Ola Driver Churn Analysis

Problem Statement:

Ola faces a significant challenge in retaining drivers. High churn rates negatively impact the company in several ways:

- sDifficulty maintaining a stable workforce to meet customer demand.
- Increased costs associated with driver acquisition compared to retention.
- Decreased employee morale due to frequent turnover.

This project aims to develop a model to predict driver churn and identify factors influencing their decision to leave the platform. By understanding these factors, Ola can implement targeted strategies to improve driver retention.

Data and Methodology:

- **Dataset:**
    - Source: `ola_driver.csv` containing monthly driver information for 2019-2020.
    - Features:
        - Demographics (city, age, gender)
        - Tenure (joining date, last working date)
        - Performance (quarterly rating, monthly business acquired, grade, income)
- **Steps:**
    - **Data Preprocessing:**
        - Clean and format data.
        - Handle missing values using KNN imputation (numerical features only).
        - Aggregate data by driver ID to remove duplicates.
    - **Feature Engineering:**
        - Create features indicating changes in quarterly rating and income (increased/not increased).
        - Create a target variable indicating driver churn (left/not left).
        - Perform one-hot encoding for categorical variables.
        - Address class imbalance (if present).
        - Standardize training data.

    - **Modeling:**
        - Implement ensemble learning methods: Bagging and Boosting with hyperparameter tuning.
    - **Evaluation:**
        - Evaluate model performance using classification reports and ROC AUC curves.

Expected Outcomes:

- Identify key factors influencing driver churn.
- Develop a model to predict driver churn with high accuracy.

Actionable Insights & Recommendations:

Based on the model's findings, Ola can develop targeted strategies to address driver churn:

- **Compensation and Performance:**
    - Review compensation structure to ensure competitiveness and link income to performance.
    - Provide transparent paths for income increases to incentivize retention.
- **Performance Management:**
    - Implement a fair and frequent performance evaluation system with clear feedback mechanisms.
    - Offer support and development opportunities for low performers to improve their skills and satisfaction.
- **Driver Acquisition:**
    - Focus on attracting and retaining drivers with a higher propensity to stay, based on model insights.
- **Targeted Programs:**
    - Develop programs addressing specific needs of different driver segments (e.g., gender, designation, grade).
    - Consider programs for work-life balance, career development, and recognition tailored to driver concerns.

By implementing these recommendations and continuously iterating on the churn prediction model, Ola can significantly improve driver retention and build a more stable and satisfied workforce.