

# Pittsburgh Bike Rides (POGOH)

## Exploratory Data Analysis

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INFSCI 2415 – Fall 2024

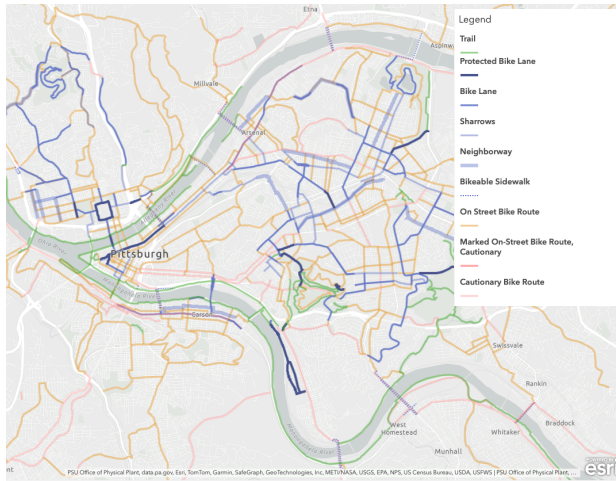


Fig. 1: Pittsburgh Bike Map (2023 updated) [3]

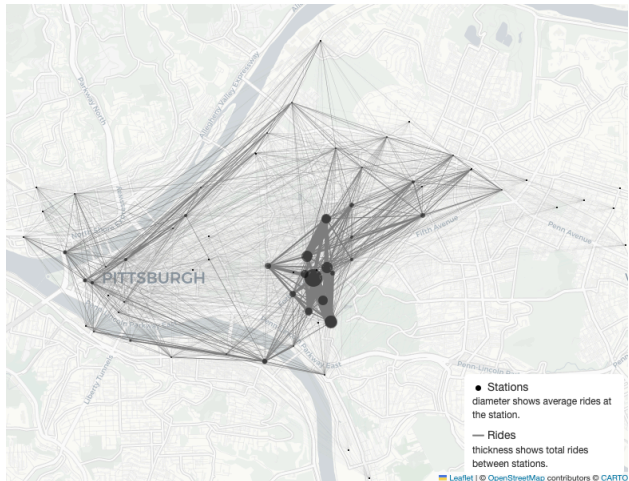


Fig. 2: POGO Bike Rides (May 2022 - Oct 2024) [1]

## Introduction

POGOH, a nonprofit organization (formerly known as Healthy Ride), has been offering bike-sharing services in Pittsburgh, PA. POGOH serves the residents, students, and visitors with over 300 e-assisted and 200 pedal bikes across 60 (currently active) stations throughout the city. From May 2022 till the end of October 2024, riders have made more than half a million rides using these bikes. The majority of these rides occurred around the University of Pittsburgh and Carnegie Mellon University campuses; two of the city's biggest universities, suggesting frequent use of the service by university students and staff. Most of these rides were short (50% of rides are around 7 minutes), but there were rides as long as a few hours. Aside from the universities, POGOH's bike stations are close to big apartment complexes, stadiums, and transportation hubs. Although some of the roads have designated bike lanes, others are not. This data analysis can provide insights into which routes bike riders may frequently take that require further safety improvements.

## Dataset

The [POGOH Trip Dataset](#) [2] was used in this work. This dataset contains 684,329 trip details (Closed Status, Trip Duration, Start Station ID, Start Date, Start Station Name, End Date, End Station ID, End Station Name, and Rider Type) between 67 stations, from May 2022 to October 2024. The test stations were removed through a data-cleaning process, and the

inconsistencies in station IDs and date formats were also fixed. The cleaned dataset was then used for this analysis.

## Analysis

Visualizing the trip data on the map of Pittsburgh reveals interesting patterns. The majority of trips occur within the campus areas of two major universities (the University of Pittsburgh and Carnegie Mellon University). A significant number of trips originate from their nearby neighborhoods. Other popular bike station locations include Downtown, the South Side, the North Shore, and areas along the Allegheny River (Figure 2). The average duration of trips taken by these bikes is 14.05 (SD=19.46) minutes with 50% of them being shorter than 7.28 minutes – around 1 to 2 miles of biking distance. Interestingly, there are also some long trips across the city, going from one side to another.

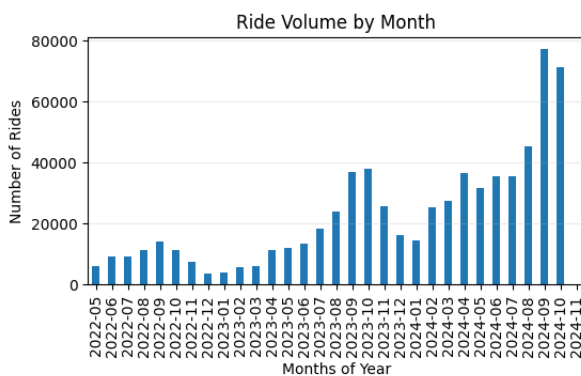


Fig. 3: Bike rides volume trend and distribution shown by months of the year.

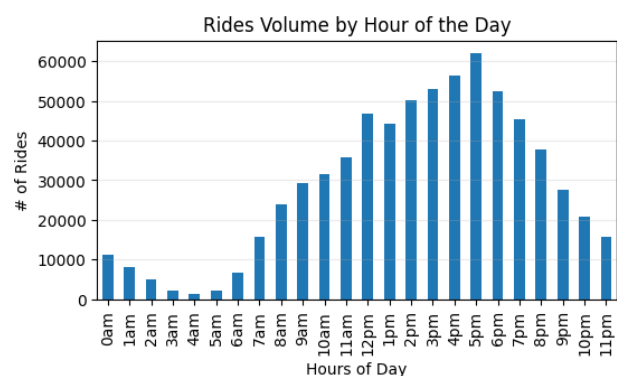


Fig. 4: Bike ride distribution shown by hours of the day.

Since POGOH's rebranding and its launch in May 2022, the number of bike trips is doubling every year (Figure 3). This shows that residents are adopting it as a new form of short-distance transportation. Over two and half years, the majority of bike trips occurred in the afternoon, peaking at 4 pm - 6 pm. Since a lot of the trips are within and around university campuses, it is safe to assume that it is mostly the university students who are using the bikes around this time. The local peak at 12 pm also suggests the same thing. Beyond the university class schedules, people are also using these bikes to travel around the city during the night. A considerable number of trips occur between 9 pm to 3 am. This is probably people who have enjoyed Pittsburgh's nightlife and use these bikes to get back to their apartment. The use of these bikes doesn't change significantly across days of the week; on average, rides peak on Thursday as the busiest day with 804 per day, and drop to 678 per day on Sunday the least busy day in a week.

There is a big gap between the number of bikes being rented from a bike station compared to the number of bikes being parked there (Figure 5); riders are not usually riding back to their initial location, otherwise, these numbers should have been in balance. One explanation for this can be that riders don't use these bikes as their primary means of transportation. This further suggests that they may not have safety gear on when riding. According to the "Allegheny County Crash Data (2004 to 2022)" [4], among 238,582 total vehicle crashes, in

1645 (0.69%) a bicycle was involved, resulting in 20 deaths (1.42% of the total death). This clearly shows that compared to other types of vehicles, the fatality rate is higher for bike riders; bikes by their nature lack the required safety features.

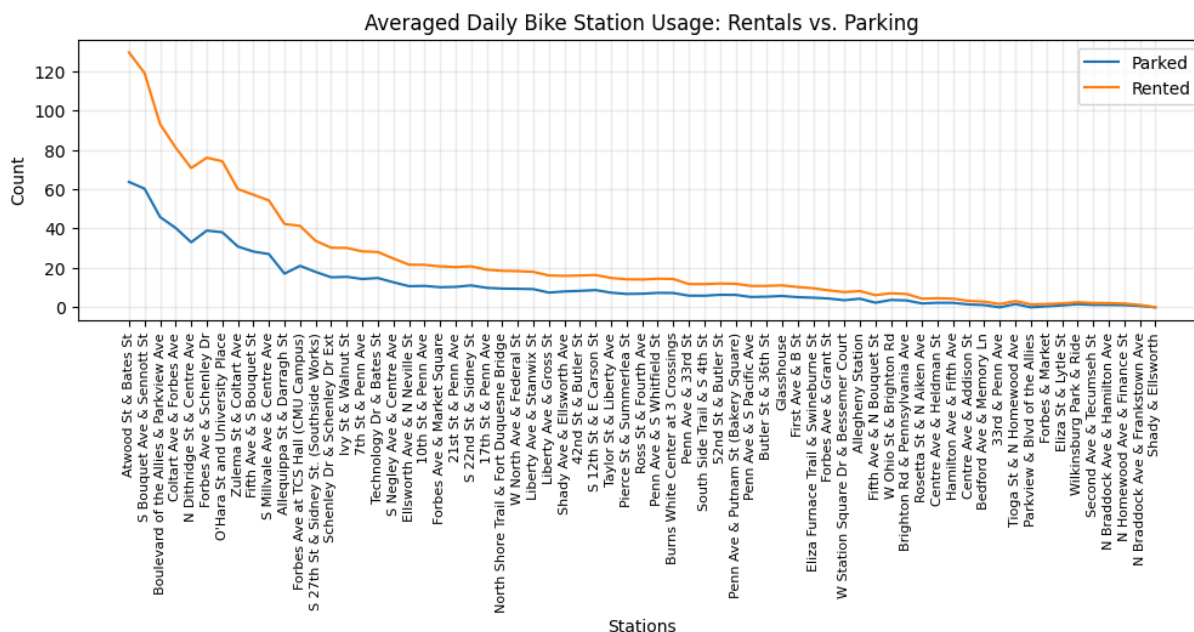


Fig. 5: Daily average number of bike rentals and parking for each POGO station.

## Conclusion

The city of Pittsburgh, due to its rivers, bridges, and hills, is divided into multiple zones that are connected with roads that may not be initially designed for bikes. This analysis shows that riders use POGO's bikes to ride both short distances within the city zones and long distances across them. Riders use these bikes casually, possibly without proper safety gear, and even worse during the night. The data shows that the use of these bikes as a means of transportation has rapidly grown and continues to grow in the future. Although each city zone has designated bike lanes within them, no such lanes exist connecting them. This will expose bike riders to dangerous traffic situations. Identifying specific routes for safety improvement for bike riders is beyond the scope of this work. However, this work emphasizes the role of local governments in identifying these routes and improving their safety for bike riders. A practical step the POGO administration could take is to provide helmets along with their bikes.

## Links

1. [GitHub Repository: Pitt-INFSCI2415-POGOH](#)
2. [POGOH Trip Data - Dataset - CKAN](#)
3. [The Pittsburgh Bike Map - 2023 updated \(interactive\)](#)
4. [Allegheny County Crash Data - Cumulative Crash Data - CKAN](#)