Analyzing Austin B-Cycle Product Consumption Trends

# **Problem Statement**

What is the problem? How did you convert the problem into a data science problem? Why does the problem matter?

Currently, there has been a nationwide boom in the “micro-mobility” market, which includes car sharing and electric scooters. Through the likes of Bird and Lime, this market has seen a product shift from pedal-powered bikes to e-scooters, and this change can be clearly seen throughout the streets of Austin [1]. These new era tech companies are replacing the position once held by traditional bike sharing companies, like Austin B-Cycle, and they threaten to drive traditional bike sharing companies out of business.

However, one advantage that Austin B-Cycle has over the scooter companies is its age. Scooter companies did not hit the streets until mid-2018, whereas B-Cycle landed in Austin late-2013. By analyzing the data collected by B-Cycle’s rides, which detail start and stop locations for rides and their duration, and public data collected for the associated weather, we are able to create a model that associates consumer trends for B-Cycle’s product use. Through this analysis, we can recommend a course of action for Austin B-Cycle that will help the company combat encroaching scooter companies and set itself up for long term success in the Austin market.

Without docks, irresponsibly placed scooters can injure pedestrians and damage cars, making the rise of scooters as a public safety issue [2]. The University has taken measures to mitigate these risks by enforcing speed zones and parking zones for scooters, but a large scale city cannot manage to do so. Austin B-Cycle currently has the infrastructure set up to remain in accordance with city law and safety regulations, so with the right long term planning, B-Cycle can continue growing its share within the Austin market.

Sources:

[1]<https://www.bicycling.com/news/a26623484/lime-bikes-scooters/>

[2]<https://www.vox.com/2018/8/27/17676670/electric-scooter-rental-bird-lime-skip-spin-cities>

# **Solution**

### **Data used**

We used two public datasets for this project.

One dataset is provided by the city of Austin, and it details consumer use for the Austin B-Cycle program. The dataset provides information regarding membership type, bike ID, and the date, time, and location for bike check out and check in.

The other dataset is found on Kaggle, and it details daily weather in Austin. The dataset provides information regarding the day’s low, average, and high temperatures, dew points, humidity, precipitation, and other relevant weather events for each day.

### **Approach and assumptions**

Include data science approaches, nuances, research, and any innovations in procedure used.

### **Application of Darwin**

Why was Darwin used? How was Darwin used? How was the team’s experience with Darwin—i.e., what features of Darwin were helpful, and what features did you wish Darwin had?

Darwin is a machine learning product that automatically builds and deploys data science models using Python. How was Darwin used? How was the team’s experience with Darwin?

# **Team Engagement**

How did the team divide roles? How was team participation?

Our team took a holistic approach when dividing roles. Each member took an active part throughout the entire project but with a different focus that depended on their existing skillset.

Our project was divided into three main parts: data scrubbing, data engineering, and data visualization.

For the first part, the entire group focused on feature engineering. We actively discussed the pros and cons of every feature to finalize our working set.

For the second part, Nathan and Danny focused on gang shit. Aparna and Rohan perhaps worked on separate gang shit. Idk at this point.

**General Challenges**

Where did the team run into challenges? E.g., research, machine learning, data, tooling, coordination, etc. What worked well, what was more difficult than anticipated, and what did you try without success?

* **Data visualization**
* **Building the algorithm**
* **Deciding the data science algortihm**
* **Managing run time efficiency**

# **Next Steps**

What could be done with this solution next?

* Establish scooter model?? Add scooter docks too?
* Change ride pricing?
* Increase station docks?
* Increase ease of access? Reduce barriers of entry?