

Uber

Uber Technologies Inc. Business Plan

April 25, 2019

ISTM 6209 - Web and Social Analytics

Group B

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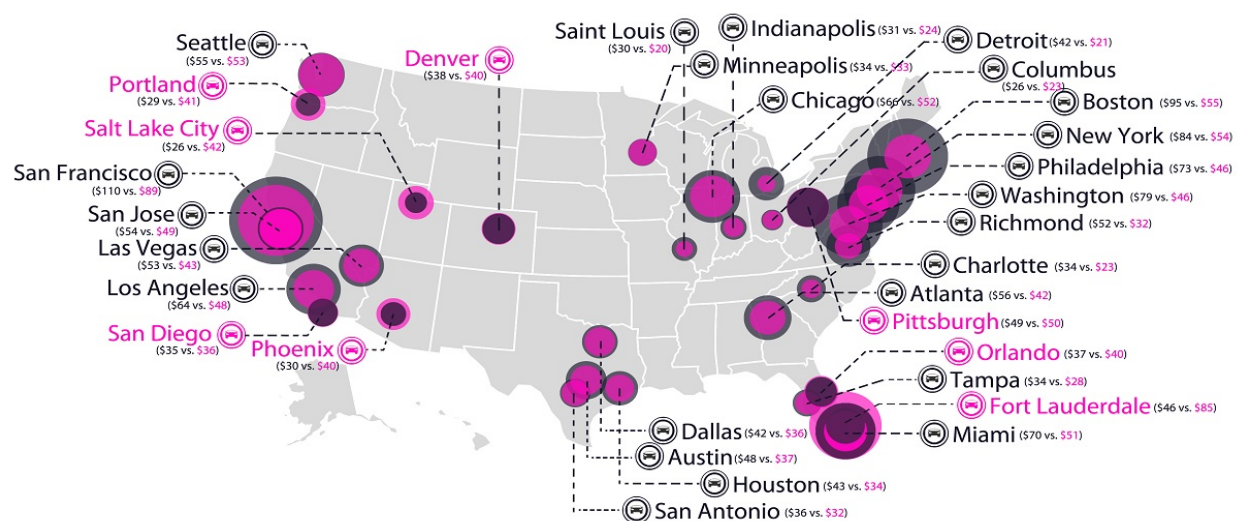
Executive Summary

Sharing Economy

The sharing economy, also known as the peer-to-peer (P2P) economy, is an economy where goods and services are not owned by a single user, but rather accessed by members of a network for a fee. This often involves attempts to make a more efficient and effective use of labor and capital through the use of technology that lowers the initial costs of matching buyer with sellers. Some examples of sharing economy include Airbnb, the short-term room and apartment rentals, WeWork for renting shared office space and Uber/Lyft for providing taxis and carpooling options to consumers. In this report, we provide an overview of the ridesharing industry, while providing data, statistics and competitors. At the moment, the largest players in the US ridesharing industry are Uber and Lyft, though Uber currently has the upper hand. Our company focus in this report will be Uber, however, we will also emphasize differences and advantages that Uber has over Lyft.

Ridesharing Platforms

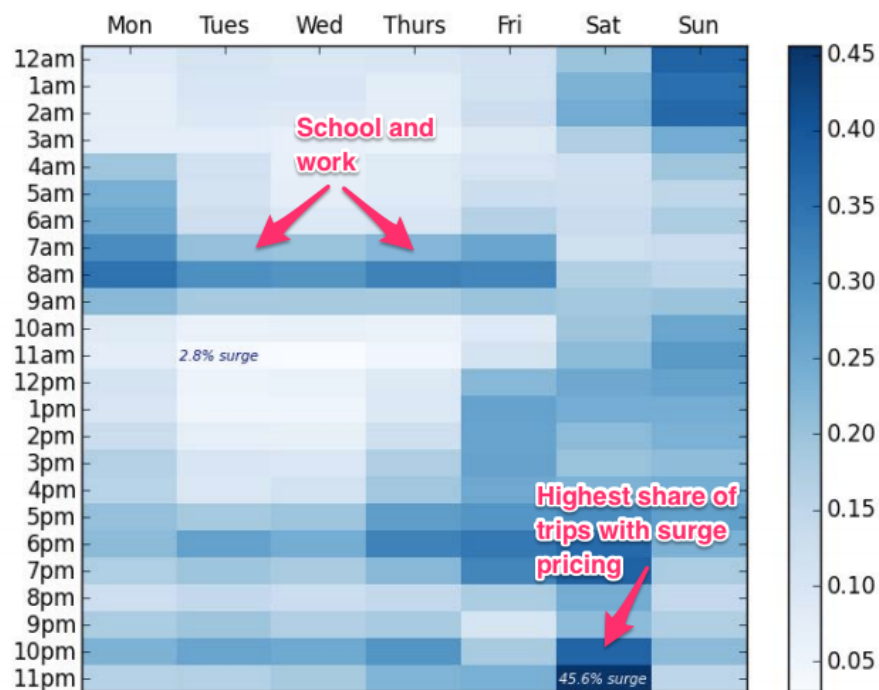
Ridesharing platforms connect drivers and vehicles with customers who typically request rides on their smartphones, to a destination at an agreed price. The application on their smartphone walks the consumer through a series of steps that include the expected price of the ride, location of the driver and contact details. The application takes advantage of GPS to navigate the ride and efficiently determine the driver's best route. Uber and Lyft also provide the driver with other benefits for riders and drivers to enjoy a quality ride and foster trust between the two parties like paying for tolls for a faster arrival time, an efficient payment system and frequently using a credit card that is entered into the platform's database system. The application is also designed to help balance demand and supply by adjusting their prices in real time to accommodate for any shortfalls with regards to the supply of drivers or surges in the demand. For providing these services, platforms like Uber and Lyft take a percentage which may vary between 20%-25% of the fare for each ride (**Huet, 2015**).



Uber vs. Lyft average spend in the US. Source: [CNBC](#)

Ridesharing is not a new occurrence. It has a background going back to the times during World War 2 when there was a limitation of gas, resulting in shared rides. Later in the 1970s, there was an oil and energy crisis which encouraged another period of ridesharing. Today's ridesharing revolution took place due to the development of the GPS, smartphone technology and payments made electronically. There is evidence that the use of ridesharing platforms is growing quickly. Since its launch in the market, Uber has attracted several new drivers from fewer than 1,000 in January 2013 to almost 40,000 starting in December 2014 (**Hall and Krueger, 2015**). Currently, more than half of American adults have heard of ride sharing apps like Uber and Lyft and 15% actually using these services (**Smith, 2016**).

In addition to statistics and data, our report will also highlight particular recommendations based on these datasets, while including important insights and potential research opportunities with ridesharing platforms.



Note: This figure shows the frequency of surges by hour of day and day of week for UberX. Darker rectangles identify times and days when riders are more likely to face surge pricing. Tuesday at 11am represents the time and day combination when surge pricing is least common, and Saturday at 11pm represents the time and day combination when surge pricing is most common.

Using big data to estimate consumer surplus for Uber. Source: [Econlife](#)

Uber Technologies Inc.

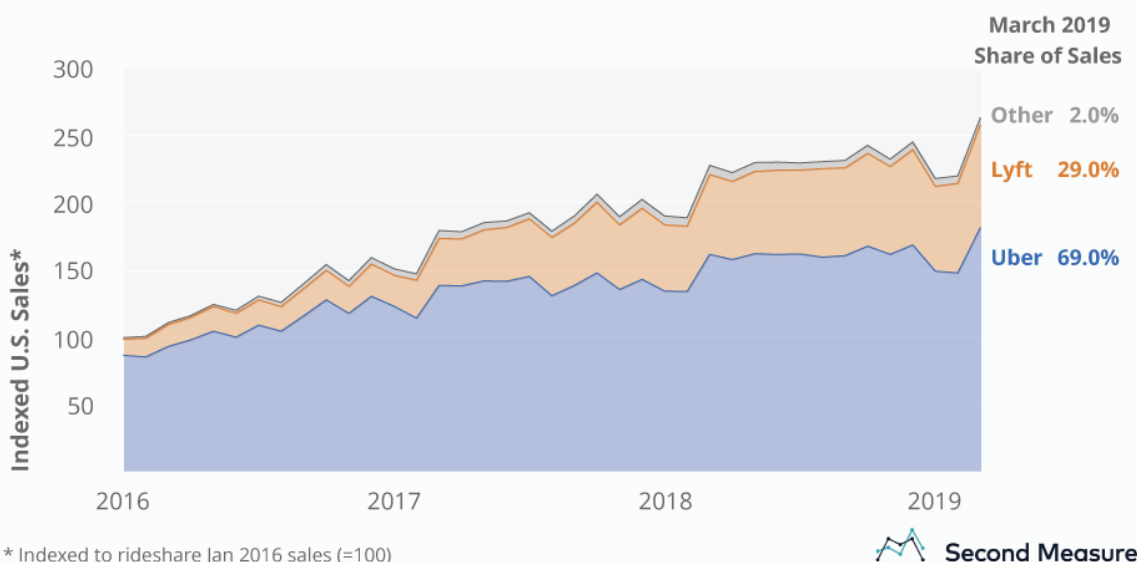
Company Overview

Uber Technologies Inc. (hereafter referred to as Uber) is a transportation network company headquartered in San Francisco, California that offers ridesharing, food delivery and bicycle-sharing system. The company has operations in 785 metropolitan areas worldwide. Uber has been very prominent in the sharing economy that the changes in industries as a result of it has been popularly referred to as uberisation as the company has established itself as the dominating ridesharing platform worldwide. As of October 2018, the company is valued at \$120 billion, leading Honda, Tesla, General Motors and Ford. Ride fares are fairly inexpensive, typically hovering around the \$5-10 range for shorter rides and \$15-20 for longer rides. Prices also vary from city-to-city.

Market Share in the US

As of March 2018, Second Measure valued Lyft's market share at 27% and Uber's at 73%. However, Uber does not disclose information about their market-share data to the public. Additionally, in October 2018, Uber and Lyft combined own nearly 98% of the U.S. consumer ride-sharing market, according to Second Measure. It is important to note that Second Measure is a company that analyzes billions of anonymized credit and debit card purchases, but includes all international rides in its U.S. market share calculation. For example, if someone is taking an Uber in India with a U.S. credit card billing address, their data would be added to the U.S. market tally.

Rideshare - Monthly Sales



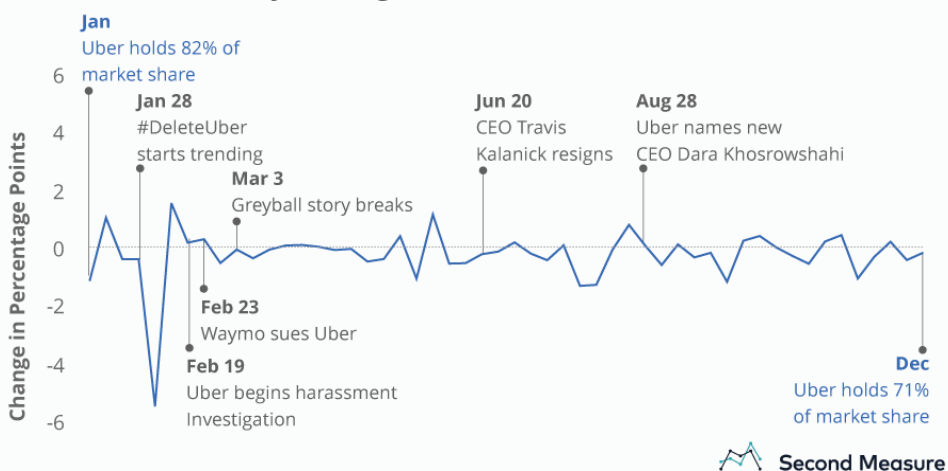
Monthly sales of Uber and Lyft as of March 2019. Source: [Second Measure](#)

Uber includes its revenue from Uber Eats, its international business and payments from other business accounts which increased to \$2.95 billion which is about a 38% increase from the previous year. Uber is currently present in several states in the US, in addition to being present in over 83 countries and 858 cities worldwide.

Initial Public Offering (IPO)

Despite being involved in several lawsuits and controversies for cases that include alleged sexual harassment by drivers, most investors are eager for Uber to go public. We believe Uber is a great candidate for an IPO considering that it operates on a combination of smartphone technology, real-time results and engineering and a concept that is set to flourish in the next few years, changing the transportation industry (Ajmal, 2018).

Uber - 2017 Weekly Change in U.S. Market Share



Weekly changes for Uber in the U.S. market share in the year 2017. Source: [Second Measure](#)

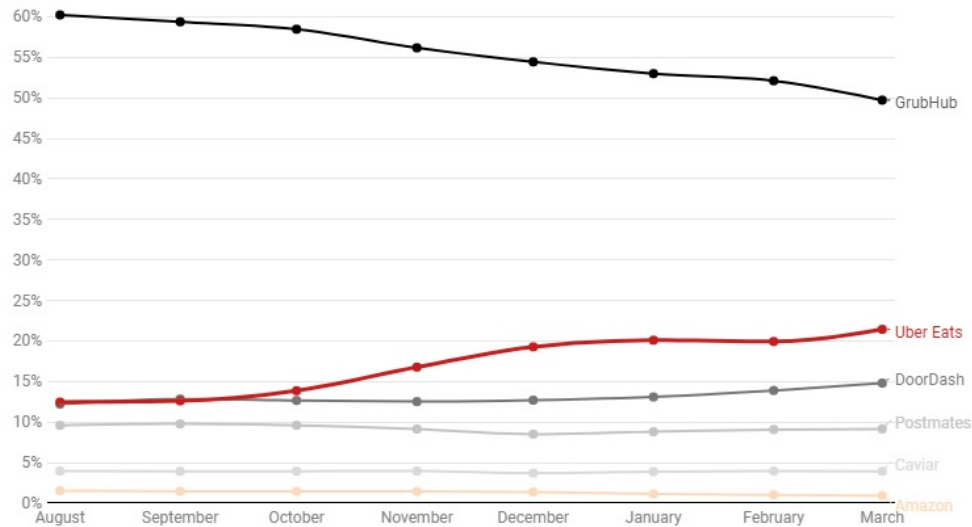
Products and Services

Access to rides, on demand - Uber's main source of revenue is its ridesharing platform giving rides and drivers the power to get where they want to go. The app is designed to have clear navigation options and cashless payments using real-time technology. Uber currently has over 75 million riders and 3 million drivers and have completed a total of 10 billion (and counting) trips worldwide.

In a survey conducted by Statista that determined the frequency of Uber usage in the U.S. in 2016, about 25% of users stated that they use Uber at least once per month.

Uber Eats - Restaurants that partner with Uber Eats can now have their food delivered to customers by Uber. Uber hires drivers to help deliver customer's foods depending on your city. Uber Eats was initially launched in August 2014 and has since then partnered with over 46,000 restaurants around the world. Currently, it is known to be available in 250 cities across the world. GrubHub is the current leading market share in food delivery, however, Uber Eats is gaining ground.

Uber Eats is known to make a real impact on any restaurant business. When a certain restaurant's food is featured in the app, new customers can discover it and loyal customers can enjoy it more often. Delivery partners that use the Uber app can deliver their food faster, maintain the best possible food quality and thus resulting in high customer satisfaction.



Eat24 data for Aug.–Oct. 2017 is combined with GrubHub. Postmates data may be slightly overrepresented due to other delivery types.
Source: [Second Measure](#) • Created with [Datawrapper](#)

Uber Eats market share in the US. Source: [BusinessOfApps](#)

Uber Freight - Uber freight is a free app that matches carriers with their shippers. Shippers tap a button to instantly book the loads they wish to haul. Due to upfront pricing, carriers will always know how much they will get paid for their service. This platform was built in close collaboration with shippers to help change the process that often takes them hours or leaves them in the dark about market prices.

UBER FREIGHT

[DASHBOARD](#)
[CREATE SHIPMENT](#)

Hello, Jake

Good Morning

American Southwest Packing Corp.

SHIPMENT STATUS

ALL

13 IN-PROGRESS
2 UPCOMING
27 COMPLETED

Customer or UF Reference #

In-Progress 13

171239

In Transit

Aug 11 10:18 AM

WILLIAM FAMILY BEVERAGES

Colombus, OH

Aug 11 1:50 PM

FRESH SPRINGS, INC.

Chicago, IL

Aug 11 6:30 PM-9:00 PM

764123

Driver Assigned

Aug 22 5:27 PM

BLUE PEAK ROOFING

Louisville, KY

Aug 24 5:00 AM

RAY GREY CONSTRUCTION

Houston, TX

Aug 26 10:00 AM

123376

Driver Assigned

Aug 23 9:04 AM

DESIGN JAR PLASTICS

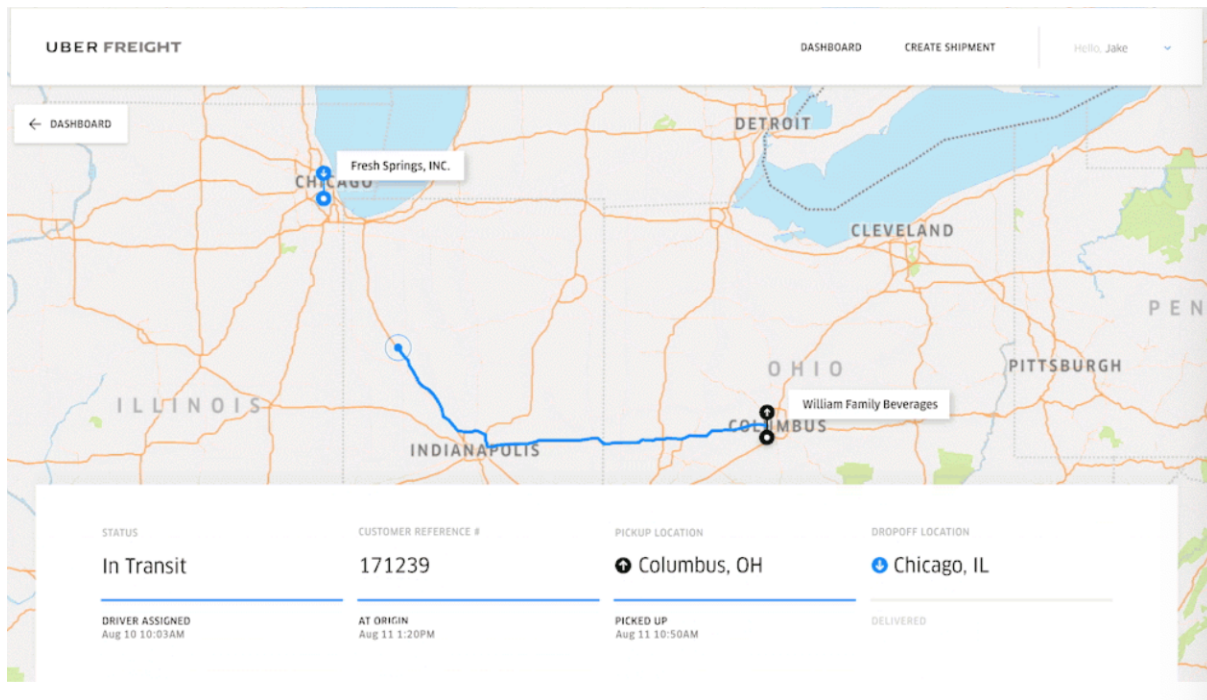
Atlanta, GA

Aug 25 10:00 AM-11:00 AM

FOURTHCROWN DISTRIBUTION

Dallas, TX

Aug 26 8:00 AM

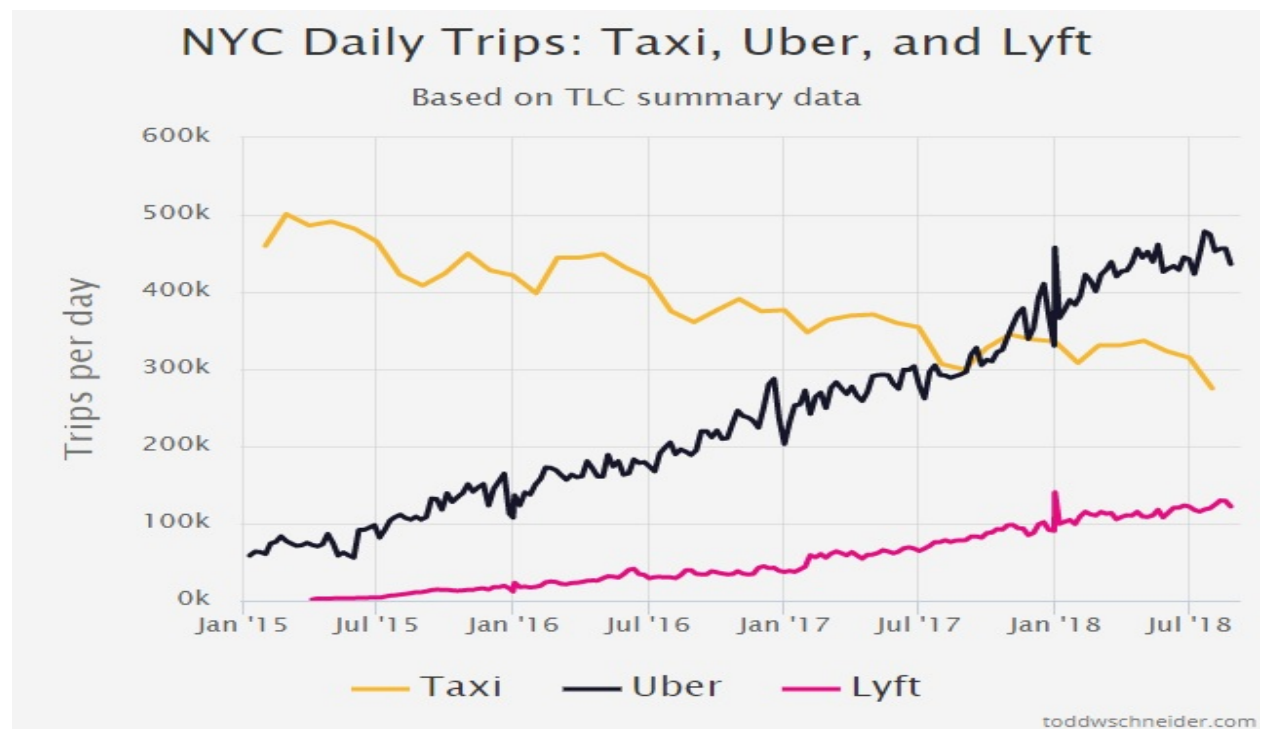


Uber Freight showing real-time tracking. Source: [Uber](#)

Competitors and the Market Place for Rideshare App

Growth and Success of Uber

Over the past few years we have seen a constant growth in the usage of ride sharing apps. There are many reason why people have leaned towards such mode of transportation and why the marketplace for such transaction has so far been effective. These rideshare apps have introduced many features that make them more convenient to users versus the traditional transportation methods that were existent for so many year before. Statistics over recent years show that more and more people are getting in the habit of using the likes of Uber and Lyft rather than taxis. For instance, On September 2017 Uber surpassed taxis as the most used mode of private transportation in New York. This was very significant because it was the state where taxis were very popular and brought distinguishing character to the city more than others. (Iqbal, 2019) This NY report can be seen as an example of how Uber and other rideshare options are taking over and becoming more popular that taxis. A most recent data in 2018 also shows that Uber had 436,000 rides per day whereas Taxis were 275,000. It can be seen that Uber has built a large number of customers since it first began its business.



Daily trips made in New York City from January 2015 to July 2018. Source: [Todd W. Schneider](http://toddwschneider.com)

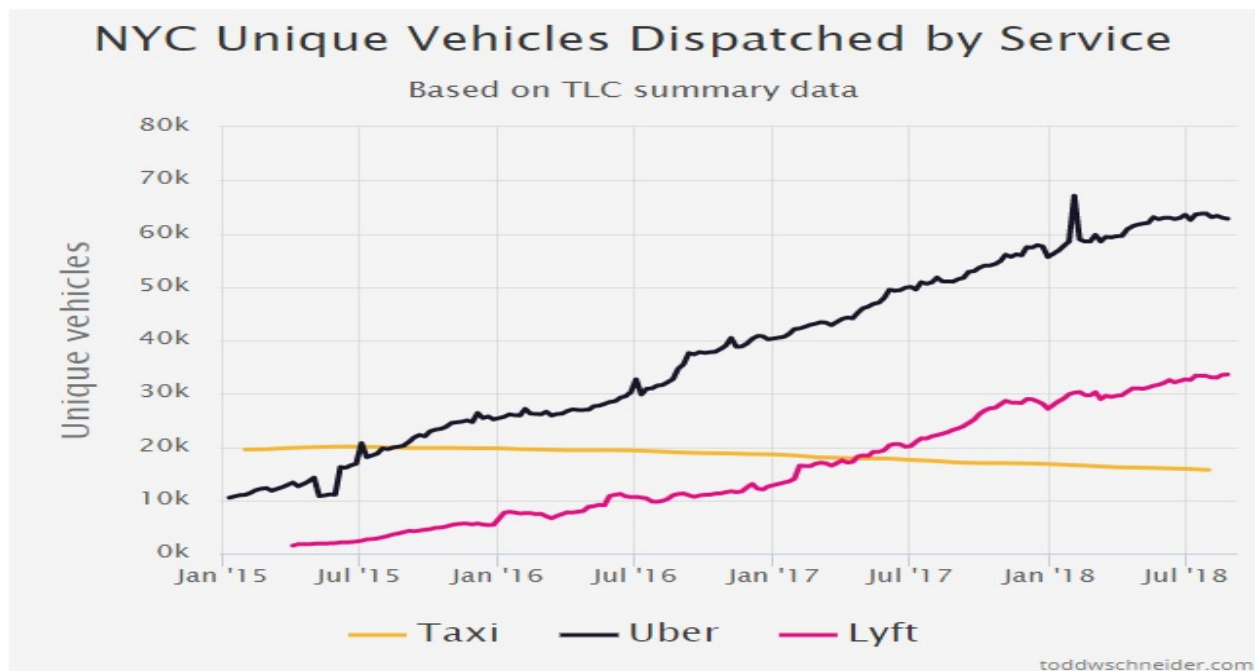
Uber's Popularity

Some of the reasons for the fast growth of Uber and other rideshare apps are as follows. Uber had an advantage because it was the earliest to arrive to the market and was initially only competing with usual mode of transportations. This gives Uber an advantage over the other rideshare companies as well and is why it has the highest number of customer base. These companies gave the customer options and convenience that the traditional way could not

accommodate to. When the idea for Uber was first introduced, it introduced a very exciting and useful application that can be applied in day to day life and benefit many potential users. The application was made user friendly which coincided with the current technology and also applied the usage of GPS. It had very little marketing when it was started and based it mostly on good reviews and customers passing on the information to bring in more customers.

Uber also begun in one city rather than all at ones which gave the company a clear market analysis, expectations and what path to follow for the future. Customers could call a ride without going outside, the ride gives an estimate of the price and arrival time which in time started to appeal to many more people. One could also be in the middle of nowhere and if they had access to the internet, they could easily order a ride.

The Payment option was much simpler with a customer putting in their card information for access anytime and call for a ride. But above all, the company does not own cars, they all belong to the drivers, who are contracted with Uber and receive a share of the ride while Uber takes care of customer connectedness and location analysis. Because of this they were different from taxis, people could work any time they want and while doing other jobs as well. Through time statistics show that more Uber drivers are available compared to taxi drivers. Related to the above example for New York we can also see that in August 2018, it was recorded that 63000 Uber cars were available, 34000 for Lyft and 16000 for yellow cabs (Iqbal, 2019). This will not be a completely accurate representation because some Uber drivers may also be Lyft drivers. Even so, compared to taxis, more people are now using Uber, Lyft and other rideshare transportations. They are continuing to expand and grow constantly because of the value they have brought to the daily lives of people. Many people consider it to be economically affordable, easily accessed and pertaining to customer needs. Customers can also participate to rate the drivers which allows for a more customer oriented business and services.

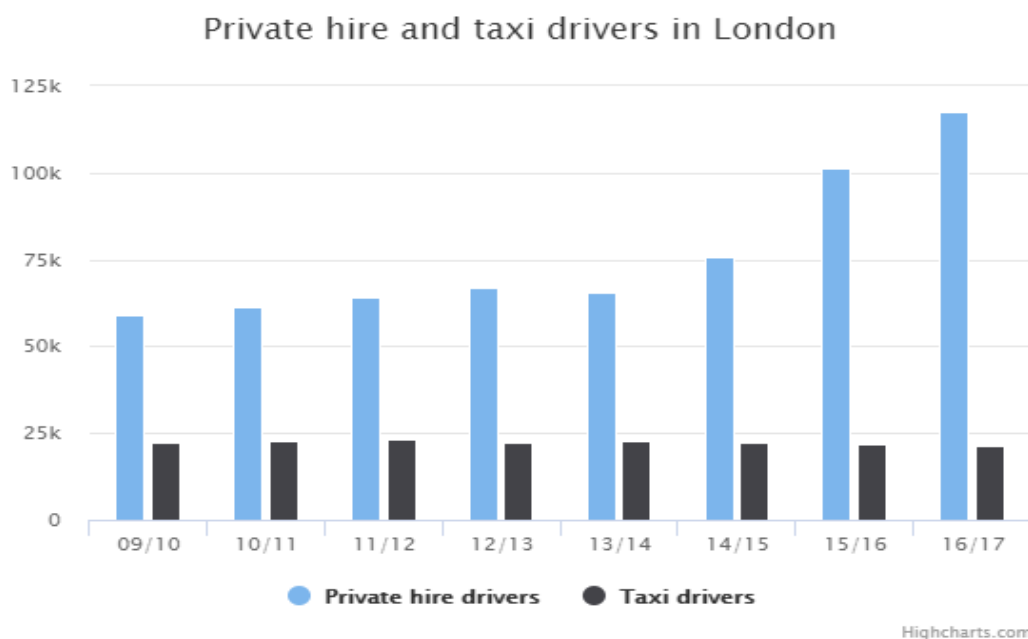


Uber vs. Taxis vs. Lyft – Number of Vehicles in fleet in New York. Source: [Todd W. Schneider](#)

Market Share in the World

After its much success and recognition in the US, Uber has been targeting different countries, mostly with large cities to grow and solidify the business around the world. With some places, it can be seen that it is growing and being accepted much like in America and with some places, it has faced difficulties. These difficulties can either be due to various country regulations that limit the business or the acceptance of rideshare app by the people, taxi drivers mostly. In Europe, regulations and resistance has held back the success and Uber is still fighting to make its presence in these cities. In some countries, like Russia for example, Uber chose to merge with another rideshare company to bring optimum business benefits.

It is also different for Uber in other countries because the business is not the same as when it started in the US. Uber now has more competitor companies striving to dominate the market where they can and a place where a rideshare platform is nonexistent is the perfect place for most. It is, however, also becoming successful in some cities even if the market is not as big as it is in the US. In London, statistics show that the number of private hire cars has significantly increased from the time Uber was introduced to most recent note date. The private hire car includes cars beyond Uber, but it is useful in this case because the number has shown more growth after Uber was introduced to the city. What is different for the city London is that the number of taxis have indeed decreased in the same amount of time, however, the decrease is not as significant as it was in the US and affected the taxi market less than it did here (Iqbal, 2019).



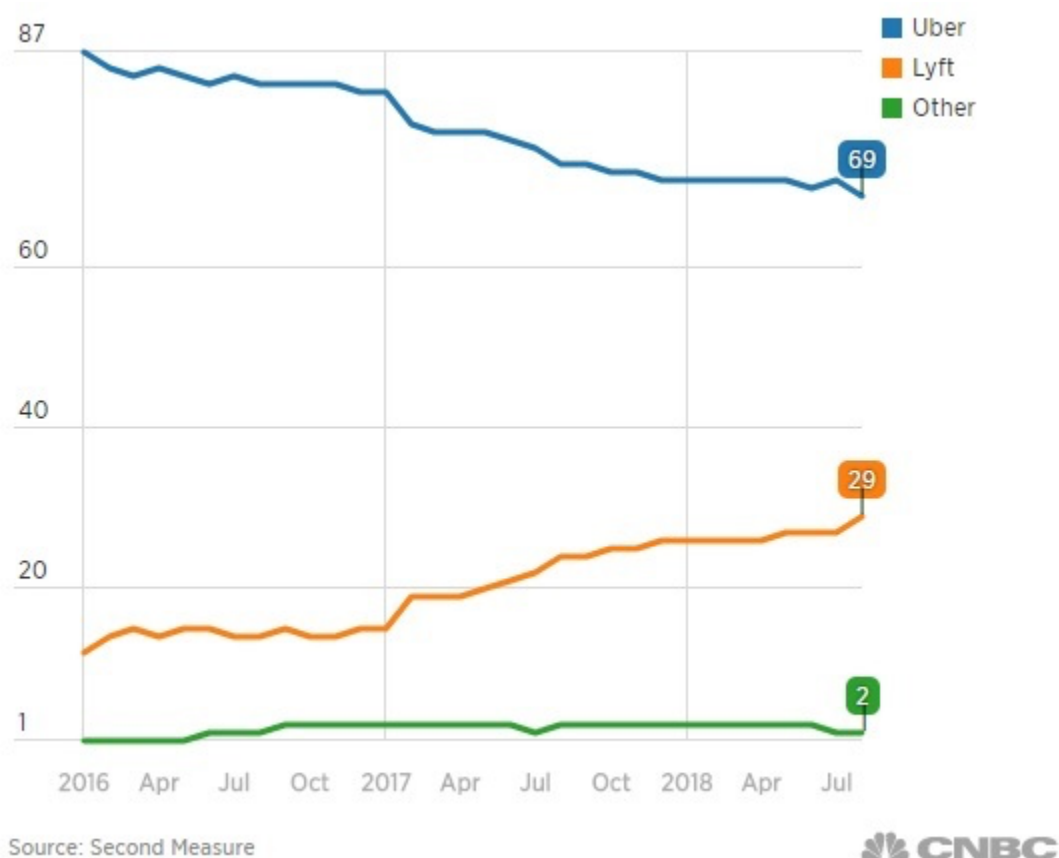
Graph showing private hire vs. taxi licenses in London. Source: [The Telegraph](#)

Uber is aiming to grow and expand despite some of the challenges presented around the world. In some countries, it is through a merger with a similar company and in others it might be by pushing against the resistances and regulations being put in front of.

Competition Within Rideshare Companies

Uber vs. Lyft vs. Grab vs. Didi

As stated earlier, Uber was the first company to launch ride sharing app which has significantly given it advantage over other similar companies. When other companies came out with similar apps following Uber's growth and recognition, they presented various challenges to the industry and gave customers more options to choose from. Some of the main competitors that we will look at here include Lyft, Grab and Didi. Lyft is mainly present in the US and is top competition for Uber in the states. There are other ride share apps as well in the US such as Via but the two main ones people use most often are Uber and Lyft. Uber still controls the majority of the market share, however, Lyft has been growing fast and taking some of the market share from Uber. According one research, Uber now has 69% of the market share whereas Lyft has 29%. There are several statistics out there that present different number but Uber is still the dominant transportation choice in all.



Uber vs. Lyft market share. Source: [CNBC](#)

Grab and Didi are mainly present in the Southeast Asian and Chinese Market. These companies are the top choices for users in these countries rather than Uber, even though it has tried to penetrate the market. Uber sold its Chinese share to Didi, which can be an example of the presence of these to rideshare companies in Asia and how Uber has faced many challenges to capitalize on the market (Carson, 2018).

Key Performance Indicators

Ridesharing companies such as Uber have multiple key performance indicators (KPIs) that need to be focused on. Those KPIs can be categorized and are related to three parties: drivers, passengers, and platform. Some KPIs are specifically related to only one party, while other KPIs are important for two or more parties. A list of KPIs and their significance are in the table below.

<u>KPIs</u>	<u>Description</u>	<u>Range</u>
Driver profit	How much drivers earn (revenue minus cost) per hour	Average \$8.55 ¹
Trip cost	How much passenger needs to pay for one trip	Average \$24.22 + \$4.03 tip ²
Driver rating	Score that users rate the driver	From 1 to 5
Passenger rating	Score that drivers rate the passenger	From 1 to 5
Cancellation rate	What percentage of the booked trips was canceled	Varied by Drivers
Wait time	Time that a passenger has to wait to book a ride	2 minutes for UberPOOL
Pick up time	Time that a passenger has to wait for the driver to pick up	About 16% of the time ³
Trip time	Time that a passenger is on the way to destination	About 50% of the time ³
Driver idle time	Time that a driver remains idle	About 35% of the time ³
Drivers density	Number of drivers in one area	Varied by area
Surge price	Fare cost when demand is high	Varied by trip

Normal price	Fare cost when demand is normal	Varied by trip
Weekly active rider to driver ratio	# of Riders weekly / # of driver weekly	11-13 riders to every driver
Average seats occupied	The average # of people taking the same Uber car	Varied by trip
Multiple TNPs percentage	The percentage of drivers who use multiple ride sharing platforms	About 13%

¹ Based on a report from MIT in May 2018

(<https://www.theguardian.com/technology/2018/mar/01/uber-lyft-driver-wages-median-report>).

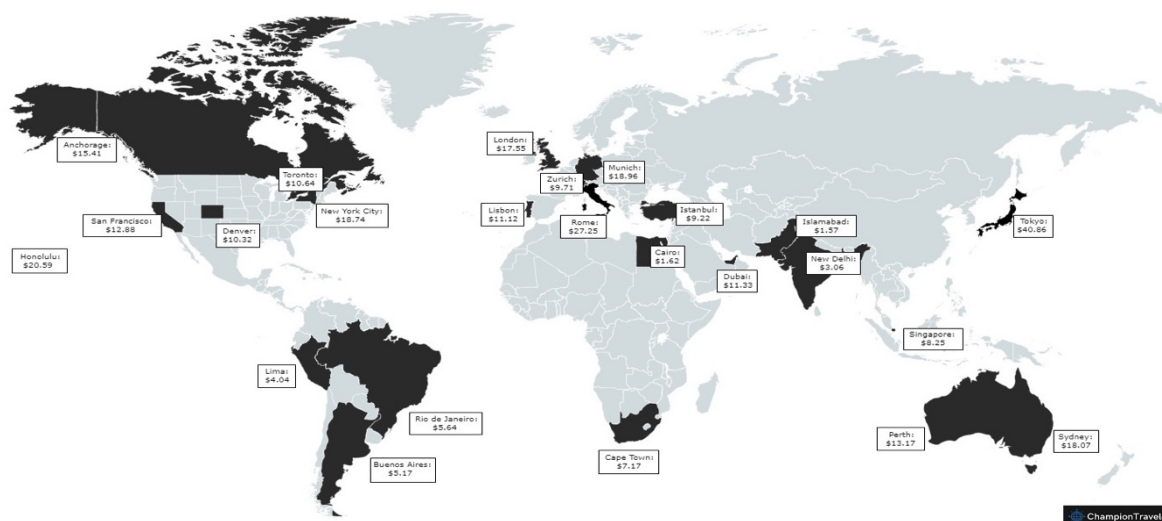
² Based on business trips on Uber in 2018 Q1 (<https://www.certify.com/Certify-SpendSmart-Report-Story-Infographic-Q1-2018.aspx>).

³ Based on Uber trips in NYC in September 2014

A lot of KPIs are interrelated. For example, a driver's wage is based on trip cost that is affected by surge/normal price, drivers density, trip time, and so on. Some KPIs are specific related to drivers or passengers, such as ratings and cancellation. On the other hand, majority of the KPIs are important to Uber as a platform and could indicate the efficiency of its business model and algorithm. Uber must do its best to improve its algorithm to improve KPIs such as wait time, travel time, and idle time.

Trip Cost

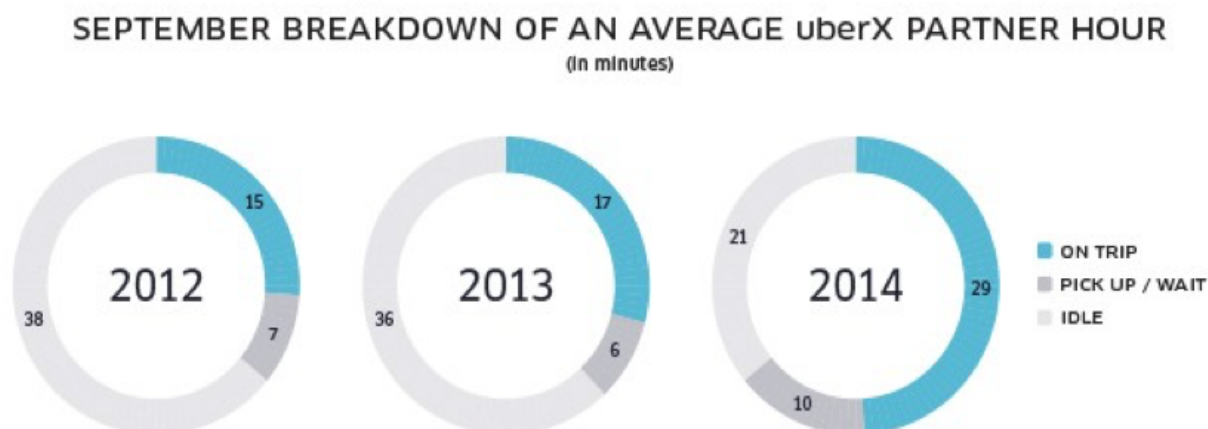
The cost of a 10km (6.2 mile) Uber in different cities around the world



Source: [Champion Traveller](#)

From the graph above, we can see that trip cost for Uber varies greatly from region to region. In developed world, people in Rome or Honolulu can expect to pay a lot more than Toronto or Zurich. The cheapest Ubers are available in the developing world, in cities such as Islamabad and Cairo, where the trip can be made for under \$2. There is one outlier: Tokyo. The reason why its trip cost per 10 km figure is \$40.86 is because the level of service available being limited to the premium UberBLACK. The trip cost could also be applied to drivers' earnings, as the higher the trip cost, the higher the drivers' earnings.

Uber Efficiency



The graph above is Uber drivers' time spent comparison in September for three consecutive years for the trips in NYC. To make Uber more efficient, Uber needs to maximize the trip time and minimize other time for drivers. From the graph, we can see that the algorithm was actually improving from 2012 to 2014.

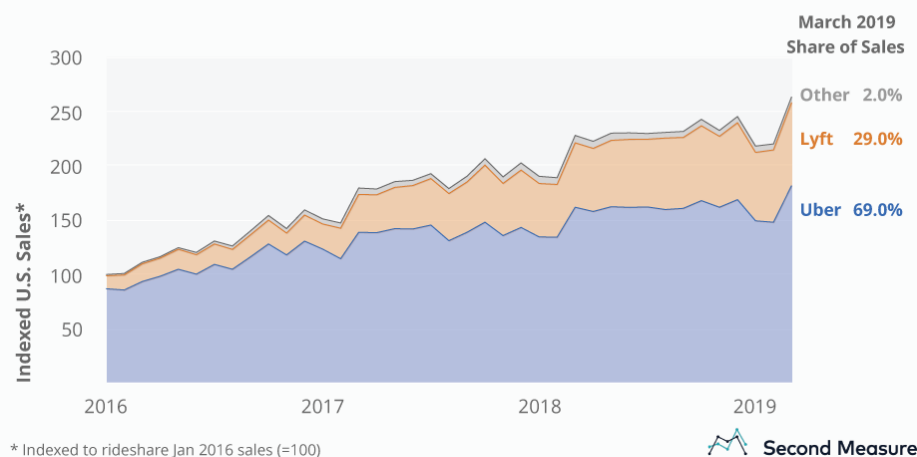
Another important factor that improves Uber's efficiency is the introduction of UberPOOL (currently combined with UberPOOL Express). UberPOOL has lowered the price for the rider and importantly added another dimension to utilization: seats occupied in a car in addition to minutes on trip. It helps the driver to make more money on the trip as well, since more people are paying. In addition, the UberPOOL Express lets drivers to pick up and drop off at a certain distance away from the destination, which allows the drivers to take more efficient routes and reduces the drivers pick up/wait time. Lastly, UberPOOL also helps improve the weekly active rider to driver ratio, because more riders are willing to take Uber for its reduced price.

Financial Report

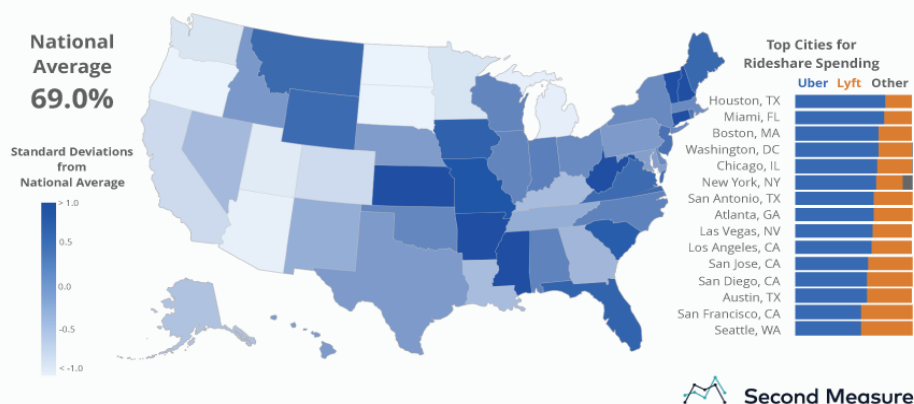
Past Performances for Uber and Lyft

As mentioned earlier Uber still has the lead on the US market compared with Lyft. But recent reports also show that Lyft is growing faster than Uber. The 69% to 29% show a 3% growth for Lyft compared to the previous year in 2017 of the same analysis. Monthly sales analysis of rides also show that Lyft has constantly been growing and sharing the US Market with Uber. There are also some states where Lyft is significantly performing better than Uber, and though many rideshare companies have been introduced, most sales and rides are still between Uber and Lyft. Seattle is one of the cities Lyft has a larger market share and is continually growing and bringing in more customers. Many users now alternate between the two apps to find themselves a ride with the optimum benefit. These users who utilize both apps are also said request more rides than people who only have one rideshare app profile. Since Uber is still dominant, most, even the ones that have both apps, seem to spend more on Uber which means Uber received more ride requests than Lyft. In 2018, \$451 was the average spending of a regular user with 52% accounted for Uber sales.

Rideshare - Monthly Sales



Uber - March 2019 Share of Rideshare Sales

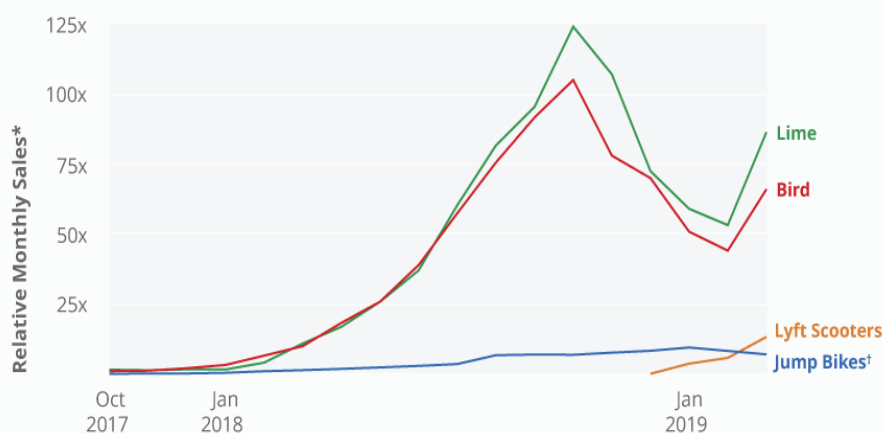


Revenue and Future Expectations

Both companies are constantly growing and expanding which means their revenue is continually growing. Revenue analysis for Uber showed that the growth has been slowing down and they also have incurred a consistent loss that is reflecting on the business. It is constantly trying to find a new avenue for profit, its food delivery, electric bike and many more example of ventures Uber is following to increase its revenue model and Thus increase profit. These investments, while are good introductions, did not match the budget spent on them. Uber had a revenue of 11.4 billion dollars, which shows they control the largest share of the market, however, the growth has been slow especially when compared with past performance. This will likely not affect the company in the short while since Uber has become a consistent economy and large number of investors still see potential in the technology and advantages it can bring (Newcomer, 2019).

On the other hand, it is reported that Lyft's revenue doubled in 2018 to reach 2.2 billion dollars which is a large growth compared to 343.3 million in 2016 (Carson, 2019). The main part of this increase comes from its increasing popularity and the market gain from Uber customers who might have come to prefer Lyft for several reasons. Much like Uber it is also facing a growth in losses which can have a long term effect in the future. Though there are several challenges cited that could affect both Uber and Lyft with proper approach, data collection and interpretations of the market demand, they have potential to keep growing and expand to include more users and a wider customer base. Both have now also started to invest in bikeshare and scooter business as part of the expansion forum for rideshare. Other competitors are more prominent in these businesses but they are pushing to make their mark on bikes and scooters as well. Uber acquired jump bikes in March 2019 but Lyft was first to introduce scooters. These are still growing and usually sales is highly affected depending on the season (Gessner, 2019). However the true aspirations of these companies in the near future is to develop a driverless ride service. There have been many difficulties in trying to pursue and implement this plan but, both companies are still moving forward and trying to get it right. If this is what the future holds for rideshare platforms, with all the technology and advancement, they will be looking at higher revenue and return on investment.

Dockless Bikes and Scooters - Sales Growth



* Indexed to Bird Oct 2017 sales (=1x)

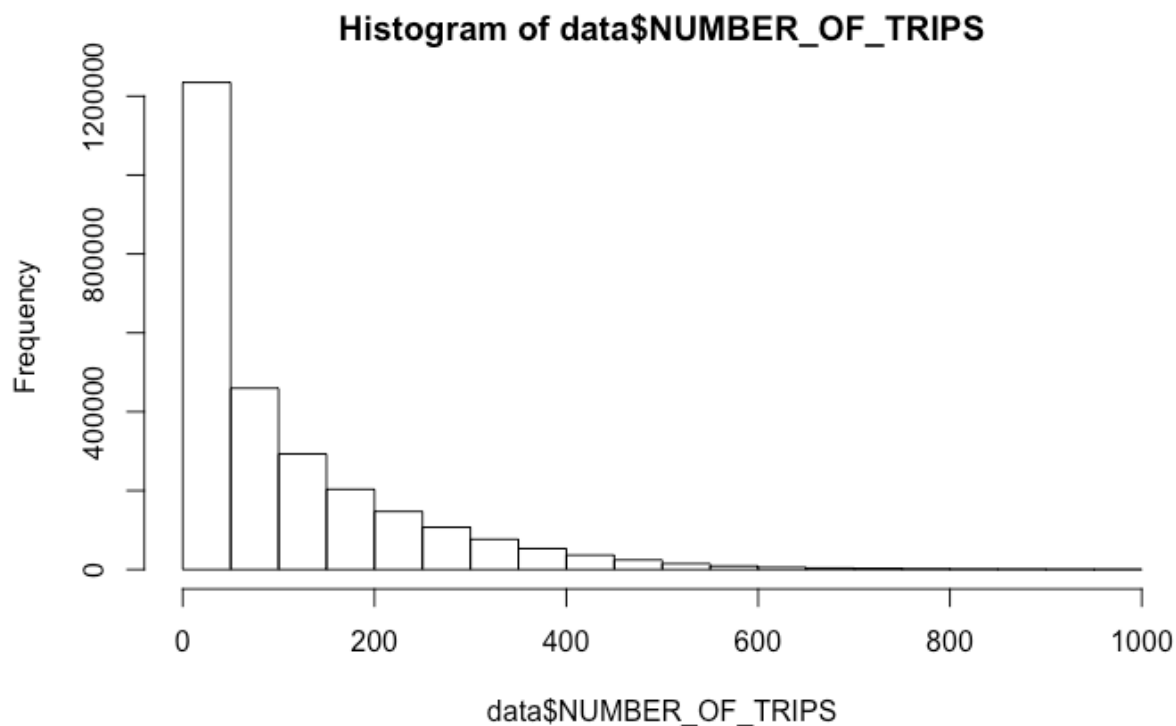
[†] In March 2019, some jump transactions made via the Uber app could not be captured.

Second Measure

Ride Sharing Analysis

We are able to get our hands on ride sharing data collected and published by City of Chicago. The data contains three datasets related to transportation network providers (TNPs, aka ride sharing companies): Vehicles, Drivers, and Trips. The data was collected from November 2018 to April 2019. We believe that through these datasets we are able to analysis and get a big picture of how Uber operates and give recommendations to Uber's strategies.

Number of Trips by Drivers



Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
1.0	17.0	60.0	107.5	155.0	999.0

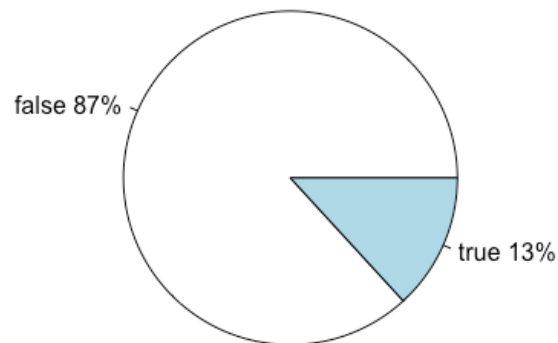
The above graph is the histogram of number of trips by drivers. The x-axis represents the total number of trips completed in a month, and the y-axis represents the number of drivers. We can see that the histogram is heavily skewed, where most drivers only completed less than 50 trips per month. However, there are also a lot of drivers who completed more than a few hundred trips. Due to the source of the data, any driver who completed more than 999 trips are converted to null and won't be included in the analysis.

From the summary on number of trips, we can see the median number of trips by drivers is 60. Because of the skewness that some drivers completed a lot more trips than average drivers, the mean is 107.5 which is higher than the median.

Multiple TNPs

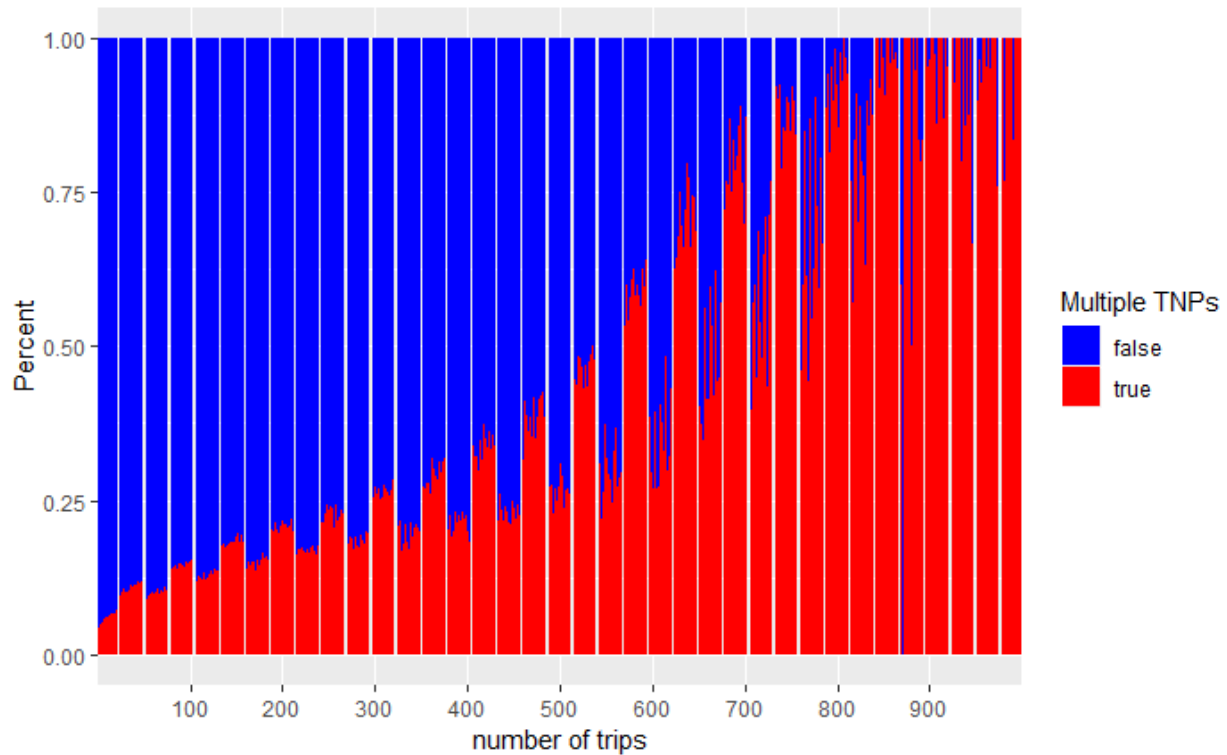
Multiple TNPs means that the vehicle was reported by multiple ridesharing companies in this month. So, if the vehicle has multiple TNPs, the vehicle has been running on different platforms at the same time, which is common practice for some Uber drivers to maximize their income and trips. The matching was imperfect according to data source, but it could still give us a big picture.

Pie chart of multiple TNPs



false	true
2324117	352961

From the above pie chart, we can see that about 13% of the drivers use more than one ride sharing platform. The number doesn't surprise me but it is actually a bit too high for Uber. As a ride sharing company, Uber always wants to have loyal drivers who will only use its platform. But 13% of its driver also drive on other platforms such as Lyft. We don't have the data on the passenger's side, but we can reasonably assume that the number will only be higher for passengers. In order to improve user's loyalty including drivers' and passengers', Uber need to do more to retain its users, develop platform loyalty, and decrease multiple TNPs by providing better services and pricing.

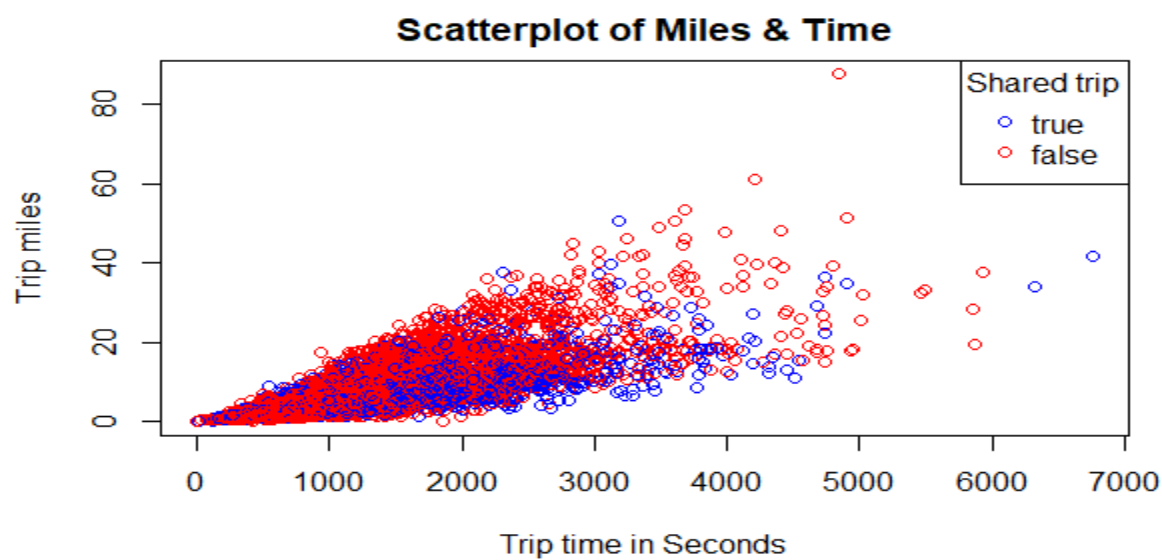


The overlay bar chart shows that the percentage of multiple TNPs increases as the number of trips increases. It is reasonable to think that using multiple ride sharing platforms, the driver can capture more customers, which in turns increase the number of trips. However, in some cases, the driver who have done hundreds of trips only uses one platform. These drivers are loyal to that platform and need to be studied so that it can be applied to more drivers. Uber can make effort to decrease its multiple TNPs percentage by retaining more drivers who do more trips and encourage them to only use Uber as the ride sharing platform. For example, keeping drivers busy and decreasing idle time would definitely improve multiple TNPs percentage.

Trips

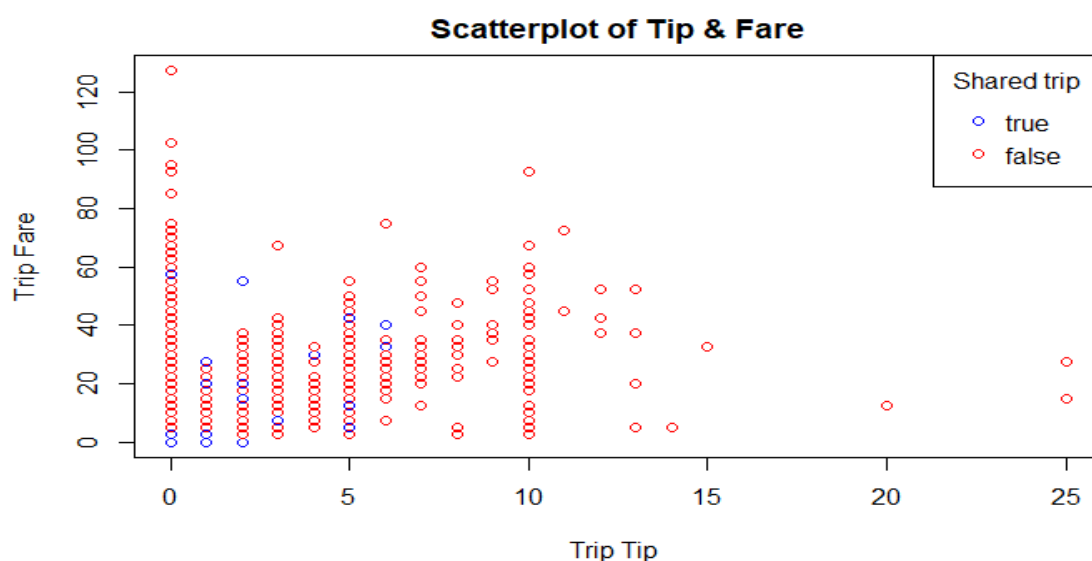
Because the trips dataset is massive and includes more than 17.4 million observations, it is not optimal to analyze the entire dataset. Thus, we only randomly selected 10 thousand observations to analyze. We believe the shortened version of the data can still give us insights.

Trip Time



From the scatterplot above, we can see that the longer the trip length, the longer the trip time. In addition, whether it is a shared trip has impact on the trip time. As we can see that non-shared trips (red dots) dominated the shared trips (blue dots) at the upper space, meaning non-shared trips can travel further than the shared trips, given the same time. The result is expected, because the shared trips usually need to make more stops picking up or dropping off passengers, which result more time spent on the trip. On the other hand, we can interpret from the graph that for shared trips, picking up or dropping off other passengers would not have too much impact on the passengers' experience, because the majority of the blue dots are mixed in with the red dots.

Trip Cost

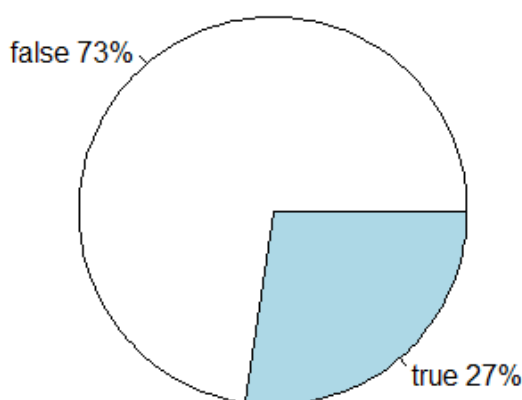


Because of the data source, trip fares and tips are rounded into nearest \$2.50 and \$1.00. From the above scatterplot, we can see that trip fares and trip tips don't have too much correlation. It indicates that the amount of fare has little influence on tip. However, we do notice that most

passengers do not tip their drivers, and tips are under \$10 in general. In addition, passengers on shared trips will give less tips than non-shared trips. Low amount of tips is an issue for drivers, because they generally are not compensated by their services. Uber will have the opportunity to act on it to increase the drivers' loyalty. For example, Uber can introduce a new policy to make tips mandatory for certain trips that have higher trip fares.

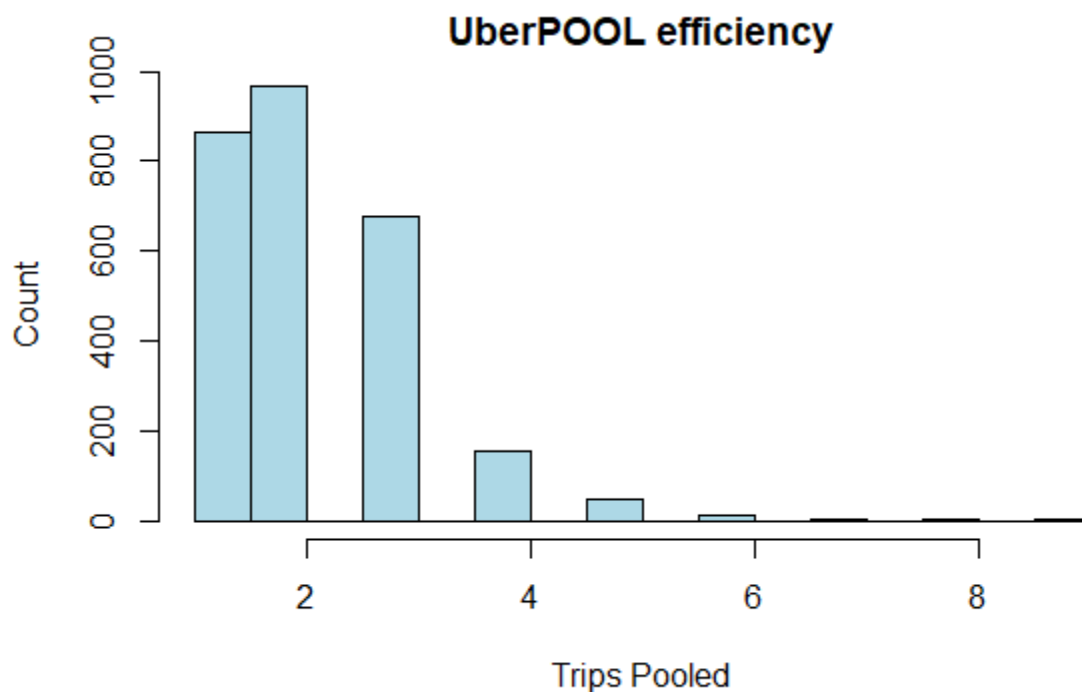
UberPOOL efficiency

Pie chart of UberPool



false	true
7263	2737

From the graph above, we can see that only 27% of the passengers choose UberPool over UberX. The number definitely has room to improve. Though UberPool is not as private as and a bit slower than UberX, UberPool has a lot of benefits such as reduced fare and relieve traffic congestion. Drivers can also earn more income on UberPool than UberX ($\leq 2x$) as more passengers on the same car will pay fares. Uber should take actions to encourage riders to choose UberPool.



Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
1.000	1.000	2.000	2.142	3.000	9.000

The definition of Trips Pooled is that “if customers were matched for a shared trip, how many trips, including this one, were pooled. All customer trips from the time the vehicle was empty until it was empty again contribute to this count, even if some customers were never present in the vehicle at the same time.” So, we determine this column is perfect for analyzing how efficient UberPool is, because UberPool aims to pool as many trips together as possible. Many trips without UberPool will have trips pooled count as one, so we have filtered the trips that only include UberPool. From the graph above, we can see the UberPool is not efficient, since the majority of the trips pooled are only one or two. That being said, most of the time when a passenger order an UberPool, he/she will ride alone or have only one other passenger joins the trip. It is certainly not optimal for Uber. However, we also have to consider that many other factors will affect trips pooled. For example, the locations, time, traffic, and route selection. Uber needs to take all the factors into account and improve its UberPool service to make it more efficient.

Recommendation

From the previous analysis, we can make recommendations to Uber in four aspects: drivers, passengers, platform and pricing.

Drivers

- Increase royalty:
From our analysis, we now understand that though the percentage of multiple TNPs is only 13%, drivers who have finished more than hundreds of trips are more likely to use multiple ride sharing platforms. Uber should focus on increasing its drivers' loyalty by studying those drivers who only use one platform, and apply them to other drivers. One of the best practices is to decrease idle time for drivers, and keep drivers busy. In this way, drivers will find it hard to switch to other ride sharing platforms.
- Increase tips:
In general, passengers pay none or little tips to drivers, no matter how much the fare is. Thus, drivers usually are not properly compensated by their services. Uber should take action to improve this situation. For example, they could introduce a mandatory tips to certain long trips, or to all the trips and decrease fares like UberEats did.

Passengers

- The percentage of passengers using UberPool has a large room to grow. Uber should improve and promote UberPool to passengers so that drivers can earn more ($\leq 2x$ than UberX), save money for passengers, and relieve traffic congestions. However, we should also notice that UberPool generally takes more time than UberX when travelling the same distance. This is why Uber needs to continue improving its algorithm and decrease wait time and pickup time.

Platform

- We cannot stress enough about the importance of Uber's algorithm. Uber's entire services depend on its algorithm. That is why Uber needs to keep improving to have a more efficient algorithm to find the best route, decrease drivers' idle time, and increase UberPool's efficiency. In the future, Uber can combine Uber Eats and Uber Drive to make these into one service for drivers. In this way, drivers may be able to constantly drive on trips and become hooked on the Uber platform.

Pricing

- Uber can provide more transparency on their algorithm used to set surge prices. They can try finding an optimal market-clearing model and provide data on number and location of the drivers in real time.

Appendix 1

Uber Data from the City of Chicago

Transportation-Network-Providers-Vehicles:

<https://data.cityofchicago.org/Transportation/Transportation-Network-Providers-Vehicles/bc6b-sq4u>

Vehicles data variables used in analysis:

Data	Description
NUMBER_OF_TRIPS	Number of trips provided in this month. Due to the complexities of matching, errors are possible in both directions. Values over 999 are converted to null as suspected error values that interfere with easy data visualization
MULTIPLE_TNPS	Whether the vehicle was reported by multiple TNPs in this month

Transportation Network Providers - Trips

<https://data.cityofchicago.org/Transportation/Transportation-Network-Providers-Trips/m6dm-c72p>

Trips Data Variables used in Analysis

Data	Description
Trip seconds	Time of the trip in seconds.
Trip miles	Distance of trip in miles
Fare	The fare for the trip, rounded to the nearest \$2.50
Tip	The tip for the trip, rounded to the nearest \$1.00. Cash tips will not be recorded.
Shared Trip Authorized	Whether the customer agreed to a shared trip with another customer, regardless of whether the customer was actually matched for a shared trip
Trips Pooled	If customers were matched for a shared trip, how many trips, including this one, were pooled. All customer trips from the time the vehicle was empty until it was empty again contribute to this count, even if some customers were never present in the vehicle at the same time. Each trip making up the overall shared trip will have a separate record in this dataset, with the same value in this column

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