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Crime Attrition Analysis in Washington D.C. (2024)

Overview
This project analyzes crime data from Washington D.C. in 2024, sourced from the District of Columbia’s Open Data Portal. Using Microsoft Excel, the study explores crime distribution across different Wards and Advisory Neighbourhood Commissions (ANCs) through data cleaning, aggregation, and visualization techniques like pivot tables, charts, and filtering. The analysis aims to identify crime trends, hotspots, and inform strategic policing and policy planning for improved public safety.

Key Points
* District 3 identified as a major crime hotspot.
* "Theft/Other" (opportunistic crimes) is the most prevalent crime type.
* January and evening hours experience peak criminal activity.
* ANCs play a crucial role in community awareness and crime reporting.
* Data-driven policing is essential for effective crime reduction.

Detailed Summary

Section 1: Introduction
This section introduces the importance of crime analysis in urban areas, using Washington D.C. as a case study. It explains the use of the 2024 crime dataset from the Metropolitan Police Department (MPD) and Microsoft Excel for data analysis. The primary objectives of the analysis are outlined, focusing on understanding crime distribution across Wards, ANCs, and geographical hotspots.

Section 2: Source of Dataset
Details about the dataset are provided, including its source (District of Columbia’s Open Data Portal), characteristics (offense type, date/time, location, administrative zones), collection process by MPD, changes in methodology post-2020, and the strengths and limitations of the data.

Section 3: Dataset Preprocessing
The steps taken to clean and prepare the data for analysis in Excel are described. These include importing the data, removing duplicates, normalizing text, handling missing values, formatting coordinates, deleting incomplete rows, decomposing the date/time field, and summarizing the cleaning operations.

Section 4: Analysis of Dataset
This section comprises the core analysis, broken down into nine objectives:

* **Objective 1: Crime Type Distribution:** Analysis of the distribution of different crime types using a pivot table and pie chart.
* **Objective 2: Monthly Crime Trend:** Analysis of crime trends across months using a pivot table and radar chart, focusing on the "Sum of CCN."
* **Objective 3: Shift-wise Crime Analysis:** Analysis of crime distribution across different shifts (day, evening, midnight) using a pivot table and pie chart, incorporating filters for offense type, district, and month.
* **Objective 4: Top 5 Districts:** Identification of the top 5 districts with the highest crime rates using a pivot table and horizontal bar chart.
* **Objective 5: Neighbourhood-wise Analysis:** Analysis of crime distribution across different neighborhood clusters using a pivot table and column chart.
* **Objective 6: Ward-wise Crime:** Analysis of offense type distribution across different wards using a pivot table and 3D surface chart.