Preparation of Papers for IEEE Sponsored Conferences & Symposia*

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I. INTRODUCTION

The purpose of this analysis is to provide a comprehensive examination of the bike-sharing system, delving into its various aspects to gain insights into its impact, utilization, and potential areas for improvement. As bike sharing addresses issues such as traffic congestion, air pollution, and the need for sustainable transportation alternatives, it is increasingly important to understand the nuances and effectiveness of bike sharing programs. Our goal is to provide a balanced assessment that informs policy decisions, enhances user experience, and analyzes the sustainability of shared bikes for urban transportation.

II. MOTIVATION

The motivation for conducting Shared Bike Analysis involves several aspects such as understanding usage patterns, improving bike-sharing services, optimizing operations, enhancing user satisfaction, contributing to environmental sustainability, and aiding urban planning. Below are more detailed points covering various dimensions:Understanding Usage Patterns: Helps in comprehending when and how people use shared bikes, allowing providers to align services with demand. Optimizing Bike Availability: Ensures bikes are accessible where and when needed, enhancing user satisfaction and reducing wait times. Improving Operational Efficiency: Aids in efficiently managing and distributing the bike fleet, lowering operational costs and increasing service reliability. Enhancing User Experience: Utilizes data insights to elevate the user experience, potentially increasing customer retention and attracting new users. Supporting Eco-Friendly Transportation: Contributes to reducing carbon emissions by promoting a sustainable mode of transportation. Aiding Infrastructure Planning: Offers valuable insights for urban planning, supporting the development of bike-friendly infrastructure. In essence, Shared Bike Analysis is fundamental for improving service efficiency, customer satisfaction, and promoting environmental sustainability and urban development.

III. DATA PROCESSING

We will be collecting raw data from Bikeshare website as well as some processed data from the dataset of Kaggle. After collecting all the data we need, we will process to create our own module to handle the data. If the module is not efficient enough to provide expected outcome, we will augment it.

IV. DISTRIBUTION

A. Mengjun Wang: Mengjun Wang is responsible for gathering and preparing the necessary data for our project. This includes collecting relevant datasets, cleaning and organizing the data, and ensuring its readiness for analysis.

B. Haoyu Li: Haoyu Li's primary role is to conduct data analysis and create visualizations that help interpret the data effectively. He will employ various analytical techniques and tools to extract insights from the collected data.

C. Weilin Ouyang: Weilin Ouyang is tasked with performing statistical analyses on the data. His responsibilities include running statistical tests, modeling, and drawing meaningful conclusions from the data to support our research objectives.

D. Tianhao Wu: Tianhao Wu is responsible for documenting our project's progress and findings. He will prepare written reports, documentation of methodologies, and any necessary presentations to communicate our results clearly to stakeholders.

V. MILESTONE

09/28 - 10/10 data cleaning and preprocessing;
10/11 - 11/15 data and result analysis;
11/16 - 12/05 report writing

VI. EXPECTED OUTCOME

In the forthcoming paper, several critical dimensions of bike-sharing systems will be thoroughly analyzed to optimize and enhance service delivery. The research will delve into the distribution of hot stations, providing insight into the most frequented locations and aiding in efficient bike allocation. A detailed examination of rush hour dynamics will shed light on peak usage times, enabling better service preparedness.

The analysis will also compare round trip and one-way journey patterns, offering a comprehensive understanding of user preferences and behaviors.

Furthermore, the paper will explore the relationship between trip duration and passholder type, uncovering valuable correlations that could inform tailored service offerings. Altogether, this multifaceted analysis aims to bolster the efficiency, reliability, and user satisfaction of bike-sharing systems, contributing significantly to the advancement of sustainable urban mobility.