Analyzing Bike Share Usage During a Pandemic

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Introduction

As an eco-friendly and convenient vision of commuting, bike sharing programs have become increasingly popular in the past few years. Starting in the mid 2000's, bike programs have become available worldwide in many urban cities such as Los Angeles, Portland, Wuhan and Seoul. These bike sharing programs provide short-term rentals to people that need to travel short distances in urban settings where using public transportation or motorized vehicles may not be as efficient.

COVID-19 has affected almost every single country in numerous ways, forcing businesses to shut down, having people work from home, and preventing people from seeing their loved ones just to name a few. Because of this many urban cities have completely changed the way their inhabitants live. This project aims to analyze **how this pandemic has affected bike share usage/revenues** and determine, if needed, **what changes can be made to the business model to sustain profits**?

Datasets

The data that will be used will be obtained from Washington D.C.'s Capital BikeShare company website. They publish usage data every month with 13 features including 'ride_id', 'rideable_type', trip start latitude/longitude, trip end latitude/longitude. The data will also be augmented with further information such as weekday/weekend, weather, and workday/holiday to provide a more accurate analysis.

Anticipated Data Science Approach:

- Augment further information to dataset
- Use K-Nearest Neighbors to establish hotspots
- Use Time-Series forecasting models such as Autoregressive Integrated Moving Average (ARIMA) to predict usage.

Deliverables:

The main deliverables for this project will include the code and the model that will be created throughout this project, and the final report and presentation slide deck.