To: Programme Manager

From: Wani

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Subject: Analysis of Share-Bike User Behaviour for Program Development (2013 – 2023)

Context

Cyclistic is a bike-sharing programme in Chicago, serving both casual customers and annual subscribers with three types of bikes. To facilitate strategic growth in annual subscriptions, this analysis investigated the historical behaviours of riders. By identifying behavioural patterns in bike usage, Cyclistic can improve marketing strategies and develop targeted services such as membership products and subscription perks. This briefing note summarises the insights that are derived from ten years of trip data to facilitate strategic growth biking programme.

Analytical Overview

In this analysis, ten years of ride data (> 30 million records) were extracted from Cyclistic data storage, and map of Chicago was obtained from government data. Using data across ten years enabled a comprehensive, longitudinal analysis. A decade-long dataset also helped mitigate short-term uncertainty and pandemic-related biases. Quality of data was checked to ensure reliability, comprehensiveness, and consistency of analyses. Missing data and inconsistent business terminologies were standardised before analysis. For this project, number of rides, preference of bike types, trip duration, ride distance, and geographic location were chosen as KPIs for this analysis, as these metrics best capture behavioural differences. For each KPI, descriptive statistics were computed to find key behavioural patterns in customers and annual subscribers, which was followed by comparison using graphs. Suitable statistical tests were conducted to evaluate whether the visual distinctions between customers and annual subscribers were significant and reliable. The results from statistical tests were synthesised into key business insights regarding user behaviours and growth potential.

Key Findings

Number of bike rides. From 2013 to 2023, the total number of rides taken by subscribers was double that of customers. Each year since 2013, more rides were consistently taken by subscribers. The number of rides by subscribers dropped during the pandemic, but it had recovered

and grew since 2021. In contrast, customers only increased their bike use after 2020. On a weekly basis, more rides were taken by subscribers on weekdays, whereas more rides were taken by customers on weekends. Overall, Cyclistic maintains a healthy subscriber base, whose members likely used the bike services for weekday commute. The rise of customers after 2020 may represent behaviours related to leisure and tourism, which could be an untapped opportunity for targeted membership growth.

Preference on bike types. Subscribers used classic bikes the most, which was followed by docked or electric options. By comparison, customers preferred electric bikes over classic ones, but the distinction is not significant. Ride data alone could not test whether classic bikes were truly preferred by subscribers, or they were simply more available.

Trip duration. Rides by subscribers were significantly shorter than those by customers, which persisted across all time scales, namely total rides over ten years, annual rides, and daily rides over a typical week. The average trip duration by subscribers across ten years is close to 13 minutes, being nearly one third of the average trip duration by customers. The consistent pattern suggests a genuine behavioural difference.

Ride distance. Rides by subscribers were significantly shorter in distance than those of customers, but the gap in ride distance is somewhat modest, averaging at 200 m. When considered alongside trip duration and number of trips in a typical week, the shorter and faster rides by subscribers likely represent their use for weekday commute.

Geographic location. Although no spatial distinct between subscribers and customers was found, most rides by both groups started and ended in the northeast, downtown regions of Chicago. Data from this project could not facilitate further investigation on whether biking was the only option for commute or riders simply preferred biking over driving.

Implications and Recommendations

The findings suggest that future growth of Cylistic should be aligned to riders' needs. Two actions are recommended: (1) conducting surveys to find the best locations to distribute bikes for weekday commutes by subscribers using customer surveys; (2) running a targeted campaign to design new leisure membership to convert customers into subscribers.