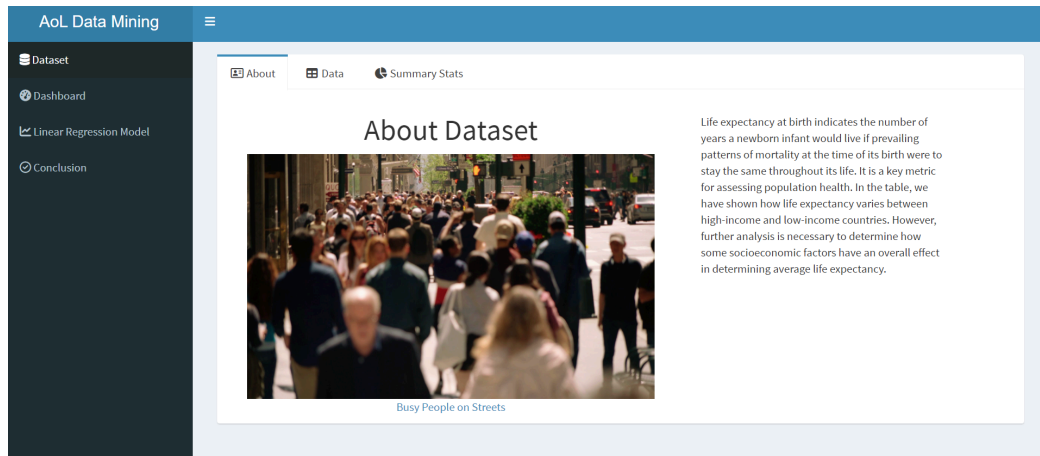


# Shiny Dashboard Report



## a. Dataset

The dataset section is designed to provide users with a comprehensive overview of the life expectancy dataset and facilitate an in-depth exploration of the data.

### i. About Dataset



The “About” tab explained briefly about the dataset used, ensuring users have a clear understanding of its context and significance.

## ii. Dataset Table

Country	CountryCode	Region	IncomeGroup	Year	LifeExpectancy	Undernourishment
Afghanistan	AFG	South Asia	Low income	2001	56.31	
Angola	AGO	Sub-Saharan Africa	Lower middle income	2001	47.06	
Albania	ALB	Europe & Central Asia	Upper middle income	2001	74.29	
United Arab Emirates	ARE	Middle East & North Africa	High income	2001	74.54	
Argentina	ARG	Latin America & Caribbean	Upper middle income	2001	73.75	

```
tabPanel("Data", icon = icon("table"),
  fluidPage(
    titlePanel("Life Expectancy Data by Region"),
    sidebarLayout(
      sidebarPanel(
        selectInput("inRegion", "Select a region",
          choices = c("All", unique(life_expectancy_data$Region)))
      ),
      mainPanel(
        style = "height: 400px; overflow-x: scroll;",
        tableOutput("lifeExpectancyData")
      )
    )
  )

# Render life expectancy data
output$lifeExpectancyData <- renderTable({
  if (input$inRegion == "All") {
    life_expectancy_data
  } else {
    subset(life_expectancy_data, Region == input$inRegion)
  }
})
```

The “Data” tab allows users to interact with the raw dataset. Users can select a specific region from a dropdown menu to filter the data and view relevant records in a table format.

## iii. Summary Stats

Country	CountryCode	Region	IncomeGroup	Year	LifeExpectancy	Undernourishment	Sanitation
Length:3042	Length:3042	Length:3042	Length:3042	Min. :2001	Min. :40.37		
Class :character	Class :character	Class :character	Class :character	1st Qu.:2005	1st Qu.:63.37		
Mode :character	Mode :character	Mode :character	Mode :character	Median :2010	Median :72.05		
				Mean :2010	Mean :69.58		
				3rd Qu.:2015	3rd Qu.:76.57		
				Max. :2019	Max. :84.36		
Undernourishment	CO2	HealthExpenditure	EducationExpenditure	Unemployment	Sanitation		
Min. : 2.50	Min. : 30	Min. : 1.264	Min. : 0.8503	Min. : 0.100	Min. : 2.378		
1st Qu.: 2.50	1st Qu.: 2453	1st Qu.: 4.202	1st Qu.: 3.6318	1st Qu.: 3.751	1st Qu.: 30.249		
Median : 6.25	Median : 11675	Median : 5.836	Median : 4.3689	Median : 5.870	Median : 48.267		
Mean :10.06	Mean : 163284	Mean : 6.206	Mean : 4.4733	Mean : 7.807	Mean : 50.764		
3rd Qu.:12.80	3rd Qu.: 61850	3rd Qu.: 7.991	3rd Qu.: 4.9610	3rd Qu.: 9.861	3rd Qu.: 63.472		
Max. :70.90	Max. :10707220	Max. :20.413	Max. :14.0591	Max. :37.250	Max. :100.000		
Injuries	Communicable	NonCommunicable					
Min. : 1216	Min. : 1266	Min. : 5575					
1st Qu.: 98928	1st Qu.: 79634	1st Qu.: 523983					
Median : 311900	Median : 509095	Median : 1663369					
Mean : 1431651	Mean : 5092195	Mean : 8027634					
3rd Qu.: 902333	3rd Qu.: 3577354	3rd Qu.: 4278578					
Max. :55636759	Max. :268564610	Max. :324637810					

```

tabPanel("Summary Stats", icon = icon("chart-pie"),
  div(class = "verbatim-box", verbatimTextOutput("summary"))
)

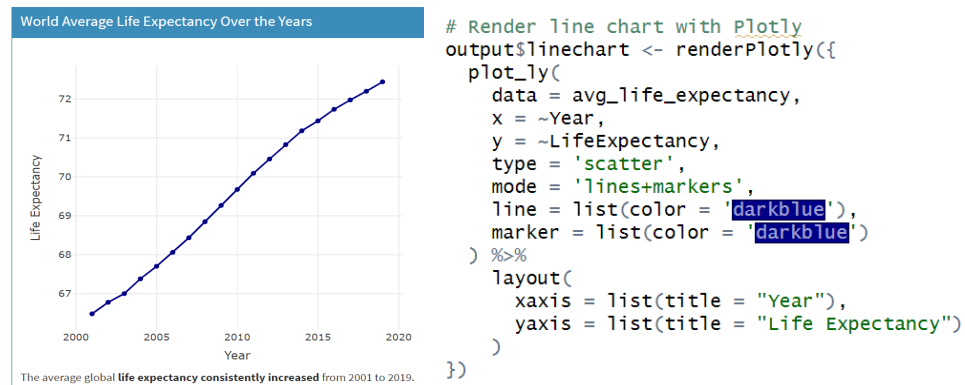
# Render life expectancy summary
output$summary <- renderPrint({
  life_expectancy_data %>%
    summary()
})

```

The “Summary Stats” tab provides a statistical summary of the dataset, displaying essential metrics such as mean, median, minimum, and maximum values for each variable.

## b. Dashboard

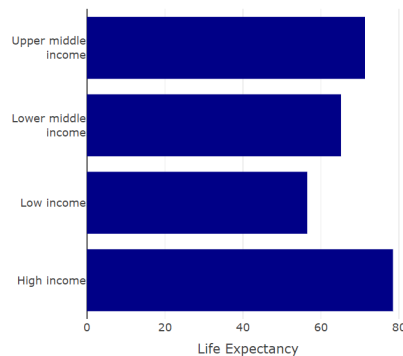
### i. Average Life Expectancy Over the Years



Line chart showing the global average life expectancy over the years.

## ii. Bar Chart Life Expectancy Based on Income Group

Average Life Expectancy Based on Income Group



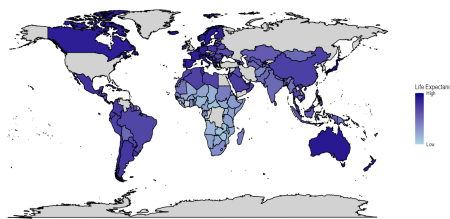
It is evident that as income levels increase, life expectancy also rises.

```
# Render line chart with Plotly
output$linechart <- renderPlotly({
  plot_ly(
    data = avg_life_expectancy,
    x = ~Year,
    y = ~LifeExpectancy,
    type = 'scatter',
    mode = 'lines+markers',
    line = list(color = 'darkblue'),
    marker = list(color = 'darkblue')
  ) %>%
  layout(
    xaxis = list(title = "Year"),
    yaxis = list(title = "Life Expectancy")
  )
})
```

Bar chart showing the average life expectancy based on income group.

## iii. Average Life Expectancy Distribution Across Regions

Average Life Expectancy Distribution on World Map



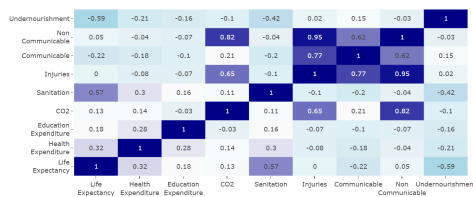
Based on world map, America, Europe, and Australia have higher life expectancy compared to Asia and Africa.

```
output$mapchart <- renderPlotly({
  ggplot(mapdata, aes(x = long, y = lat, group = group, fill = LifeExpectancy)) +
    geom_polygon(color = 'black') +
    scale_fill_gradientn(
      name = "Life Expectancy",
      colors = c("lightblue", "darkblue"),
      na.value = "lightblue",
      breaks = c(min(mapdata$LifeExpectancy, na.rm = TRUE), max(mapdata$LifeExpectancy, na.rm = TRUE)),
      labels = c("Low", "High")
    ) +
    theme(
      axis.line = element_blank(),
      axis.text = element_blank(),
      axis.title = element_blank(),
      axis.ticks = element_blank(),
      plot.title = element_blank(),
      panel.background = element_rect(fill = "white"),
      legend.position = "right"
    )
})
```

Map chart showing average life expectancy across regions.

## iv. Correlation Plot Between Numerical Variables

Correlation between Numerical Variables

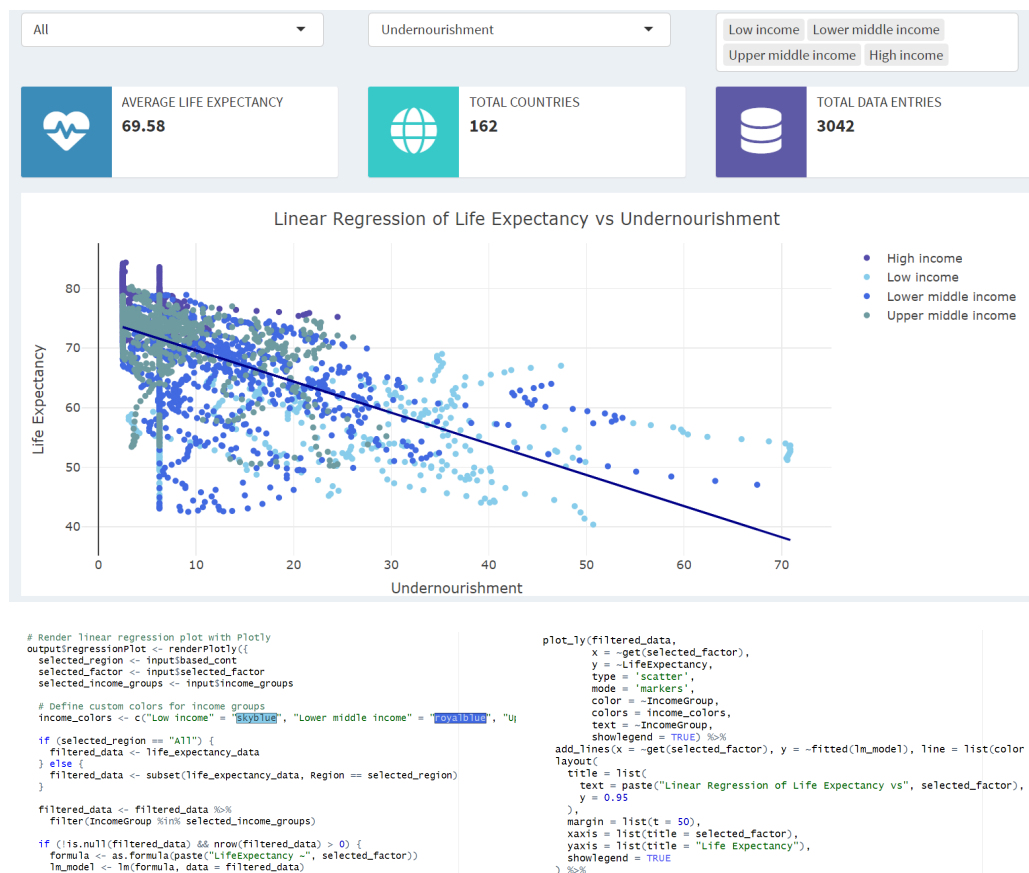


Based on plot above, life expectancy is most likely have correlation with health factors: health expenditure, sanitation, and underrnourishment.

```
output$corrtest <- renderPlotly({
  plot_ly(
    data = corr_data,
    x = ~Var1,
    y = ~Var2,
    z = ~value,
    type = 'heatmap',
    colorscale = list(c(0, "lightblue"), c(0.5, "white"), c(1, "darkblue")),
    text = ~round(value, 2),
    texttemplate = "%{text}",
    hovertemplate = "Variable 1: %{x}<br>Variable 2: %{y}<br>Correlation: %{z}<extra></extra>",
    showscale = TRUE
  )
})
```

Correlation map showing corr score of every numerical variable in the dataset.

## c. Linear Regression Model



The Linear Regression Model section allows users to explore how different factors influence life expectancy through regression analysis. Users can select a continent, a factor for regression, and specific income groups to see the analysis to their interests.

## d. Conclusion

### Conclusion

#### Summary of Findings

Based on data given, our analysis has revealed several critical insights into the factors affecting life expectancy globally:

- Global life expectancy has steadily increased from 2001 to 2019, highlighting **improvements in healthcare, nutrition, and living conditions**.
- Regions with higher income levels generally exhibit higher average life expectancy, underscoring the **importance of economic stability** in health outcomes.
- Significant correlations** exist between life expectancy and various socioeconomic factors, such as education, income, and healthcare access.

These findings emphasize the need for **continued investment in healthcare infrastructure, education, and economic development** to further **enhance life expectancy** globally.

```
#Render text for conclusion page
output$conclusionText <- renderUI({
  HTML("<p>Based on data given, our analysis has revealed several critical insig
<u>
<li>Global life expectancy has steadily increased from 2001 to 2019, hig
<li>Regions with higher income levels generally exhibit higher average l
<li><strong>Significant correlations</strong> exist between life expecta
</u>
<p>These findings emphasize the need for <strong>continued investment in h
})
```

The Conclusion section summarizes the key findings and comprehensive overview of the insights gained from the data analysis.