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Washington DC Bikeshare Program Ridership

Introduction:

In this report, we set out to determine if any of the bike stations were particularly efficient or inefficient in 2023. We will use the public bikeshare data for the months of January - November 2023. We will analyze when and which bike stations are being used the most and least, and use the data to make informed decisions regarding the bikeshare infrastructure. Our goal is to be able to make recommendations which maximize bike ridership.

Analysis:

Using the data, we first set out to determine what times of year that the bikes are being used the most. Below, you can see that bike ridership is relatively low in January, with about two million rides that month, and it trends upwards to about 4.8 million rides in November.
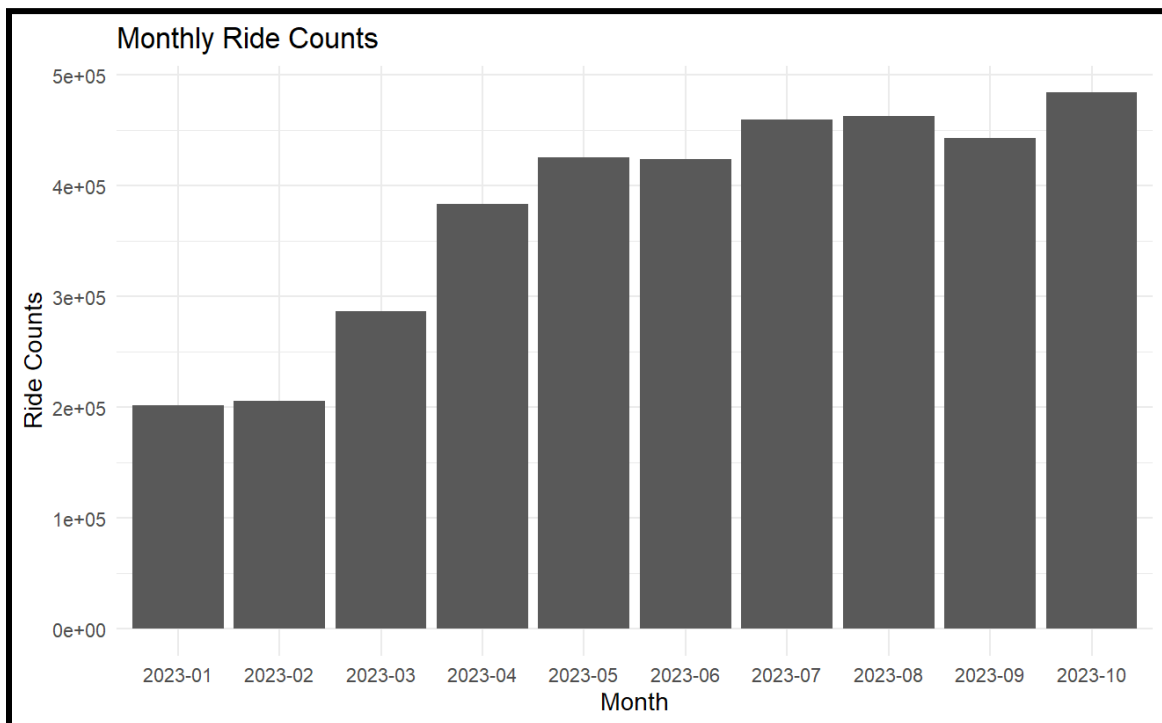

Figure 1: Yearly Bike Ridership

Additionally, we can observe which bike type that riders tend to ride throughout the year. Below, you will see another figure that was generated from the public data.
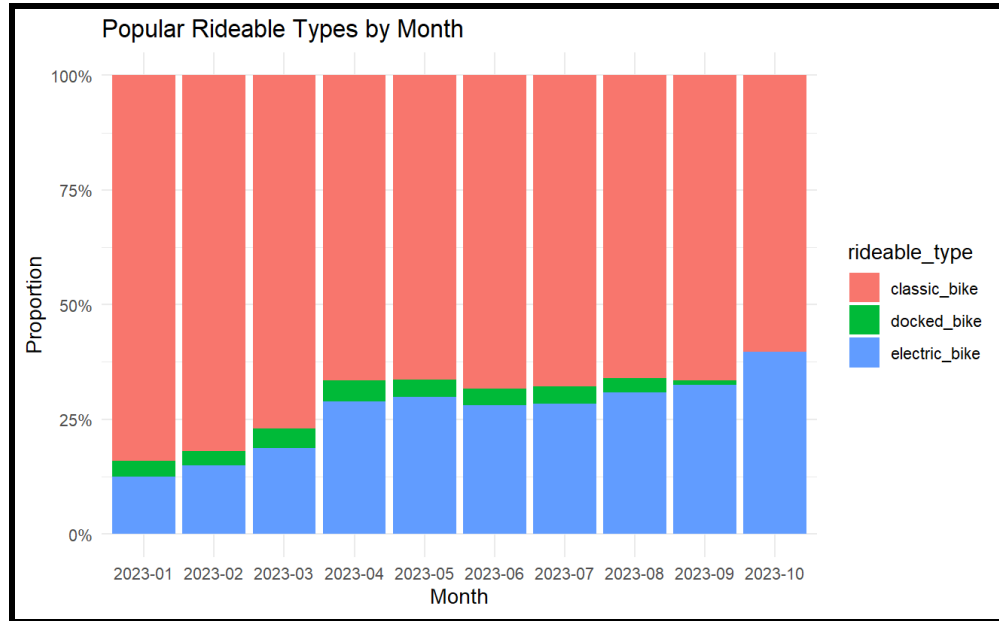
Figure 2: Proportion of popular bicycle types

Here, we can see that those who do decide to ride in January and February tend to prefer the classic bikes, with electric bikes becoming more popular later in the year. This information can be helpful for deciding when to perform routine maintenance on the bicycles with minimal impact to users. Based on the data. January and February is a good time to take some of the electric bikes off of the street if mechanical maintenance is needed.

Additionally, we will sort the data by individual bike station. Below, you will see the 5 most used bike stations in the program.

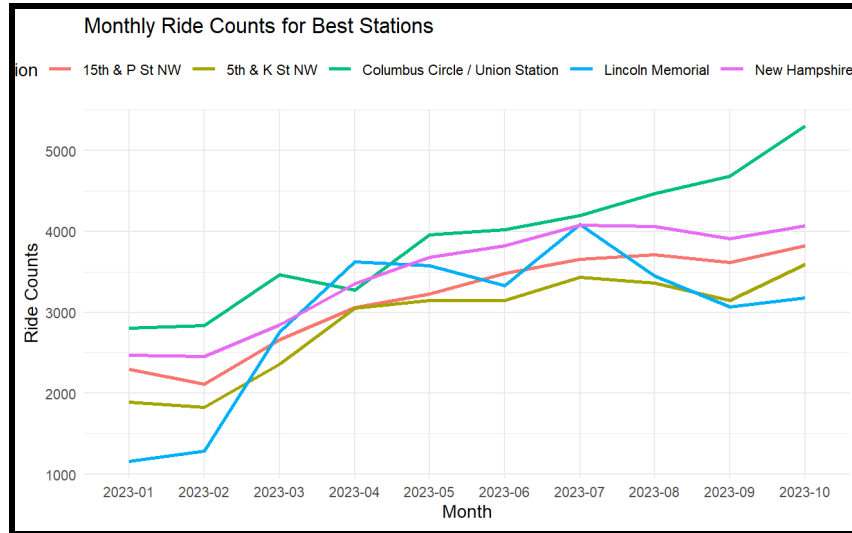| station	n
<chr>	<int>
Columbus Circle / Union Station	78283
New Hampshire Ave & T St NW	68926
15th & P St NW	63360
Lincoln Memorial	59338
5th & K St NW	58465

Figure 3: Most Used Bike Stations

Figure 4: Most Used Bike Stations - Monthly

Here, you can see that the most used bike station was the Columbus Circle/Union Station location, with 78,283 rides this year. The trend in usage over time for these bike stations is consistent with the overall trend for the entire data set which we observed earlier.

station	n
Beech Dr at Draper Dr Park	14
Fairfax Blvd & Pickett Rd South	10
Westbranch Dr & Jones Branch Dr	9
S Wayne and 9th St	8
Fairfax Blvd & Pickett Rd North	7
Reston Regional Library	7
21st NW & E St NW	3
Layton Hall Dr & University Dr	2
Shady Grove Hospital	2

Figure 5: Least Used Bike Stations

Here, we can see that the least used bike stations are orders of magnitude less than the most used ones. They're practically of no significance at all! Upon further inspection,we can discover that the Layton Hall bike station was just added last month; and similarly the Reston Regional Library station had been removed in January.

Conclusion:

Even though we discovered that the data is incomplete for at least two of those bike stations, there are several others which may be in need of some attention. For example, for the bike stations located at Westbranch Dr & Jones Branch Dr, and several others, there is no additional information to be found about whether they have been decommissioned. It may be a good idea for the Capital Bikeshare organizers to look further into these little-used stations and relocate them to somewhere where they will be used. In the case of Shady Grove Hospital, it was found that the hospital is no longer in use, so it is likely that there is no longer any need for a bike station at that location.

By keeping track of bike station usage, we can be proactive in relocating bike station resources to places where they won't go to waste. Macro, Kashyap, and Josh recommend a further look into the bike stations at Beech Dr, Fairfax Blvd & Pickett South Road, Westbranch Dr & Jones Branch Dr, 21st NW & E St NW, and Shady Grove Hospital be re-evaluated for potential to be relocated.