Washington Metro Stops Issue

Where should the Washington D.C. Metro be expanded?

Outline

1. Introduction
   1. Business Areas of Concern
2. Data
3. Methodology
4. Results
5. Discussion
6. Conclusion

1.0 Introduction

1.0 Introduction

- Washington D.C., the capital of the USA, suffers from traffic issues. These could be alleviated by expanding the Metro System.

- This project looks to see what parts of the metro system (i.e. what color line) should be expanded based on usage and surrounding area population.

- Business Areas of Concern:
  - Traffic costs money, time, and causes fatalities in car crashes.

2.0 Data

2.0 Data

○ The data that I will be using for this project consists of Foursquare data for the WMA as well as Wikipedia (https://en.wikipedia.org/wiki/List_of_Washington_Metro_stations) and pre-constructed visualizations from the Washington Metropolitan Area Transit Authority (WMATA) in order to best determine what line of the area's metro should use more stops. This is especially important for the WMA as the cost of living increases the closer to Washington D.C. a person lives. Therefore, more people are moving farther out, and requiring more time to come into work (and thereby creating more traffic).

○ The other data that I used included population of Maryland's counties, and latitude and longitude data gathered from Google. This was to demonstrate where the different counties were, and therefore where the different areas of concern are.

3.0 Methodology

3.0 Methodology

- The first step was to see where the stops are in Washington D.C. and the WMA. This was done through Folium. This data was gathered through the Foursquare available data. One issue was that the Foursquare data only had information for approximately 50 of the approximately 150 metro stops. As a result, I attempted to find other sources for the location data, but was unable to. The Foursquare data, used in conjunction with the other available data, provides a decent understanding of the current layout of the Washington Metro system.
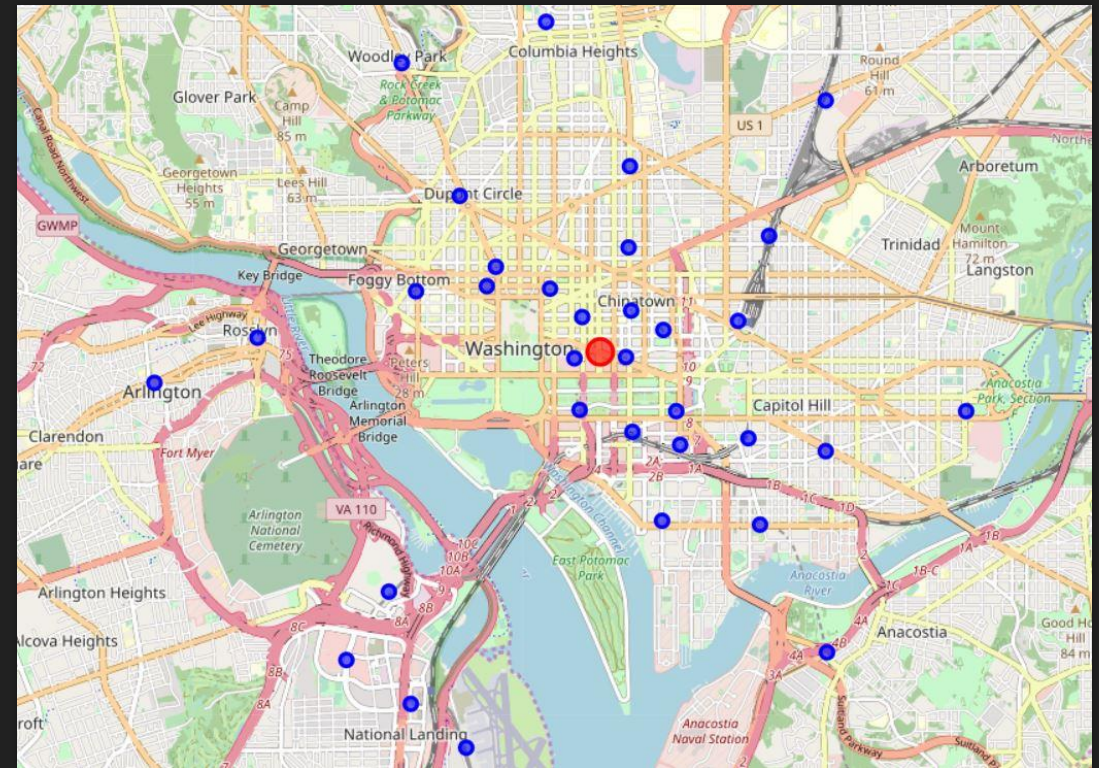
4.0 Results

4.0 Results

○ This project illustrated that Maryland has the Metro stations that have the most passengers, as well as having the busiest metro line (the Red line). In addition, the Red line ends in the most populous county in Maryland. In addition, the other direction, covered by the Green line, does not extend far enough--leaving commuters from four or five counties having to drive in, rather than take the Metro or other commuting options.
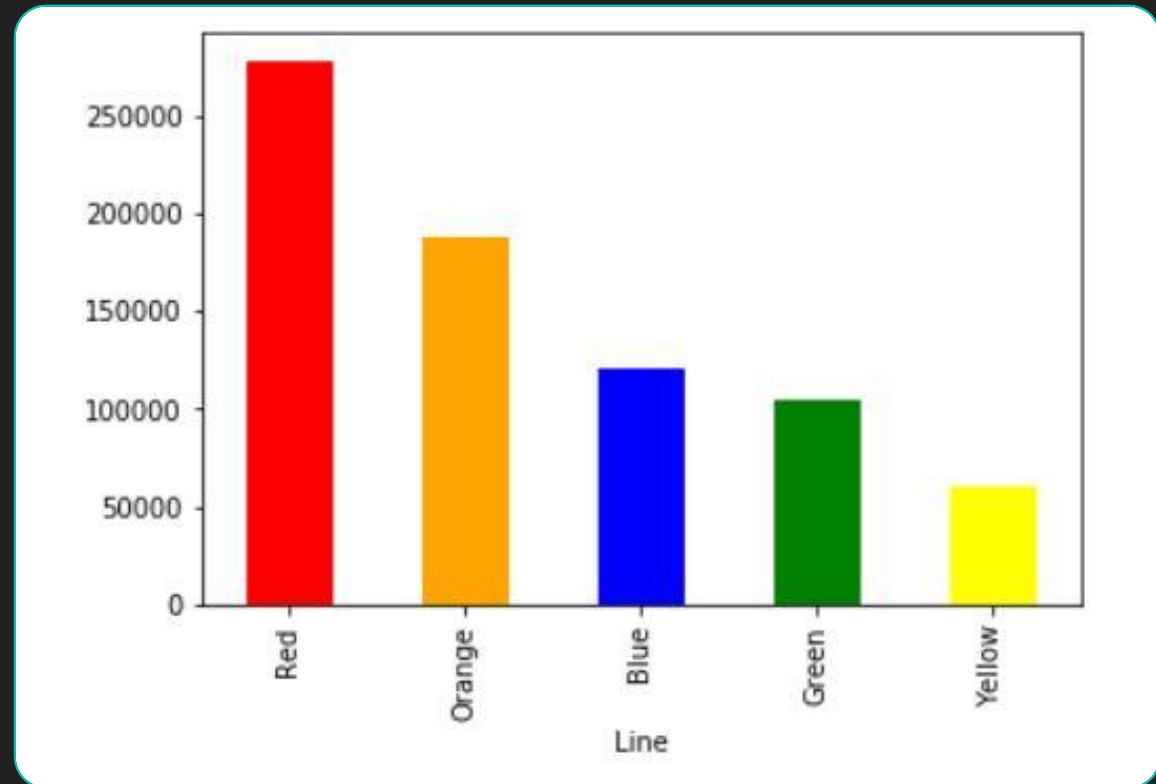
4.0 Results

	Line	Stations	Terminus 1	Terminus 2	Rider Number	Percentage
1	Red	27	Shady Grove	Glenmont	277741	(37%)
2	Orange	26	Vienna	New Carrollton	187663	(25%)
3	Blue	27	Franconia–Springfield	Largo Town Center	120104	(16%)
4	Green	21	Branch Avenue	Greenbelt	105091	(14%)
5	Yellow	17(12 during peak hours)	Huntington	Mount Vernon Square (rush peak)Fort Totten (al...	59781	(8%)

These provide further information regarding the busiest line, as well as the 10 most populous counties in Maryland.
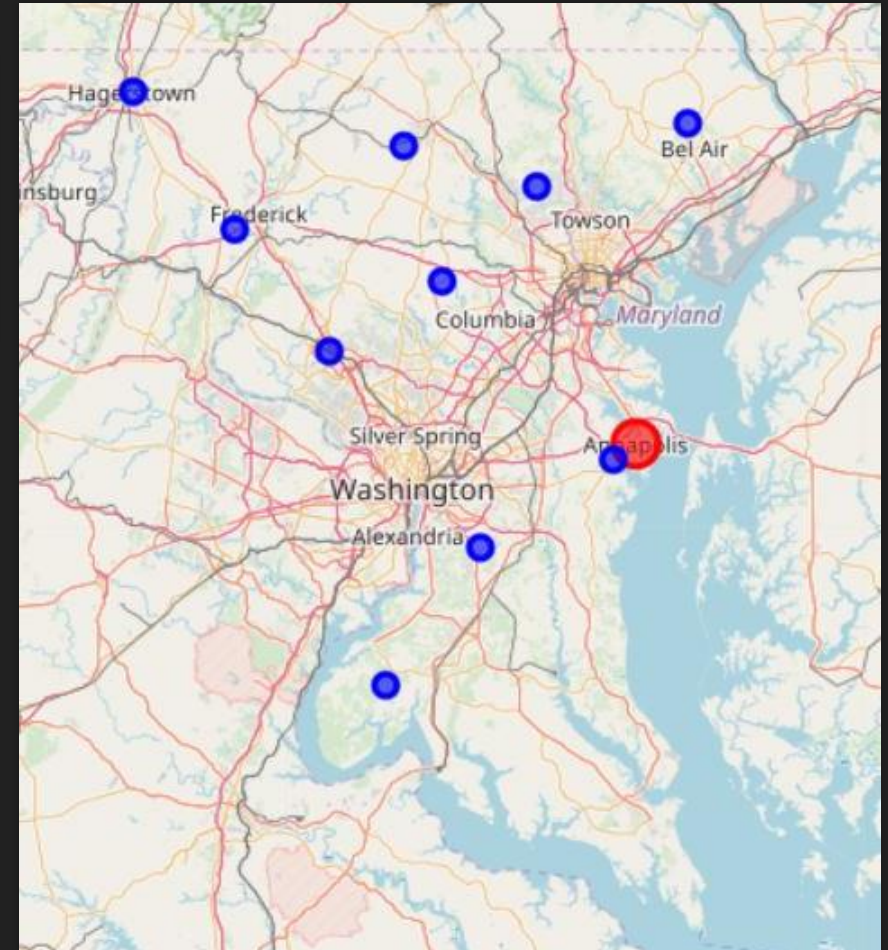
5.0 Discussion

5.0 Discussion

- As a result of the above images and the data gathered as a part of this project, I suggest extending the Red line in order to reduce traffic. My secondary suggestion would be to expand the Green line.

- The WMATA and both state and federal governments are looking into expanding the Metro. There is a proposed "Purple" line which would run around part of Washington D.C. in Maryland, and would assist commuters in going from one part of Maryland to another—currently they have to go through D.C. in order to transfer to a different line. In addition, various entities are looking for other places to put a bridge or tunnel to cross the Potomac River. And, by 2021, the Silver Line should be completed, which will allow for easier travel to and from parts of Northern Virginia. However, even with these proposed changes, many people are still commuting into work via car rather than public transportation.

6.0 Conclusion

6.0 Conclusion

○ While this project has only presented a small snapshot of the issues surrounding Washington D.C. and WMA traffic, it is clear that expanding the Metro facilities throughout Maryland would be highly beneficial to the individual communities and the larger economy of the WMA. The Red Line expansion would assist over one million Americans, and the Green Line expansion would assist almost as many.

○ Regardless of the type of public transport utilized, it is important to use it in order to provide a better commute for everyone. Less cars on the road which contain only one passenger would result in faster commutes, and people would be using less fuel, thereby saving themselves (and companies) money, as well as assisting in reducing the output of greenhouse gases.