

EXPLORATORY DATA ANALYSIS

CIA-3

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1. Problem Statement / Objective

This analysis explores three important areas of concern using real-world datasets:

1. **Social Concern:** Analyzing education levels in Swiss provinces using the `swiss` dataset.
2. **Environmental Concern:** Studying the CO2 uptake of plants under different conditions using the `CO2` dataset.
3. **Societal Concern:** Understanding the relationship between GDP per capita and life expectancy using the `gapminder` dataset.

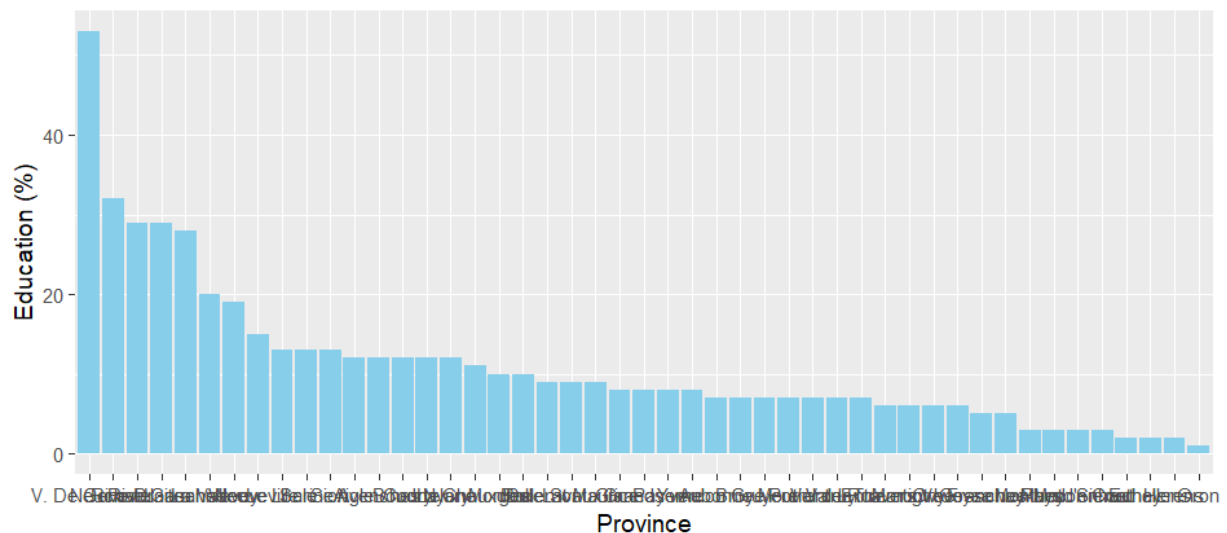
Objective: Use simple descriptive statistics and charts in R to generate insights into social, environmental, and societal issues, and reflect on their broader impact.

2. Insights Based on Descriptive Analytics and Charts

1. Social Concern – Education in Switzerland

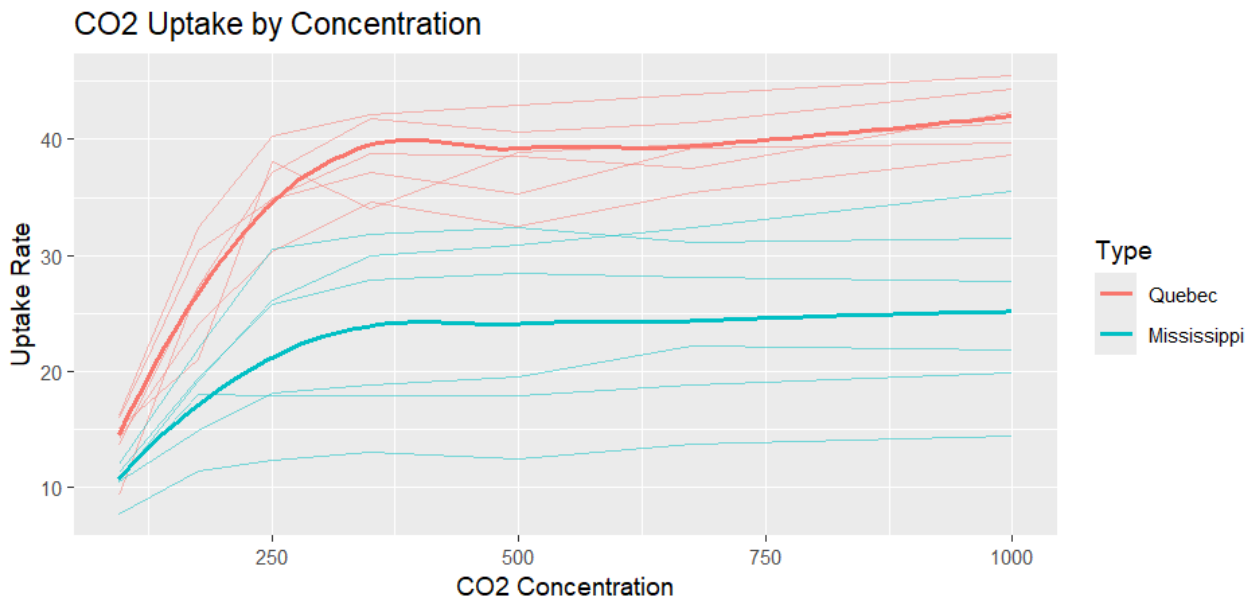
- Dataset: swiss
- **Insight:** Some provinces have significantly higher education levels than others.
- **Chart:** Barplot shows differences clearly.

Education Level by Province



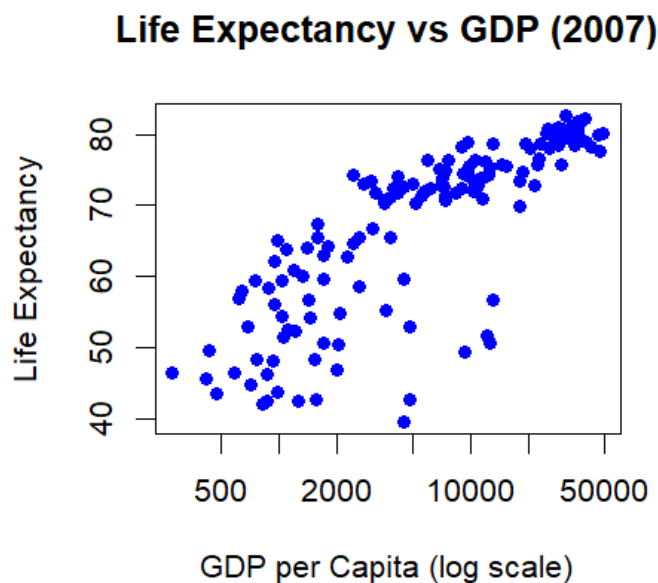
2. Environmental Concern – CO2 Uptake

- Dataset: CO2
- **Insight:** Uptake increases with concentration; types of plants respond differently.
- **Chart:** Scatter plot shows this trend.



3. Societal Concern – Life Expectancy vs GDP

- Dataset: gapminder (year = 2007)
- **Insight:** Higher GDP generally relates to higher life expectancy.
- **Chart:** Scatter plot on a log scale.



3. Social and Ethical Interpretation

1. **Education Disparities:** Regions with lower education access may face long-term challenges in economic development and equality. This highlights the need for targeted educational policies.
2. **Environmental Impact:** Understanding how plants absorb CO₂ helps in planning sustainable agriculture and combating climate change.
3. **Global Inequality:** The gapminder data shows that countries with lower GDP also suffer from lower life expectancy. This reflects global inequality and the need for equitable development.

Ethical Viewpoint: Data must be interpreted responsibly. While statistics show trends, they must not be used to stereotype or stigmatize regions or countries. Instead, they should inform better, inclusive policies.