# Analyzing Crime Rates in Uzbekistan: A Demographic Perspective

*How do the factors of Population Density and Income Levels affect the Crime Rates in Uzbekistan?*

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# 01 - Introduction

Crime rates in Uzbekistan have been increasing and posing a significant challenge to the safety and well-being of its inhabitants. This alarming trend has prompted concerns from both the general population and governmental authorities. Addressing this problem requires a comprehensive understanding of the factors contributing to the increasing crime rates.

**The primary objective of this project** is to analyze the dynamics of crime rates in Uzbekistan by integrating crime statistics with demographic data, including population density and income levels.

*Goal*

*This project aims to discover the underlying issues through a data-driven approach, providing valuable insights for informed decision-making.*

# 01 - Introduction

*Goal* ⤵

*We aim to identify potential correlations and causalities between these variables.*

Understanding the main causes of rising crime rates is important for developing effective strategies to address this issue. The findings of this project may provide practical insights for policymakers and governmental authorities of Uzbekistan.

# 02 - Methods

*Datasources* ↴

*Statistics Agency under the President of the Republic of Uzbekistan (www.stat.uz) is the main official organization in Uzbekistan that provides statistical information on socio-economic and demographic events and processes.*

For this project, the following three datasets were used:

Datasource1: **CrimeRate** - *recorded crimes across all service lines by region.*
Datasource2: **PopulationDensity** - *population density at the beginning of the year, the number of inhabitants per 1 sq. km.*
Datasource3: **IncomeLevels** - *total per capita income by region, in thousand soums.*

# 02 - Methods

*Data downloading, conversion and extraction parts of the datapipeline are done using* ***pipeline.py*** *script.*

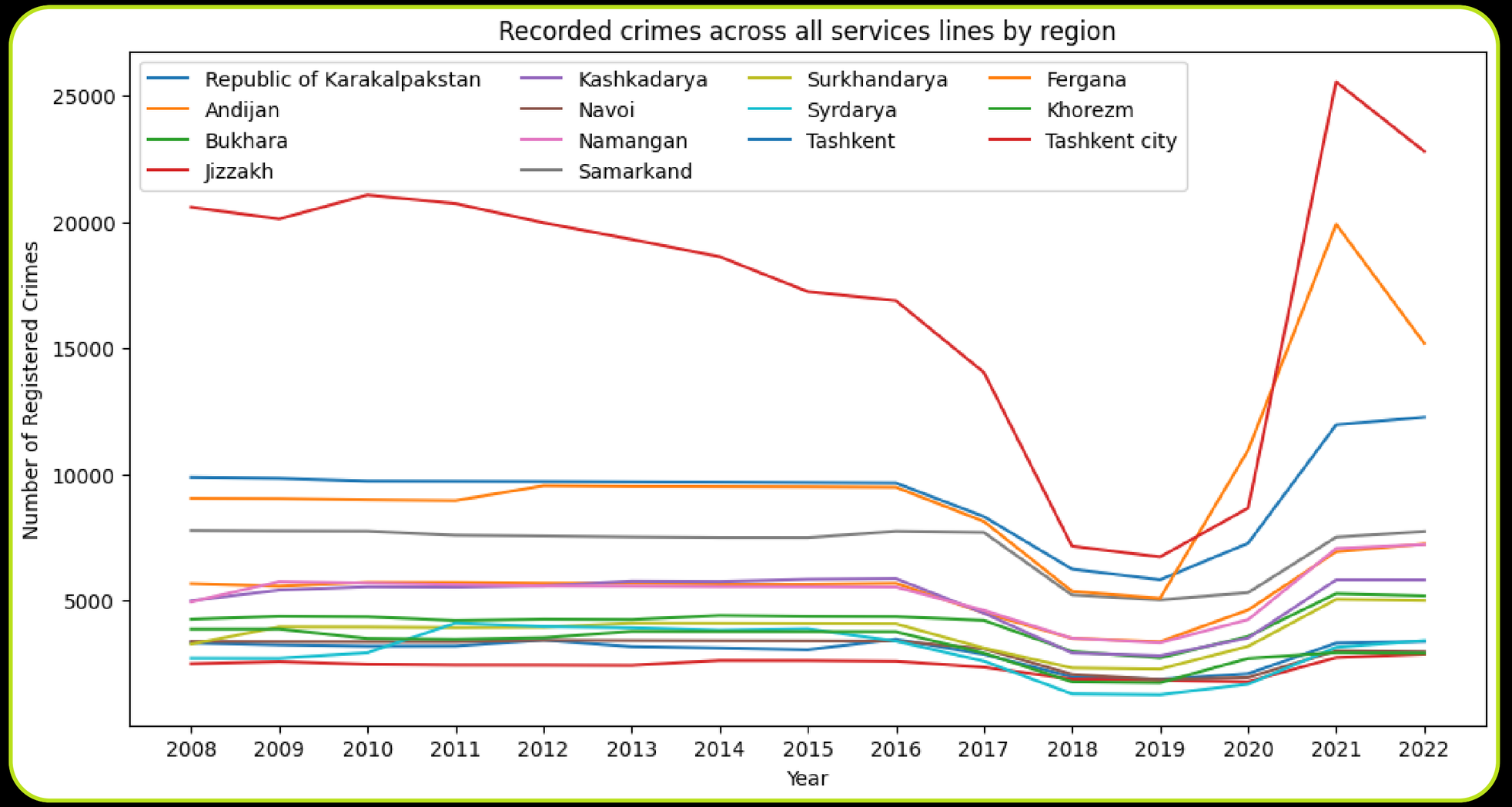
*Data Pipeline*

The first problem that had to be solved was about SSL verification issue. Downloading the Excel files was possible only after disabling the SSL verification.

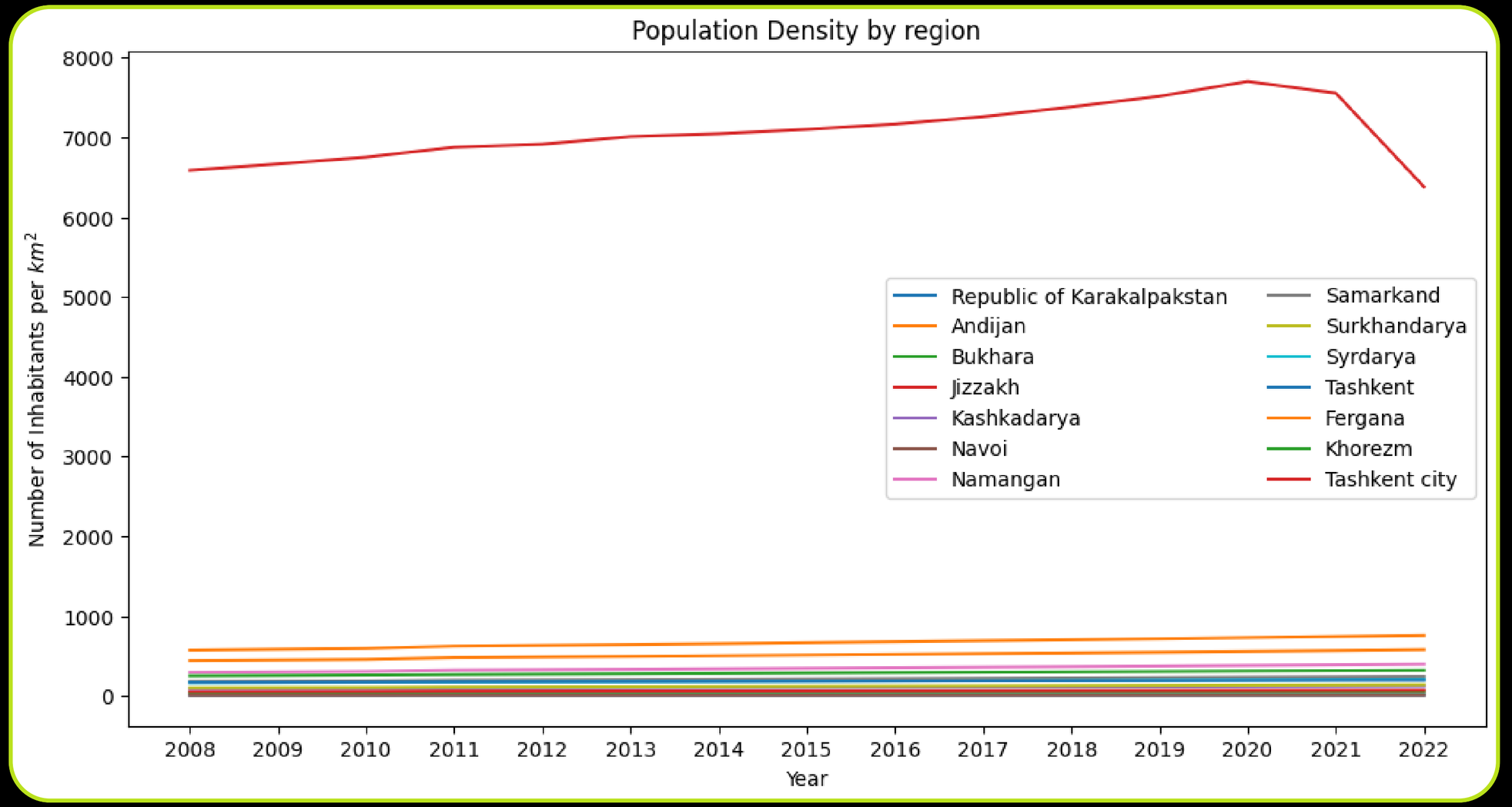
In the next step, we had to get rid of the unneseccary columns and rows and standardize the column names.

At the end of its execution, the pipeline.py converts all Excel files into CSV files and saves them into the data/ directory.

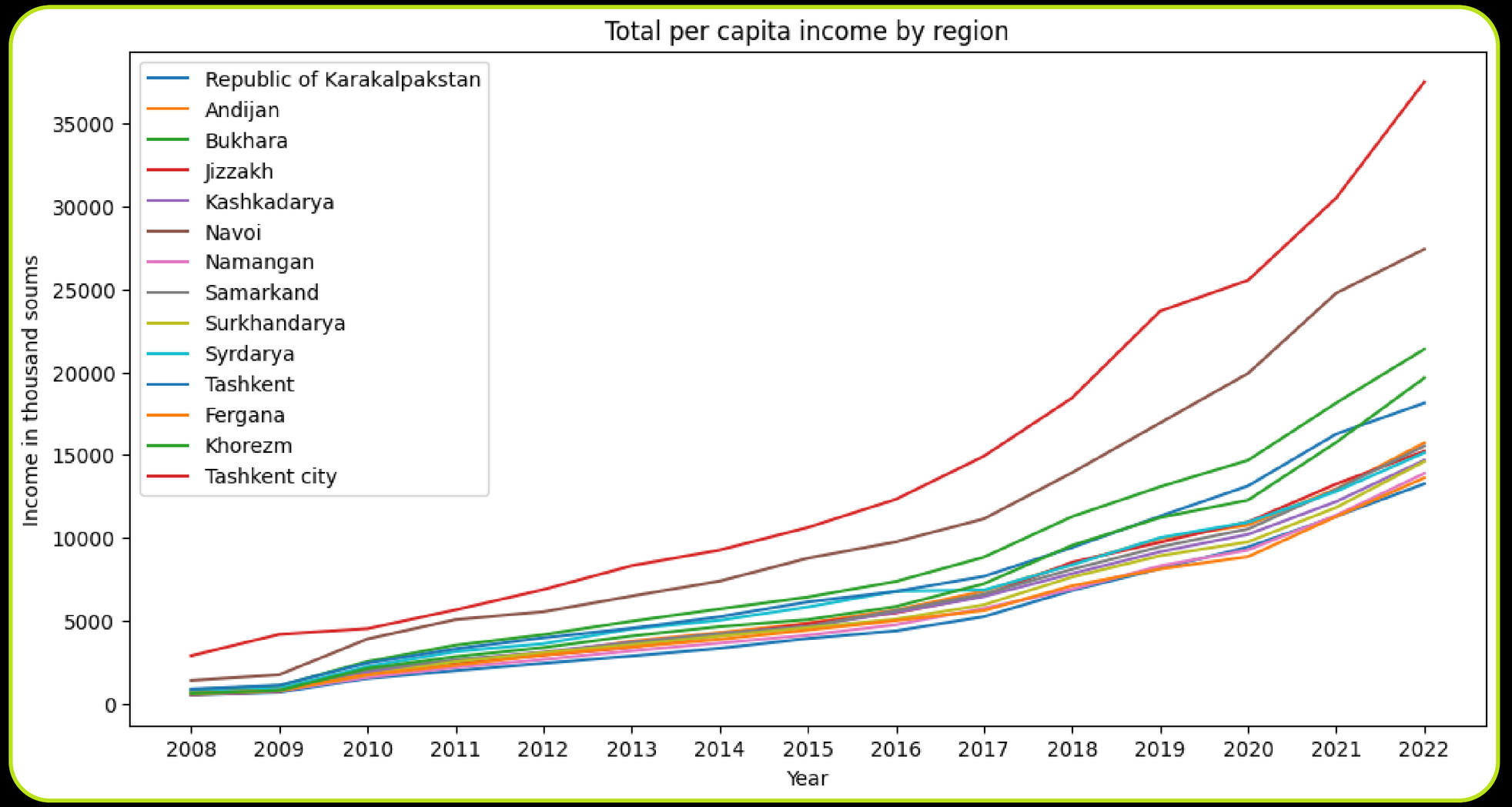
# Data Visualization: CrimeRate



# Data Visualization: PopulationDensity



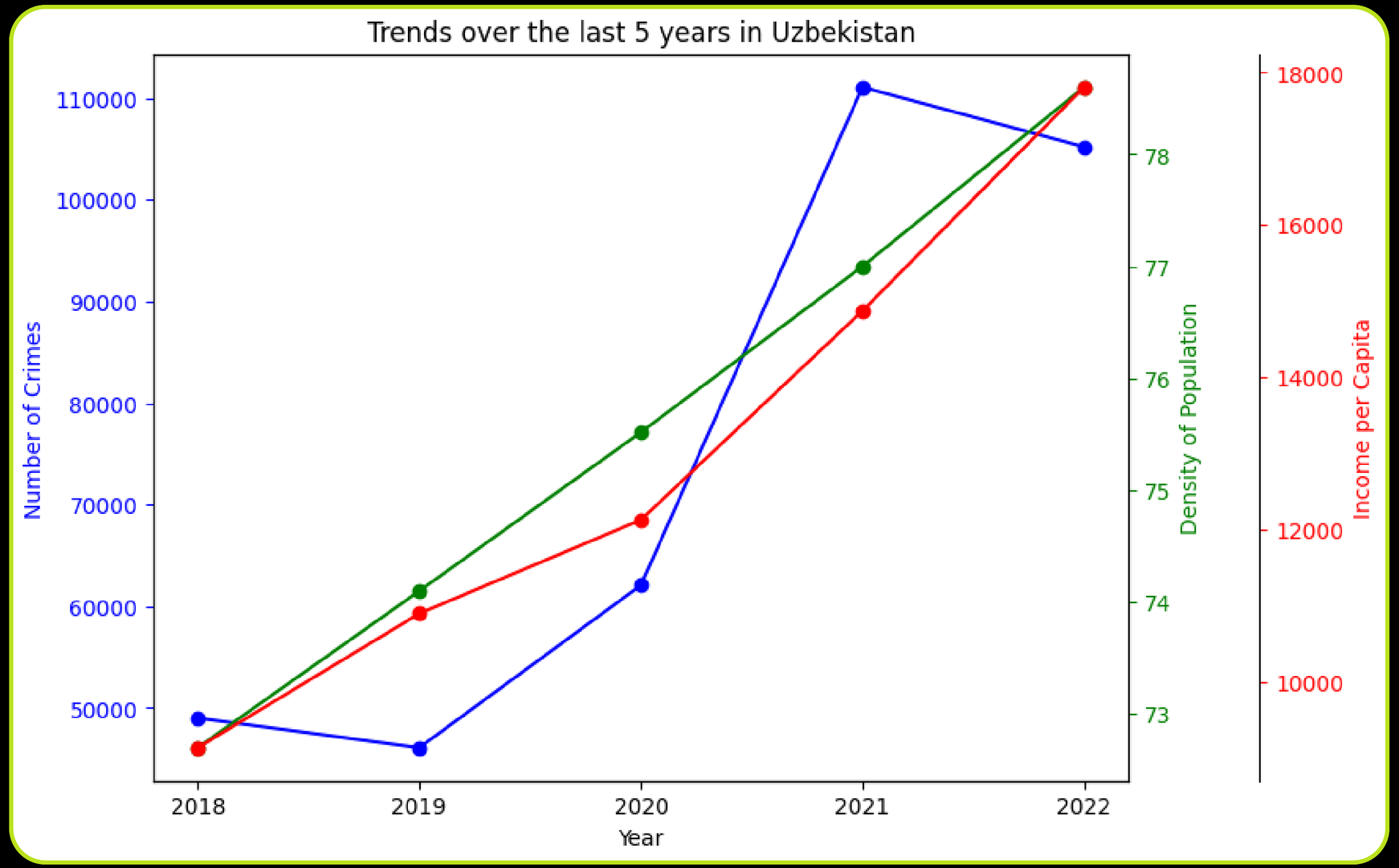
# Data Visualization: IncomeLevels




1 Euro =
13.577,06
Uzbek Soums

January 15, 2024
Google rates

# Data Visualization: Overall Trends




While the correlation of the variables is obvious from the graph, it's time to get the actual numerical results of correlation and causality analysis.

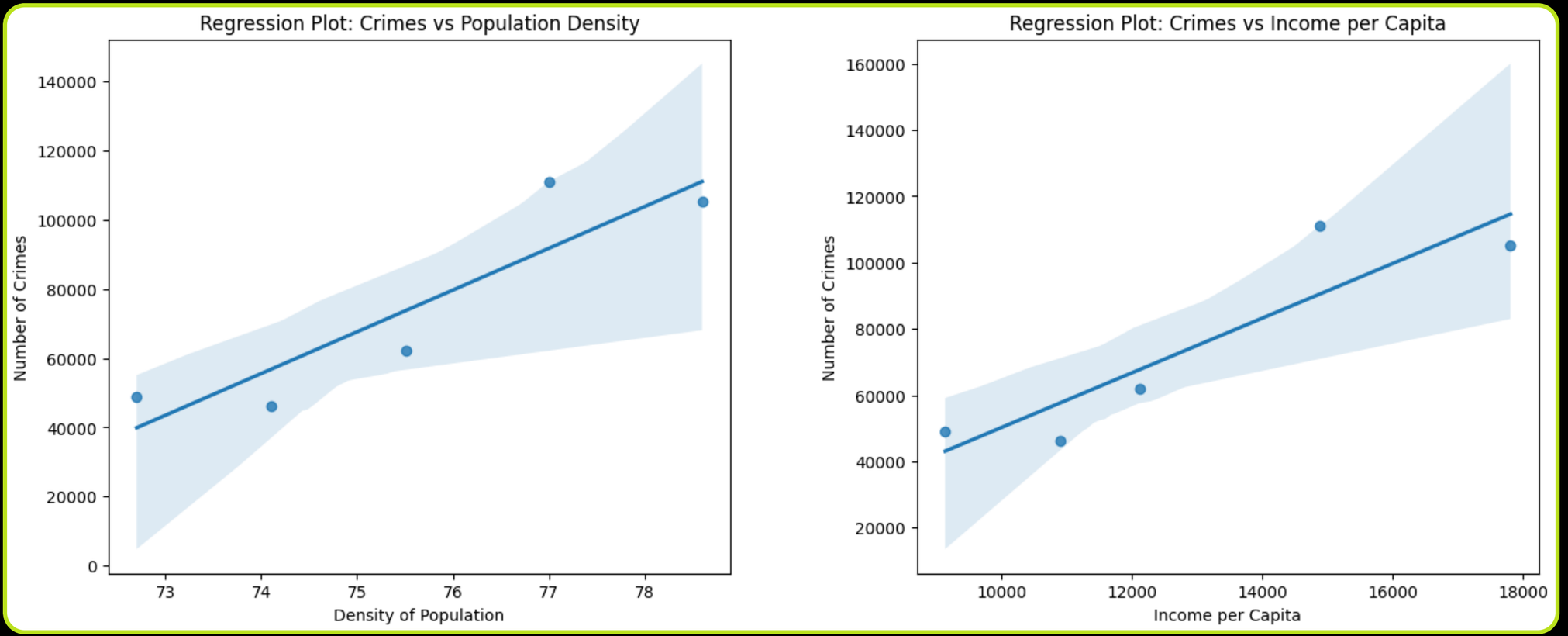
# 03 - Results: Correlation Coefficients

Correlation between crimes and population density:
0.8993466725758003

Correlation between crimes and income per capita:
0.9033464532864491

Correlation between population density and income per capita:
0.9900786000797461

# 03 - Results: OLS regression analysis




The model's R-squared value of 0.817 indicates that approximately **81.7%** of the variability in the total number of crimes can be explained by the combination of population density and income per capita.

The limitations that the models faced occurred due to the small sample size. We only used the data of the last 5 years, due to some nuances.

For example, the sudden reduction in crime rates from 2016 to 2020 introduces an element of skepticism regarding the reliability of these data points.

Moreover, political changes in Uzbekistan around 2017, coupled with significant policy shifts, including the liberalization of national currency regulations made us to choose the datapoints from more stable years.

*Limitations*

*The individual coefficients in the regression model are not robust enough to make definitive conclusions.*

# 04 - Conclusions

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The findings of this project may underscore the complexity of the factors influencing crime rates in Uzbekistan.

While the correlations provide initial insights, further research with a larger, reliable and more diverse dataset, along with advanced statistical techniques, is required to better understand the nuanced relationships between population density, income per capita, and crime rates.

*The non-significant p-values in the regression results highlight the need for caution in interpreting the individual coefficients.*

*Considerations*

***Outlook to Future Work***

# *Thanks*

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