**R Project: Case Study Report from Google Data Analytics Certification:**

How does a bike-share navigate a speedy success?

**Introduction**

**Purpose**

To understand how annual members and casual rider differ in their duration of ride length throughout the week. This study calculates the average length duration of casual riders and annual members on each day of the week from April 2019 to March 2020. We also identified the most popular start station that casual riders visit on each day of the week. This study also identified 3 recommendations for achieving the business task, aided with the results of the analysis.

**Business task**

Converting casual riders to annual members through design marketing strategies as annual members are much more profitable.

**Stakeholders**

Lily Moreno (directing manager), the president of the company and the executive team.

**Methods**

**Data source**

* [Historical trip data](https://divvy-tripdata.s3.amazonaws.com/index.html) from Divvy bicycle sharing service from the City of Chicago
* Made available by Motivate International Inc. under the [license LLC (“Bikeshare”)](https://ride.divvybikes.com/data-license-agreement)
  + 4 CSV files used (data from April 2019 – March 2020)

**Documentation for cleaning or manipulating of data.**

* Columns and labels were renamed for consistency in all files.
* Name of subscribers were kept consistent (customer renamed to casual, subscriber renamed to member)
* Added trip duration column for 2020 data and ride length column (in seconds) for all data.
* All trip duration negative values were removed.

*All data was cleaned, manipulated, and analyzed by using R.*

**Results**

Throughout April 2019 to March 2020, there were a total of 2973860 member rides and 902182 casual rides. The highest number of member rides are on Tuesday, and casual rides are on Saturday. Casual riders have a higher average trip duration (59 minutes) compared to member riders (14 minutes). In Figure 1, casual riders have the highest average trip duration for all days of the week.

**Table 1.** Average trip duration and number of rides for all riders from April 2019 to March 2020

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Day of week** | **Average trip duration (mins)** | |  | **Number of rides** | |
| Member | Casual |  | Member | Casual |
| Monday | 14 | 56 |  | 472196 | 103296 |
| Tuesday | 14 | 60 |  | 508445 | 90510 |
| Wednesday | 14 | 62 |  | 500329 | 92457 |
| Thursday | 14 | 61 |  | 484177 | 102679 |
| Friday | 14 | 63 |  | 452790 | 122404 |
| Saturday | 16 | 56 |  | 287958 | 209543 |
| Sunday | 15 | 60 |  | 267965 | 181293 |

|  |
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|  |

**Figure 1. Average trip duration of rider between April 2019 to March 2020**

For member riders, the most visited start stations were Canal St & Adams St, Kingsbury St & Kinzie St and Wells St & Concord Ln (Table 2). For casual riders, the most visited start stations were Streeter Dr & Grand Ave and Lake Shore Dr & Monroe St (Table 2).

**Table 2.** Most visited start stations on each day of week for member and casual riders

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Day of week** |  | **Member** | |  | **Casual** | |
|  | **Start Station** | **Number of visits** |  | **Start Station** | **Number of visits** |
| Monday |  | Canal St & Adams St | 9243 |  | Streeter Dr & Grand Ave | 2266 |
| Tuesday |  | Canal St & Adams St | 9958 |  | Lake Shore Dr & Monroe St | 1373 |
| Wednesday |  | Canal St & Adams St | 8523 |  | Streeter Dr & Grand Ave | 1274 |
| Thursday |  | Canal St & Adams St | 8484 |  | Streeter Dr & Grand Ave | 1839 |
| Friday |  | Canal St & Adams St | 7120 |  | Lake Shore Dr & Monroe St | 1887 |
| Saturday |  | Kingsbury St & Kinzie St | 1902 |  | Streeter Dr & Grand Ave | 3840 |
| Sunday |  | Wells St & Concord Ln | 2047 |  | Lake Shore Dr & Monroe St | 4459 |

**Key findings**

* Member riders are more frequent during the weekday, whereas casual riders are more frequent during weekends. One possible reason is that member riders use bikes mainly to go to work whereas casual riders use bikes for leisure.
* Although the casual riders have a higher average trip duration compared to members, there are a greater number of total member riders than casual riders on each day of the week.
* The most visited start stations in each day of the week are different between member and casual riders.

**Top three recommendations based on analysis.**

* Collect more information through surveys on why member and casual riders ride bikes.
* Investigate why member and casual riders use bikes on the most visited start stations.
* Provide discounts or promotions such as 1-month or 14-days free ride when casual riders convert to annual members.