



Transportation Network Companies: What does the Future Hold?

June 1, 2016

Matthew L. Kessler

Graduate Research Assistant, MSES Candidate in Transportation
University of South Florida

Yu Zhang, Ph.D., Advising Professor,

Associate Professor, Department of Civil & Environmental Engineering
University of South Florida

Abstract

Peer-to-peer shared mobility has gained momentum as part of the latest cluster of developments in transportation. A technical marvel known as a mobile phone application or “app” arranges a ride or introduces a rider with a driver “sharing” his or her private vehicle. This is conveniently ordered by tapping your cell phone and, within minutes or seconds, not only is the chore of setting up transportation achieved, but so is compensation for the trip. This paper explores why this is so significant, using Uber as an example.

Uber clutched the concept of peer-to-peer ride hailing and created a multi-billion dollar commercial enterprise. It subsequently underwent rapid growth within a very short amount of time. Since its establishment, other comparable companies have sprung from the same idea or something very close to it. At present, there are at least a dozen companies to rival Uber. However, even with all the competition, Uber is the largest in terms of the variety of services available, where it operates, and market valuation. Uber is available in 58 countries and over 400 cities, with a market valuation speculated as high as \$70 billion. Uber’s story of success did not happen without controversy. Regardless, Uber is now on everyone’s radar—regulators, academia and those who need to get to their destination.

This paper aims to focus on Uber’s business model, and describe it relative to other types of transportation services. This paper addresses the business model’s fundamental advantages and disadvantages, the variety of controversies surrounding it, and offers some predictions and concluding remarks.

Disclaimer:

The opinions, and assumptions, expressed in this research paper are solely those of the author and were deliberately created to elicit consideration and contemplation. They do not reflect the policy positions of the Center for Urban Transportation Research (CUTR) nor of any other entity. The TNCs discussed, throughout, are not clients of CUTR and no compensation was solicited in the composition of this document.

Email: MLKessler@cutr.usf.edu

Introduction

In a little over a century, we have come to witness various technological changes that have transformed the transportation industry. From horse-drawn carriages to high speed rail to the present day testing of autonomous vehicles, these advances have revolutionized the way people and goods get from Point A to Point B.

We also observed, within the last quarter century, how high tech developments like the portable wireless phone progressed into a “smartphone”. Unlike past models, today’s phones are small enough to be placed into a shirt or pant pocket. Within the past decade, recent high-tech advances quickly altered the transportation industry as a result of the invention of the mobile phone application, or “app”. An app is a type of software designed to perform a specific purpose on personal electronic devices, such as a smartphone or some other similar device.

Most cell phones are either already pre-programmed with apps, and many more can be selected and purchased from a multitude of vendors. These types of devices “help users...from turn-by-turn driving directions to assistance with public transit” (Smith, 2015). For example, a smartphone owner can download apps such as Google Maps, a trip planner, and a real time bus locator.

Currently, statistics indicate 64% of all American adults own a smartphone (Smith, 2015). Statistics such as these mean that the United States consumer has come to accept the smartphone, is comfortable with its features, and may know how to utilize its amenities. Companies have developed a multitude of apps, some with transportation in mind, which allow potential customers to get to their destinations quicker and, in many cases, cost-effectively. Two examples of such apps are provided by Lyft and Uber.

Three firms, Bla Bla Car, TaxiMagic, and Mytaxi claim to be the first to create and put into service an app similar to Uber.¹ But Uber grew rapidly within a short period of time. The innovation behind the concept is fairly simple: a mobile app acts as an intermediary arranging transportation service between consumers and a Driver who happens to be in the immediate vicinity, operating his or her own private not-for-hire automobile. The Driver is not necessarily a direct company employee or even a full-time professional.

Some of the more established well-known apps are Lyft, Wingz, Summon, Taxify, Haxi, Didi Kuaidi, InstantCab, Grabtaxi, Ola, Mytaxi and Sidecar.² However, from all of these, Uber is the largest in terms of market value and the number of cities where it offers service.

Questions arise about the Uber business model. Academics and government authorities are researching and discussing how to classify firms like Uber and what conditions require regulations. To illustrate, Uber claims to be a software firm that hires independent contractors in lieu of full-time employees. Yet others claim that Uber should be considered a transportation network company (TNC) that hires and directly manages full-time employees. The distinction is important as it relates to liability, taxation, and worker benefits.

Distinguishing TNCs from Ridesharing

Also referred to as ridesourcing, transportation network companies are different from ridesharing. According to Anderson et al., ridesharing “...entails the participation of one or more riders (peer consumers) who, together with a driver (peer provider)...typically [share] a car [or ride], when travelling

¹ Originally called RideCharge, TaxiMagic is now known as Curb.

² Sidecar terminated revenue service in 2015.

from start points to destinations. To accomplish this, peer providers together with peer consumers agree on various aspects before or throughout the service performance; e.g., pick-up and drop-off points, waiting time, compensation, etc. A specialized type of peer-to-peer service sharing platform, [also referred to as] a ridesharing platform, facilitates this.” (Andersson, Hjalmarsson, & Avital, 2013) Examples include Zimride and NuRide.

Ridesharing “implies that at least two people (often counting the driver) are in the same car – possibly with multiple, but proximate, destinations – [for such reasons as] to conserve resources [and] or save money.” (Freed, 2015). Ridesourcing is “a [technological] platform used to “source” rides from a driver pool” (Rayle, Shaheen, Chan, Dai, & Cervero, 2014).³ Accordingly, they also distinguish that the driver is only involved in ridesourcing as a means to earn income as opposed to ridesharing where the driver is already traveling somewhere and volunteers to drive as part of an agreement made with passengers. Polzin defines a transportation network company as “a company that leverages smart phone apps to hail livery services. Sometimes referred to as e-hailing...Not ridesharing” (Polzin, 2016).

It was not until the State of California was compelled by political pressure to create the necessary legal mechanism that resolved most of the complaints of the taxi industry about companies like Uber. Effective July 1, 2015, the state legislature passed Assembly Bill 2293, which made Uber a lawful entity known as a Transportation Network Company or TNC and also requires it to retain liability insurance at certain thresholds with minimum amounts.

Uber—the Largest TNC

Uber was originally conceived in 2008, as UberCab, to resolve the “taxi problem” in the San Francisco Metropolitan Area (Hyder, 2014).⁴ The idea developed into a realistic and implementable transportation problem solving tool. Figure 1 illustrates a minimum of 20 firms having initiated e-hailing services.

Uber’s objective is to cultivate a for-profit enterprise. With their technological innovations, their highly emulated business model, and their estimated multi-billion dollar market cap, one awaits the moment when Uber or one of the other industry players announces the intent to begin trading shares. Present estimates for Uber, not yet on the stock market, indicate a valuation of approximately \$68 billion (Chen, 2015). Lyft, a slightly newer player and Uber’s chief rival, has been appraised at \$2.5 billion (Ronen, 2015). After a successful launch in San Francisco, Uber started expanding into both urban and rural areas.

Location can have a significant effect upon how a Global Positioning System (GPS) functions. This can be a considerable advantage for one TNC to have over another. For example, in Las Vegas, Lyft has better GPS technology over Uber. Drivers can zero in on the exact location of the customer where Uber cannot. Uber only has a general location feature which becomes a liability for all involved. The Driver cannot find the passenger and the passenger cannot locate the waiting vehicle. This could greatly inconvenience a rider forcing him/her to walk to an out-of-the-way rendezvous point (Kosoff, 2016).

³ Rayle, et al. employ the legal definition that is explained in further detail in the section entitled: Legal Status.

⁴ Uber’s founders were in a foreign country and it was during a snow storm where they could not “hail down” a taxi for themselves.

Nonetheless, what makes Uber so attractive is their ever expanding list of services to select from (TRB 319, 2015):

1. UberX (midsize car)
2. UberSUV (sport utility vehicle)
3. UberXL (larger SUV for larger groups)
4. Uber Black (black livery style limo or town-car level sedan)
5. UberLUX (luxury “high-end” cars, premium service and “highest-cost option”) (Uber Basics & Services – UberLUX, 2016)
6. UberTaxi (SUV with standard taxi-metered rates and fees with tips automatically added)
7. UberFamily (vehicle with car seats - incur an additional fee)
8. UberAssist (the driver can “assist” or help older or impaired passengers)
9. UberWAV (wheelchair-accessible vehicles)
10. UberPool (carpooling service limited to only 2 passengers)
11. UberEATS (formerly UberFresh – a food delivery service) (O’Brien, 2015)
12. UberPOP (a very low-cost ridesharing service employing small private cars primarily in Europe) (Jelinski, 2015)
13. UberChopper (helicopter service) (Amira, 2013)
14. UberRush (courier-style package delivery service) (Gross, D. 2014)
15. Corner Store (local delivery service) (Reisinger, 2014)
16. Uber Garage (think tank) (Rao, 2012)
17. UberBoat (water-taxi service) (Finkel, Courcoulas, 2015)

Uber manages over a million rides per day (Huet, *1 Million Rides*, 2014). Transit riders now have Uber as another option to reach their destination. The rise to success by Uber was accompanied by numerous controversies that perhaps enhanced their name recognition by government, media, Driver/Partners and passengers.

Advantages and Disadvantages of TNCs

The story of TNCs is not all negative, as TNCs have advantages and disadvantages, summarized in Figure 2 and explained further below.

Riders		Drivers	
Advantages	Disadvantages	Advantages	Disadvantages
<ul style="list-style-type: none"> • Time savings • Convenience • Cashless/paperless transactions • Communication • Safety and security • Driver/partner rating • Insurance coverage • Regulatory protection • Accessibility • Fare sharing 	<ul style="list-style-type: none"> • Less affordable than public transit • Origin/destination restrictions • Group rides may require individual accounts • No legal recourse • Discourages active transportation • Navigation apps require periodic updates 	<ul style="list-style-type: none"> • Income • Flexibility of hours • Multiple employers & opportunities • Can specify driving boundaries • Promotions • Rider rating • Networking • Customer support • Insurance • Reimbursement for property damage • Company pays traffic tickets • Training 	<ul style="list-style-type: none"> • Oversupply of drivers • Safety and security risks • Lack of customer service assistance • Tax liability

Figure 2: General Advantages and Disadvantages of TNCs Compared to Taxis and Public Transportation

Advantages from the Rider’s Viewpoint

What are the advantages, from the Rider’s viewpoint by employing or utilizing these types of services versus taxis and other modes of public transportation?

- a. **Time savings.** Time savings may be the main advantage. A vehicle can be at your service within minutes. This is often quicker than a taxi, commuter bus or rail system. Figure 3, below gives some idea of wait times.

KEY FINDINGS: WAIT TIMES

About how long did you wait for your ride (from the time you made the request to the time the vehicle arrived)?

Percentages of wait times less than or equal to 10 minutes:

Wait Times	Ridesourcing	Taxi (Phone)	Taxi (Street Hail)
M-F 4am-6pm	93%	35%	39%
M-F (6pm-4am)	92%	16%	33%
S-Su	88%	16%	25%

Figure 3

Source: Rayle, et al., 2014

- b. Convenience.** A major sales point for these firms is their dynamic capability to furnish almost instantaneous service. To illustrate, upon placing their request, there is an almost immediate reply by the app giving information, such as which driver is most proximate to the passenger, their name, and other identifying information, as well as an estimated fare. Furthermore, there is always seat availability. When compared and contrasted to your conventional modes of public transportation, seat availability is never guaranteed.
- c. Cashless/paperless transactions.** All the aforementioned firms require a valid credit, debit or other electronic form of payment ahead of a request. This method offsets the need for additional cash to be carried by the passenger. A receipt is electronically delivered to the passenger's email of preference, mitigating strewn and missing proof of payment, and saving trees, which positively affects the environment.
- d. Communication.** Passengers can communicate directly with the driver. Riders can follow the location of the Driver until boarding occurs. Doing so enhances coordination, if necessary.
- e. Safety.** Passengers employing Lyft have the additional benefit of knowing that their Drivers' vehicles must pass inspection. Riders will receive a picture of their selected Driver. Drivers are required to undergo a background investigation. Riders decrease their risk of causing drunk-driver related accidents when hiring Uber, Lyft, or other identical services as designated driver. All vehicles must be a newer model than a pre-established year.
- f. Driver/Partner rating.** Drivers are issued a report card in the form of ratings. Subject to the rating, Uber and Lyft have the power to sever all future ties or rides between a particular Driver and Rider. A Rider can submit a "rating" to a transit authority and taxi companies by filing a letter of praise or a formal complaint. The difference is at Uber, Lyft, and taxi companies, Drivers can be eventually terminated. At a transit authority, Drivers are usually union members and cannot be easily terminated.
- g. Insurance coverage.** Both Uber and Lyft furnish policies insuring customers from origin to destination.
- h. Regulatory protection.** Some state and local governments are beginning to regulate these companies, providing a level of protection for riders.

- i. **Accessibility.** Riders cannot be denied service to their intended destination, even if it is perceived as a high crime location. Taxis, at times, deny service upon learning the address from the passenger. Mass transit can only deny transportation for lack of payment.
- j. **Fare sharing.** If two or more people are riding together, some TNCs allow the fares to either be divided amongst them with their own separate, individual accounts or the rider who made the original arrangements can pay the entire fare.

Disadvantages from the Rider's Viewpoint

- a. **Less affordable than public transit.** From the perspective of a public transit patron, rides from TNCs are more expensive. Like mass transit and taxis, Uber and Lyft offer peak and off-peak prices. Peak prices, or high-in-demand fares are termed by Lyft and Uber; respectively, "prime time" or "surge pricing". Under prime time, Lyft imposes a limit on the multiple added to its normal fare. Uber's surge pricing charges are much more. Lyft's receipts are general; therefore, to receive details of your fare you have to submit an official request.
- b. **Origin/destination restrictions.** In some cities, Uber cannot offer service *from* some airports but Uber can take the passenger to the airport. Some urban and rural communities have not yet allowed TNCs. Comparing urban and rural settings, it will be much quicker to summon Uber or Lyft for service in the city than it would be in a rural area.
- c. **Group rides may require individual accounts.** Some TNCs insist that each rider have their own account. Not all riders have that capacity.
- d. **No legal recourse.** Unless the Rider knows that the above mentioned firms have been legislatively recognized within the jurisdiction, where service is requested, the Rider may not be able to file a lawsuit against the TNC. For the purpose of directly suing a TNC, the Driver must be legally considered an employee as opposed to an independent contractor.
- e. **Discourages active transportation.** Studies have emerged indicating a correlation between a person's health and the type of transportation used (Raynault & Christopher, 2013). If fares become too cheaply, it may spark reliance on TNCs as opposed to jogging, bike riding or walking on a brisk sunny day. Long term it could negatively affect a person's health.
- f. **Navigation apps require periodic updates.** Drivers who do not possess the latest software version may not know their way around town, so it may take longer than anticipated for the Driver to arrive, and requiring the passenger to play backseat driver as warranted.

Advantages from the Driver's Viewpoint

- a. **Income.** Drivers can earn income by working for TNCs, such as Uber and Lyft.
- b. **Flexibility of hours.** Due to schedule flexibility, drivers often hold other jobs in addition to their work as a driver. Currently, both Uber and Lyft offer certain "guarantees" (Current Lyft Promotions for 2016/Rider and Driver Promo Guide, 2016; Perea, 2016). Subject to the firm's

terms and conditions⁵ and the Driver's base of operation, there will be a minimum amount given to the Driver, hourly or weekly, provided s/he meets the criteria as set forth by the respective firm.

- c. **Multiple employers & opportunities.** Drivers can work for Uber and Lyft, simultaneously. Before Sidecar ceased its operations in 2015, SideCar expanded their repertoire by offering delivery service. This added feature allowed a Sidecar Driver the option to select from two distinctive divisions or to provide transport for both.
- d. **Can specify driving boundaries.** Sidecar Drivers were able to specify the distance or boundaries within which they were willing to drive (Sloan, 2015).
- e. **Promotions.** Uber and Lyft have, on occasion, offered promotions that benefit their Drivers, such as sign-on bonuses and extra pay in the form of a "referral fee". There are websites that supply detailed information on these matters (Promotions, 2016).
- f. **Networking.** A driver may strike up a conversation that can lead to increased business from building loyalty and trust. Introductions to other people can facilitate other opportunities. Uber and Lyft provide forums, such as a blog, and other social media pages where Drivers can talk shop and consult amongst one another.
- g. **Rider rating.** Drivers can rate their passengers and vice-versa. If the customer receives poor ratings, a Driver will never have to encounter that particular Rider in the future.
- h. **Insurance.** Both Uber and Lyft offer a policy covering collisions. Lyft will compensate Driver's deductible with amounts higher than Uber. Lyft gives round-the-clock accessibility to an insurance agent.
- i. **Reimbursement for property damage.** Uber and Lyft will cover any costs involving customer-produced property damage or "loss of business" (Uber vs Lyft: Comparing the Rideshare titans, 2016).
- j. **Company pays traffic tickets.** Uber and Lyft will be responsible for certain summonses.
- k. **Training.** Generally speaking, no formal company training is required to be a driver. This allows for an easy and immediate entry into this job market. Nonetheless, depending on the venue of operation, local regulations may require a formal training session as part of the mandatory licensing requirements, as in New York City (WAV Training, n.d.).

Disadvantages from the Driver's Viewpoint

- a. **Oversupply of drivers.** When Sidecar was still in operation, the company sought to enroll as many drivers as possible (Sloan, 2015). This policy is still executed by Uber and Lyft. This diminishes the value of the current, more experienced drivers and creates internal competition.

⁵ In a telephone interview with an Uber Driver/Partner representative, there are four requirements in order to receive the "guarantee". 1) Limited to select Drivers via email. 2) The Driver must be within precise geographical parameters. 3) No more than two trips for the same customer shall count towards the trip total, and 4) the invitation requires a specific number of trips to be completed within a certain amount of time.

- b. Safety and security risks.** There is the risk to the driver of being robbed, beaten, or worse, as a result of passenger unfamiliarity. For example, unbeknownst to Uber or its Drivers, drug dealers hired their service (Jones, 2015).
- c. Lack of customer service assistance.** While Drivers have access to a Lyft representative 24 hours/7 days-a-week via a dedicated toll-free phone number, and/or email, replies, normally can take up to 48 hours. (Uber vs. Lyft Prices, Cost, and Support, 2016). Access to Uber is limited to Internet communication and replies are anticipated to take almost a week.
- d. Tax liability.** Litigation has been ongoing whether Drivers are considered to be employees or independent contractors. The final ruling will affect whose responsibility it is to pay income tax. As an employee, some of the tax liability would be borne by the TNC. If the ruling is against the Drivers, some Drivers may decide to quit. For some Drivers, the extra income in comparison to the tax to be paid on it as an independent contractor may not be in their best interests. Employee status offers additional legal safeguards. For example, the TNC could be named as a direct defendant in a civil litigation proceeding as opposed to the Driver.

In addition to the advantages and disadvantages experienced by Riders and Drivers, there may be system wide impacts. The arrival of TNCs has provided an additional mode choice for travelers. This added competition can lead to fewer public transit passengers. As a result, public transit agencies might have to reduce service or eliminate routes. Taxi drivers may see a drop in revenue and could quit to find other employment opportunities, and some taxi companies may go out of business (Rogers, 2016). Unlike certain mass transit modes with dedicated rights-of-way and fixed routes, Uber and Lyft do not have these restrictions. Because of this, Uber, Lyft and others may be the solution to the first mile/last mile problem. Presently, MARTA, the Atlanta transit authority, has been in negotiations with Uber to address this issue.

Business Model

A business model shows or plots how the business will maintain a flow of income. When applying a business model to Uber, Lyft, or Sidecar, the business model answers three simple questions: (1) What product or service is offered? (2) Who are the suppliers? and (3) How are invoices paid? The answers are illustrated below in Figure 4.

The product is a service where the potential passenger downloads an app into his/her cellphone and requests a ride. The supplier in some cases is the software engineers but are primarily the drivers. A professional driver is either a licensed chauffeur or a dedicated full-time driver who owns a car. Drivers can already be working full time for an established livery company or they may, for example, be a student or someone simply seeking extra income.



Figure 4. Basic Business Model

Source: http://www.iplanner.net/business-financial/online/how-to-articles.aspx?article_id=business-model-uber

In 2008, Alexander Osterwalder developed a means of designing an enhanced version of a business model, referred to as the Business Model Canvas. This visually aids a potential entrepreneur in gaining a graphic idea of how an organization makes or intends to make money. It also empowers a business to concentrate on operational and strategic management and marketing plans (Canvanizer, n.d).

Osterwalder's Business Model Canvas was constructed as a result of a comprehensive study of business models. His Canvas is the result of his notion that most business models are alike in scope.

The essential nine building blocks of the Business Model Canvas are the following.

1. **Value Proposition:** What value are you proposing to create or offer?
2. **Customer Segments:** To whom are you proposing to bring value?
3. **Channels:** How do you plan on conveying your message of value?
4. **Customer Relationships:** What is your plan to establish and increase relationships with clients?
5. **Key Resources:** What does this model require to become feasible?
6. **Key Activities:** What is needed for this model to be executed?
7. **Partner Network:** How do you identify and invite potential partners?
8. **Revenue Stream:** What is your source of revenue?
9. **Cost Structure:** What are the costs?

When this model is applied to Uber, the Business Model Canvas looks like Figure 5.



Figure 5. Uber Business Model Canvas

Source: <https://www.quora.com/What-is-Ubers-business-model-1>

One might argue that Uber’s Business Model Canvas describes how Uber filled a need. Uber “[had] a great team that met a great market” (Deep, What led to Uber’s success, October 2015)

In Figure 6 below, we can discern how Lyft’s business model is similar to the Uber business model. However, some technicalities separate them, as shown in yellow highlight. For example, Uber has a smorgasbord of services to select from in contrast to Lyft. Moreover, Lyft permits tipping, while Uber forbids it. When Lyft entered the business, there was no formal fare framework. The “fare” was in the form of a “donation” (Hausman, 2013).

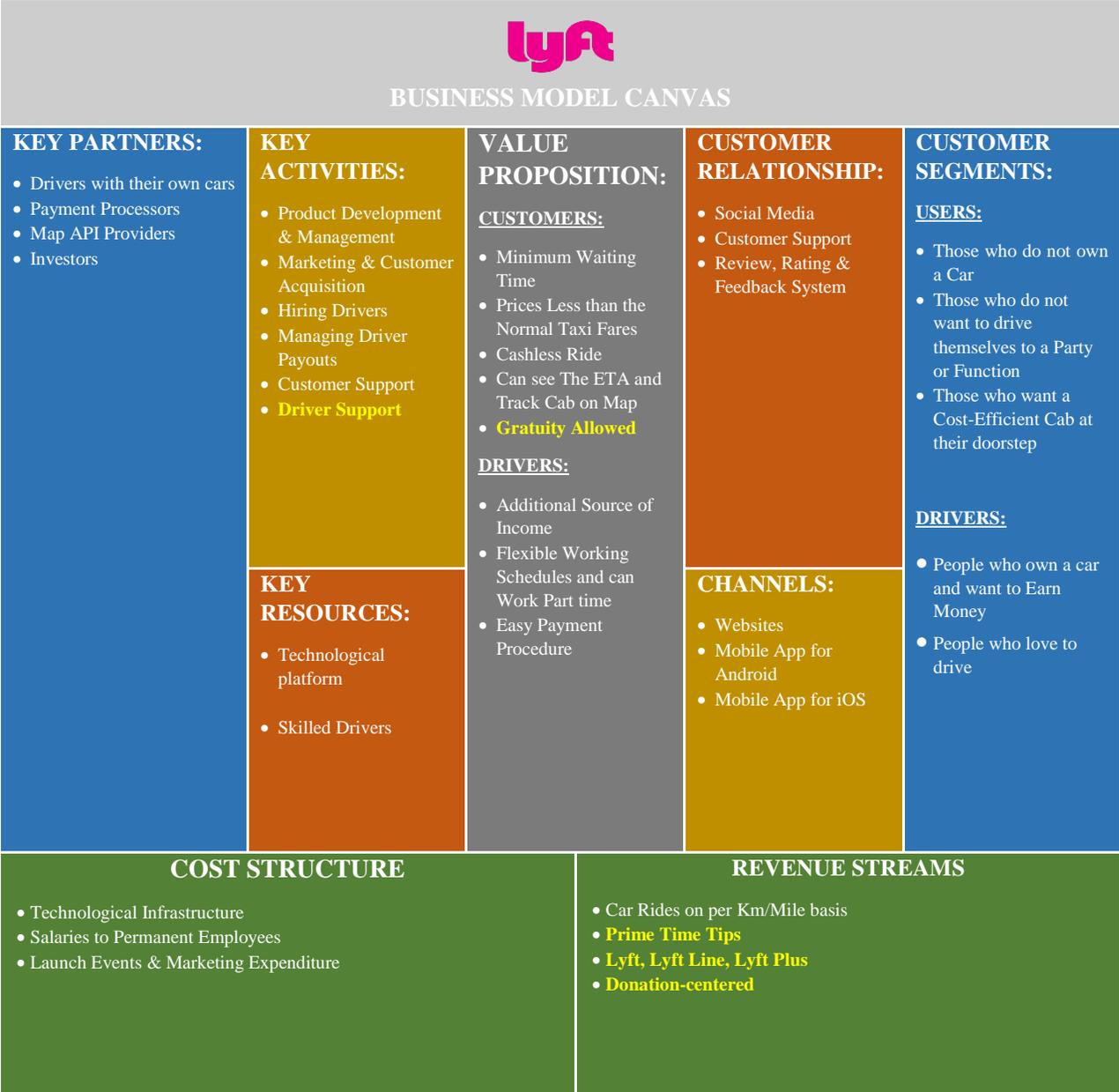


Figure 6. Lyft Business Model Canvas
 Source: <https://www.quora.com/What-is-Ubers-business-model-1>⁶

By 2014, Lyft phased out its donation policy. By that time, ten cities were still operating under the donation-based system (Soper, Geekwire Trending, 2014).

⁶ Some of the data from the Lyft Business Model Canvas come from Figure 5.

Uber's original intended market were young urban professionals. Eventually, that market enlarged leading to other untapped demographics. Those untapped demographics are what have led to the creation of Uber Black (upscale vehicles), Surge Pricing (passengers' willingness to pay beyond the normal rates), UberXL (group travel), and UberPool (carpooling).

There must be an appealing value proposition for the drivers. Obviously, if drivers do not perceive value, they will not drive. The statistics are quite staggering. In less than two years, Uber hired over 40,000 drivers. Deep does not give details nor any real explanation as to the root cause. Nevertheless, he does allude to the possibility that drivers are already working for competitors or they are vehicle owner/operators seeking a supplementary income (Deep, 2015).

Uber's revenue stream is what makes investors take notice. Generally, it gives 80% of the fare to the driver with the remainder for Uber. Despite that part of the 20% fee that Uber collects may go toward marketing, projected net revenue for 2015 was \$2 billion. "...most of...Uber's revenue was coming from 5 cities among the 130 odd cities where the company was present by end of 2015" (Deep, 2015).

Similarly, and overall, TNCs have comparable business models. Yet, what sets them apart are their sustained innovation, selected venues of operation and their ability to market themselves better as a result of their advantage of nativity. For example, let us look at Uber's market entry into India. Ola, an Indian TNC, already had a pre-existing presence in India. Uber, in opposition, was battling a formidable, yet, local competitor. According to Dalal, Ola and Uber India, respectively, were claiming each owned very high percentages of market share, albeit unverifiable (2016). Even without instantiated data, it can be extrapolated that Ola possesses familiarity with the local business culture. It also knows who the political players are and, equally important, has the inherence to easily communicate naturally in the provincial dialects.

In 1995, Clayton Christensen, a Professor of Business Administration at Harvard University, created both the phrase and theory known as "sustaining innovation". It can be described as an idea that "does not create new markets or value networks but only develops existing ones with better value, allowing the companies to compete against each other's sustaining improvements" (Hansen, 2014). Christensen hypothesizes that a business model is either sustaining or disruptive.

The term disruptive innovation can be defined as "an innovation that helps create a new market and value network, and eventually goes on to disrupt an existing market and value network [displacing or disrupting established market leaders]" (Hansen, 2014). It is also a "process whereby a smaller company with fewer resources is able to successfully challenge established incumbent businesses". Additionally, these "incumbent businesses" either enhance their wares for their established customers, simultaneously disregarding other markets or pricing themselves out of them. Thus, this creates opportunities for budding competition to pounce on the opportunity to capture those unwanted markets. (Christensen, Raynor, & McDonald, 2015).

Christensen argues that the Uber business model is a sustaining innovation as opposed to a disruptive innovation. First, "[t]he concept disruptive technology is widely used but disruptive innovation seems a more useful concept in many contexts since few technologies are intrinsically disruptive. It is rather the business model than the technology that enables and creates the disruptive effect..." (Hansen, 2014); however, disruptive innovation and disruptive technology are terms that are often used interchangeably.

According to Christensen et al., many academics and professionals use the term disruptive innovation too freely. Many people associate any circumstance involving the interference of commerce while simultaneously creating a new business in the same trade, as a disruptive innovation. In Christensen's opinion, in order for an entity to be considered or called anything remotely disruptive it must meet a specific criterion (Christensen, Raynor, & McDonald, 2015).

It might appear that Uber meets the textbook definition of disruptive innovation. According to Christensen it does not. A disruptive innovation must begin in either a “low-end foothold or a “new-market foothold”. A low-end foothold is a market consisting of customers that purchase products or services, but just not on the same level as a consumer with a greater need for that product or service. A new-market foothold is exactly that—where disruptive innovators establish a new market. Christensen declares that Uber did not commence from either type of disruptive innovation. (Christensen, Raynor, & McDonald, 2015). Uber initially sought the young urban professional market. It offered its service to people going to and from clubs, as an example.

A sustaining innovation is where the company manufactures an improved, quality product from the incumbent’s existing customer’s viewpoint. Christensen gives detailed examples on how Uber meets those standards.

1. Summoning a ride is improved. To illustrate, making a reservation is easily performed via smartphone app, no cash transactions are involved, and there is an evaluation framework in place.
2. Its fares are on the same level as a cab, often less.
3. Service is prompt and dependable.

Christensen et al. emphasize that in order to be a disruptive innovation it takes time. Established businesses don’t pay attention to these potential interrupters that gradually improve their services over a long period of time. A company entering their intended target market for the first time can learn over time from trial-and-error. This allows the company to tweak their business model if necessary.

According to Christensen et al., the other aspect of what separates TNCs from other transportation services is where their base of operations is located. It is central for TNCs seeking international business to understand the customs and traditions of the intended market’s country. What is accepted in the United States could actually represent something unfavorable in the eyes of the local community in another country. Another example is the language. This is where companies such as Hail-O and Didi Kuaidi hold an advantage over Uber. Hail-O and Didi Kuaidi are not only owned and operated by local investors, but they also speak the local language and are well aware of local social norms.

Automobile Manufacturers and TNCs

Within the scope of this paper is the need for the transportation industry to be adaptable. Darwin wrote “It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change...In the struggle for survival, the fittest win out at the expense of their rivals because they succeed in adapting themselves best to their environment” (University of Cambridge, 2016).

Uber’s app has forever changed how we get around town. It has had a profound impact on all of us, not just as a society, but it also has affected whole industries. Taxi and livery companies must now incorporate 21st Century ingenuity into their operations, in order to compete – if it wants to survive. Uber also affected the automobile manufacturing industry as well. So formidable is the impact upon the automobile manufacturers, it dictates the need for an industry-wide adaptation.

At what point does someone make the decision to relinquish his or her car and use a TNC? It apparently comes down to financial calculations. Keep in mind that there are some elements that need to be considered when prompting this kind of decision (Lawler, 2014).

1. **Miles per Gallon or MPG.** Is your vehicle giving a decent rate of miles per gallon of fuel burned?
2. **Fuel expenditure.** How much is gas costing you?
3. **Commuting Miles.** How far is it to where you work, study or frequent?

4. **Parking.** What is the availability and cost of parking?
5. **Summons.** How much are you paying in traffic and parking fines each year?
6. **Opportunity Cost.** What is the cost of not being able to complete other chores or items on your to-do list if you do not own a vehicle?

Lawler, in his analysis, fails to mention other costs of car ownership. These include leasing or financing the purchase, depreciation, maintenance, insurance, and taxes. Lawler does provide a comparative example, based upon an UberX base fare and mileage cost of driving 9,481 miles in the Los Angeles area. Not including Uber’s surge pricing, the comparative cost is \$12,744 per year to own/operate an auto versus \$18,115 for one year of Uber service.

If we intensely examine the aforesaid example, assuming that the constant factors are average time and average distance – the ultimate determinant, therefore, is the amount of mileage driven. In the final analysis, the less miles driven per annum, the higher the likelihood that yearly Uber service would be cheaper.^{7 8}

Lawler specifically discloses, he extracted this data from another blogger, Kyle Hill (Hill, 2014). Hill, contrariwise, goes into much more detail concluding that the answer lies in the total number of miles. Figure 6, below, gives a detailed quantitative account.

$$\begin{aligned} & \underline{\text{costs_ownership_year}} = \\ & \text{costs_payments_year} + \text{costs_fuel_year} + \text{costs_interest_year} + \text{costs_insurance_year} + \\ & \text{costs_repairs_year} + \text{costs_taxes_year} + \text{costs_parking_year} + \text{costs_tickets_year} + \\ & \text{costs_opportunity_year} \end{aligned}$$

$$\begin{aligned} & \underline{\text{costs_uber_year}} = \\ & (\text{miles_year} / \text{average_commute_distance} * .80) + (\text{miles_year} * 1.10) + (\text{miles_year} / \\ & \text{average_commute_distance} * \text{average_commute_time} * 0.21) \end{aligned}$$

Figure 7. Financial Formula of Vehicle Ownership vs. Uber
Source: Hill, 2014

Figure 8, on page 18, provides an illustration of how mileage, in Hill’s measurement, will be the determinant. Hill extracted averages from various national organization’s databases as part of his methodology. Ultimately, the range of miles gauged by the motor vehicle owner will determine whether or not it pays to employ Uber’s services permanently or occasionally.

In 2013, an Uber employee posted on the Uber blog that someone was “selling [their] cars in favor of using Uber” (Voytek, 2013). There are figures posted and accordingly, the cost would be approximately \$14,400 - \$18,000/annually to be the proud owner and operator of a BMW 3-series convertible as opposed to being a daily UberX customer where the annual disbursement would be just shy of \$13,000.^{9 10} To

⁷ This calculation was for UberX service (base fare + mileage cost) within the Los Angeles Area. This does not include Uber’s Surge Pricing model.

⁸ The calculation is incorrect. Totaling the figures amounts to \$12, 831. Notwithstanding, the figure of 9,481 miles as the threshold is manifested in Figure 7, Example #2.

⁹ The venue for this particular example is San Francisco.

recap, if anything else, the sole purpose of the proceeding calculations are to serve as a methodology to ascertain a financial threshold of feasibility whether to forego and relinquish the thought of car ownership or to employ Uber permanently.

It would be in GM's best interest to devise a game plan to maintain a spot in the forefront of the automobile industry. And already they are doing so. GM purchased Sidecar, and invested in Lyft rather than Uber. There are a number of arguments as to why GM bankrolled Lyft. GM's motivation might be to put the brakes on Uber that has the potential of becoming a monopoly in the shared mobility industry.

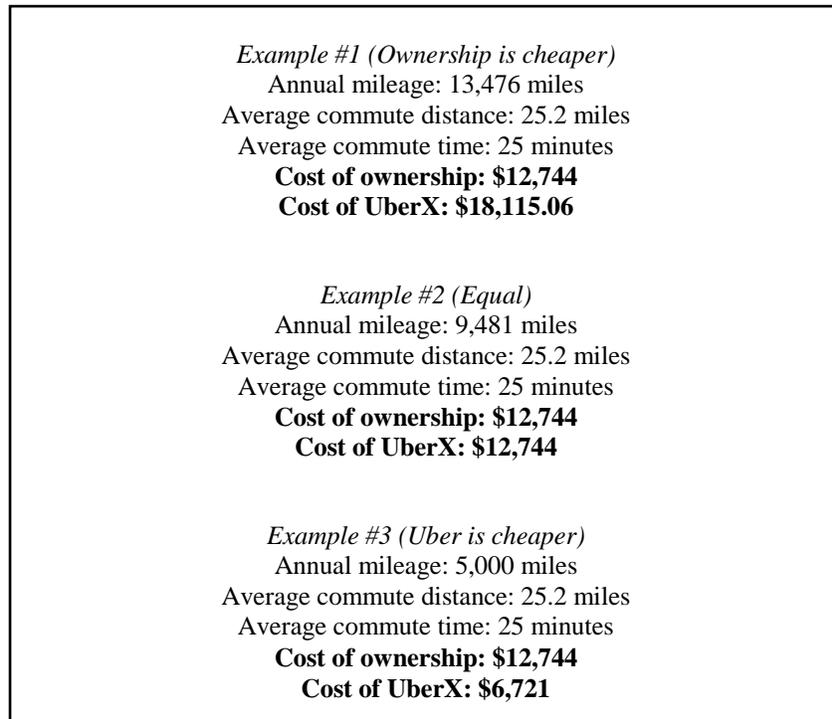


Figure 8. Comparative Analysis of Vehicle Ownership to Uber Based upon Mileage
Source: Hill, 2014

GM acquired Sidecar, the third largest TNC in the United States. This guaranteed, indefinitely, Lyft's position as the second largest TNC in the United States. Moreover, GM "need[s] for a validator from Silicon Valley to support its autonomous ambitions" (Hawkins, 2016). GM believes that it may be on schedule to introduce a group of autonomous cars as early as 2016. The interconnection of alliances with Lyft makes sense. It is anticipated that with the onset of self-driving cars, a TNC client placing an order for a ride will encounter a driverless car that will seamlessly transport the person with minimum wait time. There must be a sufficient supply of vehicles to meet that kind of demand.

Uber's ambition is to create and implement autonomous vehicles as part of their service. It would behoove Uber also to team with a car manufacturer, like the partnership of GM and Lyft. In addition to the

¹⁰ The article fails to mention that the individual selling his car has a financial interest in Uber. <http://www.theverge.com/2013/2/7/3964394/taxi-race-can-uber-and-hailo-deliver-a-real-time-revolution/in/3731645>). It also neglects to provide an exact calculation other than cost per ride. The fare is \$17/each way, Voytek stated he uses Uber 3x per day. The assumption is there are 20 working days per month which yields to \$12,960. Lastly, UberLUX is a luxury car service not available in San Francisco. One vehicle within this class is a BMW 7-series.

technological development, there are the logistics, long-tenured relationships and production knowledge that established automakers, like GM, have that Lyft and Uber directly do not. Besides, the purchasing power of Uber, which accompanies such voluminous transactions, this helps create an atmosphere where negotiating for a hefty discount from a car manufacturer will most likely be successful. A sharp decrease in the cost of producing any kind of car—autonomous or human-controlled—not only increases profits, but also the cost savings will be passed down to the TNC customer. Additionally, Lyft’s drivers may not have funds to purchase a vehicle and they may find it more financially feasible to either lease or rent a car for their work as a Driver.

TNCs will reshape the vehicle purchase market, subject to the popularity and acceptance of the autonomous vehicle, and the cost of vehicle ownership and operation regardless of whether the car is autonomous or not. Companies such as GM and other manufacturers will benefit as Uber, Lyft and future TNCs will need to purchase very large quantities of vehicles to meet anticipated demand similar to today’s car rental business. By acquiring Sidecar and investing in Lyft, GM avoided serious investment of time and expense necessary to first begin the process of recruiting the best research scientists. It empowers GM to build upon an established group of technological inventions.

The scientific intersection of autonomy and motor vehicle technology has been on the top of Uber’s priority list for a while. Uber donated \$5.5 million to Carnegie Mellon “to fund a new robotics faculty chair and three fellowships” (Kokalitcheva, 2015). It has also partnered with the University of Arizona’s College of Optical Science for the purpose of researching “mapping technology and eyes...or optics...for mapping and safety” (Korosec, 2015).

Car-sharing

Moreover, the growth of TNCs is partly indebted to car obtainability without the concomitant ownership responsibilities. This is where car-sharing enters the shared mobility service arena. Car-sharing dates as far back as 1948 in Switzerland when a cooperative was developed with the objective of granting access to those who were unable to buy a motor vehicle. Today, many carmakers worldwide have entered the car-sharing market as part of an array of mode choices. Automobile producers saw several reasons to expand into car-sharing.

1. A decreasing number of people want to own a car (Kato, Nakanishi, & Wakasugi, 2016)
2. Many urban areas are gradually limiting vehicle access. (Kato, Nakanishi, & Wakasugi, 2016)
3. Those who cannot afford an auto constitute a new market for auto makers. (Nakanishi, 2016)
4. Car-sharing enables car availability in areas where zoning reduces allowed parking.
5. (Nakanishi, 2016)
6. Consumer indecisiveness (Szymkowski, 2015).

GM markets their car-sharing brand as Maven. Service is primarily within the United States. Because Maven is in its early stages, GM’s posture is merely to study and analyze those customers. Simultaneously, they are completely aware that “someone will have to own the fleets” (Nakanishi, 2016). GM is also a partner in CarUnity. Autonomous versions of their Chevy Volts are scheduled to be tested at their main campus in 2016.

GM has competition. Below is a list of other automakers that have commenced car-sharing services:

1. Daimler’s brand is called Car2Go. Starting in 2011, it currently has more than 13,000 vehicles with service in Europe and the United States. The vehicle model is called Smart which is similar to the Mini Cooper.
2. BMW’s brand is called DriveNow. It is, chiefly, a one-way type of car-sharing service. Anyone that rents their autos can take it from origin to destination without having to return it to its original

- spot. Since 2011, they have offered vehicle models such as the Mini Cooper and a few select BMWs. In August 2012, BMW introduced DriveNow to the San Francisco Area but in November 2015 BMW terminated operations due to a lack of sufficient curbside parking (King, 2015). Service is now limited to the United Kingdom, Germany, Denmark, Sweden and Austria.
3. Opel's brand is CarUnity. Service is confined within Germany and customers can select other models outside of the Opel brand. CarUnity has been described as a P2P or peer-to-peer car-sharing service.
 4. Volkswagen has a service called Quicar. Launched in 2011, their models are the VW Gold BlueMotion, with service primarily in the City of Hanover, Germany.
 5. Audi bills its service as Unite. Initiated in 2014, it is considered a car-sharing service but one where the cost is apportioned amongst members. Service is only in Stockholm, for now.

Controversies

Whenever a newly formed company opens for business, as a result of being developed from an original concept or establishing additional competition, new issues emerge. These issues may relate to technical compliance, the necessity for supplemental credentials, organized labor agreements, as well as many other possible legal requirements. While Uber is the largest of its type in terms of size and growth, it is not the first of its kind. That distinction goes to Taxi Magic.^{11 12}

Over time, various state authorities and local jurisdictions informed Uber and Lyft that they needed to comply with additional requirements. In some of the cases, it would have been a transaction of no more than the procurement of additional licenses, certifications, or a small number of other legal compulsories.

However, in December 2014, litigation proceedings were filed against Uber and Lyft for several incidents, and SideCar was threatened with similar litigation (Huet, 2014). The plaintiff's main complaints were about fraudulent claims of drivers' qualifications, unauthorized direct operation from airports, and overcharging. Unlike Uber, Lyft agreed to an out-of-court agreement which included punitive damages of \$500,000 with the understanding that \$250,000 would be deducted if Lyft observed the terms and conditions of the agreement. Uber claimed innocence, declaring that it did conduct a first-rate examination into its drivers' past records (Huet, 2014). Sidecar, in the end, was not prosecuted as they were in negotiations with the district attorneys (DeAmicis, 2014). When Sidecar was in business, Sidecar purposely sought to negotiate, cooperate and comply with the regulatory authorities. Sidecar was the first to procure operating permits for service to/from San Francisco International Airport.

As of November 2015, the aggregate number of lawsuits in the United States involving Uber was over 170 (Ryffel, 2015). In February 2016, Uber offered to pay over \$28 million to resolve the issues regarding driver investigations and the overcharges. Regardless of the outcome, the plaintiffs will likely be awarded very little (Velazco, 2016).

The following discussion will focus upon five main controversies: 1) Legal Entity Status, 2) Safety and Security, 3) Labor Relations, 4) Ethics & Tactics, and 5) Liability and Auto Insurance.

¹¹ Taxi Magic claims to be the first to allow customers to arrange transportation via a cell phone app. It commenced operations in January 2009. As of August 2014, it changed its name and is now called Curb.

¹² Please see: <https://www.crunchbase.com/organization/ridecharge#/entity>. TaxiMagic went through a couple of Mergers & Acquisitions Furthermore, please read Footnote #11.

Legal Entity Status

Uber Technologies, Inc. asserts that it is a commercial enterprise in a technology industry rather in the transportation industry. It is headquartered in San Francisco, California, a city known as a venue where many high-tech start-ups are initiated. Many believe that the transportation industry is primarily a technical field.

Members of the for-hire industry perceived Uber, Lyft, and Sidecar as a threat. Crucial to taxi cabs were the loss of customer loyalty and the corresponding income. Purportedly, Uber's revenue surpassed that of the whole taxi industry serving the San Francisco Area (Pershan, 2015).¹³ Since 2012, "...the average number of trips made by [passengers] using traditional taxis has fallen by 65 percent...", and another example is in Montreal, where "...cab companies...have lost upwards of 30 percent of their clientele to UberX..." (Perez, 2016).

From a legal standpoint, analysis by many has shown that there is not one way to describe any of the companies (Hughes, 2014).

Some of the diverse descriptors to better classify these firms are listed below:

- Transportation broker (TNCDemise, 2016)
- Ride-sharing app (Bertoli, 2015)
- Ride-sharing service (Widman, 2015)
- Taxi app (Widman, 2015)
- Car-sharing app (Roof, 2013)
- Private rideshare transportation companies (Lyft vs. Uber: The Rivalry, 2016)
- Taxi service¹⁴ (Wheatly, 2014)
- Carpooling service (Huet, The Case For Carpooling, 2015)
- Alternative transportation mode (Viechnicki, Khuperkar, Fishman, & Eggers, 2015)
- Shared Mobility service (Todts, 2015)
- Technology platform (Sebag, 2015)
- Smartphone app (Stokes, 2015)
- On-demand car service (Stokes, 2015)
- Taxi industry disruptor (Goldmark, 2013)
- Ridesharing company (Steinmetz, 2014)
- On-demand ride service (Viechnicki, Khuperkar, Fishman, & Eggers, 2015))
- E-hail company (Steinmetz, 2014)
- Taxi-hailing service (Todts, 2015)
- Digital service (Todts, 2015)

¹³ Pershan quotes Uber's CEO. However, Pershan also notes that some are skeptical.

¹⁴ To be used interchangeably with taxi company and taxicab operations.

- Logistics company (Singleton, 2015)

The governor of the State of California signed into law Assembly Bill No. 2293 that took effect July 1, 2015. This was the first official action taken by any legislative body in the United States to define TNCs for purposes of identifying who it is, how they function, their type of operations, and for the intention of placing TNCs under regulation. Following California's example, other states and municipalities have passed legislation. For example, the State of North Carolina produced a law known as the Act to Regulate Transportation Network Companies, which went into effect October, 2015. In Canada, the City of Edmonton allowed Uber to legally commence operations as of March 1, 2016.¹⁵

Safety and Security

In this section, the controversies involving Uber, Lyft and Sidecar as they relate to safety and security issues are described from both the Rider's and the Driver's perspectives.

From the Rider's Perspective

In late 2015, The Transportation Research Board published a report on Commercial Ground Transportation at Airports, which classified regulations for commercial transportation into two categories, economic and safety (LeighFisher Inc., 2015). Some instances of regulations covering the economic spectrum address market entry, fares, routes, and operations. Safety regulations focus on the credentials of drivers and vehicle roadworthiness.

For the most part, the report affirmed that safety has generally been accepted to be managed and adopted by local governments. Local governments principally conduct code enforcement as well. The rationale is that since these types of transportation services are local in nature, local government should be the proper jurisdiction. California, Colorado and several other states require Uber, Lyft, and other such companies to procure a license as a TNC if they desire to conduct business in those states. Furthermore, the Public Utilities Commission (PUC) or such lateral agency will have the authority of overseeing these enterprises (LeighFisher Inc., 2015). From a safety context, Uber, Lyft, and similar companies must procure an operating license that requires all drivers to be thoroughly vetted and their vehicles to be meticulously inspected.

In December 2014, the City of Portland, Oregon filed litigation against Uber for allegations of breaking "local laws" (Saitto, 2014). Although Saitto neither elaborates nor cites the exact regulations infringed upon, she does allude to Uber and Lyft scoffing at regulations affecting new market entry. Some of those ordinances address safety for all parties involved, such as rigorous driver background checks, minimum vehicle safeguards and insurance requirements, etc.

To give the Rider a more heightened awareness of the seriousness of what some of the criminal-level actions Drivers have committed, there is at least one website dedicated to the safety and security controversies surrounding Uber and Lyft Drivers. Below is a sample of media headlines (Who's Driving You, 2016):

- Uber Driver Kills 6
- Pedestrian struck by Motorist driving for Uber
- Lyft named in wrongful death litigation
- Uber repudiates accountability after 7-year old killed by one of their drivers

¹⁵ The first city in Canada to grant permission for Uber to legally commence revenue operations. Uber was already in operation beforehand, albeit illegally.

- Passenger assaulted allegedly for burping by Uber Driver in Washington DC
- Lyft Driver wields knife in LA
- SF Pedestrian is attacked allegedly by Lyft Driver
- Activist and writer claim to be attacked in DC by Uber Driver; HQ repudiates all
- Uber Driver arrested and charged with sexual battery in Raleigh, NC
- Lyft/Uber driver charged with attempted rape in Seattle, WA
- Lyft Driver slapped with lawsuit – allegedly groped UNF student
- Court Orders Lyft Driver to stay away from Jacksonville, FL passenger
- Floridian Uber Driver Faces Charges of 4th DUI

These do not include unreported cases. Other reported crime categories, domestically and internationally include kidnappings, convicted felons getting past background checks, and imposters.

From the Driver’s Perspective

The security of the operator is no less important than the paying customer. Uber and others claim to be the middleman in transactions between the Driver and Rider. Realistically, the Driver is in the middle. Uber gives Drivers many security assurances but Drivers experience their susceptibility to crime only after revenue service begins.

Disparity is instantly created when each Driver is completely evaluated and investigated, and not the Rider. This inequality is partially mitigated by a ratings system. Uber and Lyft enable their Drivers to rate their passengers. Driver ratings will determine whether s/he will either no longer be matched with that Rider or if the Rider is completely banned from engaging that app (Lazzaro, 2015). However, management support may be lacking, as described by the case in which California police arrested two young men in early 2015 for allegedly selling contraband while riding Uber. “Don’t you think [Uber would] rat out a dope dealer in a flash and hand over all that data to the authorities if they were asked?” (Jones, 2015). The assumption is Uber would prefer to retain a reputation for its concern for their customer’s privacy, than being “known as a safe haven from criminal activity” (Jones, 2015).

Labor Relations

The pivotal ingredient in Uber’s recipe for success and long-term permanence is Uber’s labor, or Driver/Partners. Some believe the title of “partner” was conferred upon drivers by Uber to purposely avoid its legal obligations as an actual employer. As an employer, Uber would be responsible for several liabilities, including, but not limited to, payroll taxes. If the driver is an independent contractor, there is no legal employee/employer relationship. Uber is then not responsible for paying and withholding income taxes, and Uber is released from the obligation to contribute towards Social Security and Medicare for employees. Payment of taxes becomes the burden of the independent contractor.

There are at least 13 lawsuits already filed against Uber in various states across the country. In many of these cases, Driver/Partners are complaining they are barely making ends meet (Farivar, 2016). Some examples are listed below.

- A Driver/Partner “made \$5 per hour after expenses, or significantly less than the [State of Ohio, where this case was filed] minimum wage”
- In the Commonwealth of Pennsylvania, a Driver/Partner was earning \$80 per week.

- In Illinois, a plaintiff is suing because his take-home pay was \$100-\$200 per week.

The above are only some of the many complaints Driver/Partners have filed against Uber.

A Driver/Partner filed a complaint with the California Labor Commission (CLC) in 2014 for back pay and repayment of costs in the operation of her automobile. The plaintiff further argued that she was an employee, not an independent contractor. Therefore, she requested the CLC to order Uber to settle up, and be formally declared an employer. The Commission ruled in favor of the plaintiff. From this ruling came the court case known as *O'Connor v. Uber*.

What originally started as individual complaints by Driver/Partners has grown into one of the most anticipated class-actions lawsuits in some time. A trial date for the class-action litigation has been set for June 20th, 2016.¹⁶ Even if the Driver/Partners should win, they will ultimately lose. This is because Uber could choose to immediately and permanently cease operations. Although it would be considered a drastic move on Uber's part, Uber could easily deliver the keys of their business to its strongest adversary Lyft. Lyft would gladly seize the chance to become larger than it already is at this moment. Publicly, Uber's legal counsel and management believe they will prevail. Assuming they do not, a loss would grant Uber time to reconvene, reevaluate their finances and devise new strategies going forward. Assuming they have not done so beforehand, Uber may already have contingencies in place. If Uber were to indefinitely halt operations, the economic punch would harm those that depend on Uber, regardless of whether working as a Driver/Partner is a sideline or as a sole income source. Alternatively, Uber can file an appeal that would draw out the lawsuit for years to come. As one reporter observes: "[I]t's easy to understand why Uber is investing so heavily in the development of its own driverless technology. These guys will fight and avoid until they hit their end goal, which is the driverless car...The game [strategy] is [to] delay, make as much money as you can, then get rid of the problem." (Popper, 2015)

Ethics & Tactics

Issues relating to ethics and tactics also have plagued Uber, Lyft, and Sidecar, such as those described below.

1. **Corporate sabotage.** Uber has been accused of purposely arranging 5,560 rides with rival companies, then cancelling them. These pseudo-journeys were organized by over 175 Uber employees. Uber "recruiters" created a minimum of over a dozen accounts. Each of these "account holders" summoned multiple rides only to cancel them at the latest possible moment (Fink, August 12, 2014). The same play was carried out against another rival, Gett (Segall, 2014).
2. **Privacy Issues.** Claims were made against an Uber senior executive who purportedly had plans to spend as much as \$1 million to probe and accrue personal information about journalists who compose and publish negative press about the company (Timberg, Scola, & Peterson, 2014).
3. **Intimidation.** Uber learned that a number of Drivers were working for competitors. In New York City, Drivers were misled by Uber to believe they could only work for one TNC (Fink, Uber threatens drivers, August 5, 2014).
4. **Surge pricing.** Fares are dynamic in the sense that the app charges the passenger based upon supply and demand. The fare is calculated by increasing the regular fee in multiples. A passenger

¹⁶ Driver/Partners filed litigation against Uber. Drivers working for Lyft filed their own suit separately as well.

who normally would pay \$5 for a local trip may end up paying \$25-30. Sidecar tried this policy back in 2012 and then stopped it in 2015 (Gannes, 2013; Sidecar, 2015). Lyft's strategy was the same but not on the level of Uber. It was originally designed to be identical to "transit peak fares" but yielded very poor public relations. Instances of surge pricing were found in situations involving inclement weather, hostage situations, and other serious events. (ClunkClunk, 2015).

The above are just some of the domestic issues. Uber's reputation has reached international shores too. The bulk of these issues concerns Uber's status in the eyes of regulators in other nations.

If Uber, Lyft and other TNCs do not possess the proper authorizations, other countries will bar Uber or Lyft from entering their cities. Some countries that have prompted that action are Taiwan, Switzerland, Canada, Italy, Belgium and France. India initially banned Uber but rescinded the ban in July 2015 (TNCs: A Worldwide Overview of Regulatory and Legal Actions, 2015). Brazil has suspended Uber and banned ride sharing, Spain placed a temporary ban on Uber, and Germany and The Netherlands have specifically banned UberPOP (TNCs: A Worldwide Overview of Regulatory and Legal Actions, 2015). Even when Uber became licensed, Uber was still under scrutiny by the authorities. For example, China "investigat[ed] the service over questions about its licensing" (Lawson, 2015). Australia began criminal action against Uber. Hong Kong, The Netherlands, France and China all have conducted police raids on Uber (TNCs: A Worldwide Overview of Regulatory and Legal Actions, 2015).

If the taxi companies in other countries perceive a threat by Uber, there is almost certainly enough clout to place political pressure on outsiders, such as Uber, Lyft and other non-local TNCs.

Liability and Auto Insurance

The requirement for a motorist to acquire vehicle insurance dates back to almost a century ago when Connecticut and Massachusetts were the first states in the nation to pass legislation making such purchase a law. The rationale behind this was twofold.

1. In the event that a driver has an accident and is found guilty of causing the accident ["at-fault"], insurance would cover any compensation.
2. At the time the private automobile was invented, it was determined that motorists would unavoidably be involved in incidents. If the accident resulted in any sort of loss, the possibility exists that the at-fault party may not have sufficient funds to cover the expenses (Anish, 2012).

Remarkably, three states presently do not require a driver to have car insurance: New Hampshire, Virginia and Mississippi. These states either give an owner the option to purchase or require purchase of insurance under certain terms and conditions.¹⁷

What makes automobile liability insurance controversial is somewhat convoluted. The issue is known as "insurance gap" (Cecil, 2014). As an example, an Uber Driver/Partner decides to go out and work for a few hours. Once s/he turns the cell phone on, it becomes a matter of when there will be a

¹⁷ New Hampshire requires purchase of insurance if found guilty of driving under the influence, if issued a moving violation summons subject to the infraction, or based upon the type of accident. Virginia offers the option to either purchase insurance or "pay an uninsured motorist fee"

(<http://www.dmv.virginia.gov/webdoc/pdf/vsa86.pdf>). Mississippi also grants the option to either purchase insurance or provide for a cash deposit or in bond.

(<http://www.dmv.org/ms-mississippi/car-insurance.php>).

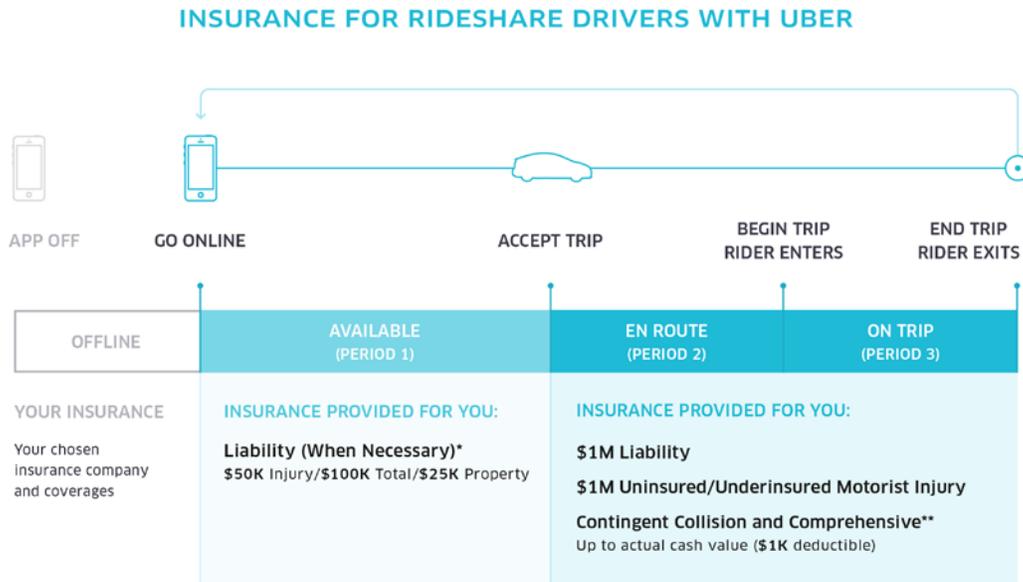
passenger in the vehicle. The ‘gap’ is the difference between having an actual passenger inside the vehicle as opposed to driving around just waiting until there is one. What is key is the Driver/Partner is employing his *personal* vehicle for *commercial* usage. Commercial, in this context, means the acceptance of compensation for transportation service as contrasted to personal, which is merely giving a friend or stranger a ride. Most, if not all, insurance carriers will not cover the owner of personal insurance who is driving under commercial circumstances.

The debate of who is held liable began when an Uber driver killed a child. Legal action on the grounds of wrongful death was filed against Uber. The debate revolves around two elements: 1) whether it makes a difference if there was an actual passenger in the car or not when the Driver/Partner accessed the app, and 2) when liability begins for Uber or the Driver/Partner once the app is opened. The question that has not been fully answered is “Why would a company that owns no cars buy car insurance?” (Badger, Uber Car Crash, 2013)

This relates to another controversy. Uber needed to devise a strategy to increase the number of drivers by marketing to those who wanted to become a Driver/Partner. One of the requirements was that s/he would need an automobile that meets Uber’s minimum standards. In the end, many either had cars but did not meet the criteria or just did not have cars altogether. Uber partnered with a bank and several car dealerships to join their new leasing/purchasing program. The issue was how the vehicle was being registered. The sales staff were registering the vehicle as personal rather than commercial. In California, even if a Driver operates for Uber rarely, the California Department of Motor Vehicles used to require that the Driver register their vehicles as commercial. This led many Driver/Partners to either convert their insurance to a commercial policy or to resign from Uber since commercial insurance increases the expense, making driving for Uber cost-prohibitive (Bensinger & Bhuiyan, Uber Advises to Buy Insurance, 2014). In late January 2015, California Department of Motor Vehicles suspended, indefinitely, the requirement for Driver/Partners to register their cars as commercial if contracting for Uber, Lyft and/or Sidecar (AirTalk, 2015).

An added controversy involving Uber and insurance stems from their Driver/Partners purchasing commercial policies. The consequences have resulted in Driver/Partners being “suspended” by Uber (Bensinger & Bhuiyan, Uber Suspends Drivers, 2015; Cecil, 2014). While Uber asserts that they, as a matter of policy, do not suspend their Driver/Partners who register their vehicles as commercial, Lyft answers why a TNC would be motivated to do so. “Requiring Lyft drivers...to get commercial plates would essentially treat peer-to-peer transportation the same as a taxi...noting that it would undermine efforts to allow ride-hailing by other state agencies” (Bensinger & Bhuiyan, Uber Suspends Drivers, 2015). One observer states, “Uber doesn’t want people to realize that operating legitimately means that [their Driver/Partners would] earn sub minimum wages...that’s why they suspended these [Driver/Partners]...if that secret gets out they’ll be out of business tomorrow” (Gross, Uber’s Suspending Drivers, 2015).

In March 2016, Uber amended and upgraded its policy for insurance covering its Driver/Partners. To illustrate, Figure 9, below, gives a detailed look at when Uber’s insurance coverage will commence.



* We maintain automobile liability insurance on your behalf if you do not maintain applicable insurance of at least this amount.
 ** Pays for damage to your vehicle if you maintain auto insurance that includes collision coverage for that vehicle.
 Note: Additional coverage will be provided where required by state and local laws. At least this much coverage is provided in all US states for drivers while operating personal vehicles under the transportation network company model.

Figure 9. Uber Insurance Coverage
 Source: Uber Newsroom Blog, 2014

Author’s Predictions

Change in Everyday Lexicon

A proprietary eponym “...is a brand name that has become...synonymous with, a general class of product or service...” (Wikipedia, 2016). Proprietary eponyms are interchangeable with the term’s genericized trademark. These are trademarks that “...become genericized...when the...services with which the trademark is associated have acquired substantial market share or mind share, such that the primary meaning of the genericized trademark becomes ...the service itself...” (Wikipedia, 2016).

To further illustrate, consumers have used phrases such as: “Make me a Xerox copy”, “I need a Q-Tip”, “Hand me the Scotch tape”, “Can I have a Coke?”, “May I have a Kleenex?”, “FedEx this to the main office” (Ries & Ries, 2002).

As consumers increase their use of TNC services, one might expect to hear, “Let’s Uber it over there” or “We can Uber down the road”. Lyft might be better positioned for a proprietary eponym. We already utilize it in our daily expressions. For example, “Do you need a lift to USF?” Regardless, we might anticipate Uber to be a part of our modern conversation in the very near future.

In addition to e-hailing, the phrase “Uberization”, or “uberization of trucking”, has come to mean the ability to open an app and “...match a carrier with a shipper, faster, easier, and at lower costs.”

(Network Fob, n.d.) Others use ‘uberization’ as “...the profusion of software to enable more automation in the load-matching process...” (Dills, 2015). Still others use “uberization” as an “... app enabling shippers to connect with available drivers seamlessly. GPS functionality on the phone enables in-transit visibility for shipper and receiver. In-phone cameras serve as proof of pickup and delivery. Standardized rates translate to quick payment upon delivery...” (Dills, On-demand load matching: Where it’s happening, 2015).

The final definition fails to mention that quick payment is made automatically to a credit card, as per Uber’s requirement, when opening an account.

Unionization

As of December 2014, there were 162,037 “active drivers”, or Driver/Partners, who accomplished at least four rides. According to Uber’s data, Driver/Partners earn more than those who work for cab companies on a full-time basis (Badger, We Know How Many Drivers Uber Has, January 22, 2015). But what Uber fails to mention is whether the earnings are gross or net. Regardless, there have been a myriad of protests all over the nation. For example, in New York, Tampa and Dallas, there have been organized protests over Uber lowering its fares and leading to a reduction in Driver/Partner income. Uber Driver/Partners have protested, as illustrated in Figure 10.



Figure 10: Uber Driver/Partners protesting at rally in NYC

The Dallas protesters have, for the most part, a legitimate complaint. Uber Driver/Partners for UberBlack (rides in luxury-style vehicles) in Dallas, rallied when they learned of a new policy to force them to accept UberX Riders who pay a much lower fee. Under these conditions, UberBlack Driver/Partners will not only work for less, but because they were also compelled to purchase fancier vehicles, in some cases the income may not be able to sufficiently cover such expenditures (Wilonsky, 2015).

Even if 12,000 Driver/Partners resigned and there are 150,000+/- remaining, the possibility exists that should Driver/Partners unionize nationally, Uber would have no choice but to listen to their demands. The six-figure number alone shows superior strength, and shows no deceleration. By January 2015, the number of Driver/Partners increased 200% for every six-month period for the previous two years (Badger, 2015). If the Driver/Partners collaborate with experienced negotiators, this could radically change both the business model and the future practices of Uber as well other TNCs. Should Driver/Partners go forward, they would have three options: join the Amalgamated Transit Union (ATU), develop their own union, or join the Teamsters.

This prediction may come to fruition quicker than anticipated. In December 2015, the City of Seattle passed legislation permitting Uber and Lyft drivers to unionize. Teamsters Local 117, which is based in the Seattle Area, assisted in shaping and crafting the new law (Stangler, 2015).

Obituary for a Taxi

On April 14, 2016, an investigative reporter published findings that Uber and Lyft have, for the most part, decimated the taxi business in Los Angeles, California. It took approximately three years, but the number of pre-arranged trips and total number of trips have decreased by 42% and 30%, respectively (Nelson, 2016). As seen in Figure 11, the number of trips by taxi in 2012, have considerably declined in the following three years. Intriguingly, “the city’s most popular nightlife and tourist destinations” were primarily where the sharp declines occurred. Over 66% of taxi rides in San Francisco have dwindled “over a two-year period”. And “many drivers have seen their trips fall by as much as 40%, and the decline seems

to be accelerating”. Some of these drivers have jumped ship and have become Uber Driver/Partners. (Nelson, 2016). Although other major cities have experienced declines, it is incomparable to the decline seen in Los Angeles and San Francisco.

Current records indicate that Uber and Lyft have gained permission to operate to and from Los Angeles Airport (LAX). Initial information indicates that they are managing approximately 24,000 trips per week (Nelson, 2016). While these numbers represent present conditions, only time will tell whether taxi companies will still be in business or go extinct.



Figure 11. Uber v. L.A. Taxi Industry
Source: Los Angeles Department of Transportation¹⁸

Automated Vehicles

In 2012, Google announced that it reached a milestone of completing 300,000 miles of automated vehicle operation without incident (Rosen, 2012). Since then the automated vehicle (AV) has received an increased level of attention from media and academic researchers. Uber began to take notice, too. In 2015, Uber published on their blog that it has formed a “strategic partnership” with Carnegie Mellon University (CMU) to fund and build the Uber Advanced Technologies Center in Pittsburgh, Pennsylvania. Uber’s CEO, Travis Kalanick stated, “[This] will provide a forum for Uber technology leaders to work closely with CMU faculty, staff, and students – both on campus and at the National Robotics Engineering Center (NREC) – to do research and development, primarily in the areas of...vehicle safety and autonomy technology” (Uber Newsroom Blog, 2015). It further states, “[Uber Advanced Technologies] Center will aid in local job creation” (Uber Newsroom Blog, 2015).

There is a symbiotic relationship that presently exists: Driver/Partners rely on Uber as an income source and Uber relies on Driver/Partners to serve the Riders and continue revenue generation. Uber seeks, in the long term, to replace the Driver/Partners with the AV. A major benefit to Uber would be keeping the 80% fee it currently pays to its Driver/Partners. Drawbacks include the cost of maintenance, insurance, registration, and market acceptance of AVs.

An alternative outcome might be a “hybrid” scenario. Uber would still keep its Driver/Partners and could slowly introduce the AV in minor increments. However, if the AV becomes publicly accepted

¹⁸ Nelson, L. J. (2016, April 14). *L. A. Now*. Retrieved April 18, 2016, from Los Angeles Times: <http://www.latimes.com/local/lanow/la-me-ln-uber-lyft-taxis-la-20160413-story.html>

and Uber replaces all of its Driver/Partners with AVs, Uber could become more popular than ever imagined. The losers will be the thousands of Driver/Partners who helped Uber advance its business.

TNCs as a Complement to Transit

A commonly known predicament within the transit industry is the “first mile/last mile problem”. In this context, first mile is used to explain the lack of easy access from an origin to mass transit. Last mile means the lack of easy access from mass transit to his or her final destination. A passenger uses one mode to reach public transit so that s/he can arrive at his/her planned destination.

The Metropolitan Atlanta Rapid Transit Authority (MARTA) is the ninth largest transit agency in the United States.¹⁹ It is a multi-modal organization that offers Bus Rapid Transit, bus and subway service in the City of Atlanta. In 2015, it signed an agreement with Uber called the “Last Mile Campaign” (Jack, 2015). To assist residents and tourists, MARTA has a dedicated website providing instructions and advice on getting to Atlanta’s points of interest (<https://martaguide.com/category/uber/>). Almost a year later, it appears to be successful.

Furthermore, many agencies across the nation do not provide service 24 hours per day, 7 days per week. Uber can complement transit when transit is unavailable in the late evening or early morning. (Galloway, 2016). When Uber first launched in San Francisco its target market was men and women who frequented bars and clubs late at night. The Bay Area Rapid Transit (BART) is not a 24 hour a day, 7 day a week operation nor is the San Francisco Municipal Transportation Agency. TNCs can not only become transit’s complement, but also reduce air pollution and traffic jams by enabling people to forgo vehicle possession.

In March 2016, the City of Altamonte Springs, a suburb of Orlando, Florida entered into an agreement with Uber to partially subsidize rides where the origin and destination are within the municipality’s boundaries. The subsidies are 25% to/from the SunRail commuter railroad station and 20% to/from anywhere within Altamonte Springs. The agreement is a one-year pilot program to determine if it can work. It is the first city in the United States to assist in paying part of an Uber trip (Comas, 2016). The Mayor of Altamonte Springs sums it up. “I look forward to the day, when in the very near future, we can step off SunRail and immediately get into an Uber vehicle to reach our final destination” (Comas, 2016).

Conclusion

This paper provided an introduction to the concept of a Transportation Network Company (TNC). It concentrated on one of these TNC’s: Uber. It further discussed Uber’s business model and how regulators were compelled to categorize Uber under a classification that balanced the rights of all parties. This paper discussed the advantages and disadvantages of TNCs, and the variety of controversies surrounding them.

Over the past few years many articles have been published about Uber and its rivals. The mainstream media have focused upon a couple of main points. Primary is its valuation, particularly, its current worth. Uber is, at this time, measured in financial terms anywhere from \$62.5 – \$70 billion, and more important is how Uber is not on any stock exchange.²⁰ Secondly, broadcast media have focused upon the controversies surrounding Uber, as described in this paper.

Right now the Driver/Partners await to learn their fate as to if they will legally be categorized as employees or remain as independent contractors. Recently, Uber offered an out-of-court settlement involving a \$100 million cash outlay. Part of the proposed settlement terms was that Uber still gets to classify Drivers as independent contractors.

¹⁹ APTA ranked transit agencies in the United States based upon the number of total annual passenger trips.

²⁰ At the time of this report, Uber had no defined date in the near future to go public.

Uber has had to overcome a series of obstacles and still does as it goes forward. Notice how Figure 1 displays the final logo at the far right. It was purposely inserted to symbolize the great app that will be invented for future transportation. Irrespective of what it may become, Uber will likely have to cope with other new competitors.

As for the mass transit industry, to offer similar convenience as TNCs but at a more affordable price, public transit providers will need to adapt to cashless/paperless types of fare collection methodology. Several agencies have experimented with electronic style fare payments. Challenges such as union acceptance, funding and strategic planning for future technological needs, such as replacing obsolete equipment, will require further research, investment and negotiation.

Earlier it was mentioned that there must be a vision. Here is a sample: "...fleets of self-driving cars continuously picking up and dropping off passengers, who pay next to nothing in fares; the end of car ownership; the end of traffic accidents; the end of fossil fuels and pollution; [how can anyone] lose..." (Hawkins, 2016). While travelers pursue this dream, automobile manufacturers and TNCs like Uber will continue to search for the next profitable venture as advancing technologies keep altering the playing field.

References

- AirTalk. (2015, January 26). *AirTalk*. Retrieved January 15, 2016, from 89.3 KPCC:
<http://www.scpr.org/programs/airtalk/2015/01/26/41249/dmv-suspends-commercial-license-requirement-for-ub/>
- Amira, D. (2013, July 1). *Daily Intelligencer*. Retrieved April 10, 2016, from New York Magazine:
<http://nymag.com/daily/intelligencer/2013/07/uber-helicopter-uberchopper-hamptons-july-3rd.html#>
- Andersson, M., Hjalmarsson, A., & Avital, M. (2013). *Beta*. Retrieved December 15, 2015, from Semantic Scholar: <https://pdfs.semanticscholar.org/a5d1/c8142c5b5e83166745a00d59afa74b189397.pdf>
- Anish, J. (2012, January 20). *Consumers*. Retrieved April 12, 2016, from Cover Hound:
<https://coverhound.com/blog/post/why-is-car-insurance-mandatory>
- Badger, E. (2013, September 10). *Commute*. Retrieved April 16, 2016, from Citylab:
<http://www.citylab.com/commute/2013/09/real-future-ride-sharing-may-all-come-down-insurance/6832/>
- Badger, E. (2015, January 22). *Wonkblog*. Retrieved March 7, 2016, from The Washington Post:
<https://www.washingtonpost.com/news/wonk/wp/2015/01/22/nw-we-know-many-drivers-uber-has-and-how-much-money-theyre-making%E2%80%8B/>
- Badger, E. (2015, January 22). *Wonkblog*. Retrieved March 7, 2016, from The Washington Post:
<https://www.washingtonpost.com/news/wonk/wp/2015/01/22/read-ubers-new-study-of-the-demographics-earnings-and-employment-decisions-of-its-workers/>
- Bensinger, K., & Bhuiyan, J. (2014, December 22). *Tech*. Retrieved April 17, 2016, from BuzzFeed News:
<http://www.buzzfeed.com/kenbensinger/ubers-yawning-insurance-gap#.nm8MdoDw7>
- Bensinger, K., & Bhuiyan, J. (2015, January 22). *Tech*. Retrieved April 17, 2016, from BuzzFeed News:
http://www.buzzfeed.com/kenbensinger/ubers-auto-registration-gambit?utm_term=.lcrvRoBnO

- Bertoli, A. (2015, July 22). Retrieved March 24, 2016, from Green Living Ideas:
<http://greenlivingideas.com/2015/07/22/15-best-apps-for-carpool-and-rideshare-in-2015/>
- Canvanizer. (n.d.). Retrieved March 26, 2016, from <https://canvanizer.com/how-to-use/business-model-canvas-vs-lean-canvas>
- Cecil, A. (2014, October 8). *Blog*. Retrieved April 7, 2016, from Policy Genius:
<https://www.policygenius.com/blog/insurance-secret-uber-doesnt-want-know/>
- Cecil, A. (2015, April 8). *Auto Insurance*. Retrieved April 9, 2016, from Policy Genius:
<https://www.policygenius.com/blog/uber-lyft-and-other-rideshare-drivers-now-have-insurance-options/>
- Chen, L. (2015, December 4). *Forbes Investing*. Retrieved March 7, 2016, from Forbes:
<http://www.forbes.com/sites/liyanchen/2015/12/04/at-68-billion-valuation-uber-will-be-bigger-than-gm-ford-and-honda/#67319dc35858>
- Christensen, C., Raynor, M. E., & McDonald, R. (2015, December). Retrieved March 27, 2016, from Harvard Business Review: <https://hbr.org/2015/12/what-is-disruptive-innovation>
- ClunkClunk. (2015, October). *Out Of The Loop*. Retrieved March 28, 2016, from Reddit:
https://www.reddit.com/r/OutOfTheLoop/comments/3i3dl0/why_is_uber_so_controversial/
- Comas, M. E. (2016, March 4). *Seminole County News*. Retrieved April 17, 2016, from Orlando Sentinel:
<http://www.orlandosentinel.com/news/seminole/os-altamonte-springs-uber-transportation-20160304-story.html>
- Current Lyft Promotions for 2016*. (2016, April 4). Retrieved April 18, 2016, from [rideshareapps.com](https://rideshareapps.com/current-lyft-promotions-for-2016/):
<https://rideshareapps.com/current-lyft-promotions-for-2016/>
- Dalal, M. (2016, March 22). *Live Mint E-Paper*. Retrieved March 2016, 24 , from Live Mint:
<http://www.livemint.com/Companies/LRaNYUrBjTD6qAdc3yDolJ/Whos-lying-about-its-market-share-Ola-or-Uber.html>
- DeAmicis, C. (2014, December 10). *GIGAOM*. Retrieved February 1 , 2016, from www.gigaom.com:
<https://gigaom.com/2014/12/10/heres-why-sidecar-wasnt-named-in-the-das-ridesharing-lawsuit/>
- Deep, A. (2015, October 29). *Juggernaut*. Retrieved March 21, 2016, from Next Juggernaut:
<http://nextjuggernaut.com/blog/uber-business-model-canvas-what-led-to-uber-success/>
- Dills, T. (2015, April 1). *Business*. Retrieved April 12, 2016, from Overdrive:
<http://www.overdriveonline.com/on-demand-load-matching-where-its-happening/>
- Farivar, C. (2016, February 11). *Civilization & Discontents*. Retrieved April 19, 2016, from Ars Technica:
<http://arstechnica.com/tech-policy/2016/02/more-uber-drivers-file-labor-lawsuits-one-claims-he-only-makes-80-per-week/>
- Fink, E. (2014, August 12). *Tech*. Retrieved April 15, 2016, from CNN Money:
<http://money.cnn.com/2014/08/11/technology/uber-fake-ride-requests-lyft/>
- Fink, E. (2014, August 5). *Tech*. Retrieved March 12, 2016, from CNN Money.
- Finkel, I., & Courcoulas, C. (2015, June 25). *Tech*. Retrieved April 10, 2016, from Bloomberg Technology:
<http://www.bloomberg.com/news/articles/2015-06-25/uber-crosses-continent-with-istanbul-water-taxi-service>

- Freed, B. (2015, June 30). *News & Politics*. Retrieved April 10, 2016, from Washingtonian: <http://www.washingtonian.com/2015/06/30/why-you-shouldnt-call-uber-and-lyft-ride-sharing/>
- Gannes, L. (2013, September 19). *All Things D News*. Retrieved March 9, 2016, from All Things D: <http://allthingsd.com/20130919/ride-sharing-is-legal-in-california-utilities-commission-votes-unanimously/#ethics-statement>
- Gett. (2016). *Home*. Retrieved March 22, 2016, from <http://gett.com/nyc/>
- Goldmark, A. (2013, August 8). *In California, They're Not Taxis, They're "Transportation Network Companies"*. Retrieved December 21, 2015, from WNYC: <http://www.wnyc.org/story/311452-california-theyre-not-taxis-theyre-transportation-network-companies>
- Gross, B. (2015, January 23). *LA Transportation*. Retrieved April 17, 2016, from Curbed Los Angeles: <http://la.curbed.com/2015/1/23/9999572/ubers-been-suspending-southern-california-drivers-for-getting>
- Gross, D. (2014, April 8). *Tech*. Retrieved April 10, 2016, from CNN: <http://www.cnn.com/2014/04/08/tech/mobile/uber-rush-delivery/>
- Hansen, T. (2014, August 26). *Pulse*. Retrieved March 28, 2016, from LinkedIn: <https://www.linkedin.com/pulse/20140826055111-35338609-is-your-company-s-business-model-sustaining-or-disruptive>
- Hausman, A. (2013, May 23). *Risk vs. Reward*. Retrieved March 22, 2016, from Capitalist Creations: <http://capitalistcreations.com/lyfts-business-model-exploiting-an-existing-competitors-weakness/>
- Hawkins, A. J. (2016, January 6). *Transportation*. Retrieved April 20, 2016, from The Verge: <http://www.theverge.com/2016/1/6/10719414/uber-lyft-gm-driverless-cars-ridesharing>
- Hill, K. (2014, August 31). *A Financial Model Comparing Car Ownership with UberX (Los Angeles)*, Blog. Retrieved January 5, 2016, from Medium: <https://medium.com/@kaleazy/a-financial-model-comparing-car-ownership-with-uberx-los-angeles-b7becd917095#.5ed8vikvy>
- Huet, E. (2014, December 17). Uber Says It's Doing 1 Million Rides Per Day, 140 Million In Last Year. *Forbes*. United States: Fopr. doi:<http://www.forbes.com/sites/ellenhuet/2014/12/17/uber-says-its-doing-1-million-rides-per-day-140-million-in-last-year/#d6ba4f87a686>
- Huet, E. (2014, December 9). *Forbes Tech*. Retrieved February 3, 2016, from Forbes: <http://www.forbes.com/sites/ellenhuet/2014/12/09/sf-la-district-attorneys-sue-uber-and-lyft-over-misleading-business-violations/2/#4f63124d29bb>
- Huet, E. (2015, August 18). *Tech*. Retrieved March 22, 2016, from Forbes: <http://www.forbes.com/sites/ellenhuet/2015/08/18/inside-lyfts-and-ubers-carpooling-quest-uberpool-lyft-line/#2d93d96411a5>
- Hughes, M. (2014, July 4). *Web Culture*. Retrieved from Make Use Of: <http://www.makeuseof.com/tag/uber-threatening-traditional-taxi-services/>
- Hyder, Y. (2014, February 7). *Case Study 15*. Retrieved February 14, 2016, from University of Minnesota: http://www.tc.umn.edu/~ssen/IDSC6050/Case15/Group15_index.html
- Jack. (2015, July 23). *Uber News*. Retrieved February 2016, 22, from Uber: <https://newsroom.uber.com/us-georgia/uber-marta-connecting-the-last-mile/>
- Jelinski, C. (2015, September 29). *Is there a difference between Uber and Uberpop?* Retrieved from Quora: <https://www.quora.com/Is-there-a-difference-between-Uber-and-Uberpop>

- Jones, L. (2015, July 10). *News*. Retrieved March 14, 2016, from LAist:
http://laist.com/2015/07/10/uber_driver_explains_the_pros_and_c.php
- Kato, T., Nakanishi, T., & Wakasugi, T. (2016, April 19). *Business*. Retrieved May 2, 2016, from Nikkei Asian Review: <http://asia.nikkei.com/Business/Companies/Car-sharing-services-reshaping-the-mobility-landscape>
- King, D. (2015, October 6). *Official*. Retrieved May 5, 2016, from AutoBlog:
<http://www.autoblog.com/2015/10/06/bmws-drivenow-car-sharing-shutting-down-sf-next-month/>
- Kokalitcheva, K. (2015, September 9). *Tech*. Retrieved May 3, 2016, from Fortune:
<http://fortune.com/2015/09/09/uber-carnegie-mellon-2/>
- Korosec, K. (2015, August 25). *Tech*. Retrieved May 2, 2016, from Fortune:
<http://fortune.com/2015/08/25/uber-self-driving-cars-arizona/>
- Kosoff, M. (2016, January 7). *Business Insider*. Retrieved April 30, 2016, from Tech Insider:
<http://www.businessinsider.com/uber-and-lyft-in-las-vegas-2016-1>
- Lawler, R. (2014, September 1). *When Does Uber Become Cheaper Than Owning A Car?* Retrieved May 3, 2016, from Tech Crunch: <https://techcrunch.com/2014/09/01/when-does-uber-become-cheaper-than-owning-a-car/>
- Lawson, A. (2015, May 7). *Business Analysis & Features*. Retrieved April 4, 2016, from Evening Standard: <http://www.standard.co.uk/business/markets/what-is-uber-and-why-is-it-so-controversial-10233084.html>
- Lazzaro, S. (2015, November 11). *Business & Tech*. Retrieved April 2, 2016, from Observer:
<http://observer.com/2015/11/uber-will-ban-you-if-drivers-give-you-a-bad-rating/>
- LeighFisher Inc. . (2015). *Commercial Ground Transportation at Airports: Best Practices*. Airport Cooperative Research Program. Washington, D.C.: Transportation Research Board. Retrieved January 12, 2016, from http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_146.pdf
- Lyft vs Uber: The Rivalry. (2016, October 25). *Rideshare Help*. Ridely.com. Retrieved December 21, 2016, from <https://rydely.com/lyft-vs-uber/>
- Nakanishi, T. (2016, April 21). *Interview*. Retrieved May 1, 2016, from Nikkei Asian Review:
<http://asia.nikkei.com/Business/Companies/GM-aims-to-move-you-with-Maven-car-sharing-service>
- Nelson, L. J. (2016, April 14). *L. A. Now*. Retrieved April 18, 2016, from Los Angeles Times:
<http://www.latimes.com/local/lanow/la-me-ln-uber-lyft-taxis-la-20160413-story.html>
- Network Fob. (2016, January 13). *Info Blog*. Retrieved April 18, 2016, from Network Fob:
<http://www.networkfob.com/uberization-in-transportation/>
- O'Brien, C. (2015, February 19). *News*. Retrieved April 10, 2016, from Venture Beat:
<http://venturebeat.com/2015/02/19/uber-launches-its-first-international-meal-delivery-service-with-ubereats-in-barcelona/>
- Perea, C. (2016, January 15). What To Make of The 2016 Uber Hourly Guarantees. *The Rideshare Guy*. (H. Campbell, Ed.) United States: Campbell, Harry. Retrieved January 20, 2016, from <http://therideshareguy.com/what-to-make-of-the-2016-uber-hourly-guarantees/>
- Perez, L. (2016, January 5). *In Defence of Marxism*. Retrieved March 7, 2016, from Marxist.com:
<http://www.marxist.com/uber-controversy-reveals-rottenness-of-taxi-industry.htm>

- Pershan, C. (2015, January 19). *sfist news*. Retrieved March 7, 2016, from SFist:
http://sfist.com/2015/01/19/uber_says_sf_revenues_are_500_milli.php
- Polzin, S. E. (2016, January 31). How New Technologies and Autonomous Vehicles May Change Public Transportation. 7. Tampa, Florida, United States: Center for Urban Transportation Research.
- Popper, B. (2015, June 17). *Tech*. Retrieved April 7, 2016, from The Verge:
<http://www.theverge.com/2015/6/17/8797021/uber-california-lawsuit-labor-employee-contractor>
- Promotions*. (2016, March 5). Retrieved March 19, 2016, from Ride Share Apps:
<http://rideshareapps.com/uber-driver-promo-code/>
- Rao, L. (2012, April 18). *News*. Retrieved April 10, 2016, from Tech Crunch:
<http://techcrunch.com/2012/04/18/uber-experiments-with-lower-priced-taxis-in-chicago-through-newly-launched-labs-group-garage/>
- Rayle, L., Shaheen, S., Chan, N., Dai, D., & Cervero, R. (2014, August). *Research Papers*. Retrieved April 10, 2016, from University of California Transportation Center:
<http://www.uctc.net/research/papers/UCTC-FR-2014-08.pdf>
- Raynault, E., & Christopher, E. (2013, May/June). *Public Roads*. Retrieved December 20, 2015, from Federal Highway Administration Research and Technology:
<https://www.fhwa.dot.gov/publications/publicroads/13mayjun/05.cfm>
- Reisinger, D. (2014, August 19). *Mobile*. Retrieved April 10, 2016, from CNet:
<http://www.cnet.com/news/uber-begins-to-test-local-delivery-with-corner-store/>
- Ries, A., & Ries, L. (2002). *Thw 22 Immutable Laws of Branding* (First ed.). New York, New York: HarperBusiness. Retrieved February 1, 2016
- Rogers, K. (2016, January 26). *Small Business*. Retrieved March 3, 2016, from CNBC:
<http://www.cnbc.com/2016/01/26/uber-lyft-put-pressure-on-taxi-companies.html>
- Ronen, L. (2015, September 9). *IPO*. Retrieved March 15, 2016, from Amigo Bulls:
<http://amigobulls.com/articles/lyft-ipo-presents-better-multiples-and-growth-potential-than-uber>
- Roof, K. (2013, July 9). Retrieved March 20, 2016, from The Street:
<http://www.thestreet.com/story/11971941/2/top-5-car-sharing-apps.html>
- Rosen, R. J. (2012, August 9). *Technology*. Retrieved April 17, 2016, from The Atlantic:
<http://www.theatlantic.com/technology/archive/2012/08/googles-self-driving-cars-300-000-miles-logged-not-a-single-accident-under-computer-control/260926/>
- Ryffel, P. (2015, November 16). *Edmonton Journal Opinion*. Retrieved February 3, 2016, from Edmonton Journal: <http://edmontonjournal.com/opinion/columnists/opinion-dont-buy-into-uber-myths>
- Saitto, S. (2014, December 10). *News*. Retrieved March 31, 2016, from Insurance Journal:
<http://www.insurancejournal.com/news/national/2014/12/10/349484.htm>
- Sebag, G. (2015, April 1). *Tech*. Retrieved March 24, 2016, from Bloomberg Technology:
<http://www.bloomberg.com/news/articles/2015-04-01/is-uber-a-taxi-service-or-a-mobile-phone-app-eu-regulators-ask>
- Segall, L. (2014, January 24). *Tech*. Retrieved March 24, 2016, from CNN Money:
<http://money.cnn.com/2014/01/24/technology/social/uber-gett/index.html?iid=EL>

- Sidecar*. (2015, June 18). Retrieved January 21, 2016, from Facebook:
<https://www.facebook.com/sidecr/photos/a.268897509853729.63634.238582516218562/864546500288824/?type=3&theater>
- Singleton, M. (2015, October 14). *Transportation*. Retrieved March 20, 2016, from Supply Chain 247:
http://www.supplychain247.com/article/uberrush_officially_launches_in_three_cities
- Sloan, R. (2015, September 20). *Uber Series C \$361MM Financing*. Retrieved March 19, 2016, from Quora: <https://www.quora.com/Ride-Sharing-Company-Comparisons/Given-the-financing-excitement-at-Uber-and-Lyft-are-there-any-other-viable-competitors-What-happened-to-Sidecar>
- Smith, A. (2015, April 1). *Internet & Tech*. Retrieved December 12, 2015, from Pew Research Center:
<http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>
- Soper, T. (2014, November 3). *GeekWire Trending*. Retrieved February 2, 2016, from Geekwire:
<http://www.geekwire.com/2014/sidecars-carpooling-feature-approved-california-regulators-uber-lyft-still-waiting/>
- Stangler, C. (2015, December 18). *Business*. Retrieved April 18, 2016, from International Business Times:
<http://www.ibtimes.com/why-uber-lyft-driver-union-push-could-disrupt-gig-economy-2232778>
- Steinmetz, K. (2014, November 20). *Tech Transportation*. Retrieved March 31, 2016, from Time:
<http://time.com/3595621/uber-lyft-flywheel-sidecar/>
- Stokes, N. (2015, August 5). *Use It*. Retrieved March 22, 2016, from Techlicious:
<http://www.techlicious.com/tip/uber-via-lyft-sidecar-best-car-service/>
- Szymkowski, S. (2015, June 24). *News*. Retrieved May 2, 2016, from GM Authority:
<http://gmauthority.com/blog/2015/06/opel-launches-new-car-sharing-service-carunity/>
- Timberg, C., Scola, N., & Peterson, A. (2014, November 18). *Technology*. Retrieved January 21, 2016, from The Washington Post: https://www.washingtonpost.com/business/technology/uber-executive-stirs-up-privacy-controversy/2014/11/18/d0607836-6f61-11e4-ad12-3734c461eab6_story.html
- TNCDemise. (2016, March 27). *Forums*. Retrieved March 28, 2016, from Uber People:
<http://uberpeople.net/threads/uber-and-lyft-should-be-shutdown.68893/>
- Todts, W. (2015, August 29). *News*. Retrieved April 1, 2016, from Transport Environment:
<https://www.transportenvironment.org/news/uber-case-shape-future-shared-mobility>
- TRB.org*. (2015). Retrieved February 7, 2016, from Online TRB:
<http://onlinepubs.trb.org/onlinepubs/sr/sr319facts.html>
- Uber. (2015, August 27). *Uber's YouTube Channel*. Retrieved January 27, 2016, from YouTube:
<https://www.youtube.com/watch?v=qUSMGCKd2DE>
- Uber vs Lyft: Comparing the Rideshare titans*. (2016, May 12). Retrieved May 20, 2016, from rideshareapps.com: <https://rideshareapps.com/uber-vs-lyft-comparison/>
- UberLUX*. (2016). (GoDrive, Inc.) Retrieved January 5, 2017, from I Drive With Uber:
<http://www.idrivewithuber.com/riders/uber-basics/uber-services/uberlux/>

- University of Cambridge. (2016). *Darwin Project*. Retrieved May 2, 2016, from University of Cambridge: <https://www.darwinproject.ac.uk/people/about-darwin/six-things-darwin-never-said-and-one-he-did>
- Velazco, C. (2016, February 11). *Engadget Business*. Retrieved March 3, 2016, from Engadget: <http://www.engadget.com/2016/02/11/uber-class-action-safety-settlement/>
- Viechnicki, P., Khuperkar, A., Fishman, T. D., & Eggers, W. D. (2015, May 18). *Articles*. Retrieved April 1, 2016, from Deloitte University Press: <http://dupress.com/articles/smart-mobility-trends-transportation-on-demand/>
- Voytek. (2013, March 4). *Newsroom*. Retrieved May 3, 2016, from Uber: <https://newsroom.uber.com/economics-of-car-ownership/>
- WAV Training. (n.d.). Retrieved January 22, 2016, from Uber Drive: <http://driveubernyc.com/wav/>
- Wheatly, 2. (2014, January 30). *Atlanta*. Retrieved March 22, 2016, from Creative Loafing: <http://clatl.com/atlanta/atlantas-taxi-industry-declares-war-on-uber-lyft/Content?oid=10295234>
- Who's Driving You. (2015, September 15). Retrieved March 24, 2016, from <http://www.whosdrivingyou.org/wp-content/uploads/2015/09/TNC-WW-REGS-SEPT-15-2015.pdf>
- Widman, J. (2015, January 9). *Mobile Apps*. Retrieved March 18, 2016, from Computerworld: <http://www.computerworld.com/article/2863379/need-a-ride-3-ridesharing-and-2-taxi-apps-considered.html>
- Wikipedia. (2016, April 17). *Generic trademark*. Retrieved April 17, 2016, from Wikipedia: https://en.wikipedia.org/wiki/Generic_trademark
- Wilonsky, R. (2015, September 20). *Transportation Blog*. Retrieved April 17, 2016, from The Dallas Morning News: <http://transportationblog.dallasnews.com/2015/09/uber-strike-continues-as-some-luxury-sedan-drivers-protest-lower-fares.html/>