

# STAT40830-assignment1

Ye Ji

# Table of contents

- Introduction
- Motivation
- Data Overview
- Code
- Preprocess
- GDP per Capita
- Plot (GDP per Capita):
- GDP Analysis
- Life Expectancy at Birth
- Plot (Life Expectancy at Birth):
- Fertilizer Consumption
- Plot (Fertilizer Consumption):
- Conclusion
- Custom Styling:

# Introduction

This analysis presents the economic, social and environmental indicator data of three countries—Canada, New Zealand, Cuba. The objective is to examine how these nations differ in key development metrics over time.

## Motivation

Chose Canada, New Zealand, and Cuba to highlight differences in regional development trajectories. Canada and New Zealand are high-income economies with stable growth, while Cuba offers a unique case.

The goal is to compare social and economic indicators in these diverse contexts.

## Data Overview

- Total records: ~210,000.
- Time range: 1960–2023.
- Over 100 unique indicators per country.
- Format: country, year, indicator, value.

# Code

## Preprocess

```
[1] "Fertilizer consumption (% of fertilizer production)"
[2] "Fertilizer consumption (kilograms per hectare of arable
land)"
[3] "Agricultural land (sq. km)"
[4] "Agricultural land (% of land area)"
[5] "Arable land (hectares)"
[6] "Arable land (hectares per person)"
[7] "Arable land (% of land area)"
[8] "Land under cereal production (hectares)"
[9] "Permanent cropland (% of land area)"
[10] "Rural land area where elevation is below 5 meters (sq. km)"
```

**We select two key indicators(GDP per capita, Life expectancy at birth) for further analysis.**

# GDP per Capita

The following table shows the average GDP per capita for each country from 1960 to 2023.

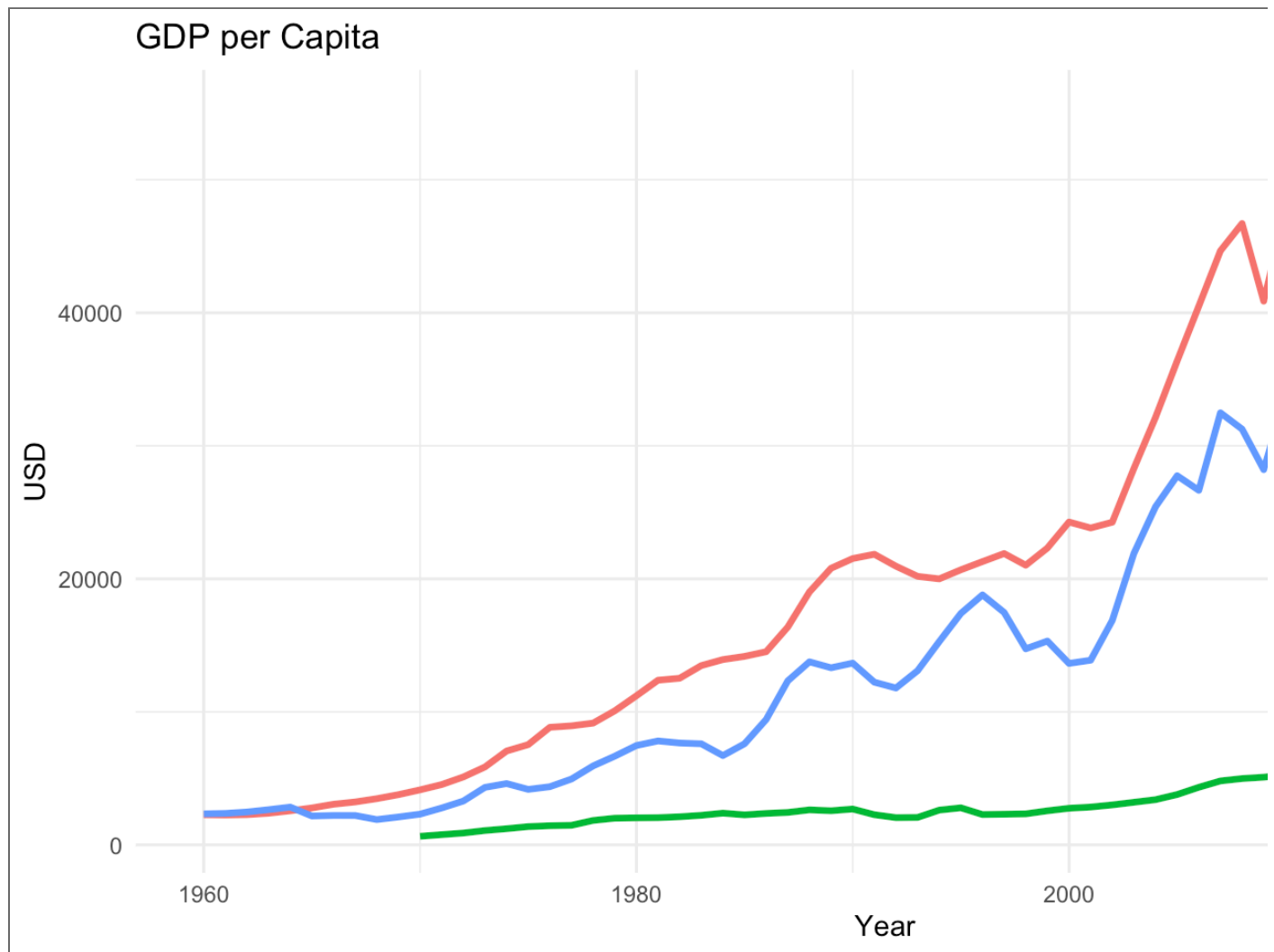
This helps us identify long-term economic trends and differences in wealth levels across the selected countries.

Key: <Country, Year>

	Country	Year	MeanGDP
	<char>	<int>	<num>
1:	Canada	1960	2264.948
2:	Canada	1961	2246.084
3:	Canada	1962	2274.428
4:	Canada	1963	2380.317
5:	Canada	1964	2561.638
---			
175:	New Zealand	2019	42747.210
176:	New Zealand	2020	41785.692
177:	New Zealand	2021	49624.182
178:	New Zealand	2022	48216.510
179:	New Zealand	2023	48280.811

## Plot (GDP per Capita):

This plot displays how GDP per capita has changed over time.





## GDP Analysis

- Over the six-decade span, Canada maintains the highest GDP per capita, and Canada's consistent upward trajectory reflects stable economic growth, while Cuba exhibits both lower levels and greater variability.
- New Zealand closely follows but at a lower level.
- Cuba's GDP per capita is significantly lower and more volatile.

This reflects differences in political systems and access to international markets.

# Life Expectancy at Birth

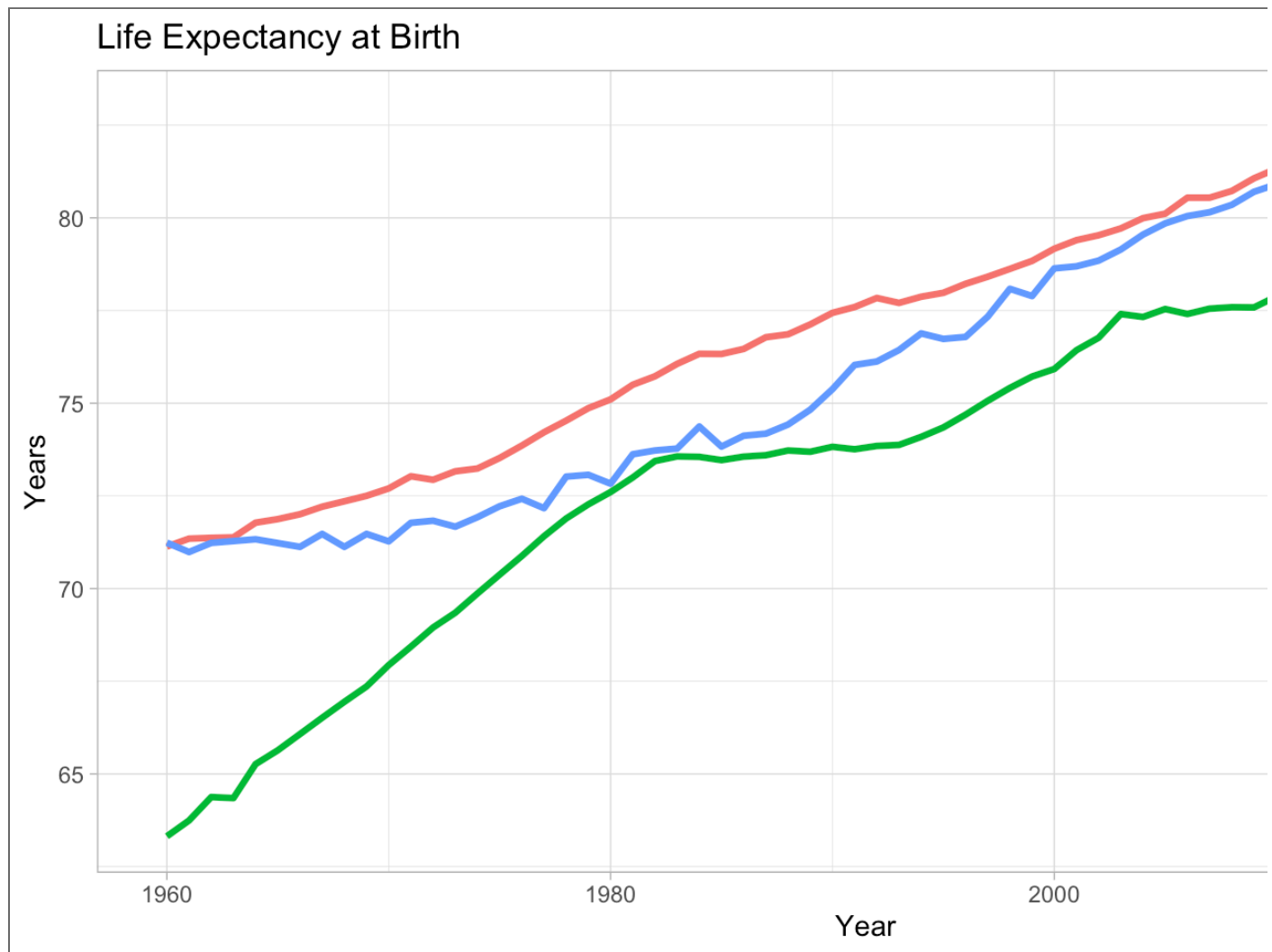
Life expectancy is a core measure of population health. The following table compares average life expectancy across the three countries.

Key: <Country>

	Country	AvgLife
	<char>	<num>
1:	Canada	77.20424
2:	Cuba	73.26517
3:	New Zealand	76.27905

## Plot (Life Expectancy at Birth):

This plot shows the evolution of life expectancy from 1960 to recent years.



# Fertilizer Consumption

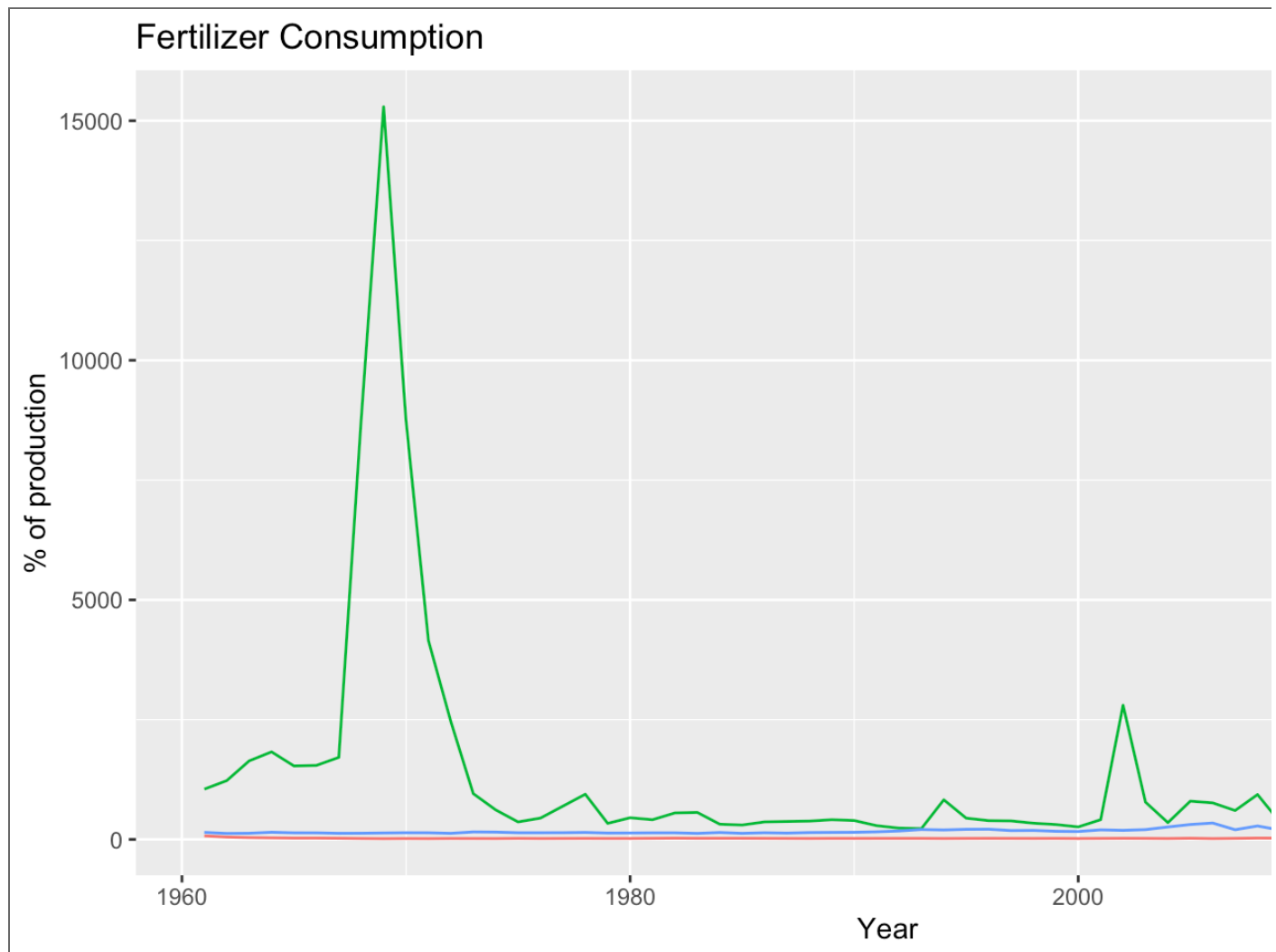
This indicator reveals how intensively countries use fertilizers in agriculture.

Cuba shows extremely high usage, which may reflect policy differences or data irregularities.

Key: <Country>

	Country	MeanValue
	<char>	<num>
1:	Canada	23.7694
2:	Cuba	1327.0214
3:	New Zealand	190.6026

## Plot (Fertilizer Consumption):



Cuba's fertilizer consumption stands out with values 5–10 times higher than the other countries.

## Conclusion

- GDP and life expectancy trends match global expectations.
- Cuba shows anomalies in fertilizer consumption—requires further investigation.
- Future work could expand the scope to include climate-related or education indicators across a broader set of countries.

## Custom Styling:

Font style: applied via individuation.css

Clean theme

Slide numbers and TOC included

Speaker notes