Shared Scooters - a Fad or the Future? An Investigation of their Usage & Viability in the Cities of North America

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Background:
In the past two years, electric scooters have gone from a new niche choice for getting around cities to ubiquity, across cities in America, Europe and elsewhere. It's arrived on a tide of venture capital, approximately $2 billion and counting. But some are wondering whether the scooters will face the same fate as the wave of shared 'dockless' pedal bikes that had preceded them; those pedal bikes failed to recoup their costs and have begun disappear from numerous cities. Unlike public transit, neither the scooters nor the pedal bikes are receiving subsidies.

Will scooters face the same fate? What promise do scooters have, for the investors backing them, for riders using them, and for the cities hosting them?

Proposal:
We will use publicly available datasets from Austin, Texas, Louisville, Kentucky and elsewhere to forecast future ridership, industry revenue and losses, and the aggregate consumption of vehicle hardware.

We will explore the issues posed by scooters from the perspectives of investors, cities, riders and the general public:

*Explore the speed, duration, and distance of trips, and measure the popularity of trips and distances under different conditions (weather, time of day/week)

*Assess the financial viability of current operations based on trip data (trips have a standardized price structure of $1 + $0.15/minute unless noted otherwise; trip data contains persistent unique IDs for the vehicle used) and observed vehicle longevity

*Compare the carbon footprint per passenger mile of scooters vs prevailing urban alternatives, such as walking, cycling, public transit, ridehail (such as Uber & Lyft) and personal car use.

*forecast future ridership using machine learning and time-series models

*Use vehicle longevity forecasts (based on recent trends), paired with ridership forecasts, to determine when scooters may attain financial viability

*On a larger scale, we will also address the availability of scooters by location, and whether access varies by region, and how access varies with area household income, age and race and other demographic factors.

Data Source:

The data source will primarily come from the City of Austin, TX. The data sources contain the variables ID, Device ID, Vehicle Type, Trip Duration, Trip Distance, Start Time, End Time, Modified Date, Month, Hour, Day of Week, Council District (Start), Council District (End), Origin Cell ID, Destination Cell ID, Year, Start Longitude, Start Latitude, End Longitude, and End Latitude. A sample of the data can be seen in the following:

Table 1. City of Austin, Scooter Data.

ID	Device ID	Vehicle Type	Trip Duration	Trip Distance	Start Time	End Time	Modified Dat	Month	Hour	Day of Week	Council Distri	Council Distri	Origin Cell ID	Destination (	Year	Start Latitud	Start Longitu	End Latitude	End Longitud
000000cb-78	ad14e63b-94	scooter	358	915	#########	#########	#########	6	17	5	5	9	13445	13916	2018	30.263	-97.762	30.259	-97.754
00001b5f-46	c5a230c9-7e	scooter	226	839	#########	#########	#########	11	11	5	9	9	14556	15186	2018	30.283	-97.745	30.284	-97.737
00002334-2f	5a9f7815-bf(	scooter	324	1206	#########	#########	#########	10	15	2	9	9	15344	15032	2018	30.285	-97.734	30.291	-97.738

Source 1. https://data.austintexas.gov/Transportation-and-Mobility/Dockless-Vehicle-Trips/7d8e-dm7r

The analysis from the City of Austin, TX would be replicated using data from other cities as they become available.