



Dockless Bikes: Regulation Breakdown



Photo by Riley L. O'Neil

INTRODUCTION

Over the past year, the streets of many international cities have been flooded with dockless bikes and that wave is currently hitting the U.S. Unlike current docking systems in the U.S., dockless bikes allow riders to end their rides and park anywhere they like. Dockless got its start in the U.S. in 2012, when Buffalo, NY launched their system using Social Bicycles (now called JUMP) and operated by Shared Mobility, Inc (now called Reddy Bikeshare) (Galligano, 2015). This paper looks at many positive and negative externalities dockless bikes can bring: offering affordable transit; ability to solve the issue of the last mile; saving cities

money and making transportation more equitable by servicing transit deserts; and offering cities rider data with the potential to help city planners implement new bike infrastructure. The negative externalities deal with: bikes blocking public ways, thrown into trees and rivers; stories of companies launching without a proper permit and without notifying city officials; safety issues; reports of lack of maintenance on broken bikes; and problems of inconsistent availability and locations.

Present day Amsterdam, a city with vast cycling culture that first introduced the historic “white” bike share in 1965,

allowed dockless companies to launch without solidifying regulations. The launch went poorly, resulting in complete clutter (the opposite of the city's reputation) and the city eventually banned dockless bikes. The lesson to learn from Amsterdam is: no matter how bike-centric your city is (e.g. vast cycling culture and bike infrastructure) cities must *always* be involved in dockless bike regulations to create guidelines that harness the positive externalities while limiting the negative externalities.

Dockless vendors are currently in talks with Chicago transportation officials and are looking to launch this new mode of transportation in the spring of 2018 (Greenfield, 2017). In order to prepare the City of Chicago for dockless bikes, we have compiled a list of American cities and their recent dockless bike permits, regulations, contracts and proposals (**please see Regulation Breakdown Chart**). With this report we provide unique takeaways from U.S. cities currently experimenting with (or proposing) pilot programs, which we then use to provide guidelines on how the City of Chicago should approach these new dockless bike vendors.

METHODOLOGY & CONSIDERATIONS

This report is broken into 4 categories to confront specific negative externalities associated with dockless bikes that the City of Chicago will need to take into account when considering regulations. The 4 categories are: *Operations & Maintenance; Ethical Standards (Equity & Data); Fleet Number, Rebalancing, Parking Requirements; and Safety*. Below those categories are 4 to 6 subcategories that dive into the regulations more

specifically. Our chart uses a bike symbol to indicate we found language specific to the Regulation & Requirement in the city's permit, regulations, contract or proposal. If we were not able to obtain or find any definitive information regarding a specific Regulation & Requirement we indicate it with N/A (information not found). We do not indicate whether or not there is "no" language in the pilot because we understand these conversations are evolving and we are just looking to start a discussion.

OPERATIONS & MAINTENANCE

City Has Rights of Removal / Prepared for Termination

There have been stories of dockless bikes being tossed in rivers, bikes blocking sidewalks, and bikes thrown in trees in cities across the world (Cohen, 2017). In order to remedy these issues, the city should clarify its *Rights of Removal*. *Rights of Removal* also relates to cities being *Prepared for Termination*, where the key takeaway is language that states the city can remove a bike or end the program at any time. If bikes are not parked appropriately or if bikes are causing some type of issue, the city should have the right to move/remove the bikes (Russell, 2018). The Seattle Department of Transportation (SDOT) and a majority of the cities in our analysis, require dockless bike vendors to remedy bike clutter/parking issues within two hours of being reported during business hours. Failing to do so would result in the immediate reduction of the number of bikes the company is allowed have in circulation in the city (Cohen, 2017).

Dockless Vendors Incur All Liability & Fees

When dockless vendors don't fix these issues, the city is left to deal with them. Which means, the city is forced to send one of their workers to perform rebalancing duties for the vendors in a scenario where maybe a bike has to be fished out of the river. Because of this, there should be fees, so the dockless system doesn't end up costing the city money. Each city has varying reimbursement caps for these problem scenarios, preparing themselves for most incidents. Reimbursement caps are the tool cities can use to make sure the dockless vendor pays for the these situations. This leads us to the next regulation: *Dockless Vendors Incur All Liability & Fees*.

There will be costs to manage and oversee the operators, enforce violations, and potentially remove damaged bikes from the public right-of-way. Dockless bikes shouldn't cost the city anything financially, so when there are issues the city is forced to remedy, dockless vendors should be the ones to shoulder that financial burden. Many cities including Seattle, Washington, D.C., and Charlotte have fixed termination plans in their regulations that they may act on at any time during unpleasant experiences with dockless vendors.

Accessible Dockless Provider Contact Info

It's important that nonusers and users of the dockless service can call vendors, or the city, with complaints. Most cities require contact information to be displayed physically on the bike, some cities have up-to-date/transparent websites with *Accessible Dockless Provider Contact Info* for bike vendors (e.g. operator names and emails) such as

Charlotte via their City Website. If there are any problems, people can call the dockless vendors during set business hours, usually 6am-10pm and vendors have 2 hours to fix the issue. Outside of business hours, most vendors have within 10 hours of receiving notice to solve an issue. If the dockless vendors are not responsive, nonusers and users can call the city and the city will take care of the issue accordingly.

Maintenance Requirements

Issues of cheap bikes and bikes in disrepair have been reported extensively (Hernandez, 2017), and due to these problems, the City of Chicago should have *Maintenance Requirements*. For example, in NYC's pre-pilot, they set the tone that each bike must be extensively tuned up every 45 days. While other cities have less detailed requirements, all cities do acknowledge that E-bikes need stricter maintenance due to higher speeds. For example, cities allowing e-bikes should make disc brakes standard for all vendors emphasizing safety and quality of service. When bikes aren't up to requirements, companies will be required to replace or remove them, or the city will remove them. It is important new vendors employ enough personnel to rebalance and care for the bikes; we suggest about one staff member per 100 bikes.

ETHICAL STANDARDS (EQUITY & DATA)

Equity Requirement for Underserved Neighborhoods

If dockless vendors are allowed to operate in the City of Chicago, they should be required to follow strict *Ethical Standards*. The first standard should be an *Equity Requirement for Underserved Neighborhoods*, especially if a previous or

current system in the area hasn't addressed these issues. In NYC's pre-pilot, they lay the groundwork for their program by stating that the dockless vendors will not compete with its existing docking-based bike share system (i.e. Citi Bike, NYC's version of Divvy). NYC states that dockless vendors would be limited to the outer boroughs (e.g. Bronx and Staten Island) and specific areas that don't have access to Citi Bike (Warekar, 2017). Los Angeles also saw the potential of dockless bikes expanding mobility by serving more areas of the city quicker than the public transit system and without financial constraints. Based on these considerations at this time, LADOT is recommending that dockless vendors operate in areas not served by Metro Bike Share in the foreseeable future (Linton, 2017).

Divvy saw losses in 2016, due to its effort to service areas that lack transit (a.k.a. transit deserts) (Wisniewski, 2017). Docking stations are expensive and a labor-heavy task to install. Unlike Divvy, dockless bikes can be "rebalanced" with the greatest of ease. Dockless bike companies are more nimble, more affordable, and do not affect taxpayers when they suffer financial losses (Griffith, 2017). When it comes to servicing transit deserts, dockless bikes might be the best solutions for cities (Chicago Tribune Editorial Board, 2018). Dockless bikes have the potential to play a major role in solving mobility issues, as long as they are not a burden on the city either financially or socially and as long as there is a work around for non-smartphone access. Dockless vendors have yet to offer access to non-smartphone riders, but it could potentially involve pay-by-phone using SMS texting.

Non-Smart Phone Option

SMS is already being utilized for parking and could potentially be worked into the dockless experience. Here's how SMS Parking works: you pay your parking fee by sending an SMS message when you start parking your car and send another SMS message when you leave, so you pay the exact time you utilized the parking spot. All you need to do is register on a website and create an account (FAQ: Questions about parking with SMS Parking). Dockless riders could text the QR code on the bike, which unlocks the bike and resend code when they are finished with their ride to lock it. Although a phone is still needed, riders with older phones lacking app capabilities will still have the opportunity to ride.

Cities looking to utilize dockless bikes to address issues of transportation equity should seek insights from neighborhood organizations as well as national organizations like *EQUITICITY*, a nonprofit organization run by Oboi Reed. If cities are looking to address transportation equity, it's best to work from the bottom up as opposed to the top down.

ADA Adherence

ADA Adherence covers a larger scale than most think. In the beginning of this analysis, we did not focus on the ADA; however, after reading St. Louis' pilot we realized it is a significant issue to consider. Six out of ten cities refer to ADA Adherence in their pilots, but we believe this should be a standard for dockless regulation. Cluttered sidewalks are visually unpleasant, but for people with disabilities and balance issues, it's an even bigger problem. The Americans with Disabilities Act, passed by Congress in

1990, prohibits discrimination against people with disabilities and guarantees them access to public services, which includes access to public sidewalks (Martin, 2018). There are 57 million disabled people in the U.S. and, although dockless typically can't meet the needs of these users, the bicycles still share the sidewalk with them. Cities and vendors must educate dockless users to be courteous of others and encourage proper parking behavior. In Chicago, it might be beneficial for dockless vendors to meet with the Commissioner at the Mayor's Office for People with Disabilities.

ADA Mobility Options

Bike share is advancing and services are branching out to create cargo bikes & adaptive bikes for a wider range of users. According to the Shared Use Mobility Center, some of these bike share companies (i.e. Zagster) are investing in Adaptive bikes such as: Standard Trikes; Side-by-side Tandems (to allow two pairs of riders with different cycling abilities or limitations); Hand-cycles; and Heavy-duty Bikes (to accommodate larger riders). Dockless vendors might be suited to offer adaptive bikes and fill the void left by dock-based companies. Portland launched an Adaptive bike option (Anderson, 2016) and the City of Saint Louis Bike Share Program has stated it will experiment with adaptive bikes once the idea has been approved by the Director of Streets.

Data Sharing

Dockless vendors have a wealth of information to share with cities and cities are just scratching the surface of how to use that data. Anonymized dockless data, when shared with engineers and city planners, has the potential to improve bike infrastructure, cycling safety, bike

share planning, and ultimately solving the last mile question. Dockless data will only become more valuable as dockless bike technology improves, for example, the "gyroscope," that Limebike is beginning to make mandatory on all bikes. This new "gyroscope" technology can measure how smooth or bumpy a roadway is, and help to locate potholes, which is valuable information for city transportation departments.

Most current dock-based systems lack GPS on their bikes; however, Motivate just introduced a beta version of the Citi Bike App with "Ride Insights" where riders have the option to opt in and share their route data. Once you opt in, the Citi Bike app will use your phone's location to track the route you take to each Citi Bike station. Since this technology is on the rider's personal phone, and not on the bike itself, the rider can choose to opt in to share his or her data. Time will tell if Citi Bike's beta version has enough riders opting in to "Ride Insights" to determine whether it is a success or not.

DC's pilot carved out a "demonstration month," where the city allowed dockless bikes to operate while the vendors agreed to share their data. The city used the data to count the number of rides per day and measured that against its current dock-based bikeshare system. The dockless bikes underperformed during "demonstration month," but the data and numbers still led DC officials to continue the program. NYC's proposed program states that all service data, except names, will be made available in real-time, assuming they will find their own ways to creatively use the data.

Time will tell if dockless bikes are really benefiting cities, which is why SDOT has

publicly said it will use the dockless data to determine if the pilot is a success and help determine how they will move forward post-pilot (Gutman, 2017). Some cities have language in their permitting process specifying they are allowed to give the data to a third party for analysis, perhaps to keep data anonymized for privacy purposes. Data sharing is possibly one of the most beneficial externalities offered by dockless and has the potential to change the shape of cities in the future.

The value of this data to cities cannot be emphasized enough. After the launch of ride-hailing services like Uber and Lyft, cities now have an edge and a better understanding of how fast transportation technology can advance. Data sharing is a must, but *real-time Data Sharing is optimal*. The issue with real-time data is that some companies do not have the ability to share in real-time due to concern for individual privacy issues; this is another reason why government entities and dockless vendors might want to consider going through a third party.

FLEET SIZE, REBALANCING, & PARKING

Allowed Initial Fleet of 500 Bikes or More

A city can launch too many bikes [e.g., Dallas (Martin, 2018)] or it could not launch enough bikes to make a significant impact toward new customers. Each city is unique, and just because a city has a large population and streetscape, adding dockless bikes will not transform it into a cycling city overnight. In addition, just by dropping off 20,000 bikes, like they did in Dallas, doesn't mean that later in the month you will have 20,000 bike users (Martin, 2018). There is no real methodology around initial fleet

distribution, and the number really differs from one city to another due to many considerations. For our purposes, we will assume vendors aren't doing an analysis that includes population density, but rather they are hitting the ground with as many bikes as possible, hoping to gain more riders so they can expand. We recommend initial launches of bike be less than 500 and prepare themselves for phasing.

Fleet Phasing Strategy

Phasing is one of the most important considerations when introducing dockless bikes. It is more cost effective to add bikes as needed rather than launching too many in the beginning, resulting in removal or termination. In addition, too many bikes are a poor use of public space and bike clutter will lead to more problems (e.g. bikes blocking sidewalks or bikes being thrown into trees by frustrated non-riders). We recommend utilizing a *Fleet Phasing Strategy* to ensure bikes are being utilized appropriately.

Designated Hours for Rebalancing & Maintenance of Public Right-of-Way

Due to issues of damaged bikes, bikes blocking sidewalks, and other issues that might occur, it is important cities determine the hours of operations for dockless vendors. This is an important consideration if you think of how other public transportation modes work. They usually operate rain or shine, and even on holidays. Dockless, if it chooses to integrate itself into a transportation scene, will be expected to do the same. Can a customer expect to find a bike on Christmas day? Will the bikes be durable in harsh weather situations? For example, just this past winter in Chicago, a

snowstorm shut down the public schools, but Divvy still recorded hundreds of rides due to proper maintenance of service (Greenfield, 2018).

Bikes Must Be Parked Upright

How a bike is parked is almost taken for granted due to the assumption that everyone expects them to be parked upright; however, if not explicitly stated in the requirements/regulations, cities might find bikes knocked over and blocking sidewalks. With the upright parking requirement vendors will be required to pick up knocked over bikes that are not only a visual eyesore but could be dangerous for non-users attempting to navigate the sidewalk (Martin, 2018).

Suggestions for "Corral" Installation or a "Hub Centric Model"

Seattle has a great pilot program requirement checklist, but it did not mention anything about corrals or designated bike share parking areas. As of March 2018, Washington's SDOT started introducing corrals on sidewalks for dockless bike customers. Dockless services emerged fast, more recent written pilots have an advantage because they can learn from the mistakes made by other cities. NYC has taken full advantage of this scope of experience gained by other cities, requiring that interested dockless vendors invest in corrals or centralized dockless bike hub models for parking. NYC's ideas are possibly inspired from Singapore's answer to clutter, where they located vacant lots and retrofitted them for multi-dockless parking and public seating (Ho, 2017).

Dockless bikes have the ability to be parked anywhere, but just because they

can does not mean they should. Seattle's SDOT is looking into solving the clutter/parking problem by creating "corrals," painted boxes on the edge of sidewalks, out of the right-of-way for bike-sharing bikes to park. This will be one way to help solve the issue of dockless bikes not guaranteed to be parked in certain areas like dock-based systems.

Set Geofence Boundaries

To ensure bikes are being used in the right areas, are not overlapping current bike share, and are parked in designated areas, cities have required vendors to include a set "geofence." This will ensure bikes remain in designated service areas and will also provide data about parking behavior. Cities and planners can then analyze the data to determine whether or not proposed corral or designated parking areas are working. This feature can also help to enhance an area's bike scene by identifying popular biking routes and identifying areas that need bike lanes or other cycling facilities.

SAFETY

Dockless Vendors Required to Educate Users

Safety is a very important issue with dockless bikes and the biggest negative externality surrounding dockless is injury, or worse, fatality. Shortly after Divvy launched in Chicago there were stories of inexperienced cyclists hopping onto the Dan Ryan expressway (NBC Blog, 2014) and riding on Outer Lake Shore Drive (YouTube, 2013). It is imperative dockless vendors have visible language telling riders about local laws and regulations requiring riders to agree to follow the rules before allowing them to unlock a dockless bike. Cities, for the most

part, have forecasted liability issues, so the responsibility for educating consumers about bike safety and traffic laws has been placed solely on the vendors who supply the bikes.

E-bikes require even more education. E-bikes can travel faster than traditional dockless bikes and, when combined with an inexperienced rider, could result in an accident. For this reason, some companies require a driver's license to operate an E-bike (Tevrizian, 2018). PeopleForBikes and the Bicycle Product Suppliers Association (BPSA) are currently working to clarify U.S. state laws dictating the use of electric-assisted bikes. The current BPSA Class System is broken into 3 classes:

- Class 1 (low-speed pedal-assisted electric bicycle) is equipped with a motor that provides assistance only when the rider is pedaling and only reaches a top speed of 20 mph.
- Class 2 (low-speed throttle-assisted electric bicycle) is equipped with a motor that may be used exclusively to propel the bicycle and is not capable of providing assistance when the bicycle reaches the speed of 20 mph.
- Class 3 (speed pedal-assisted electric bicycle) is equipped with a motor that provides assistance only when the rider is pedaling and maxes out at 28 mph.

Bike share vendors only offers Class 1 bikes so far, meaning these electrified bicycles are equipped with an electric motor that is triggered by pedaling. The

motor can boost the bike to maximum speeds of 20 mph, which means: the harder you pedal, the more the motor increases (Alim, 2017). Because of the top speed of 20 mph, the issue of braking is something the rider needs to be educated about. If dockless vendors eventually offer bikes that fit into Class 2 or 3, cities will have to amend their ordinances accordingly.

Insurance Coverage & Set Reimbursement Cap

There have been issues of dockless vendors launching without meeting certain insurance policy requirements. Take for example the University of California, where a vendor launched without the proper insurance requirements for bike share programs (Cho, 2017).

In Seattle dockless vendors are required to maintain a minimum of \$3 million in liability insurance, both per occurrence and in the aggregate, and the city must be named in the insurance policy. In addition, Seattle requires a performance bond of \$80 per bicycle, with a \$10,000 cap, which basically translates to a security deposit. The performance bond will be utilized if the city has to exercise its *Rights of Removal or Terminate* the dockless program, thereby ensuring the city will not be financially responsible for cleaning up the bikes (Lloyd, 2017).

Helmet Law

Cities with helmet laws are currently deliberating what to do with dockless bikes. It is unlikely that dockless riders will be walking around with a helmet when they decide to ride and, for that reason, some health professionals have encouraged dockless vendors to create a

way to attach helmets to these dockless bikes. Dockless companies have said that attached helmets are not in their plans for the immediate future, claiming that a helmet out in the elements or sweaty after coming off another rider's head will not be used by the next rider, but Vancouver has opted to give it a shot.

Due to Vancouver's strict helmet law, each bike is equipped with a basket that stores a helmet and contains liners for people to use for hygiene purposes. The helmets will be free for bike share users and maintenance crews will service the helmets on a daily basis (DailyHive, 2016). Most dockless companies are not interested in supplying helmets on their bikes. LimeBike, for example, has instead opted to give away over a thousand free helmets rather than leave helmets on their bikes (Cohen, 2017).

Gamification

Because dockless bikes have a history of poor parking etiquette, many cities have asked vendors to make education a priority. With explanations and suggestions on how to ride, reminding riders to be aware of pedestrians, and encouraging proper locking, we believe gamification is a good way to direct positive behavior. Gamification is defined as the application of typical elements of game playing to encourage engagement with a product or service. Gamification could include: rewards for good riders that follow safety rules, pick-up knocked over bikes or poorly parked bikes, and could help encourage riders to engage in good riding habits. Rewards could be anything from: free rides to vendor swag.

Gamification is already something Motivate has implemented in New York

with Citi Bike's rider incentive program called Bike Angel's. Riders earn points and rewards (e.g. Amazon Gift Cards) by beginning trips at stations with an excess of bikes and docking at stations in need of bikes (Grabar, 2017). This issue occurs because cities have a specific commuter flow, where riders bike to a certain area, but do not bike back. Bike Angel riders are guided by online maps and rebalance as much as 10 percent of the bikes on busy days (Grabar, 2017). Less than a year into the program and Bike Angel's has two thousand riders that have opted into the program.

The Bike Angel's program is more than gamification, it is an important operational tool for Citi Bike when it comes to rebalancing and it is the most progressive bike share incentive program in North America. Rebalancing is expensive and time consuming and if dockless providers have riders rebalancing for them, that means they can focus their efforts elsewhere (Maus, 2016). This should be something Chicago should consider implementing when commuter flow issues persist.

The social aspect of Gamification is essential. Letting users show off or compete against their friends by posting their accomplishments on social media would be fun and engaging. Riders would be able to see how they stack up against other riders. The social aspect keeps people interested and it draws new users to the platform (Markowitz, 2011). The Bike Angel's program has an online "Angels leaderboard" that identifies riders by initials and the last digits of their Zip Code (Parker, 2017).

Gamification could be a win/win for the city and for vendors by improving the

cycling environment and creating a safe cycling culture.

SUMMARY & CHICAGO NEXT STEPS

Dockless bikes are an emerging service with innovations and new problems arising almost daily. Cities currently considering a dockless bike share service have a true advantage over older permit requirements. Chicago has a rich transit history and, for a new bike mode to adapt, city officials must properly prepare a strict guide of regulations for prospective vendors in its permit application (e.g. NYC's pre-pilot proposal). A pilot program allows for vendors and cities to get to know each other, and this relationship can start well by using proper language directing vendors to engage the community, teach the community, solve transportation problems, and be a positive part of the bike network. We recommend that the City of Chicago utilize the processes outlined above to implement dockless bikes effectively in Chicago.

We would like feedback on this document from transportation planners and stakeholders in the dockless world in order to bring them together to create a progressive permit application process for Chicago and its surrounding suburbs.

Moving forward we plan on including bikeability factors and considerations
































































































































such as: City Population; Currently Operating a Dock-based Bike Share System; Miles of Bike Network; Vision Zero City; and Fatality Rates for Pedestrians & Cyclists. More research is needed on the topic of dockless bikes and how well current regulations are containing the negative externalities. Next steps for *Twelve Tone Consulting* is an in depth academic research paper covering the U.S. and International cities and expanding upon our Regulation Breakdown chart categories.

In addition, our firm hopes to use creative thinking to determine which neighborhoods should allow dockless vendors, where to install geofencing, and utilizing GIS to locate city-owned vacant lots to be used for corrals. Ideas like mapping vacant lots in proximity to bike infrastructure is in the works with our firm, hoping to propose that those underutilized lots become "corrals" and common parking. In conclusion, we want to say that times are changing... last year the Shared-Use Mobility Conference did not even mention dockless and this year dockless was a big part of the mobility discussion. As policy writers and advocates, we see the Shared Economy is constantly changing at pace that is hard to keep up with. We hope to assist in setting up the framework for future transportation modes, streets, and smart cities.

REGULATION BREAKDOWN

Data Collection by Riley O'Neil & Brandon Bordenkircher

KEY:
 = YES
 N/A = INFORMATION NOT FOUND

Regulations & Requirements	St. Louis, MO (Pilot)	Portland, OR (2012 Contract)	Washington DC (Pilot)	Seattle, WA (Pilot)	Charlotte, NC (Pilot)	San Francisco, CA (Pilot)	Dallas, TX (Pilot)	Houston, TX (Pre-Pilot)	Los Angeles, CA (Pilot)	New York City, NY (Pre-Pilot)
OPERATIONS & MAINTENANCE										
City Has Rights of Removal/ Prepared for Termination										
Dockless Vendors Incur All Liability & Fees							N/A			
Accessible Contact Info on Bikes & City Website							N/A			
Detailed Bike Maintenance Requirement							N/A			
ETHICAL STANDARDS & DATA LAWS										
Equity Requirement for Underserved Neighborhoods					N/A		N/A			
Dockless Service Must be Multilingual	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	
Must Provide Non-Smart Phone Option		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
ADA Adherence				N/A	N/A		N/A	N/A		
ADA Mobility Options				N/A	N/A	N/A	N/A	N/A	N/A	N/A
Data Sharing		N/A					N/A			
FLEET SIZE, REBALANCING, & PARKING										
Allowed Initial Fleet of 500 Bikes or More		N/A	N/A		N/A				N/A	N/A
Fleet Phasing Strategy		N/A	N/A	N/A		N/A	N/A	N/A		
Designated Hours for Rebalancing & Maintenance of Public Right-of-Way		N/A					N/A			
Bikes Must Be Parked Upright			N/A				N/A			
Suggestions for "Corral" Installation or a "Hub Centric Model"	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Set Geofence Boundaries					N/A	N/A	N/A			
SAFETY										
Dockless Vendors Required to Educate Users										
Insurance Coverage & Set Reimbursement Cap		N/A								
Helmet Law	N/A						N/A	N/A		
Gamification Requirement to Give Riders Incentive for Good Behavior	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Twelve Tone Consulting info@twelvetoneconsulting.com

AUTHORS

Brandon Bordenkircher

C.E.O., *Twelve Tone Consulting*

Brandon@twelvetoneconsulting.com



A passionate government affairs professional with years of tech policy, political organizing, and

research experience. His master's capstone is a study on local governments' response to disruptive technologies (i.e. the sharing economy).

Riley L. O'Neil

Principal, *Twelve Tone Consulting*

Riley@twelvetoneconsulting.com



A Chicago native and thoughtful advocate for dynamic transportation centered around active modes such as public

transportation, walking, biking, skating, etc. DePaul alumnus with a Masters of Sustainability & Urban Development and a Fellow at DePaul's Chaddick Institute.

Edited by Sharon Laszlo
Illustrations by Braden Nauman

www.linkedin.com/company/twelve-tone-consulting



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REFERENCES

- Alim, T. (2017, September 22). Electric ride: New powered-up bike share system coming to DC. Retrieved February 22, 2018, from <https://wtop.com/dc/2017/09/electric-ride-new-powered-up-bike-share-system-coming-to-dc/>
- Anderson, M. (2016, July 01). Portland will offer Biketown-branded cycles for people with disabilities. Retrieved March 18, 2018, from <https://bikeportland.org/2016/06/30/portland-will-offer-biketown-branded-cycles-for-people-with-disabilities-186779>
- Can Bikesharing Serve Disabled Riders? (n.d.). Retrieved March 15, 2018, from <http://sharedusemobilitycenter.org/news/can-bikesharing-serve-disabled-riders/>
- Chicago Tribune Editorial Board (2018, January 14). Bringing bike-share to Chicago's transit deserts. Retrieved February 20, 2018, from <http://www.chicagotribune.com/news/opinion/editorials/ct-edit-divvy-bike-share-20180109-story.html>
- Cho, S. (2017, June 22). Yellow OFO Bikes to be Removed from Campus by Friday. Retrieved March 14, 2018, from <http://triton.news/2017/04/yellow-fofo-bikes-removed-campus-friday/>
- Cohen, J. (2017, December 21). Seattle Test Will Lead to Regulating Dockless Bike-Share. Retrieved February 28, 2018, from <https://nextcity.org/daily/entry/seattle-dockless-bikeshare-pilot-regulation>
- Cohen, S. (2017, August 31). Who is responsible for helmets when it comes to bike shares? Retrieved March 17, 2018, from <https://www.sfgate.com/local/article/seattle-bike-share-helmets-limebike-spin-12162539.php>
- DailyHive Vancouver Staff. (2016, February 25). Will the mandatory helmet law kill Vancouver bike share? Retrieved April 03, 2018, from <http://dailyhive.com/vancouver/vancouver-bike-share-helmet-law/>
- Divvy Biker Lost on Lake Shore Drive. (2013, August 28). Retrieved February 20, 2018, from <https://www.youtube.com/watch?v=X7Y0a-NWYEK>
- FAQ | Questions about parking with SMSParking. (n.d.). Retrieved April 02, 2018, from <https://www.smsparking.nl/enfaq/>
- Galligano, M. (2015). *Buffalo BikeShare Demonstration Project* (2016 ed., Vol. Dec, pp. 1-32, Rep. No. Report Number 16-04). NYSERDA.
- Grabar, H. (2017, February 09). How New York's Bike-Share System Pays Riders to Make It Run Better. Retrieved April 02, 2018, from http://www.slate.com/blogs/moneybox/2017/02/09/new_york_s_citi_bike_pays_riders_to_make_it_run_better.html
- Greenfield, J. (2017, November 15). Of course Hopes to Launch a Dockless Bike-Share System at Northwestern This Fall. Retrieved March 25, 2018, from <https://chi.streetsblog.org/2017/11/13/fofo-is-launching-the-regions-first-dockless-bike-share-system-this-week/>
- Greenfield, J. (2018, February 11). A Blizzard of Divvy Ridership: Snowstorm Doesn't Deter Chicago's "Badass" Bikers. Retrieved March 15, 2018, from <https://chi.streetsblog.org/2018/02/09/a-blizzard-of-divvy-ridership-snowstorm-doesnt-deter-bike-share-use/>
- Griffith, E. (2017, October 20). Why Investors Are Betting That Bike Sharing Is the Next Uber. Retrieved February 20, 2018, from <https://www.wired.com/story/why-investors-are-betting-that-bike-sharing-is-the-next-uber/>

- Gutman, D. (2017, December 19). Seattles bike-share pilot program ends this month, but the bikes are staying. Retrieved February 28, 2018, from <https://www.seattletimes.com/seattle-news/transportation/seattles-bike-share-pilot-program-ends-this-month-but-the-bikes-are-staying/>
- Ho, V. (2017, October 05). Humans ruined bike-sharing in Singapore so now bikes need parking zones. Retrieved March 15, 2018, from <https://mashable.com/2017/10/05/singapore-designated-parking-obike-mobike/#Zt9zyNboVOqh0>)
- Linton, J. (2017, December 13). Dockless Bike-Share Pilot Parameters At L.A. City Transportation Committee Tomorrow. Retrieved March 16, 2018, from <https://la.streetsblog.org/2017/12/12/dockless-bike-share-pilot-parameters-at-l-a-city-transportation-committee-tomorrow/>
- Lloyd, S. A. (2017, June 30). City of Seattle rolls out rules for private bike shares. Retrieved March 17, 2018, from <https://seattle.curbed.com/2017/6/30/15897458/private-bike-share-licensing-rules-seattle>
- Markowitz, E. (n.d.). Beyond Badges: The New Rules of Gamification. Retrieved March 17, 2018, from <https://www.inc.com/articles/201112/5-new-rules-for-adding-gamification-to-your-business.html>
- Martin, K. (2018, January 20). For disabled people, rent-a-bikes are more than an annoyance, but do they violate the ADA? Retrieved March 13, 2018, from <https://www.dallasnews.com/news/dallas-city-council/2018/01/20/disabled-rent-bikes-annoyance-violate-ada>
- Maus, J. (2016, December 07). Portland now using pedal-powered trikes to help rebalance bike share stations. Retrieved April 02, 2018, from <https://bikeportland.org/2016/09/07/portland-now-using-pedal-powered-trikes-to-help-rebalance-bike-share-stations-191007>
- Parker, I. (2017, November 27). Hacking the Citi Bike Points System. Retrieved April 03, 2018, from <https://www.newyorker.com/magazine/2017/12/04/hacking-the-citi-bike-points-system>
- Ride Insights. (n.d.). Retrieved March 15, 2018, from <https://help.citibikenyc.com/hc/en-us/articles/115003775551-Ride-Insights>
- Russell, B. (2018, January 19). Dallas Cracks Down on Bike Share Mess. Retrieved February 28, 2018, from <https://www.nbcdfw.com/news/politics/Dallas-to-Bike-Companies-Take-Corrective-Action-470098433.html>
- St. Louis Bike Share Program (2018, March 2). Retrieved February 20, 2018, from https://www.stlouis-mo.gov/government/departments/street/documents/upload/3_2_2018-2_27_02-PMSTLBikeSharePermitBPS3-2-18.pdf
- Tevrizian, M. (2018, February 27). Bikes Strewn Across San Diego in New Dockless Craze. Retrieved March 18, 2018, from <https://www.nbcsandiego.com/news/local/New-Dockless-Bike-and-Scooter-Craze-Brighten-San-Diego-475225353.html>
- Warerkar, T. (2017, December 15). NYC takes strides toward making dockless bike share a reality. Retrieved February 28, 2018, from <https://ny.curbed.com/2017/12/15/16781206/nyc-dockless-bike-share-rfei>
- Wisniewski, M. (2017, December 27). Chicago sees drop in Divvy income following expansion into South, West sides. Retrieved March 25, 2018, from <http://www.chicagotribune.com/news/local/breaking/ct-met-divvy-income-drop-20171226-story.html>