



Mobility as a Service

This paper is based on work completed as part of The University of Minnesota's Transportation Futures Project. More information about The Transportation Futures Project can be found on the [project homepage](#).

INTRODUCTION

Technological advancements are changing the way people get from A to B. While the modes available have not shifted substantially, the delivery and means of accessing them has. Currently, many cities have programs that help people share cars, rides, bicycles and even electric scooters.

For the most part, personal motorized and non-motorized modes have always been considered a good—one that is owned by one person or family. However, recently developed services allow us to share these goods easily and efficiently. This is part of the “sharing economy”—the market of many types of goods owned by a large company or single owner, but rented or “shared” by many others.

Renting and “sharing” a vehicle or ride is not a new concept. In the past, renting cars or getting a ride in a taxi was inconvenient or costly for users.¹ For example, a vehicle rental usually required a trip to a rental center, typically located in airports, central business districts or auto dealerships. Except in very few places, like airports and central business districts, taxi rides needed to be scheduled in advance. Now, in many urban areas, it is possible to “carshare” (rent a car) or “rideshare” (rent a ride from individuals with excess capacity) at the push of a button through a smartphone app.

Several factors influence the availability of shared mobility services. Shared mobility expanded rapidly in Minnesota, and in particular the Twin Cities metro area. Modern car and bike sharing began locally over ten years ago.² To better understand the role mobility as a service might play in Minnesota's future, it is important to better grasp shared mobility innovation, its presence outside the region, and future trends in the market.

RIDESHARING

Perhaps the most disruptive innovation in shared mobility today is ridesharing,³ which pairs riders using online platforms with drivers who use personal, non-commercial vehicles.⁴ Ridesharing companies such as Uber and Lyft, also called transportation network companies (TNCs), gained international attention for their recent influence on the transportation system. Uber currently operates in 68 countries⁵ while Lyft operates in Canada and the U.S. only.⁶ Ridesharing gives drivers the opportunity to make money for their service and riders new options for getting around. Many private vehicle owners have made ridesharing their full time job, while others simply drive when they are able.⁷ Rideshare companies are, in many ways, simply an app with a back-end (or “cloud-based”) dispatch service instead of a traditional taxi cab dispatch.

Both Lyft and Uber offer several different vehicle and trip types to cater to the users' party size and need, and may be chosen in the app when the trip is first booked. Uber Pool and Lyft Line offer users the option to carpool with others. Users at two different origins and two different destinations can share a ride for a reduced fare.

¹ Levinson, D. et al. “The Transportation Futures Project: Planning for Technology Change.”, Minnesota Department of Transportation Research Services & Library, 2016.

² “Car sharing - Good for drivers and for cities,” Star Tribune: Newspaper of the Twin Cities (Minneapolis, MN), March 12, 2005: 20A, accessed January 26, 2016, <http://infoweb.newsbank.com/resources/doc/nb/news/108DC3D28B19D39A?p=NewsBank>.

³ The service is often labeled as ride sourcing, while traditional ride sharing refers only to carpooling and vanpooling. This paper will consider the services provided by companies similar to Uber and Lyft as ride sharing.

⁴ [Shared Use Mobility Center, 2016](#)

⁵ uber.com/cities

⁶ lyft.com/rider/cities

⁷ [TheRideShareGuy](#)

Rideshare companies also started offering services catered to the unique needs of individuals with impaired mobility. UberASSIST functions just as the basic Uber request does, except the driver is trained to assist with mobility devices and entry and exit to and from the vehicle. Companies like HopSkipDrive and Zūm are positioning themselves as “Uber for kids,” offering rides to safely pick kids up to and from school.

Local Context

Uber and Lyft began services in the Twin Cities in 2013. These services continue to see considerable popularity. In the year following its launch in the Twin Cities, wait times to hail rides averaged only 5 minutes.⁸ However, there was, and may continue to be, concerns about whether there is adequate ride coverage in lower income areas, like North Minneapolis.

Twin Cities taxis have attempted to replicate the online platform Uber and Lyft use with the iHail app. There is no evidence yet that riders have shifted their loyalties back to cab companies.

Rideshare companies and Twin Cities’ Metro Transit indicated a willingness to work together to bring greater, more connected mobility options. Uber suggests that ridesharing increases public transit usage by providing first/last mile connections for users (see Figure 6).⁹ Uber has partnered with a number of public mobility services around the U.S. offering discounts for transit users.¹⁰ In Minnesota, Metro Transit’s Guaranteed Ride Home program promises reimbursement for regular transit users who use rideshares in cases of emergencies or during limited transit hours.¹¹ The region is also exploring opportunities to subsidize Uber/Lyft trips for Metro Mobility users, a rapidly growing micro-transit service for people with impaired mobility.¹²

There are concerns, however, that ridesharing companies are overselling the implications of these transit partnerships. Atlanta newspapers have called the partnership between Uber and MARTA little more than Uber advertising on the MARTA app.¹³ In Minnesota, transit organizations have additional concerns about rideshare drivers’ background checks and insurance coverage, and whether they would be qualified to transport vulnerable or disabled passengers.¹⁴

⁸ “Uber, Lyft Deemed Success in Mpls.” Star Tribune. August 12, 2015, accessed August 2, 2018. <http://www.startribune.com/mpls-officials-say-first-year-for-uber-lyft-was-a-success/321473401/>

⁹ [Uber, 2015](#)

¹⁰ “Uber and Transit are Trying to Get Along.” CityLab. August 2, 2015, accessed August 2, 2018. <https://www.citylab.com/solutions/2015/08/uber-and-public-transit-are-trying-to-get-along/400283/>

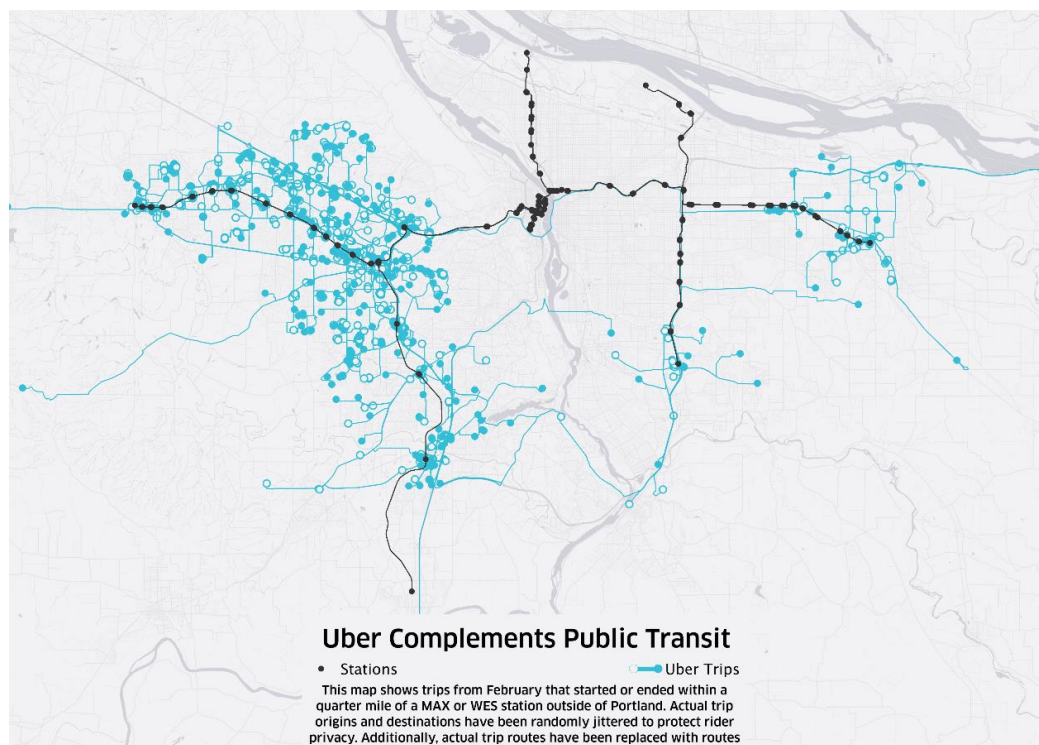
¹¹ [Metro Transit](#)

¹² Moore, Jane. “The Good Life.” Star Tribune. May 2, 2018.

¹³ “Uber and Transit are Trying to Get Along.” CityLab. August 2, 2015, accessed August 2, 2018. <https://www.citylab.com/solutions/2015/08/uber-and-public-transit-are-trying-to-get-along/400283/>

¹⁴ Moore, Jane. “The Good Life.” Star Tribune. May 2, 2018.

Figure 6: According to Uber, 1 in 4 Uber trips start or end within a quarter mile of a mass transit station.¹⁵



Current and Future Trends

Ridesharing has grown rapidly since Uber began testing the service with three cars on the streets of New York City in January of 2010.¹⁶ Cities have raised concerns about vehicle regulation, driver insurance, and data privacy. However, it is still unclear how these concerns affect the popularity of ridesharing.¹⁷

As it relates to congestion, Uber claims shared vehicle trips reduce the amount of cars on the road, especially in cities with limited transit alternatives. Researchers at University of California-Berkeley showed that every car available to share could replace as many as 13 private vehicles.¹⁸ However, recent findings reveal ridesharing actually increases the amount of vehicle miles traveled on the road.¹⁹ In addition to “deadheading,” where rideshare vehicles drive passenger-less between pickups, a large majority of users use Uber and Lyft mainly for late-night or social reasons.²⁰ In other words, ridesharing as it stands today may put additional vehicles on the roads rather than replace personal vehicle or public transit trips.

That said, shared mobility may have the potential to mediate, rather than reduce, congestion.²¹ Shared mobility and big data analytics do present opportunities for cities to improve public transit and make traffic management better financed, more intelligent, and predictable.²²

¹⁵ [Uber, 2015](#)

¹⁶ [Chokkattu, 2014](#)

¹⁷ [Rodriguez, 2016](#)

¹⁸ Martin, Elliot, Susan Shaheen, and Jeffrey Lidicker. 2010. Impact of Carsharing on Household Vehicle Holdings: Results from North American Shared-Use Vehicle Survey. Transportation Research Record: No. 2143: 150–158.

¹⁹ “The Ride-Hailing Effect: More Cars, More Trips, More Miles.” CityLab. October 12, 2017, accessed June 19, 2018. <https://www.citylab.com/transportation/2017/10/the-ride-hailing-effect-more-cars-more-trips-more-miles/542592/>

²⁰ Clewlow, R.R. and G.S. Mishra. “Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States.” *University of California—Davis*, October 2017.

²¹ Hensher, D.A. “Tackling road congestion – What might it look like in the future under a collaborative and connected mobility model?” *Transport Policy*, 2018.

²² *Ibid.*

Aside from moving people, Uber recently announced their efforts towards moving into the ever-expanding realm of delivery and freight services. UberFREIGHT aims to address trucker shortages and increasing freight demand by offering on-demand, mixed-fleet, and semi-autonomous trucking. The “Uberization of trucking” has tremendous implications for how goods are shipped and how companies handle logistics.²³ A deeper discussion can be found in the New Logistics trend analysis.

The future of Uber and Lyft, and their place in the transportation market is unclear. After General Motors invested \$500 million in Lyft in early 2016, the auto manufacturer acquired all assets of the now defunct Sidecar, a rideshare company that at one time competed closely with Uber and Lyft.²⁴ Although it seems as though GM and Lyft have competing interests (selling cars and eliminating cars on the road, respectively), some believe the move by GM was made to give themselves a place in the future autonomous car market. For more about the potential role of autonomous vehicles in ridesharing services, see the Autonomous Vehicle trend analysis.

CARSHARING

“Carsharing” is the marketing term for modern short-term car rental services. There are a number of different types of carsharing. However, they all rely on mobile information technology to streamline user experience. Mobile technology allows the customer and company to avoid the hassle of repetitive contract negotiations and inconvenient car pick-up and drop-offs that are common in traditional vehicle rentals.²⁵

Models of Carsharing

Round-trip carsharing. In the most common model, a private, for-profit company owns the services and vehicle fleet (there are a select few non-profit companies). The cars are parked and stored at designated locations, reserved by members for a set amount of time, and returned to the initial location at the end of their reservation. Round-trip carshares charge users based on mileage driven, the duration of the trip, or some combination of both.²⁶ Zipcar and HOURCAR are examples of round-trip carshare.

One-way or point-to-point carsharing. This type of carsharing is similar to the round-trip model. However, the user is not obligated to return the vehicle to the same location from where they started, as long as it is dropped off in the defined home boundary area.²⁷ Car2go is an example of point-to-point carshare.

Peer-to-peer (P2P). In peer-to-peer carsharing, a car owner may make their personal vehicle available for rent. Using web based technology provided by a carshare company as a platform to advertise their car, a prospective renter may browse, rent, unlock and return the vehicle without ever interacting with the owner. The carshare company provides insurance and hardware to the vehicle owner in addition to collecting a fee from each rental.²⁸ Getaround and Turo are examples of peer-to-peer carshare.

Niche carsharing services. These services include renting out private cars left in airport parking lots as well as closed network carshare systems that serve specific communities, like housing complexes or universities.²⁹

²³ “The Future of Trucking.” Medium. February 1, 2018, accessed June 11, 2018. <https://medium.com/@UberATG/the-future-of-trucking-b3d2ea0d2db9>.

²⁴ [Newcomer & Stone, 2016](#)

²⁵ Levinson, D. et al. “The Transportation Futures Project: Planning for Technology Change.”, Minnesota Department of Transportation Research Services & Library, 2016.

²⁶ [Shared Use Mobility Reference Guide](#)

²⁷ [Ibid](#)

²⁸ [Shared Use Mobility Reference Guide](#)

²⁹ [Ibid.](#)

Local Context

Carsharing began in Minnesota in May 2005³⁰ in the Uptown and Loring Park areas of Minneapolis with the introduction of HOURCAR. HOURCAR is a local non-profit specializing in round-trip carsharing with 60 cars and 2,300 members around the Twin Cities. The company locates their vehicles primarily around commercial corridors, colleges and universities, and transit stations. Users rent various vehicle types by the hour.³¹ HOURCAR is the University of Minnesota's official carsharing service, offering both hourly and annual rates.³² HOURCAR also allows users to swipe Metro Transit Go-To cards for completing trips. The company hopes to introduce an all-electric fleet of 100 cars by 2020.³³

Zipcar, the nation's largest carshare provider, also operates in the Twin Cities and serves Mankato and Winona, which are home to universities. The traditional car rental provider, Avis, currently owns Zipcar. Similar to HOURCAR, users must begin and end their trip at the same location.

Unlike other large cities, Minneapolis-St. Paul does not have one-way carsharing services. Car2Go, a private carsharing company that offers users the flexibility to return the car anywhere in the city and to pay only when the car is being used (rather than a fixed rate), announced in early 2017 that it was ceasing operations in Minneapolis-St. Paul after four years in the region. Car2Go cited "extremely high" state car rental taxes, which target carsharing and traditional airport rental services alike. In the case of the latter, these taxes fall on out-of-towners, like tourists and business travelers. It is a different case for carsharing services, whose primary customers are locals. Legislators are working toward a bill that exempts carsharing services from state rental car taxes and fees to attract newer mobility services for Minnesota residents.³⁴

The peer-to-peer company Turo operates in several Minnesota cities. Turo, praised as the "AirBnB" of car rentals, allows users to rent their personal vehicle directly to strangers.³⁵ The company promises longer durations for car rentals. Offering daily, weekly, and monthly rates, Turo claims their rental costs are as much as 35 percent less than traditional car rentals.³⁶ However, concerns related to how the company's insurance policy covers personal liability may limit expansion in Minnesota. Recently in New York, Turo was forced to cease all operations due to conflicts with the state's insurance policy requirements.

Current and Future Trends

Carsharing is not designed to replace traditional rental cars, which primarily serve tourists and business. This may change as services continue to evolve. Carsharing is also unlikely to be cost-effective as a replacement for daily commute trips. However, if other modes like walking, biking or taking transit to work are available, carsharing may be an option to replace owning a car or second car for other trips. Successful carsharing is related to parking costs. Generally speaking, carsharing is less promising in areas with plentiful free parking,³⁷ where there is no extra cost of storing your vehicle. However, in areas where free parking is limited, people don't want to own a personal vehicle and constantly have to pay for parking. Carsharing provides users access to cars when they need them without the hassle of car parking/storage.

Figure 1 illustrates the increase carsharing vehicles and users in North America between 1998 and 2016. The future of carsharing likely depends on the shared vehicle availability and the number of households willing to surrender a second or first car for the occasional trip.

³⁰ "Car sharing - Good for drivers and for cities," Star Tribune: Newspaper of the Twin Cities (Minneapolis, MN), March 12, 2005: 20A, accessed January 26, 2016, <http://infoweb.newsbank.com/resources/doc/nb/news/108DC3D28B19D39A?p=NewsBank>.

³¹ [HOURCAR](#)

³² [University of Minnesota](#)

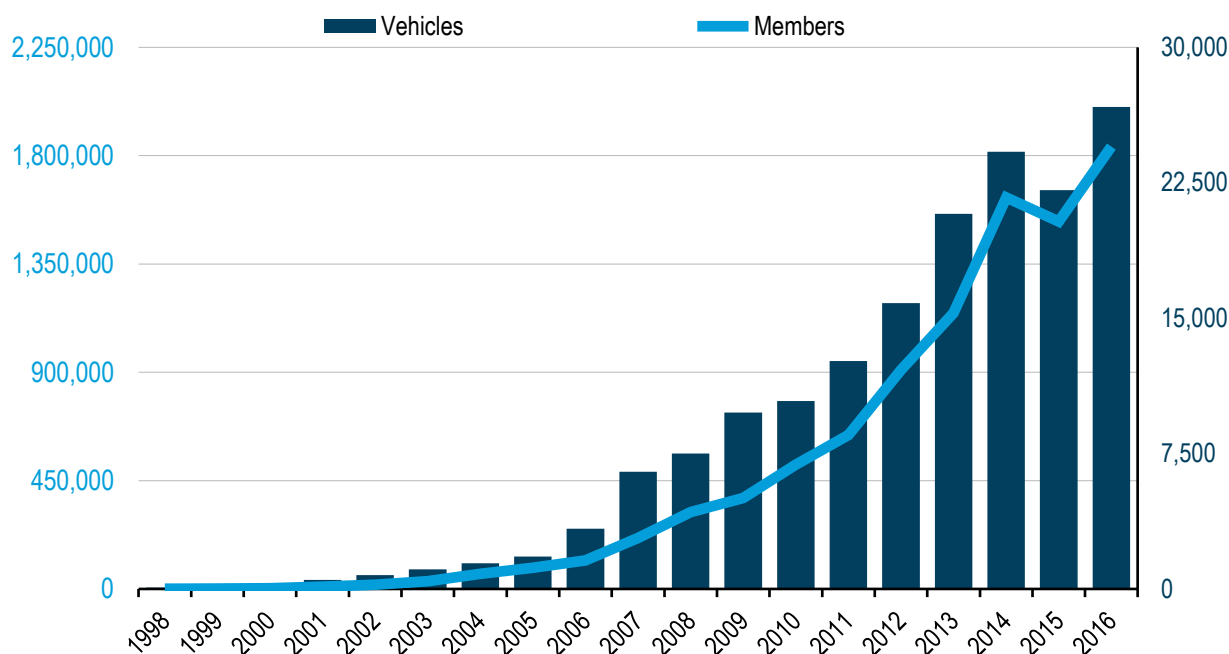
³³ "Twin Cities-based HourCar expanding, planning all-electric fleet." MPR News (Minneapolis, MN), April 2, 2018, accessed June 7, 2018. <https://www.mprnews.org/story/2018/04/02/hourcar-expanding-planning-all-electric-fleet>

³⁴ "Car2Go and gone: Legislation aims to lure more car-sharing services to TC." Star Tribune: Newspaper of the Twin Cities (Minneapolis, MN). February 11, 2017, accessed June 6, 2018. <http://www.startribune.com/car2go-and-gone-legislation-aims-to-lure-more-car-sharing-services-to-tc/413444813/>

³⁵ "Feel safe renting out your home? How about your car?" MPR News. February 14, 2018, accessed June 7, 2018. <https://www.mprnews.org/story/2018/02/14/feel-safe-renting-out-your-home-how-about-your-car>

³⁶ [Kessler, 2015](#)

³⁷ Levinson, D. et al. "The Transportation Futures Project: Planning for Technology Change." Minnesota Department of Transportation Research Services & Library, 2016.

Figure 1. Carsharing service and users in North America³⁸

Automakers' fate in the shared mobility market is also uncertain. As carshare services move from hourly pricing to longer-term, subscription-based rental services, emerging mobility companies claim to be heralding in a future where, "nobody's going to borrow money to buy a car again."³⁹ Flexdrive, in the Southern and Eastern United States, and Carma Car, in the Midwest, connect users to dealerships and automakers that offer monthly subscriptions on a wide range of cars. Automakers such as General Motors, BMW, and Nissan are also cashing in on the trend. These companies offer subscription rental services to a number of college campuses. In 2016, General Motors launched Maven, a carsharing program in Ann Arbor, Michigan, with plans to expand to Austin, Texas. With competition from car rental services, large car companies are attempting to carve out a portion of that market themselves.⁴⁰

Despite this upward trend, carsharing will continue to contend with questions of equity. Carsharing is often a service available only to the wealthy—those who can afford to live in walkable areas and have the financial flexibility to spend money on hourly rentals. Even for long-term, subscription-based or peer-to-peer services like Turo, users continue to be disproportionately white, middle-to-high-income, and under 35 years-old.⁴¹ However, a company known as WaiveCar is piloting a low-income electric vehicle program in Los Angeles.⁴² The program allows drivers under a certain income to use the cars for free for two hours. Advertisements on the cars serve as "driving billboards" and help cover the costs of the program.

This program represents only one example of how mobility companies are innovating to address equity issues by making shared mobility cheaper. Tom Fisher, University of Minnesota's Design Center, predicts that future shared mobility vehicles will surpass single vehicle ownership in affordability.⁴³ Figure 2 illustrates how, compared to today's privately owned cars, shared mobility vehicles could see cheaper per mile fixed and operating costs. This includes reduced expenses in insurance, gas, and general maintenance. Introducing affordable mobility options and technologies could gradually allow more geographically and economically disparate users to access the shared economy.

³⁸ Levinson, D. et al. "The Transportation Futures Project: Planning for Technology Change." Minnesota Department of Transportation Research Services & Library, 2016.

³⁹ "Automakers are Making Car Ownership Optional" Wired, May 27, 2018, accessed June 6, 2018.

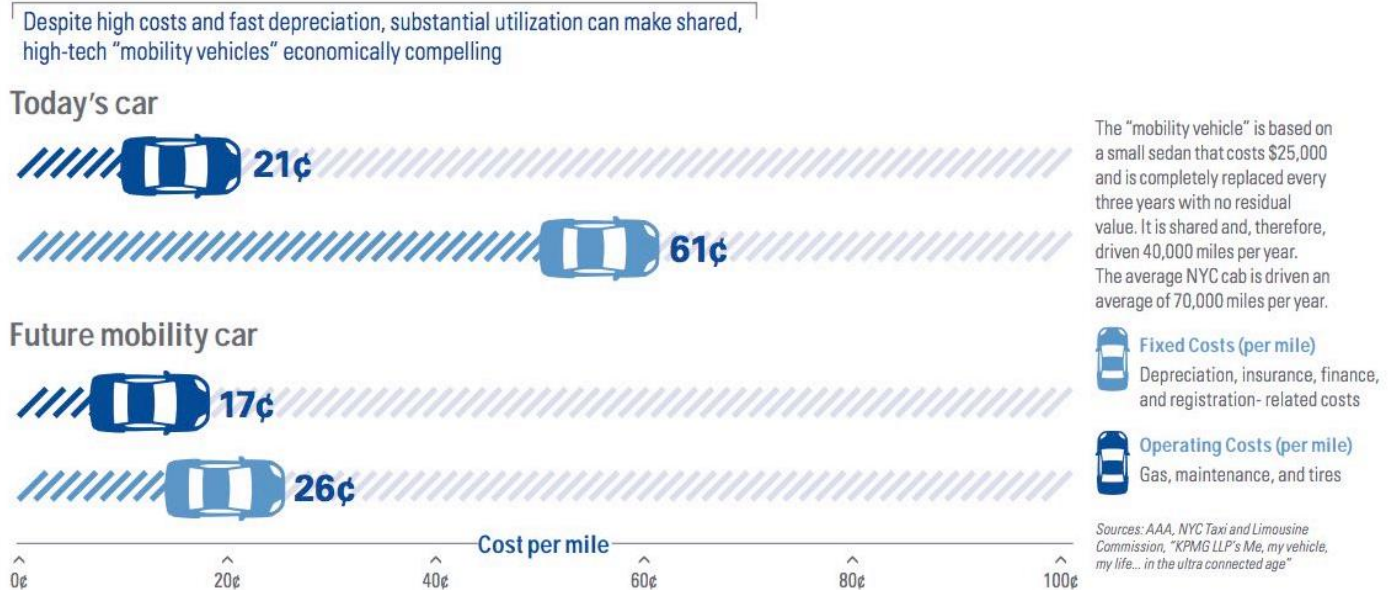
⁴⁰ [Inwin, 2016](#)

⁴¹ Shaheen, Susan, Martin Elliot, Apar Bansal. 2018. Peer-To-Peer (P2P) Carsharing: Understanding Early Markets, Social Dynamics, and Behavioral Impacts. University of California, Berkeley. <https://escholarship.org/uc/item/7s8207tb>.

⁴² [Edelstein, 2016](#)

⁴³ [Fisher, 2018](#)

Figure 2. Comparing the fixed and operating expenses of driving today's privately-owned vehicle versus a shared vehicle.⁴⁴



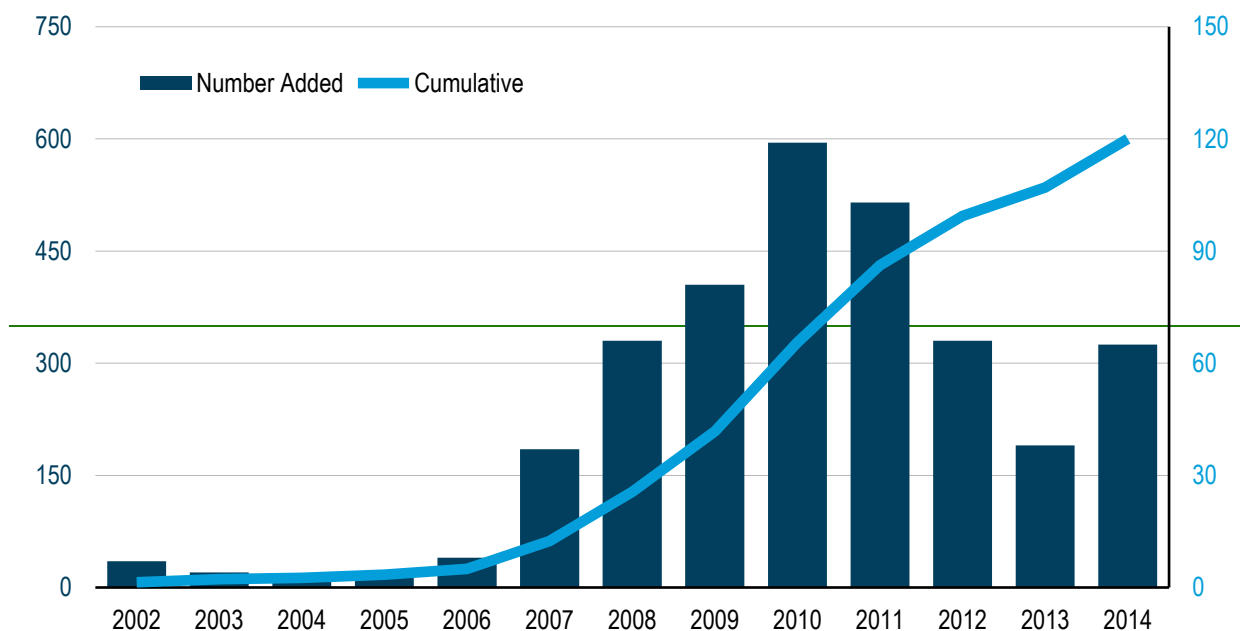
BICYCLE & SCOOTER SHARING

Bicycle sharing, as the name suggests, is any sort of system or supporting infrastructure that allows users to rent bicycles. These systems gained popularity in the past 10 years thanks to real-time information technology, which allows balancing the bicycle availability across the system.⁴⁵ More recently, electric scooter rentals, modeled after traditional bikeshare services, leapt into the national spotlight, albeit controversially.

Bikesharing attempts to provide bicycles when and where people need them, with the ability to get rid of them when they don't. As shown in Figure 3, bikesharing systems have grown in number worldwide.

⁴⁴ Fisher, 2018

⁴⁵ Shared Use Mobility Center, 2016

Figure 3: Growth of bikesharing systems globally⁴⁶

Models of Bikeshare

Dock-based system: Dock-based bikeshare systems are the most common type of bikesharing in cities today. They allow users to pick up and drop off bicycles at specific locations. The bikes are nearly all identical, and are checked out using on-site payment systems. After paying the fee, the rider can unlock the bike from the docking station.⁴⁷ The bike can be returned to any docking station within the system. Nice Ride has traditionally been an example of this type of service. However, Nice Ride will adopt a dockless system in the future.

Dockless or Flexible systems: These systems provide flexibility⁴⁸ for users to drop off and pick up a bicycle anywhere within the service area. GPS technology is embedded into each individual bicycle as opposed to the docking station, allowing users to locate bicycles on their smartphone or computer. Each bicycle has a lock on board that allows users to end their trip anywhere within the service area. The system also allows for bikeshare companies to incentivize users to help balance out the distribution of bicycles across the service area—something that dock-based systems have struggled with.^{49,50} Spin, LimeBike, Uber-owned Jump, and Beijing-based Ofo (the fastest growing bikeshare company in the world) are examples of this type of service, and exist in several cities across the United States and Canada.

Peer-to-peer bikesharing: Similar to peer-to-peer carshare, this model allows users to rent their personal bicycle to others for hourly or daily rates. Similarly, this model also considers bicycle shops or bicycle tourism services who rent bicycles in the peer-to-peer bikesharing category.⁵¹ Spinlister was an example of this type of service. In April 2018, Spinlister announced they will be ceasing all services.

⁴⁶ Levinson, D. et al. "The Transportation Futures Project: Planning for Technology Change." , Minnesota Department of Transportation Research Services & Library, 2016.

⁴⁷ [Shared Use Mobility Center, 2016](#)

⁴⁸ [The Bike-sharing Blog](#)

⁴⁹ [Ibid.](#)

⁵⁰ [WNYC, 2013](#)

⁵¹ [Shared Use Mobility Center, 2016](#)

Local Context

Minnesota has a pioneering history of bicycle sharing in North America, has embraced the modern incarnation of it in Minneapolis-St. Paul, and hopes to continue expansion to Greater Minnesota. Bikesharing in Minnesota began in 1996 with the Yellow Bike Project in Minneapolis and St. Paul.⁵² This program used coin-operated locks, which gave users access to distinctly painted yellow bicycles. This program was eventually cancelled when bikes were either kept for too long or disappeared altogether.

Nice Ride is a non-profit that formed in 2008 and became operational in June 2010. It started in Minneapolis with 700 bikes at 65 docks (or stations) and expanded to 1,800 bicycles and 198 stations in Minneapolis and St. Paul. The system logged 1.8 million total rides by the end of the 2016 season.⁵³ Users can pay a yearly membership for unlimited 60 minute rentals or pay-as-you-go at the stations or through the app.

Figure 4. The expansion of Nice Ride, 2010 - 2016⁵⁴

Year	Number of Stations
2010	65
2011	116
2012	146
2013	170
2014	170
2015	190
2016	198

In 2014, Nice Ride began a pilot system in Bemidji to evaluate the possibilities of bikesharing in smaller cities. Today, Nice Ride Bemidji is no longer operational. However, other small cities around the state have given bikesharing a try. Hastings, Rochester, Willmar, and Austin are all either operating or planning to operate bikeshare programs with varying similarities.⁵⁵ Using an honor system, Willmar and Austin distributed refurbished and donated bicycles as a free sharing service. Willmar's 'Yellow Bike' program has experienced mixed success—with a number of bicycles ending up people's backyards rather than the designated, yellow-painted racks.⁵⁶

Nice Ride announced in early 2018 that Motivate, the nation's leading private bikeshare firm, will take over operations by 2020.⁵⁷ Motivate hopes to add five times more bicycles into the system, launch a dockless bikeshare system, integrate with local transit options, and introduce electric pedal-assist and winter-specific bicycles. Also in 2018, Lyft, the popular ridesharing service, announced plans to acquire Motivate, pointing to a growing consolidation of shared mobility services.⁵⁸ While this change brings the end of Nice Ride's iconic green bikes, Nice Ride claims dockless bikes have the potential to create a fuller bikesharing network that reaches more economically and geographically diverse users.⁵⁹

⁵² Shaheen et al. "Bikesharing across the Globe," in *City Cycling*, ed. John Pucher and Ralph Buehler, (Cambridge: The MIT Press, 2012), 188.

⁵³ [Nice Ride MN](#)

⁵⁴ [Nice Ride MN, 2016 Annual Report](#)

⁵⁵ [Ross, 2015](#)

⁵⁶ "Nice Ride program putting 'butts on bikes' in Bemidji." *Star Tribune*. September 8, 2015, accessed August 1, 2018. <http://www.startribune.com/nice-ride-program-putting-butts-on-bikes-in-bemidji/326142601/>

⁵⁷ [Nice Ride MN, 2018](#)

⁵⁸ "Lyft plans to purchase leading U.S. bike-share operator." *Curbed*. June 1, 2018, accessed June 6, 2018. <https://www.curbed.com/2018/6/1/17417766/lyft-bikeshare-motivate-urban-transportation>

⁵⁹ [Nice Ride MN, 2018](#)

The transition to dockless hasn't all been smooth. St. Paul recently pulled out of Nice Ride's dockless bikeshare committee, citing disagreements with the process.⁶⁰ The decision mirrors a broader, nationwide contention between local government bodies and tech startups, who continually butt-heads on how to balance existing public infrastructure, city regulation, insurance policies, and rapidly advancing mobility technology.

Contentions will continue to progress as newer, 'micro-mobility' services become more accessible in the Twin Cities. Electric scootershares are an example of this type of service. These 20-pound, motorized, and stand-up scooters that reach speeds up to 15 mph and require a driver's license to operate have been taking off in West Coast cities and nearly two dozen other cities around the country since September 2017. In July 2018, Bird and Lime—two prominent electric scootershare startups—introduced 200 scooters into downtown Minneapolis and St. Paul's Frogtown.⁶¹ Meanwhile, dockless LimeBike operates in St. Paul, Edina and Golden Valley.⁶²

Minneapolis and St. Paul City Council continue to deliberate on various regulations to limit and manage the distribution of electric scooters and the dockless, Motivate/Lyft-owned Nice Ride. The goal is to ensure equitable access near transit lines and in low-income areas while taking active measures to prevent dockless scooters and bicycles from cluttering public infrastructure and vehicle right-of-ways.

The future of dockless bicycles, electric scooters, and micro-mobility is discussed more broadly below.

Current and Future Trends

Bikesharing can function as an extension of transit service, where transit riders transfer to a bike, then ride to a bikeshare dock nearer to their final destination. According to surveys, bikesharing reduces vehicle trips and increases transit ridership, especially in medium-density cities where the first and last mile distances between transit stops are greater. In Minneapolis, for instance, over 14 percent of survey respondents claim bikesharing increased their usage of bus and light rail.⁶³

Bikesharing does need not be station-based (with GPS and smart-phone apps). Innovations in bikesharing can help tackle the two large hurdles facing modern dock-based systems: the distribution and unpredictability of bicycles across the system and the time it takes to roll out a system large and reliable enough for users to benefit and use it.⁶⁴ Dockless bikesharing promises to remedy these issues, however the transition is not without its challenges.

Government agencies and newer bike and scooter share companies struggle to cooperate and bring well-implemented mobility services. On one side, sharing companies claim agencies are slow and not transparent in accommodating mobility innovation.⁶⁵ Companies have recommended agencies assign "mobility Czars", or experts dedicated to managing mobility trends. Many cities have attempted to stay ahead of the curve by publishing strategic plans and regulations aiming to accommodate future mobility trends. Seattle DOT, for instance, highlights 20 'first moves' to ensure 2-way dialogue between mobility services and government practices.⁶⁶ These moves hope to ensure mobility services are implemented equitably and intelligently through 'nimble' city regulations and adaptable transportation funding schemes.

Among the strategies are expanding data infrastructure and analytical capacities to model evolving mobility trends and unlock new opportunities for multi-modal trip planning. Bike-, car-, and ridesharing companies have pushed for Open Data platforms with similar goals in mind. Street-level data standards used by private companies and public agencies are incompatible and limited in utility. One of these platforms, SharedStreets, promotes

⁶⁰ "St. Paul pulls away from 'dockless' bike share proposal over concerns with process." Pioneer Press (Minneapolis, MN). January 17, 2018, accessed June 8, 2018.

⁶¹ "As St. Paul Battles Bird, Lime Rolls 100 More E-Scooters into Minneapolis." Twin Cities Pioneer Press. July 23 2018, accessed August 1, 2018.

⁶² <https://www.twincities.com/2018/07/23/have-you-heard-the-word-bird-limebike-rolls-100-e-scooters-into-minneapolis/>

⁶³ "Dockless LimeBike Rentals Hit Streets of Edina." Star Tribune. July 22, 201, accessed August 1, 2018. <http://m.startribune.com/dockless-limebike-rentals-hit-streets-of-edina/488815151/>

⁶⁴ Martin, E.W., and S.A. Shaheen. "Evaluating Public Transit Modal Shift Dynamics in Response to Bikesharing: a Tale of Two Cities." *Journal of Transport Geography*, 2014.

⁶⁵ [Marshall, 2016](#)

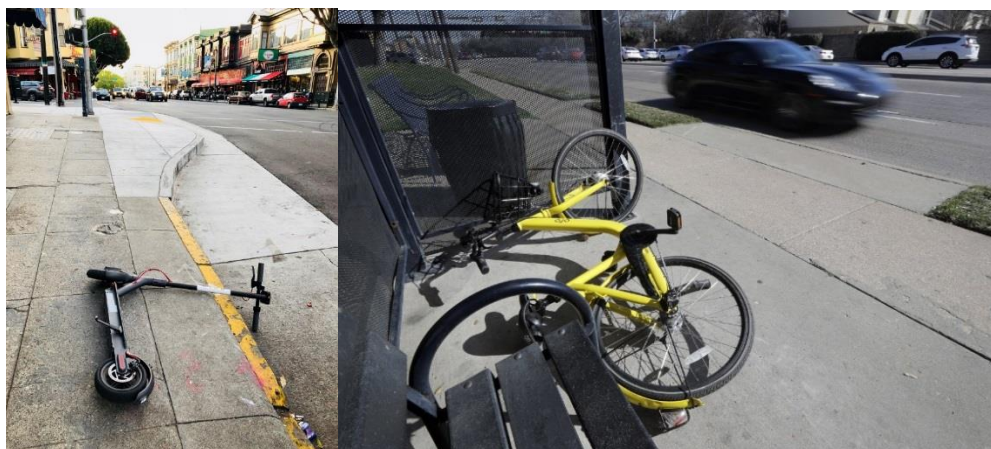
⁶⁶ [Shared Use Mobility Center, 2016](#)

⁶⁶ [Seattle DOT, New Mobility Playbook, 2017.](#)

real-time spatial data exchange to bridge the information gap between mobility companies and government agencies.^{67,68} These platforms promise to improve traffic safety, real-time traffic monitoring, and curbside management.

On the other side, government agencies accuse mobility startups of disregarding city regulation or, worse, purposefully bypassing them.⁶⁹ Cities like San Francisco,⁷⁰ Denver, and Nashville⁷¹ have put up roadblocks or suspended scootershares like Bird and Spin, despite their popularity,⁷² after failing to comply with city permitting regulations. Lack of oversight has led to discarded scooters obstructing roads, sidewalks, and business places, becoming public safety hazards (see Figure 5). Dockless bike and scooter share companies hope to address this problem by employing fulltime staff to manually balance the system and reduce sidewalk cluttering.⁷³ In fact, Bird has invited other micro-mobility companies to ‘pledge’ their commitment to helping city governments build bike lanes and maintain shared infrastructure.⁷⁴

Figure 5. In cities like San Francisco (left) and Dallas (right), unchecked implementation of shared, dockless bikes and scooters can clutter public spaces, impede pedestrian and vehicle traffic, or, worse, cause accidents.⁷⁵



THE FUTURE OF MOBILITY AS A SERVICE

As the services described above improve, urban environments become more populated, and behaviors change, so too will the services and modes upon which users rely. See Figure 6 for an overview of shared mobility services across the country. Car, bike, ride and scooter sharing will likely continue to grow as more people choose to share instead of own. Platforms such as TransitScreen help users balance the vast range of public and private mobility options by comparing different modes, costs, and times to travel between places—leaving the user to decide which service to use.⁷⁶

⁶⁷ “A Powerful Map Promises to Help Cities Keep Streets Free.” CityLab. February 22, 2018, accessed June 8, 2018. <https://www.citylab.com/transportation/2018/02/a-powerful-map-promises-to-help-cities-keep-streets-free/>

⁶⁸ [SharedStreets, 2018](#)

⁶⁹ “The Bike-Share Company Trying to Bypass Cities.” Governing. February 14, 2018, accessed June 8, 2018.

⁷⁰ “Bye-bye, SF scooters as Bird, Lime and Spin go on hiatus.” San Francisco Chronicle. June 4, 2018 accessed June 8, 2018. <https://www.sfchronicle.com/business/article/Bye-bye-SF-scooters-as-Bird-Lime-and-Spin-go-on-12966874.php>

⁷¹ “Bird agrees to suspend operations in Nashville, wait for scooter regulations.” Tennessean. June 7, 2018, accessed June 8, 2018.

<https://www.tennessean.com/story/news/2018/06/07/bird-scooters-impounded-nashville-thursday/681281002/>

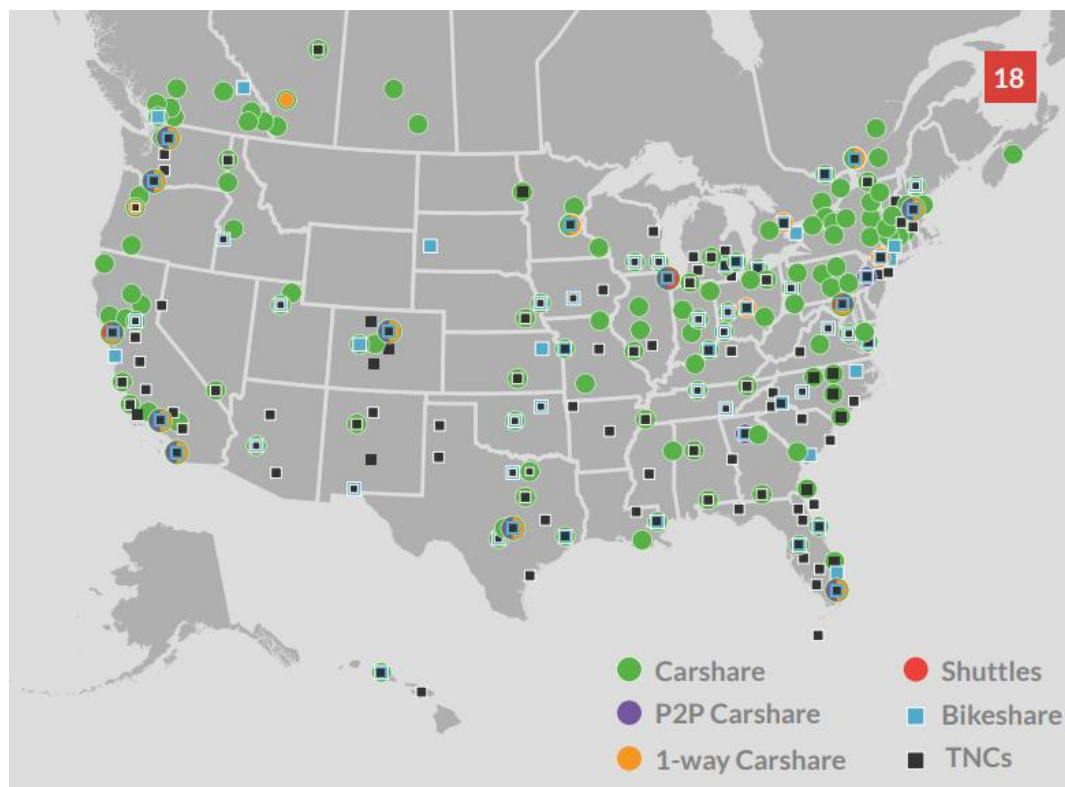
⁷² “The Love of the People Isn’t Enough to Keep Shared Electric Scooters Rolling.” Wired. July 15, 2018 , accessed August 2, 2018. <https://www.wired.com/story/shared-electric-scooters-rolling/>

⁷³ “The Love of the People Isn’t Enough to Keep Shared Electric Scooters Rolling.” Wired. July 15, 2018 , accessed August 2, 2018. <https://www.wired.com/story/shared-electric-scooters-rolling/>

⁷⁴ [Bird, LimeBike, Ofo, Mobike, Jump](#)

⁷⁵ Photos courtesy of Business Insider and Wall Street Journal.

⁷⁶ <http://transitscreen.com/>

Figure 7: Shared mobility across the country, 2016⁷⁷

Though still a relatively new concept, Mobility-as-a-Service has the potential to dramatically transform the way people travel and even the roads themselves. Figure 8 illustrates a scenario where shared mobility transforms congested roadways to a multimodal road network with infrequent private vehicle usage and parking. The idea being that with less cars, curb and parking space can be converted into green space or shared infrastructure.

Important to Twin Cities' goals of reducing congestion and improving air quality are 'mobility hubs.' Hubs are funded and built around major mass transit stations where stops are frequented. Curbside, sidewalk, and parking designs are introduced to encourage bike-, car-, and ridesharing.⁷⁸ Designs could include improved pedestrian and bicycle infrastructure around the station, curbside bump-outs for rideshare pickups and drop-offs, and traveler centers with staff to assist less tech-savvy transit users. Mobility hub initiatives hope to alleviate urban congestion by providing transportation alternatives and reducing single-occupancy commuter trips.

There are a number of obstacles to overcome before shared mobility fulfills its promise to reduce traffic and bring equitable, connected transportation options for all its users. While the advent of autonomous vehicles will likely further shape the shared economy, future success also hinges on government and private mobility-as-a-service companies' ability, or desire, to work together and make shared mobility a reality—for everyone.

⁷⁷ [Shared Use Mobility Center, 2016](#)

⁷⁸ [Twin Cities Shared Mobility Action Plan, 2017.](#)

Figure 8. A backed-up roadway (left) versus a multimodal road network with infrequent private vehicle usage and parking (right).⁷⁹



⁷⁹ Fisher, 2018