Data Analyst Assessment: Task Overview and Instructions

Introduction:

We are pleased to invite you to participate in a comprehensive data analysis assessment. This task is designed to evaluate your ability to handle, analyze, and interpret a large dataset effectively. The dataset provided contains pharmaceutical delivery data, and your task is to clean, analyze, and provide insights based on this data

Task Overview:

You will be working with a dataset consisting of the following fields:

1. **HMO ID**: Identifier for the health maintenance organization.
2. **Prescription Code**: Unique code for each prescription.
3. **First Name**: Patient's first name.
4. **Last Name**: Patient's last name.
5. **Date Created**: Date and time the prescription was created.
6. **Status**: Current status of the prescription (e.g Dispensed).
7. **Delivery Status**: Status of the delivery (e.g., Delivered).
8. **Delivery Time**: Date and time the prescription was delivered.

Note: Part of your task will be to calculate the **lead time**, which is the time taken from prescription creation to delivery.

Tasks:

1. **Data Cleaning and Preparation:**
    - Identify and handle any missing, inconsistent, or outlier data.
    - Standardize formats for dates, times if necessary.
    - Ensure data integrity and correctness.
    - Calculate the lead time from the provided data, with the following conditions:
        - For all orders created after 4 PM and not delivered the same day, consider the creation time as 8 AM the next day for lead time calculation.
2. **Descriptive Analysis**:
    - Generate distribution plots for key variables (e.g., delivery times, lead times).
3. **Trend Analysis**:
    - Identify and illustrate trends over time, particularly focusing on delivery times and lead times.
    - Analyze if there are specific times or days where delivery times are longer or shorter.
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4. **Performance Metrics:**
    - Calculate the average delivery time and lead time.
    - Determine the proportion of prescriptions delivered on time versus late.
5. **SLA Compliance Analysis**:
    - ➔ *Service Level Agreement (SLA) that states:*
        - ◆ *Prescriptions created on or before 3 PM must be delivered the same day.*
        - ◆ *Prescriptions created after 3 PM should be delivered by 12 PM the next day.*

- Analyze and trend the average turnaround time per order
- Analyze SLA achievement trends per day.
- Analyze/trend the average SLA achievement of orders sent per hour per day.
- Compare and trend actual lead times against the target lead time of four hours.
- Assess and trend the compliance with the Service Level Agreement (SLA) that states:

6. **Insights and Recommendations:**
    - Provide insights based on the analysis, focusing on any identified patterns or anomalies.
    - Make data-driven recommendations for improving delivery performance and efficiency.
    - Suggest any additional data points or analysis that could further enhance understanding and performance tracking.

Deliverables:

1. **Cleaned Data File**: Submit the cleaned and standardized dataset, including the calculated lead time.
2. **Analysis Report**: A detailed report including:
    - Summary statistics.
    - Visualizations and trend analyses.
    - Performance metrics.
    - SLA compliance analysis.
    - Insights and recommendations.
3. **Presentation**: A concise presentation summarizing key findings, trends, and recommendations.

Tools and Skills Expected:

- Proficiency in data manipulation and analysis tools (e.g,Google Sheet, Excel, SQL, Python,).
- Experience with data visualization tools (e.g., PowerBI, Google data studio(Looker studio), Tableau).
- Strong analytical and problem-solving skills.
- Ability to communicate findings clearly and effectively in both written and visual formats.

Goodluck!