Cyclistic Bike-Share Data Analysis Documentation

1. Project Overview and Scenario

Company: Cyclistic (Chicago-based bike-share program)
Objective: Analyze user behavior differences between casual riders and annual members to develop strategies for converting casual riders into members.
Tools Used: Power BI, Excel, SQL

2. Data Cleaning & Preparation

Dataset: 12 months of bike trip data (CSV files merged into Power BI)

Steps Taken:

- Imported Data: Merged 12 CSV files using Power BI's Folder Import feature.
- Checked for Missing Data: Identified blanks in station names and other fields.
- Removed Duplicates: Ensured no duplicate entries were affecting results.
- Converted Data Types:
  - Dates: Converted `started_at` and `ended_at` to DateTime format.
  - Numbers: Ensured latitude/longitude were in the correct numeric format.
- Created New Columns:
  - Ride Duration (in minutes): `Duration.Minutes([ended_at] - [started_at])`
  - Ride Month & Month Number for sorting
- Handled Null Values: Replaced missing station names with "Unknown".

3. Data Analysis & Visualizations

Key Metrics Analyzed:

A. Ride Volume Analysis

- Total Rides: Compared total trips between members and casual riders.
- Monthly Trends: Identified seasonal usage differences using a line chart.
- Peak Ride Hours: Created a bar chart to analyze popular riding times.

B. User Behavior Comparison

- Ride Duration: Compared the average ride time of casual riders vs. members.
- Most Popular Start & End Stations: Found high-traffic locations.
- Bike Type Preference: Analyzed which user type prefers which bike.

C. Filters & Interactivity

- Slicers Added:
  - Month → Filter rides by month.
  - Member Type → Toggle between casual riders and members.
  - Bike Type → View ride trends by bike type.

4. Findings & Insights

Key Takeaways:
- Casual Riders Take Longer Trips: They ride for leisure, while members have shorter and more consistent trips.
- Peak Usage Seasons: Casual riders spike in summer months; members maintain steady usage throughout the year.
- Popular Stations: Certain high-traffic stations can be targeted for membership promotions.
- Bike Type Preference: Members prefer traditional bikes, while casual riders are more likely to use assistive/cargo bikes.

5. Recommendations for Marketing Strategy
- Target Casual Riders During Peak Months: Offer limited-time membership discounts in summer.
- Leverage High-Traffic Stations: Place membership promotion ads at popular casual rider stations.
- Create a Loyalty Program: Provide incentives for casual riders who take frequent trips.
- Personalized Digital Campaigns: Use email and social media campaigns to showcase membership benefits.

6. Dashboard Optimization

Enhancements Made:
- Improved Visual Clarity:
  - Used contrasting colors for casual riders vs. members.
  - Adjusted text size and labels for readability.
  - Ensured month names displayed instead of numbers.
- Added Tooltips: Provides extra insights on hover.
- Formatted Slicers: Used dropdowns with search functionality.
- Sorted Data Properly: Ensured charts display correctly (Jan → Dec order).

Final Thoughts
This analysis provides data-driven insights into how casual riders and members differ in behavior. By implementing targeted marketing strategies, Cyclistic can increase membership conversions, improving revenue and user retention.