

Introduction

For our project topic we chose to analyse Tartu Smart Bike usage data. Tartu Smart Bike sharing is a service in which a fleet of shared bicycles is made available to the public on a short-term basis through self-served docking stations. The bicycles may be rented and returned to any of the docking stations included in the system. The main goal is to provide a sustainable and flexible alternative to commuting in urban areas to reduce congestion and pollution caused by personal cars.

Interesting fact

Average user is male in age group 19-25 who drives on average 2.81 km with speed 11.58 km/h.

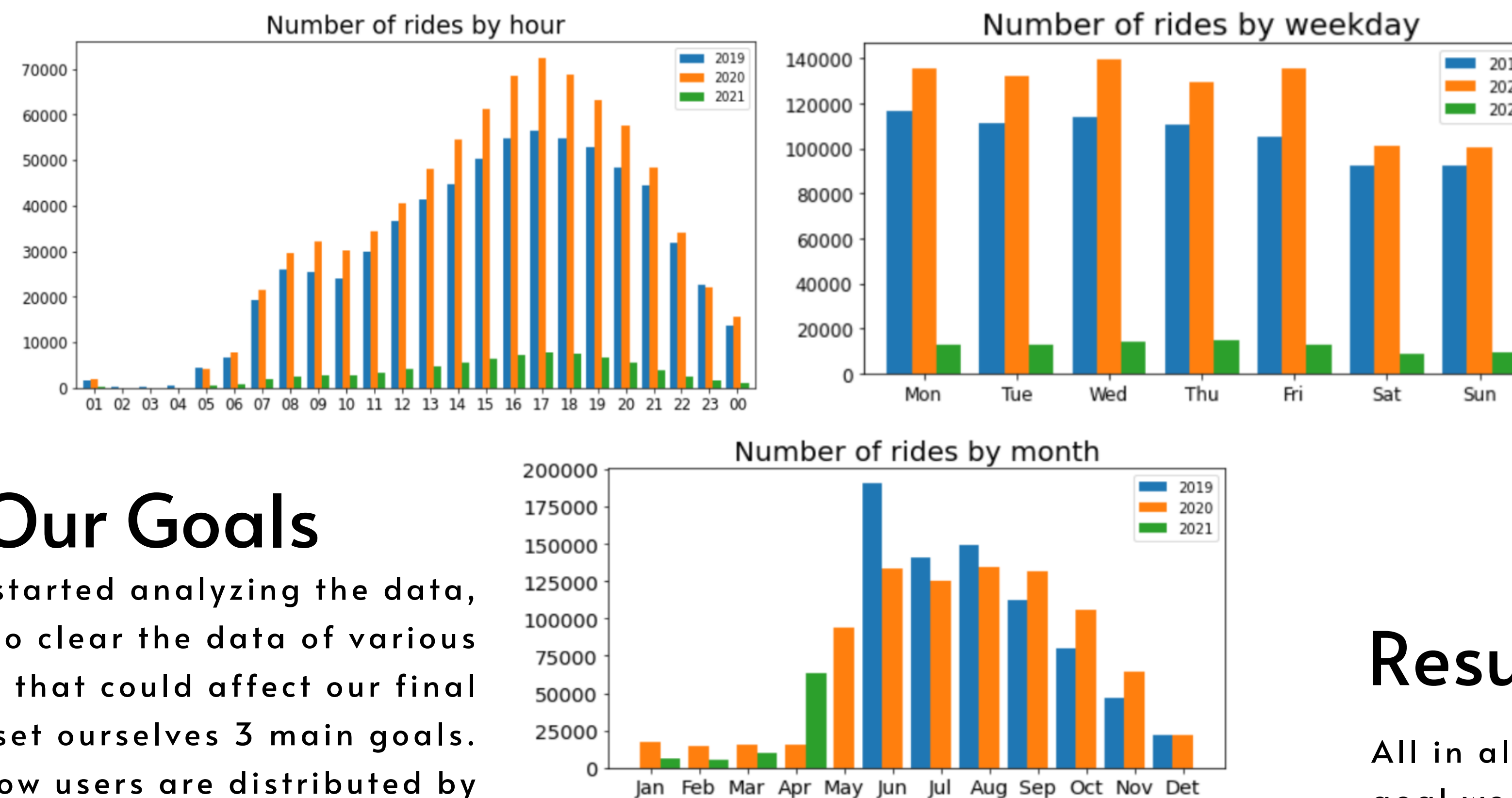


Tartu Smart Bike Usage Analysis



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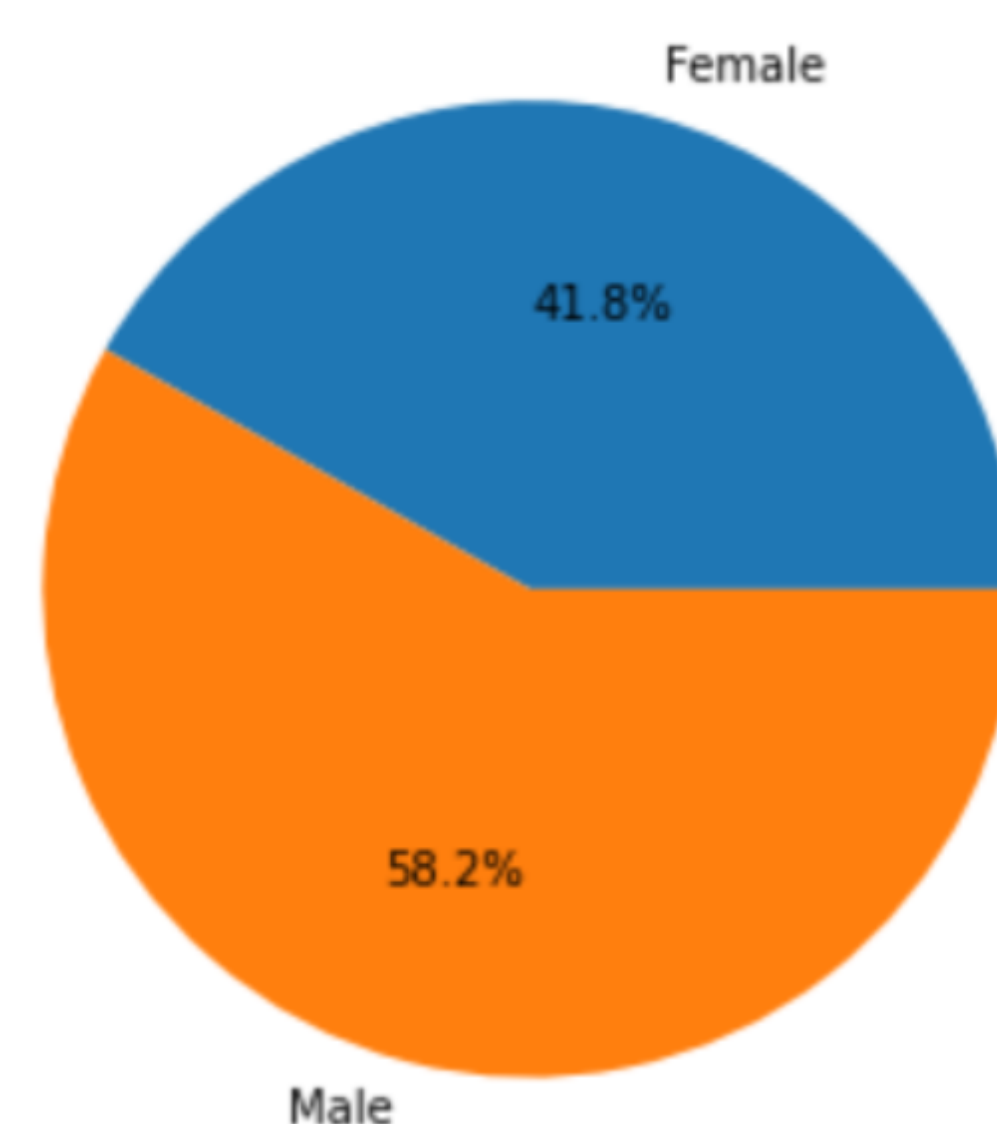
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Our Goals

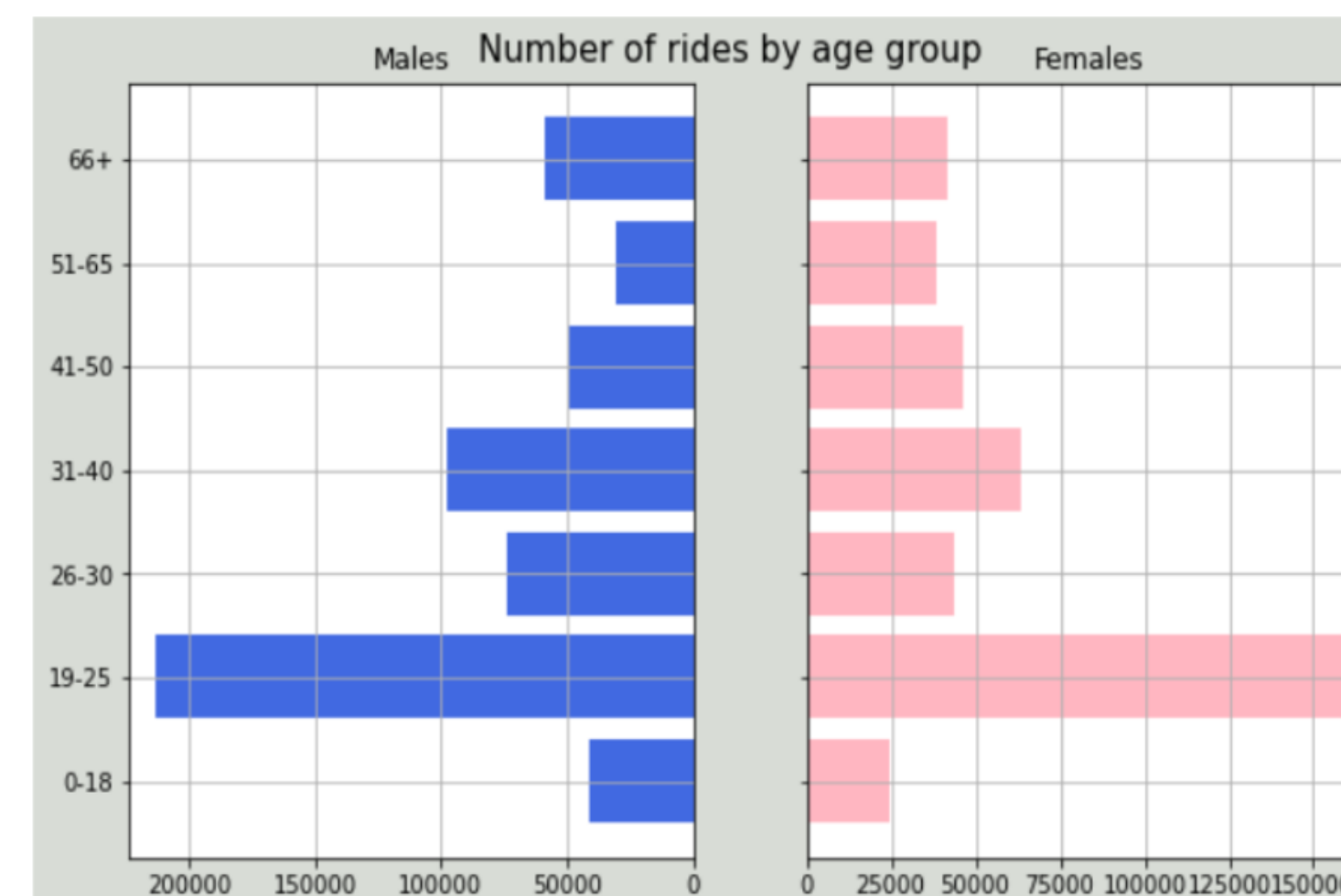
Before we started analyzing the data, we had to clear the data of various deviations that could affect our final results. We set ourselves 3 main goals. Firstly, how users are distributed by age as well as by gender. Secondly, find the stations that are used the most and the least in the system and between which stations most rides are done. Thirdly, see how the number of rides is distributed by hour, day of the week and month on yearly basis.

Bike usage by gender



Most popular stations pairs and the number of rides done between them

| | Pair | Qty |
|---|------------------------------------|------|
| 0 | (Annelinna kiir, Annelinna kiir) | 6509 |
| 1 | (Uueturu, Uueturu) | 5582 |
| 2 | (Annelinna keskus, Annelinna kiir) | 3831 |
| 3 | (Ihaste, Ihaste) | 3790 |
| 4 | (Uueturu, Vabadussild) | 3714 |
| 5 | (Annelinna kiir, Annelinna keskus) | 3569 |
| 6 | (Veeriku, Kannikese) | 3436 |
| 7 | (Pirogovi plats, Uueturu) | 3363 |
| 8 | (Uueturu, Pirogovi plats) | 3218 |
| 9 | (Vabadussild, Uueturu) | 3211 |



Results

All in all, we can say that we achieved all the goal we set ourselves at the beginning of the work, and we also found a few interesting facts. Firstly, we found out how users are distributed by gender and age, which can be seen in the bar and sector graph below left. We found out that men use more often bikes on a gender basis and young people prefer bikes on the basis of age. Secondly, after doing some data mining we found out that the most popular station was Uueturu and the least popular was Rahinge. The most popular pair of stations was Annelinna kiir to Annelinna kiir which was used a little bit over 6 500 times. Finally, we made bar graphs to get a better visual understanding of the number of rides by hour, day of the week and month on yearly basis which are in the middle. The graphs show that the bike was used the most in the summer months. In terms of time, the most popular range is 16-18. It is interesting that on weekends usage was smaller than within a week.

