_deaths      -1.226e-01 2.341e-03 -52.359 < 2e-16 ***
## Adult_mortality    -6.360e-02 1.038e-03 -61.259 < 2e-16 ***
## I(Adult_mortality^2) 3.003e-05 1.688e-06 17.794 < 2e-16 ***
## Hepatitis_B         -9.904e-03 2.075e-03 -4.772 1.91e-06 ***
## BMI                -9.205e-02 1.954e-02 -4.710 2.59e-06 ***
## Polio               1.037e-02 2.814e-03  3.686  0.000232 ***
## Incidents_HIV       -6.997e-02 1.858e-02 -3.766  0.000169 ***
## GDP_per_capita      6.627e-06 2.157e-06  3.072  0.002144 **
## Thinness_ten_nineteen_years -4.062e-02 1.475e-02 -2.755  0.005914 **
## Thinness_five_nine_years   4.851e-02 1.463e-02  3.315  0.000927 ***
## Schooling            1.281e-01 1.560e-02  8.211  3.29e-16 ***
## Economy_status_DevelopedYes 2.026e+00 1.445e-01 14.027 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.175 on 2828 degrees of freedom
## Multiple R-squared:  0.9846, Adjusted R-squared:  0.9844
## F-statistic:  5157 on 35 and 2828 DF,  p-value: < 2.2e-16

## `geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'

```

## Residuals vs Fitted Values



Based on the graph, we can observe that it is becoming more aligned with the zero line. Let us increase the order and check if the graph aligns even more closely with zero.

```
##
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     Adult_mortality + I(Adult_mortality^2) + I(Adult_mortality^3) +
##     Hepatitis_B + BMI + Polio + Incidents_HIV + GDP_per_capita +
##     Thinness_ten_nineteen_years + Thinness_five_nine_years +
##     Schooling + Economy_status_Developed, data = data)
##
## Residuals:
##      Min        1Q        Median       3Q        Max 
## -3.6687 -0.7780  0.0273  0.7510  3.6050 
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)                 8.425e+01  5.673e-01 148.513 < 2e-16 ***
## RegionAsia                  7.100e-01  9.570e-02   7.419 1.56e-13 ***
## RegionCentral America and Caribbean 2.305e+00  1.030e-01  22.374 < 2e-16 ***
## RegionEuropean Union          -3.451e-01  1.524e-01  -2.265 0.023609 *  
## RegionMiddle East              7.326e-02  1.205e-01   0.608 0.543260  
## RegionNorth America             9.081e-01  2.081e-01   4.365 1.32e-05 ***
## RegionOceania                 -3.551e-01  1.255e-01  -2.830 0.004693 ** 
## RegionRest of Europe            4.120e-01  1.206e-01   3.417 0.000642 *** 
## RegionSouth America              2.054e+00  1.169e-01  17.575 < 2e-16 ***
```

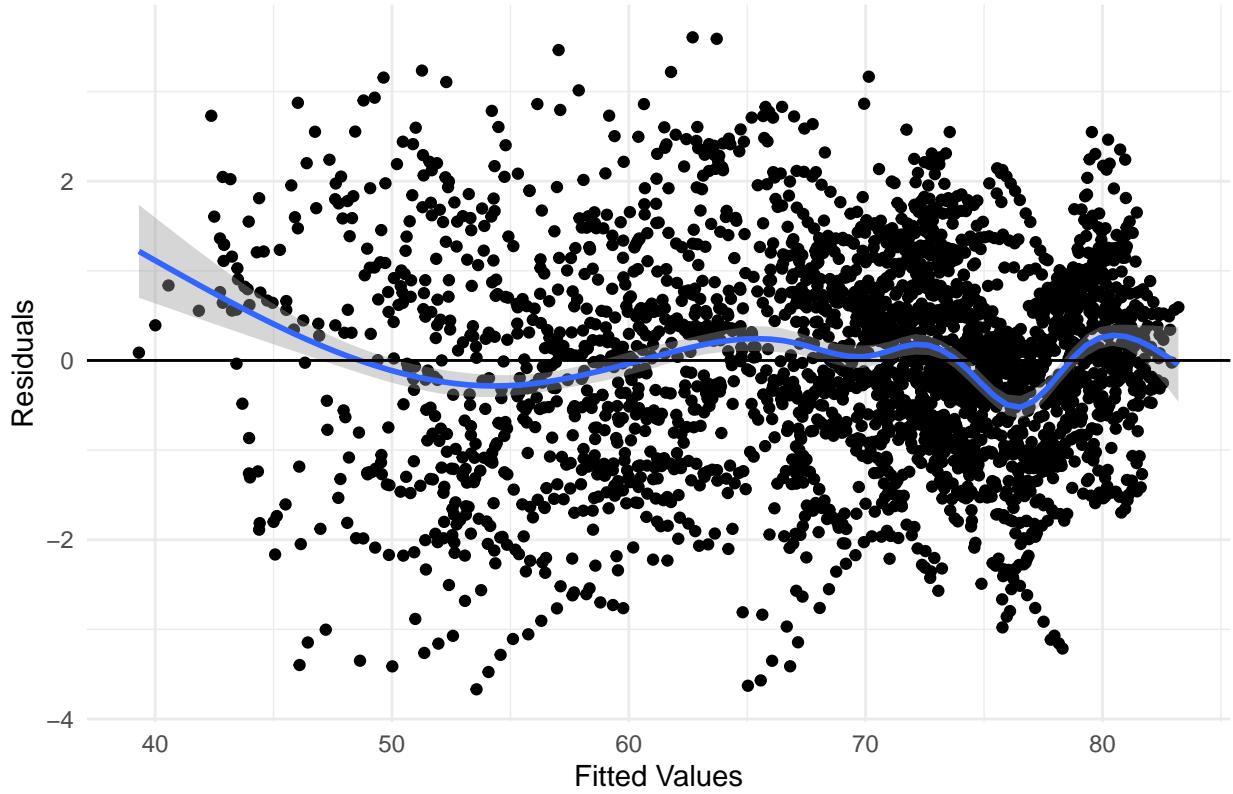
```

## YearY2001          4.421e-02  1.232e-01  0.359  0.719696
## YearY2002          2.812e-02  1.233e-01  0.228  0.819676
## YearY2003          -5.071e-02 1.234e-01 -0.411  0.681074
## YearY2004          -2.129e-02 1.235e-01 -0.172  0.863164
## YearY2005          -6.776e-02 1.237e-01 -0.548  0.583936
## YearY2006          -4.046e-02 1.239e-01 -0.326  0.744079
## YearY2007          -6.840e-03 1.241e-01 -0.055  0.956048
## YearY2008          4.885e-02 1.243e-01  0.393  0.694208
## YearY2009          1.078e-01 1.245e-01  0.866  0.386687
## YearY2010          1.828e-01 1.246e-01  1.467  0.142587
## YearY2011          2.314e-01 1.249e-01  1.853  0.063944 .
## YearY2012          2.511e-01 1.251e-01  2.006  0.044909 *
## YearY2013          3.596e-01 1.254e-01  2.866  0.004183 **
## YearY2014          4.460e-01 1.257e-01  3.547  0.000396 ***
## YearY2015          4.634e-01 1.260e-01  3.679  0.000238 ***
## Infant_deaths      -1.254e-01 2.354e-03 -53.292 < 2e-16 ***
## Adult_mortality    -7.814e-02 2.261e-03 -34.562 < 2e-16 ***
## I(Adult_mortality^2) 8.707e-05 8.070e-06 10.789 < 2e-16 ***
## I(Adult_mortality^3) -5.948e-08 8.233e-09 -7.225 6.44e-13 ***
## Hepatitis_B         -1.004e-02 2.057e-03 -4.881 1.11e-06 ***
## BMI                 -7.807e-02 1.946e-02 -4.011 6.21e-05 ***
## Polio               1.087e-02 2.789e-03  3.896 0.000100 ***
## Incidents_HIV       -7.810e-02 1.845e-02 -4.234 2.37e-05 ***
## GDP_per_capita      2.121e-06 2.227e-06  0.952 0.341030
## Thinness_ten_nineteen_years -4.047e-02 1.461e-02 -2.769 0.005654 **
## Thinness_five_nine_years   5.221e-02 1.451e-02  3.598 0.000326 ***
## Schooling            1.205e-01 1.549e-02  7.777 1.03e-14 ***
## Economy_status_DevelopedYes 1.929e+00 1.438e-01 13.418 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.165 on 2827 degrees of freedom
## Multiple R-squared:  0.9849, Adjusted R-squared:  0.9847
## F-statistic:  5106 on 36 and 2827 DF,  p-value: < 2.2e-16

## `geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'

```

## Residuals vs Fitted Values



Based on graph, we can not reduce the non linearity of curve so we can say that there is no further reduction is possible with Adult\_mortality term, lets check with other highly correlated term i.e. Infant\_deaths.

```
##
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     I(Infant_deaths^2) + Adult_mortality + I(Adult_mortality^2) +
##     Hepatitis_B + BMI + Polio + Incidents_HIV + GDP_per_capita +
##     Thinness_ten_nineteen_years + Thinness_five_nine_years +
##     Schooling + Economy_status_Developed, data = data)
##
## Residuals:
##      Min        1Q        Median       3Q        Max 
## -3.9296 -0.7610  0.0282  0.7741  3.6453 
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)                8.382e+01  5.633e-01 148.795 < 2e-16 ***
## RegionAsia                 6.240e-01  9.466e-02   6.592 5.16e-11 ***
## RegionCentral America and Caribbean 2.149e+00  1.017e-01  21.141 < 2e-16 ***
## RegionEuropean Union        -5.754e-01  1.527e-01  -3.768 0.000168 ***
## RegionMiddle East            8.088e-02  1.210e-01   0.668 0.503978  
## RegionNorth America          7.422e-01  2.077e-01   3.574 0.000358 ***
## RegionOceania                -4.221e-01  1.252e-01  -3.371 0.000760 ***
## RegionRest of Europe         2.639e-01  1.212e-01   2.177 0.029541 *  
## RegionSouth America           1.916e+00  1.157e-01  16.564 < 2e-16 ***
```

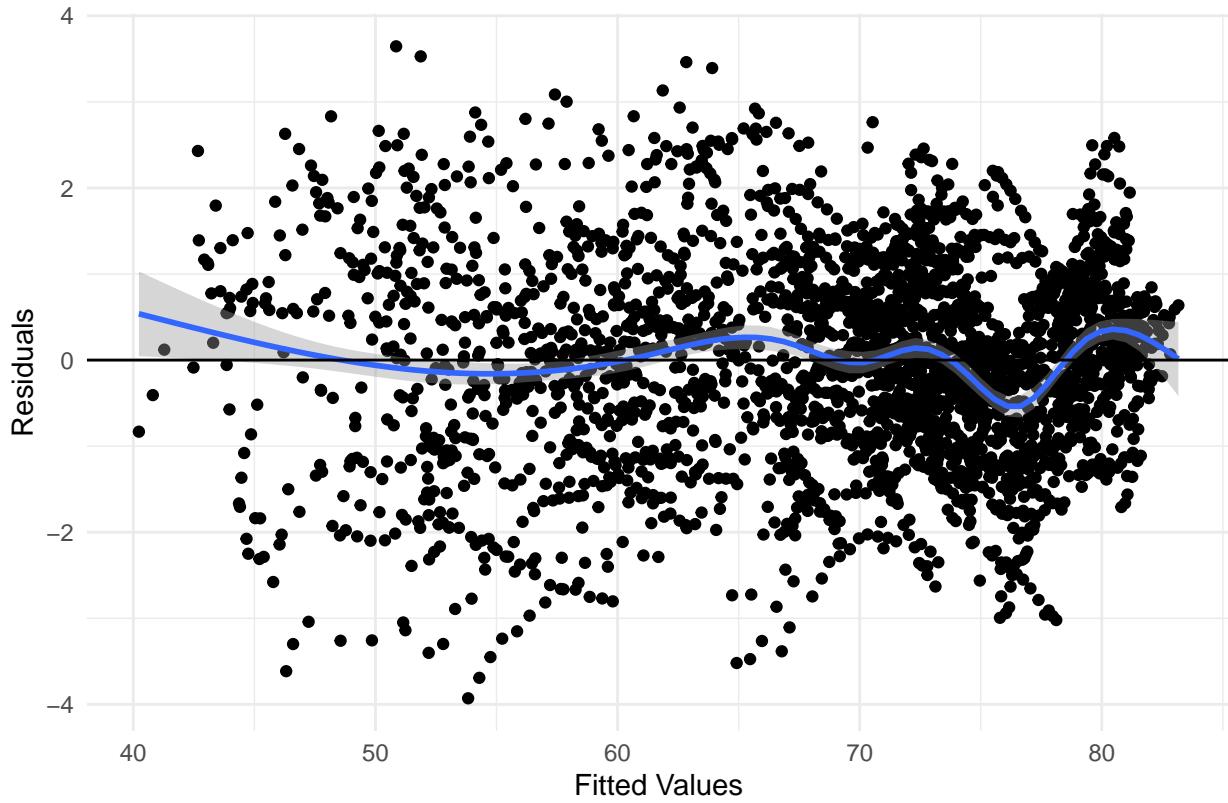
```

## YearY2001      5.765e-02  1.237e-01  0.466  0.641187
## YearY2002      4.948e-02  1.239e-01  0.399  0.689608
## YearY2003     -1.391e-02  1.239e-01 -0.112  0.910651
## YearY2004      2.927e-02  1.241e-01  0.236  0.813566
## YearY2005     -9.456e-03  1.243e-01 -0.076  0.939359
## YearY2006      2.451e-02  1.245e-01  0.197  0.843941
## YearY2007      6.218e-02  1.247e-01  0.499  0.618090
## YearY2008      1.234e-01  1.248e-01  0.988  0.323083
## YearY2009      1.876e-01  1.250e-01  1.501  0.133522
## YearY2010      2.618e-01  1.251e-01  2.092  0.036536 *
## YearY2011      3.152e-01  1.254e-01  2.513  0.012027 *
## YearY2012      3.362e-01  1.257e-01  2.675  0.007522 **
## YearY2013      4.477e-01  1.260e-01  3.553  0.000387 ***
## YearY2014      5.371e-01  1.263e-01  4.253  2.18e-05 ***
## YearY2015      5.540e-01  1.265e-01  4.379  1.23e-05 ***
## Infant_deaths   -1.467e-01  5.033e-03 -29.146 < 2e-16 ***
## I(Infant_deaths^2)  2.078e-04  3.844e-05  5.406  7.00e-08 ***
## Adult_mortality  -6.109e-02  1.132e-03 -53.958 < 2e-16 ***
## I(Adult_mortality^2)  2.598e-05  1.839e-06  14.125 < 2e-16 ***
## Hepatitis_B      -1.147e-02  2.085e-03 -5.502  4.09e-08 ***
## BMI              -9.727e-02  1.947e-02 -4.996  6.21e-07 ***
## Polio             1.280e-02  2.836e-03  4.514  6.61e-06 ***
## Incidents_HIV    -4.397e-02  1.910e-02 -2.302  0.021406 *
## GDP_per_capita   5.471e-06  2.157e-06  2.537  0.011247 *
## Thinness_ten_nineteen_years  -4.153e-02  1.467e-02 -2.830  0.004688 **
## Thinness_five_nine_years   5.080e-02  1.457e-02  3.488  0.000495 ***
## Schooling         1.087e-01  1.593e-02  6.822  1.09e-11 ***
## Economy_status_DevelopedYes 2.004e+00  1.438e-01  13.940 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.17 on 2827 degrees of freedom
## Multiple R-squared:  0.9847, Adjusted R-squared:  0.9845
## F-statistic:  5065 on 36 and 2827 DF,  p-value: < 2.2e-16

## `geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'

```

## Residuals vs Fitted Values



Based on the graph, there appears to be a subtle pattern in the residuals, though it is less pronounced. Lets check for cubic model.

```
##
## Call:
## lm(formula = Life_expectancy ~ Region + Year + Infant_deaths +
##     I(Infant_deaths^2) + I(Infant_deaths^3) + Adult_mortality +
##     I(Adult_mortality^2) + Hepatitis_B + BMI + Polio + Incidents_HIV +
##     GDP_per_capita + Thinness_ten_nineteen_years + Thinness_five_nine_years +
##     Schooling + Economy_status_Developed, data = data)
##
## Residuals:
##      Min      1Q      Median      3Q      Max 
## -3.8769 -0.7892  0.0352  0.7684  3.5875 
## 
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)    
## (Intercept)                 8.385e+01  5.621e-01 149.156 < 2e-16 ***
## RegionAsia                  5.985e-01  9.471e-02   6.319 3.05e-10 ***
## RegionCentral America and Caribbean 2.134e+00  1.015e-01  21.016 < 2e-16 ***
## RegionEuropean Union          -5.379e-01  1.527e-01  -3.522 0.000435 ***
## RegionMiddle East              7.193e-02  1.208e-01   0.596 0.551511  
## RegionNorth America            7.183e-01  2.073e-01   3.465 0.000539 ***
## RegionOceania                 -4.468e-01  1.251e-01  -3.571 0.000362 ***
## RegionRest of Europe           3.035e-01  1.214e-01   2.500 0.012492 *  
## RegionSouth America             1.885e+00  1.157e-01  16.289 < 2e-16 ***
```

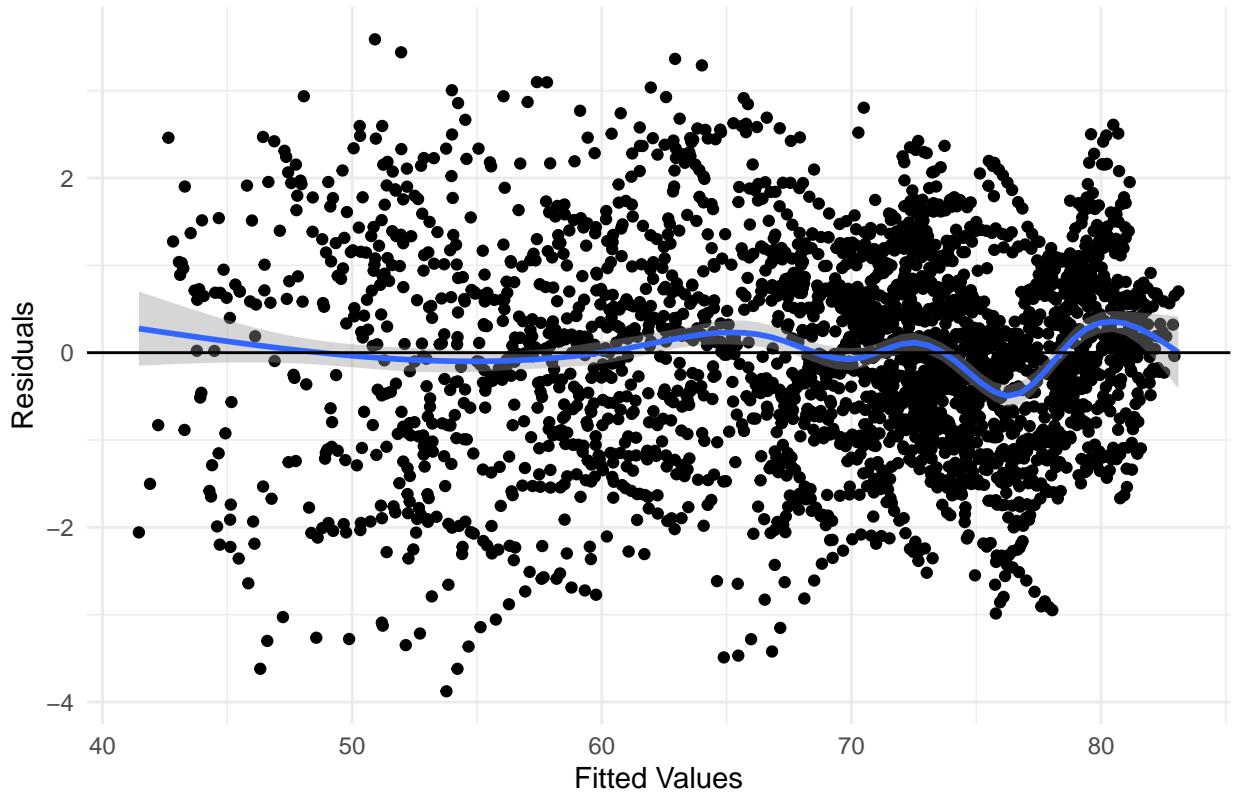
```

## YearY2001          6.593e-02  1.234e-01  0.534  0.593295
## YearY2002          6.393e-02  1.237e-01  0.517  0.605236
## YearY2003          4.886e-03  1.238e-01  0.039  0.968516
## YearY2004          5.015e-02  1.240e-01  0.405  0.685874
## YearY2005          1.471e-02  1.242e-01  0.118  0.905737
## YearY2006          4.960e-02  1.244e-01  0.399  0.690223
## YearY2007          8.880e-02  1.246e-01  0.712  0.476236
## YearY2008          1.522e-01  1.248e-01  1.220  0.222596
## YearY2009          2.178e-01  1.250e-01  1.742  0.081598 .
## YearY2010          2.926e-01  1.252e-01  2.338  0.019475 *
## YearY2011          3.463e-01  1.254e-01  2.761  0.005802 **
## YearY2012          3.679e-01  1.257e-01  2.926  0.003456 **
## YearY2013          4.794e-01  1.260e-01  3.804  0.000145 ***
## YearY2014          5.691e-01  1.263e-01  4.505  6.91e-06 ***
## YearY2015          5.864e-01  1.265e-01  4.634  3.76e-06 ***
## Infant_deaths      -1.189e-01  9.090e-03 -13.086 < 2e-16 ***
## I(Infant_deaths^2) -3.900e-04  1.678e-04 -2.325  0.020146 *
## I(Infant_deaths^3)  3.453e-06  9.433e-07 3.661  0.000256 ***
## Adult_mortality    -6.159e-02  1.138e-03 -54.128 < 2e-16 ***
## I(Adult_mortality^2) 2.649e-05  1.840e-06 14.393 < 2e-16 ***
## Hepatitis_B         -1.159e-02  2.081e-03 -5.569  2.81e-08 ***
## BMI                -1.046e-01  1.953e-02 -5.357  9.16e-08 ***
## Polio               1.180e-02  2.843e-03  4.152  3.39e-05 ***
## Incidents_HIV       -3.977e-02  1.909e-02 -2.083  0.037360 *
## GDP_per_capita      7.030e-06  2.194e-06 3.204  0.001370 **
## Thinness_ten_nineteen_years -4.017e-02  1.465e-02 -2.743  0.006133 **
## Thinness_five_nine_years   4.967e-02  1.454e-02 3.417  0.000643 ***
## Schooling            1.097e-01  1.590e-02  6.904  6.24e-12 ***
## Economy_status_DevelopedYes 2.084e+00  1.451e-01 14.360 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.167 on 2826 degrees of freedom
## Multiple R-squared:  0.9848, Adjusted R-squared:  0.9846
## F-statistic:  4950 on 37 and 2826 DF,  p-value: < 2.2e-16

## `geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'

```

## Residuals vs Fitted Values



The residuals appear to be randomly scattered, showing no discernible pattern, which suggests that the linearity assumption is satisfied. The  $R^2_{adj}$  value of 0.9846 indicates that 98.46% of the variation in life expectancy is explained by this model. Additionally, the Root Mean Squared Error (RMSE) of 1.167 reflects the average deviation of the predicted values from the observed values, demonstrating the model's high accuracy in predicting life expectancy.

### 2) Independence Assumption:

The Independence Assumption in regression analysis states that the residuals (errors) in the model should be independent of each other. This means that the error associated with one observation should not provide any information about the error associated with another observation. This typically occurs when the data for both dependent and independent variables are observed sequentially over a period of time-called time-series data. Since our data does not relate to time, space, or group so we can be pretty sure that their measurements are independent.

### 3) Equal Variance Assumption:

The Equal Variance Assumption, also known as Homoscedasticity, is a fundamental assumption in regression analysis. It states that the variance of the residuals (errors) should be constant across all levels of the independent variables. This is crucial for the validity of statistical tests and confidence intervals, as violations can lead to biased estimates of regression coefficients, incorrect standard errors, and unreliable hypothesis tests.

We will check this using Breusch-Pagan Test,

Null Hypothesis  $H_0$ : There is no heteroscedasticity is present, i.e.  $\sigma_1^2 = \sigma_2^2 = \dots = \sigma_n^2$

Alternative Hypothesis  $H_1$ : heteroscedasticity is present, atleast one  $\sigma_i^2$  is different from others  $i= 1,2,..n$ .

```
## Warning: package 'lmtest' was built under R version 4.4.2
```

```

## Loading required package: zoo

## Warning: package 'zoo' was built under R version 4.4.2

##
## Attaching package: 'zoo'

## The following objects are masked from 'package:base':
##       as.Date, as.Date.numeric

##
## studentized Breusch-Pagan test
##
## data: valid_model
## BP = 530.63, df = 37, p-value < 2.2e-16

```

A significant result, p-value < 2.2e-16 which is less than 0.05 from the Breusch-Pagan test suggests heteroscedasticity, meaning the variance of the residuals is not constant across levels of the independent variables. We reject null hypothesis.

Equal Variance Assumption is violated, a Box-Cox Transformation can stabilize the variance. This method identifies an appropriate transformation for the dependent variable.

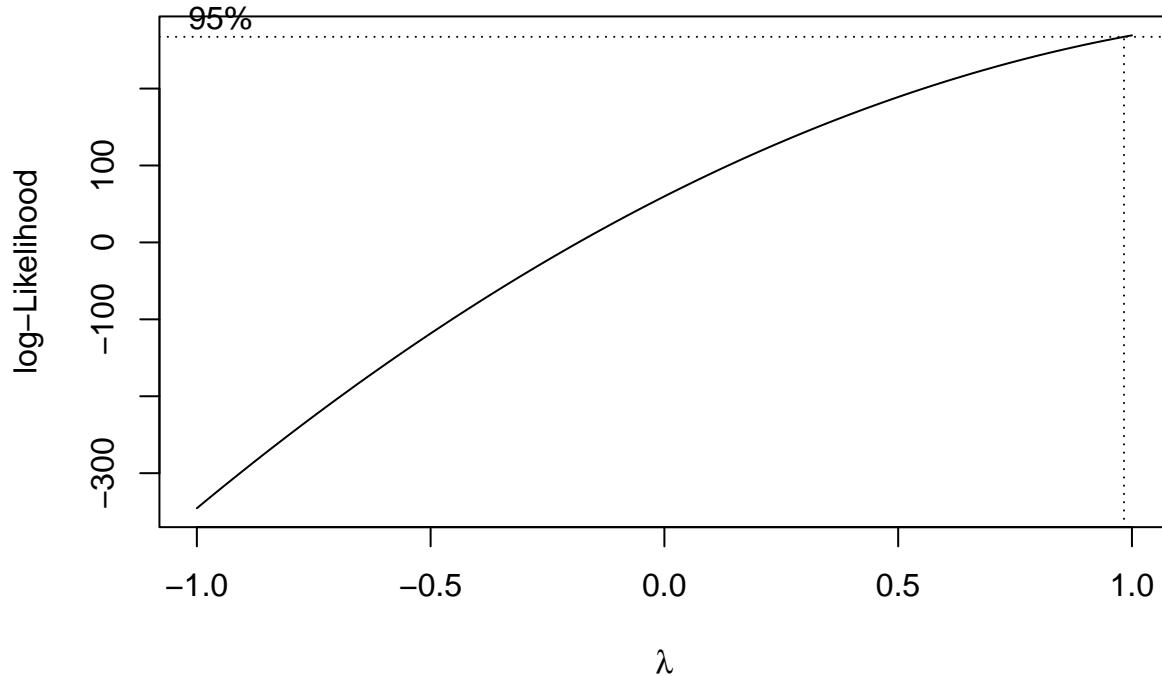
```

##
## Attaching package: 'MASS'

## The following object is masked from 'package:olsrr':
##       cement

## The following object is masked from 'package:dplyr':
##       select

```



```
## Optimal Lambda for Box-Cox Transformation: 1
```

When the Box-Cox transformation identifies an optimal lambda value of 0.59596, it suggests that the dependent variable (e.g., Life\_Expectancy) requires a power transformation to stabilize variance and meet the regression assumptions.

```
##
## Call:
## lm(formula = (((Life_expectancy^0.59596) - 1)/0.59596) ~ Region +
##   Year + Infant_deaths + I(Infant_deaths^2) + I(Infant_deaths^3) +
##   Adult_mortality + I(Adult_mortality^2) + Hepatitis_B + BMI +
##   Polio + Incidents_HIV + GDP_per_capita + Thinness_ten_nineteen_years +
##   Thinness_five_nine_years + Schooling + Economy_status_Developed,
##   data = data)
##
## Residuals:
##      Min        1Q     Median        3Q       Max
## -0.77101 -0.13967  0.00805  0.13999  0.73489
##
## Coefficients:
##                               Estimate Std. Error t value Pr(>|t|)
## (Intercept)                2.176e+01  1.043e-01 208.561 < 2e-16 ***
## RegionAsia                 1.173e-01  1.758e-02   6.673 3.01e-11 ***
## RegionCentral America and Caribbean 3.849e-01  1.884e-02   20.428 < 2e-16 ***
## RegionEuropean Union      -7.714e-02  2.834e-02  -2.722 0.006531 **
```

```

## RegionMiddle East      2.116e-02  2.241e-02  0.944  0.345114
## RegionNorth America   1.338e-01  3.848e-02  3.478  0.000512 ***
## RegionOceania          -7.602e-02 2.323e-02 -3.273  0.001076 **
## RegionRest of Europe   6.538e-02  2.254e-02  2.901  0.003747 **
## RegionSouth America    3.414e-01  2.148e-02  15.895 < 2e-16 ***
## YearY2001               1.138e-02  2.291e-02  0.497  0.619371
## YearY2002               1.104e-02  2.295e-02  0.481  0.630606
## YearY2003               -2.038e-03 2.297e-02 -0.089  0.929309
## YearY2004               3.790e-03  2.301e-02  0.165  0.869163
## YearY2005               -3.881e-03 2.305e-02 -0.168  0.866300
## YearY2006               1.833e-03  2.309e-02  0.079  0.936752
## YearY2007               9.152e-03  2.313e-02  0.396  0.692395
## YearY2008               2.035e-02  2.316e-02  0.879  0.379739
## YearY2009               3.175e-02  2.320e-02  1.368  0.171278
## YearY2010               4.594e-02  2.323e-02  1.978  0.048036 *
## YearY2011               5.449e-02  2.328e-02  2.341  0.019306 *
## YearY2012               5.846e-02  2.333e-02  2.506  0.012273 *
## YearY2013               7.875e-02  2.339e-02  3.367  0.000771 ***
## YearY2014               9.480e-02  2.344e-02  4.044  5.41e-05 ***
## YearY2015               9.846e-02  2.349e-02  4.192  2.85e-05 ***
## Infant_deaths           -1.924e-02 1.687e-03 -11.407 < 2e-16 ***
## I(Infant_deaths^2)      -1.125e-04 3.113e-05 -3.613  0.000308 ***
## I(Infant_deaths^3)      7.115e-07  1.751e-07  4.064  4.95e-05 ***
## Adult_mortality         -1.043e-02 2.112e-04 -49.406 < 2e-16 ***
## I(Adult_mortality^2)    2.997e-06  3.415e-07  8.775 < 2e-16 ***
## Hepatitis_B              -2.119e-03 3.862e-04 -5.487  4.44e-08 ***
## BMI                     -1.662e-02 3.624e-03 -4.586  4.72e-06 ***
## Polio                   2.214e-03  5.275e-04  4.196  2.80e-05 ***
## Incidents_HIV            -8.647e-03 3.544e-03 -2.440  0.014741 *
## GDP_per_capita           1.119e-06  4.072e-07  2.749  0.006011 **
## Thinnness_ten_nineteen_years -7.261e-03 2.718e-03 -2.671  0.007600 **
## Thinnness_five_nine_years 9.888e-03  2.698e-03  3.665  0.000252 ***
## Schooling                2.104e-02  2.950e-03  7.132  1.25e-12 ***
## Economy_status_DevelopedYes 3.567e-01  2.693e-02  13.244 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2166 on 2826 degrees of freedom
## Multiple R-squared:  0.9849, Adjusted R-squared:  0.9847
## F-statistic:  4965 on 37 and 2826 DF,  p-value: < 2.2e-16

```

Let's check homoscedasticity for transformed model using Breusch-Pagan Test, Null Hypothesis  $H_0$ : There is no heteroscedasticity is present, i.e.  $\sigma_1^2 = \sigma_2^2 = \dots = \sigma_n^2$

Alternative Hypothesis  $H_1$ : heteroscedasticity is present, atleast one  $\sigma_i^2$  is different from others  $i= 1,2,..n$ .

```

## 
## studentized Breusch-Pagan test
## 
## data: model_transformed
## BP = 679.85, df = 37, p-value < 2.2e-16

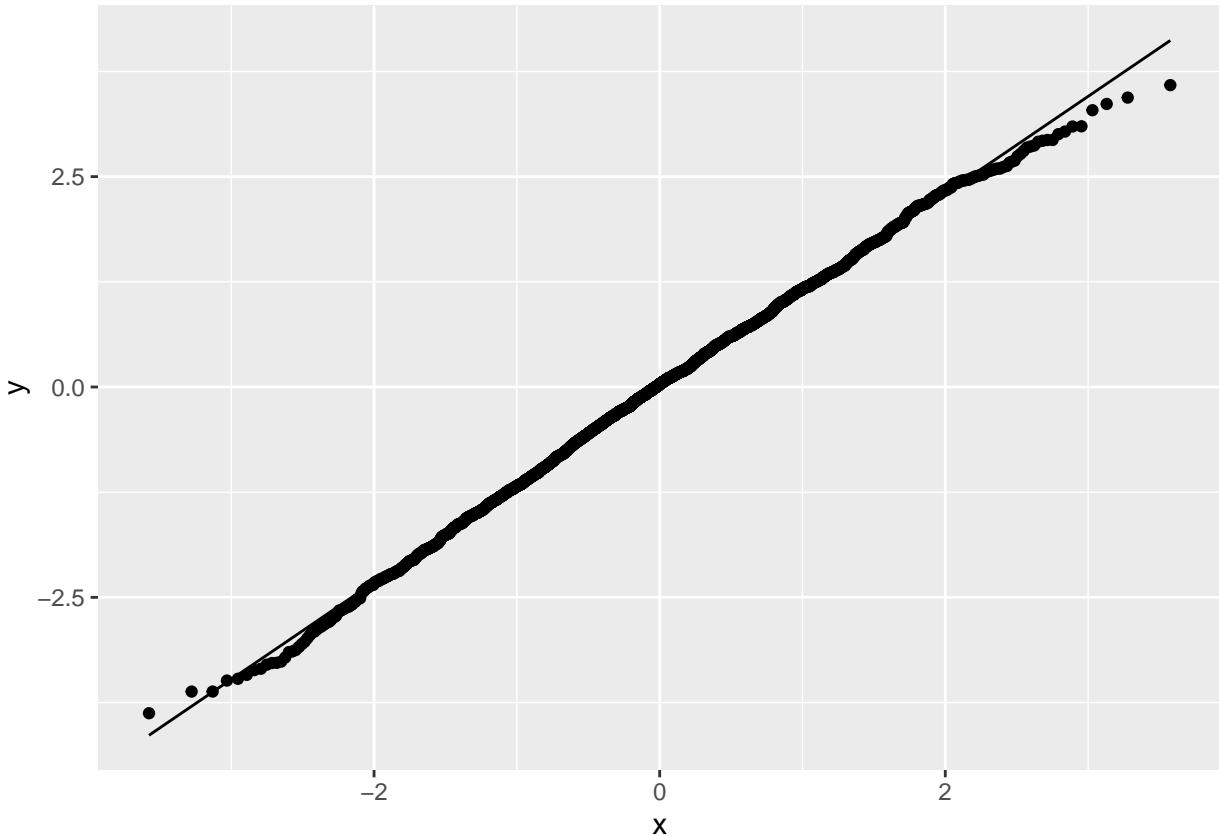
```

A significant result, p-value  $< 2.2e-16$  which is less than 0.05 from the Breusch-Pagan test suggests heteroscedasticity, meaning the variance of the residuals is not constant across levels of the independent variables. We reject null hypothesis.

After applying the Box-Cox transformation in an attempt to resolve the issue of heteroscedasticity, the Breusch-Pagan test confirmed that heteroscedasticity still persists in the residuals, indicating that the transformation was not sufficient to address the variance instability.

#### 4) Normality Assumption:

The Normality Assumption in regression analysis requires that the residuals of the model are normally distributed. We will verify using a Q-Q-Plot.



Plotted Q-Q plot, indicate that the residuals follow a normal distribution. This suggests that the normality assumption of the regression model is satisfied.

Lets perform, Shapiro-Wilk test

Null Hypothesis  $H_0$ : The sample data are significantly normally distributed Alternative Hypothesis  $H_1$ : The sample data are not significantly normally distributed

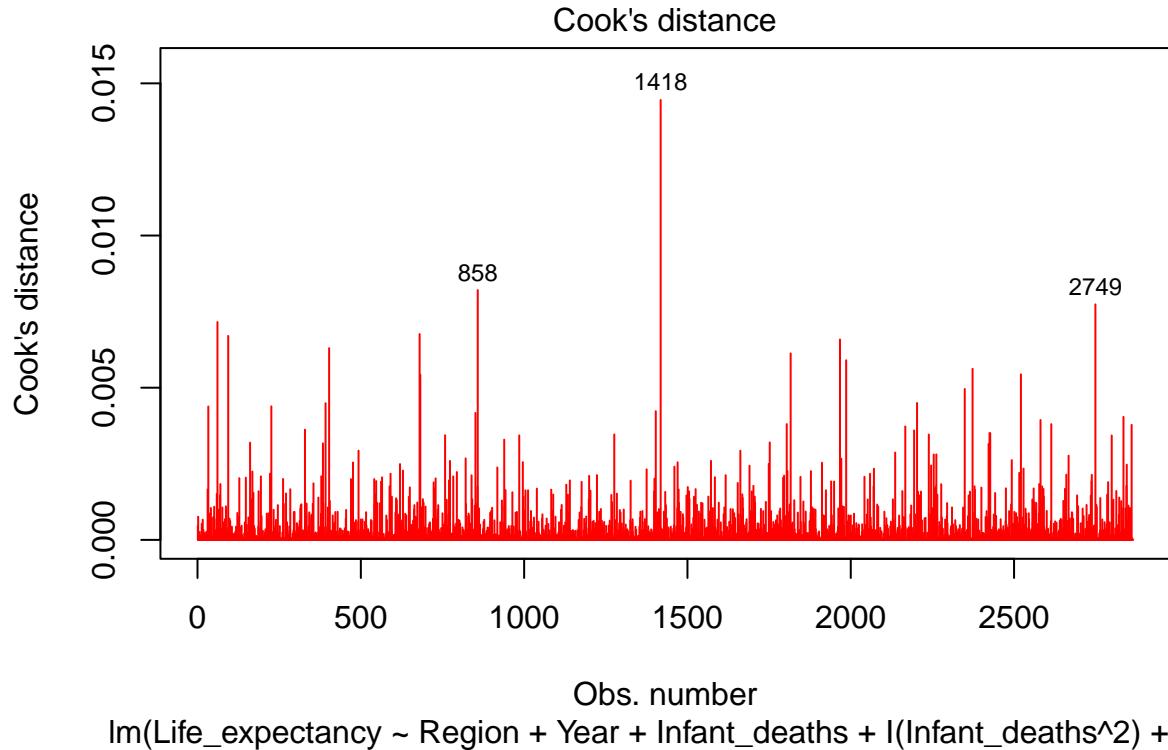
```
##  
## Shapiro-Wilk normality test  
##  
## data: residuals(valid_model)  
## W = 0.9989, p-value = 0.06246
```

The Shapiro-Wilk normality test further supports that the residuals are normally distributed, as the p-value (0.06246) is greater than 0.05. Therefore, we fail to reject the null hypothesis, indicating that the residuals follow a normal distribution.

#### 5) Outliers:

Outliers are data points that deviate significantly from the overall pattern of the data. In regression analysis, outliers can have a disproportionate influence on the estimated coefficients, residuals, and overall model fit.

We will be using Cook distance to measure of the overall influence an outlying observation.



Based on the graph, there are no outliers identified using Cook's Distance with a threshold of 0.5. This indicates that no observations exceed this threshold and are deemed influential in the context of the model.

After reviewing all residual assumptions and making necessary modifications to the model, we can conclude that the final model is valid and satisfies the key regression assumptions, ensuring its reliability for analysis and prediction.

$$\hat{\text{Life\_expectancy}} = 8.385 + 0.5985 * \text{Region}_{\text{Asia}} + 2.134 * \text{Region}_{\text{Central America and Caribbean}} - 0.5379 * \text{Region}_{\text{European Union}} + 0.07193 * \text{Region}_{\text{Middle East}} + 0.7183 * \text{Region}_{\text{North America}} - 0.4468 * \text{Region}_{\text{Oceania}} + 0.3035 * \text{Region}_{\text{Rest of Europe}} - 1.885 * \text{Region}_{\text{South America}} + 0.06593 * \text{Year}_{Y2001} + 0.06393 * \text{Year}_{Y2002} + 0.004886 * \text{Year}_{Y2003} + 0.05015 * \text{Year}_{Y2004} + 0.01471 * \text{Year}_{Y2005} + 0.04960 * \text{Year}_{Y2006} + 0.08880 * \text{Year}_{Y2007} + 0.1522 * \text{Year}_{Y2008} + 0.2178 * \text{Year}_{Y2009} + 0.2926 * \text{Year}_{Y2010} + 0.3463 * \text{Year}_{Y2011} + 0.3679 * \text{Year}_{Y2012} + 0.4794 * \text{Year}_{Y2013} + 0.5691 * \text{Year}_{Y2014} + 0.5864 * \text{Year}_{Y2015} - 0.1189 * \text{InfantDeaths} - 0.0003900 * \text{InfantDeaths}^2 + 0.000003453 * \text{InfantDeaths}^3 - 0.06159 * \text{AdultMortality} + 0.00002649 * \text{AdultMortality}^2 + 0.01159 * \text{HepatitisB} - 0.1046 * \text{BMI} + 0.01180 * \text{Polio} - 0.03977 * \text{IncidentsHIV} + 0.000007030 * \text{GDP per capita} - 0.04017 * \text{ThinnessTenNineteenYears} + 0.04967 * \text{ThinnessFiveNineYears} + 0.1097 * \text{Schooling} + 2.084 * \text{EconomyStatusDevelopedYes}$$