# 📊 ****Project Report: New Zealand Crime Data Analysis****

**Project Title:** New Zealand Crime Report Analysis  
**Intern/Analyst:** [Sebak Karmakar]  
**Duration:** September 2024 – October 2024  
**Tools Used:** Python (Pandas), Microsoft Excel, Power BI  
**Objective:**  
To analyze crime, population, and vehicle data across New Zealand regions to uncover meaningful insights for public safety awareness and decision-making.

## 🔧 1. Data Collection & Preparation

* **Data Sources:** Provided datasets on population, crime reports, and vehicle classifications.
* **Cleaning Process (Python – Pandas):**
  + Handled missing values using imputation or removal.
  + Standardized data types (e.g., integers for population, datetime for crime dates).
  + Removed duplicates and ensured consistency in categorical values.
* **Validation:** Cleaned datasets were exported to **CSV format** and validated manually in **Excel** before visualization.

## 📈 2. Key Insights from Analysis

### 📍 Top 5 Regions by Population:

| **Rank** | **Region** | **Population** |
| --- | --- | --- |
| 1 | Auckland | 1,695,200 |
| 2 | Canterbury | 655,000 |
| 3 | Wellington | 543,500 |
| 4 | Waikato | 513,800 |
| 5 | Bay of Plenty | 347,700 |

### 🌆 Top 5 Regions by Population Density:

| **Rank** | **Region** | **Density (People/km²)** |
| --- | --- | --- |
| 1 | Auckland | 343 |
| 2 | Nelson | 129 |
| 3 | Wellington | 68 |
| 4 | Bay of Plenty | 29 |
| 5 | Waikato | 22 |

### 🚘 Vehicle Make Type Insights:

* **Standard** make type had the **most make names (123)**.
* **Luxury** make type had the **least make names (15)**.

### 📅 Crime Trend Analysis:

* **Month with highest crime rate:** **April 2022**
* **Quarter with highest crime rate:** **Quarter 1 (January – March)**

### 📍 Region with Most Reported Crimes:

* **Auckland** had the **highest number of crime incidents** overall.

## 📊 3. Dashboard Development in Power BI

* Imported cleaned datasets into Power BI.
* Created an **interactive dashboard** showing:
  + Crime trends over time (monthly, quarterly).
  + Crime rates by region and location.
  + Make types and vehicle distribution.
  + Population vs. crime correlation.
* Used **DAX** for calculated columns and custom KPIs.
* Enabled filter-based exploration by region, category, and time.

## 📌 4. Outcome & Recommendations

* **Auckland** is a key focus area for both **population growth** and **crime prevention**.
* **Quarter 1** consistently shows elevated crime activity – requires resource allocation planning.
* Policymakers should **target Standard vehicle types** for tracking due to higher variety.
* Visual insights can support **law enforcement**, **city planning**, and **community outreach**.

## 🛠️ Tools & Skills Demonstrated

* **Python (Pandas):** Data cleaning, wrangling, and export
* **Excel:** Validation and data review
* **Power BI:** Data modeling, dashboard creation, KPI analysis
* **EDA Techniques:** Region-wise segmentation, time series analysis, categorical comparison

## ✅ Conclusion

This project demonstrates a complete data analysis pipeline, from raw data cleaning in Python to executive-level dashboarding in Power BI. It provides actionable insights into crime distribution across New Zealand and can assist local authorities and planners in addressing public safety challenges.