NiceRide MN

A research about Bikes distribution.

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Introduction

Context

Bicycle ride-sharing systems have become increasingly popular in major cities. They allow people to enjoy biking around the city without investing in buying a bike for themselves, by providing affordable bike rentals. Here in the twin cities (Minneapolis/St. Paul, MN) we have the bike-sharing nonprofit Nice Ride MN. Customers can rent bikes at stations, each of which has docks for several bikes, and are scattered throughout the cities. Customers can then bike around, and return their bike at any other station (providing there's an empty dock for it).

Nice Ride MN provides public access to their historical data. This dataset contains Nice Ride MN's data from the 2017 year. The data is published under the Nice Ride Minnesota Data License Agreement. This dataset also contains daily weather data for the 2017 year from NOAA.

Datasets

Nice_Ride_2017_Station_Locations.csv contains information about each station, including location (latitude and longitude), the number of bike docks at that station, and the name of the station. There is one row per station, and 202 stations in the file.

Nice_ride_trip_history_2017_season.csv contains information about each trip in the 2017 year, including the start and end stations, start and end times/dates, the account type of the renter (member/non-member), and the duration of the trip. There is one row per trip/rental, and 460718 trips in the file.

WeatherDailyMinneapolis2017.csv contains daily weather information for Minneapolis/St. Paul. Each row is a day, and columns include daily high temperature, daily low temperature, and precipitation.

Analysis

Below, we have listed 7 main questions we will try to answer with our Dataset. Providing there is enough data, we will include the level of uncertainty that each answer may possess.

- Do the number of docks at each station match the demand at those stations? Could the number of docks be more optimally distributed?

- How does riding activity depend on weather?

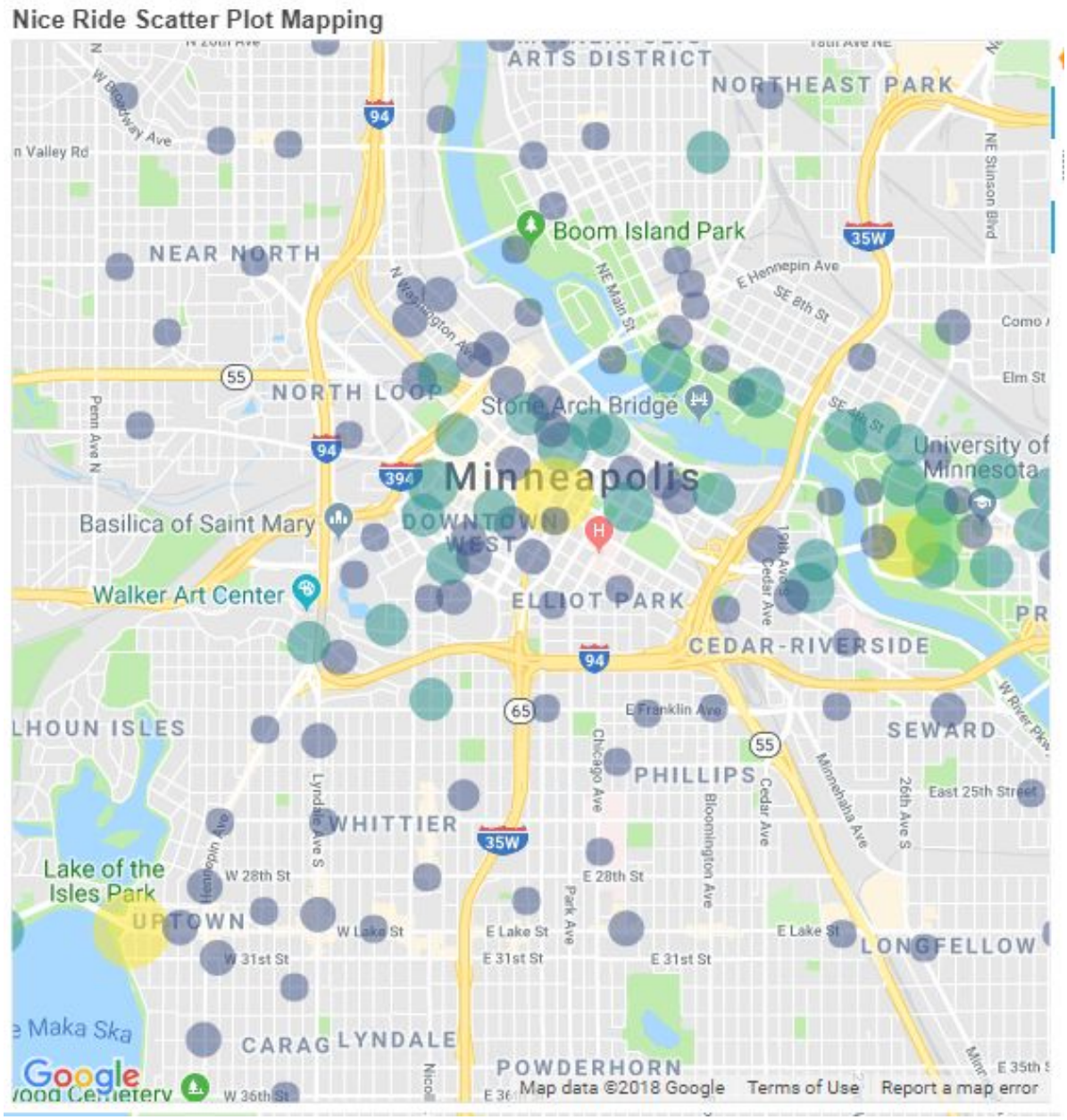
- Is there a seasonal dependence of bike demand independent of weather?

- How do riding patterns differ between members and non-members? At which stations would it be optimal to place ads for Nice Ride membership?

- How well can one predict the demand at each station?

- How well can one optimize the reallocation of bikes from full, low-demand stations to empty, high-demand stations?

- When is the earliest time to start the season, or the latest time to end, without a high risk of incurring a loss for Nice Ride MN?



Why are we doing this?

This project is a great opportunity to explore commuting behavior at a large scale. We will dig deep into the organic flow of daily commuters of Nice Ride system, thus opening a gateway to interesting analysis that only geospatial data could provide. By doing a *quick and dirty* python plot of the stations with colored circles by size and average activity in 2017, we got a glimpse on the information that lies behind this dataset.