INTRODUCTION:-

The aim of the project is to understand how life expectancy is dependent upon different factors like economical, immunization rate, diseases, lifestyle and health care expenditure in a country. We are analyzing how the following 4 factors affest life expectancy:- Healthcare & Immunization, Education, Economic factors, Geographic location. For Healthcare & Immunization, we are taking Polio and Diphtheria vaccine rates.

Now, we had to check how the model and metrics work for the past and present data. We want to check how does the life expectancy behaves for the same features for the year 2000 and for the year 2014.So, we decided to separate the data for 2000 and 2014. We ran our model for the data of the years 2000 and 2014 separately. The below plots are the residual plots of both the years with all features.

Calendar

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From the residual plot of the year 2000 and 2014, we can see that there isn’t much change in schooling and expenditure but polio is showing changes in the slope of the line.

We then used expand.grid to create dummy data for both the years 2000 and 2014 respectively and predicted the life expectancy for both years using that data. The following plots compare the predicted life expectancy and each metrics for both years 2000 and 2014.

Chart, line chart

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From the above plot, we can see that predicted life expectancy for every continent is having a positively correlation with schooling . In 2014, we can see that the slope of the line has increases, this means that life expectancy’s dependency on education has increased. Also, in 2000, schooling did not have much importance, but in 2014 we can see that minimum schooling years increased from 0 to 5 years, for every continent. This means that nearly every country have started to focus on education.

Chart

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From the above plots, we can see that the polio vaccination rate has always had a positive correlation with life expectancy. Also, the overall life expectancy for Africa has gone up by 10 years. The life expectancy of Asia also increased by nearly 5 years.

Chart, line chart

Description automatically generated

From the above plot, we can see that In the year 2000 Asia, North America and Africa had a decreasing trend between total expenditure and life expectancy, but in the year 2014, we can see Asia and North America have positive trend, in fact, every continent except Africa have positive correlation with expenditure in the year 2014. This similar trend was observed before modeling, this means that the model is doing a good job and