**Project Report: On-street parking zones**

1. **Introduction**

The dataset used for this analysis comes from an open-source collection on city parking rates. It provides details on on-street parking zones, occupancy rates, violations, session durations, and parking trends in different city areas.

1. **Purpose and Goals**

This dataset's main purpose is to analyze parking trends and provide data-driven insights to city planners. By studying occupancy patterns, violations, and revenue generation, authorities can optimize parking policies for efficiency and cost-effectiveness.

Goals:

* Identify peak parking hours.
* Analyze revenue generated from different parking zones.
* Highlight areas with high parking demand.
* Reduce congestion by improving accessibility and parking management.

1. **Key Questions on the Data**
2. What are the peak hours for parking usage?
3. How do parking rates vary by zone and time of day?
4. Are there underutilized parking areas?
5. How does parking availability impact congestion in different areas?
6. **Metrics and KPIs**

To track operational and strategic objectives, the following key performance indicators (KPIs) were defined:

* Parking Occupancy Rate: Percentage of occupied parking spaces at different times.
* Revenue by Zone: Sum of hourly parking rates collected in each zone.
* Violation Rate: Number of parking violations recorded in different enforcement hours.
* Fine Collection: Total fines collected from violations by location and time.
* Zone Utilization Efficiency: Identifying overutilized and underutilized parking zones.
* Congestion Impact: Evaluating the correlation between parking availability and traffic congestion.

1. **Data Model**

The dataset follows a structured model with key variables including:

* Zone Type: General parking, loading zones, taxi zones, handicapped spaces, etc.
* Hourly Rate: Parking cost per hour in different zones.
* Enforcement Time: Different time slots affecting parking regulations.
* Violation Fine Amount: Fines imposed for rule violations.
* Block Side Analysis: Identifying areas with the highest violations.

1. **Power BI Dashboard**

**SUM OF VIOLATION FINE BY ENFORCEMENT HOURS AND BLOCK SIDE**

* 24/7 Enforcement: Highest fines, mainly on East (E) and North (N) sides.
* 8PM-12AM: Most violations on the South (S) side.
* 8AM-8PM: Fines are highest on the North (N) side.
* 12AM-8AM: No significant fines recorded.
* East (E) and North (N) sides have more violations overall

**SUM OF VIOLATION FINE BY BLOCK SIDE**

* Chart Type: Horizontal bar chart.
* X-Axis: Represents the sum of violation fines in dollars ($).
* Y-Axis: Represents different block sides (N, S, E, W).
* Highest Fines: The North (N) side has the highest violation fines, around 4K.
* Second Highest: The South (S) side follows closely, slightly below 4K.
* Lower Fines: The East (E) side has lower fines, approximately 2K.
* Lowest Fines: The West (W) side has the least fines, below 2K.
* Trend: The fines are highest on N and S sides and lowest on W side.

1. **Conclusions**

* Parking demand is highest in general parking zones, which generate the most revenue.
* Violations are most common in the North and South sides, suggesting stricter enforcement in these areas.
* There are significant variations in parking usage based on time of day and enforcement policies.
* Identifying underutilized zones could help redistribute parking demand and reduce congestion.
* Future policy adjustments should focus on optimizing pricing, increasing accessibility, and improving compliance with regulations.