



OPTIMIZING

DOCKLESS BIKESHARE

FOR CITIES

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NEW TECHNOLOGIES AND INNOVATIVE BUSINESS MODELS HAVE TRANSFORMED THE BIKESHARE LANDSCAPE.

Dockless bikeshare has replaced an estimated 10% of car trips in Shenzhen, China, and increased the visibility and ubiquitousness of urban cycling in dozens of cities worldwide. Private dockless bicycle companies claim to provide bikeshare profitably (that is, without subsidy), creating the potential for bikeshare to become a rapidly scalable transportation option in cities.

However, complex questions have begun to arise: Can a city successfully improve urban transportation with dockless bikeshare? Can they avoid the negative outcomes of dockless bikeshare seen in many places? Can they do both by enabling profitable, competitive businesses? The answer appears to be yes, as long as cities proactively adopt policies to integrate dockless bikeshare into the city's broader transportation system. Recognizing that cities are interested in capitalizing on those gains (and limiting negative outcomes), this policy brief provides an outcome-oriented framework for regulating dockless bikeshare—one that might also be relevant to other emerging transportation modes. This brief is not intended to be overly prescriptive, nor does it cover every possible action a city could take; instead it provides important guidance for successful dockless bikeshare.



BACKGROUND

DOCKLESS BIKESHARE IN ITS CURRENT FORM —GPS-ENABLED BIKES THAT ALLOW USERS TO LOCK AND UNLOCK THEM ANYWHERE USING SMARTPHONES— HAS OPERATED IN CHINA SINCE 2014, BUT WAS LARGELY UNREGULATED DURING ITS INFANCY.

In April 2017, Chinese cities —inundated with millions of dockless bikes and the challenges that came with them— began exploring options for regulating supply, managing public space, and ensuring user safety and privacy. Soon after, in July 2017, Seattle released the first-ever, comprehensive permit structure to manage dockless bikeshare operations before companies dropped bikes on city streets. As other cities emulated this preemptive regulation strategy, many realized that a delicate balance is required. Operators need flexibility to innovate, compete, and improve their service delivery, technology, and business models. Meanwhile, parameters that limit oversupply of bikes, ensure bike safety, and protect users are critical. By passing municipal ordinances, designing pilot programs, and/or using other regulatory mechanisms to oversee how dockless bikeshare is deployed and managed citywide, more and more cities are rightly demanding dockless operators coordinate with them prior to launching operations.

RISKS OF INACTION

Despite seeing firsthand the challenges an unregulated environment can generate, many cities have allowed unregulated dockless bikeshare systems to operate. Cities should understand that taking a wait-and-see approach is extremely risky, given the potential for poorly delivered service to degrade the image and potential that dockless bikeshare can offer. Significant risks to active transportation, to future investments in cycling, and to accessing transit and other destinations are possible if bikeshare companies are unregulated. Likewise, allowing a “free market” environment in order to attract operators can be problematic once cities decide they want certain services that companies are then unable (or unwilling) to provide. At that point, outlawing an inexpensive, environmentally friendly transportation mode that people have come to rely on could cast the city in a poor light.

OPPORTUNITY

Well-regulated dockless bikeshare establishes an expectation that operators both collaborate with the city and provide a high-quality service for users. It cultivates a transparent working relationship between the city and operators, effectively securing bikeshare as part of the transportation system. Clear, outcome-oriented, regulation also creates a fair, stable, and predictable operating environment for businesses. This ultimately results in a level of service that enables residents and visitors to rely less on private vehicles for short trips, generating citywide benefits, including affordable transportation alternatives, a reduction in greenhouse gas (GHG) and other emissions, improved physical health, more space for walking and cycling, etc.



POLICY FRAMEWORK

EVEN THOUGH THE CITY DOES NOT PROVIDE FUNDS TO DIRECTLY SUPPORT DOCKLESS BIKESHARE, ITS OPERATION DEPENDS ON THE USE OF CITY-OWNED STREETS, SIDEWALKS, AND OTHER PUBLIC INFRASTRUCTURE.

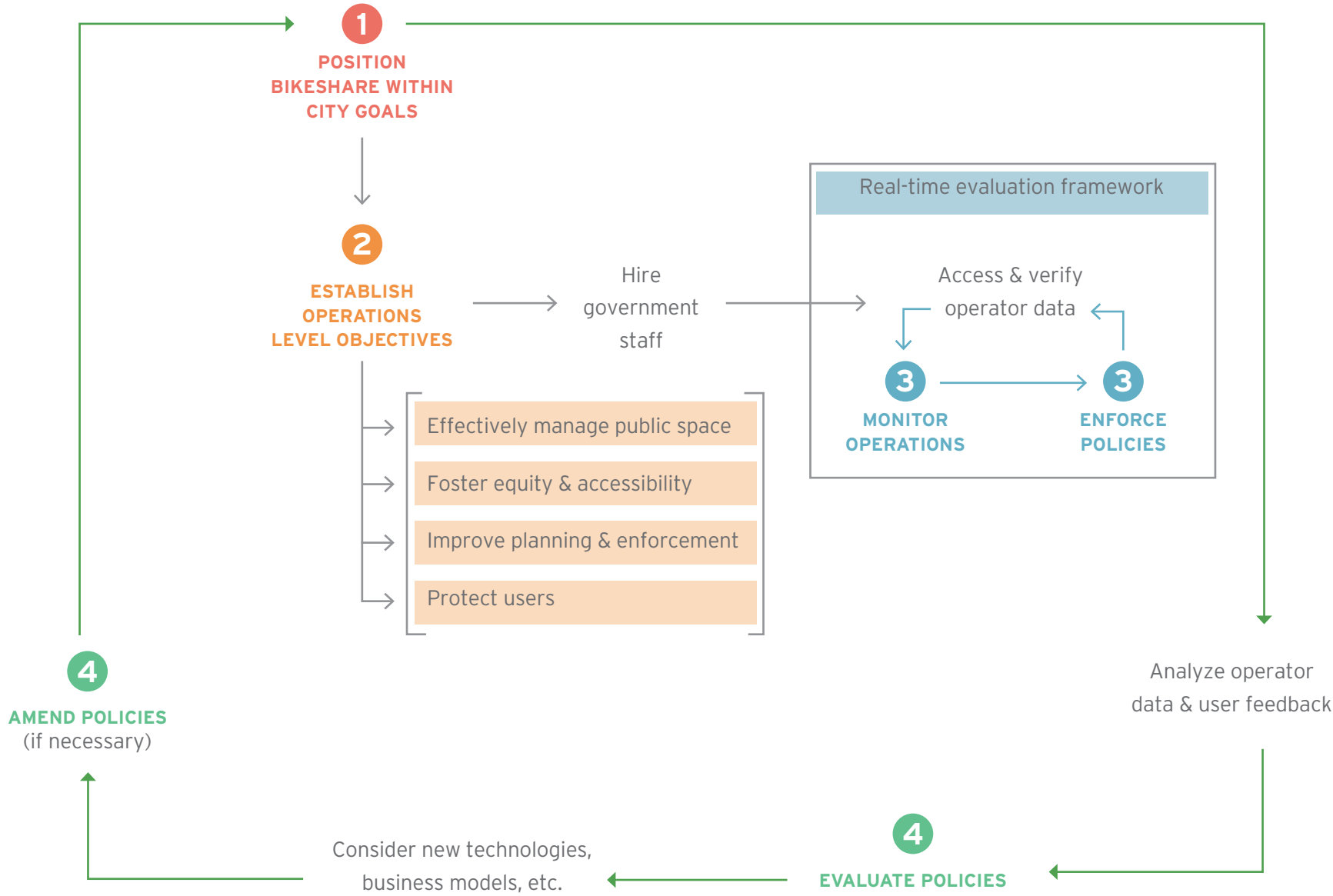
By establishing a permit system, request for proposals (RFP), memorandum of understanding (MOU), or similar regulatory mechanism, cities are well positioned to:

- 1 INTEGRATE DOCKLESS BIKESHARE INTO EXISTING MOBILITY AND ACCESSIBILITY GOALS** and adopt policies that compel operators to help achieve those goals in exchange for their use of public space.
- 2 ESTABLISH OPERATIONS OBJECTIVES FOR DOCKLESS BIKESHARE AND ADOPT POLICIES THAT:**
 - i. Effectively manage public space
 - ii. Foster equity and accessibility
 - iii. Improve planning and enforcement
 - iv. Protect users.
- 3 MONITOR OPERATOR COMPLIANCE** using data shared between each operator and trained government staff, and enforce policies through fines or other penalties when necessary.
- 4 EVALUATE AND AMEND POLICIES** based on how well bikeshare contributes to city goals over time, using operator data and user feedback.

The following diagram illustrates this iterative process.

DOCKLESS BIKESHARE POLICY FRAMEWORK

PERIODIC EVALUATION FRAMEWORK



1

INTEGRATE BIKESHARE INTO CITY GOALS



BIKESHARE CAN BE A KEY COMPONENT IN ACHIEVING ACCESS, ECONOMIC DEVELOPMENT, SUSTAINABILITY, HEALTH, AND OTHER EFFORTS CITIES ARE ALREADY UNDERTAKING.



For example, the Greater Manchester region of the UK is using dockless bikeshare to help meet existing climate-related goals by increasing bike mode share to 10% of trips by 2025 and reducing vehicle kilometers traveled (VKT) and single-occupancy vehicle trips. Singapore, which is aiming to increase transit ridership to 75% of commuters by 2030, committed to investing in pedestrian and cycling infrastructure so that more people can comfortably access transit. The city's regulated dockless bikeshare system offers an additional first-last mile option to help meet that goal. Bikeshare can also contribute to economic development goals, attracting both tourists and businesses, as well as offer an affordable, sustainable transportation mode for visitors to explore the city and a quality-of-life benefit for potential employees. Identifying how dockless bikeshare can connect with existing goals will help cities decide which policies to prioritize, and how best to track progress and measure success.



2

SET POLICIES TO MEET OPERATIONS OBJECTIVES



IN ADDITION TO CONTRIBUTING TO CITYWIDE GOALS, POLICIES SHOULD ADDRESS SPECIFIC CHALLENGES RELATED TO DOCKLESS BIKESHARE, INCLUDING OVERSUPPLY OF BIKES, LACK OF COORDINATION BETWEEN GOVERNMENTS AND OPERATORS, UNCERTAINTY AROUND SERVICE DELIVERY, ETC.



In this section, these challenges are grouped into four operations-level objectives that cities must achieve: effectively manage public space; foster equity and accessibility; improve planning and enforcement; and protect users. Conditions and goals undoubtedly differ from city to city, and uncertainty exists in relation to local authorities regulating dockless bikeshare. Given these realities, a menu of policies are suggested that achieve each objective, enabling cities to construct regulatory frameworks that meet their specific needs. In addition, it is important to recognize that goals and objectives may conflict with each other. For example, the operational objective to protect users through more rigorous equipment standards may lead to more expensive bikes and user fees, making it more challenging to meet the citywide goal of providing affordable travel options.

The following table includes suggested policy requirements and the operations objectives and broader city goals that they can help achieve. Note that not all policy options are included in the table; the full list of policies are described in detail following the table.



SUGGESTED POLICIES TO OPTIMIZE DOCKLESS BIKESHARE OPERATION

POLICY



DATA-REPORTING STANDARDS

OPERATIONS - LEVEL OBJECTIVES



- 1 Effectively manage public space
- 2 Foster equity & accessibility
- 3 Improve planning & enforcement
- 4 Protect users

CITYWIDE GOALS



- Improve transportation infrastructure planning and cycling network connectivity
- Track progress toward city goals

USER EDUCATION

- 1 Effectively manage public space
- 2 Foster equity & accessibility
- 4 Protect users

- Increase physical activity
- Reduce traffic injuries and fatalities
- Provide affordable, reliable options for multi-modal trips

EQUIPMENT STANDARDS

- 2 Foster equity & accessibility
- 4 Protect users

- Attract businesses/highly skilled workers
- Attract tourists
- Reduce traffic injuries and fatalities

FLEET SIZE CAPS

- 1 Effectively manage public space

- Provide a public right-of-way that is safe for all potential users

POLICY**BIKE DISTRIBUTION REQUIREMENTS****OPERATIONS - LEVEL OBJECTIVES**

2 Foster equity & accessibility

CITYWIDE GOALS

- Provide affordable, reliable options for multi-modal trips
- Improve access to jobs/destinations
- Increase physical activity

TRANSIT INTEGRATION

2 Foster equity & accessibility

- Improve access to jobs/destinations
- Reduce GHG emissions and other pollutants
- Attract businesses/highly skilled workers

FLEXIBLE PAYMENT OPTIONS

2 Foster equity & accessibility

- Provide affordable, reliable options for multi-modal trips
- Attract tourists

CLEAR SAFETY INFORMATION

4 Protect users

- Reduce traffic injuries and fatalities
- Provide a public right-of-way that is safe for all potential users

OBJECTIVE

1 EFFECTIVELY MANAGE PUBLIC SPACE



ITDP China

Dockless bikeshare operates under the assumption that public space will be available for bike parking between uses. In some areas, public space may be less contested because of wide sidewalks, low pedestrian flows, etc. But in areas with narrow sidewalks, high pedestrian traffic, street trees or other planters, outdoor restaurant seating, and any number of other uses of public space, parked bikeshare bikes compete for space. It is up to the city to allocate public space for dockless bike parking in order to avoid negative outcomes such as bike piles and bikes blocking the pedestrian right-of-way. Chinese cities have had to shoulder the enormous cost of removing thousands of bikes because of parking and/or public space violations.

Cities have a number of policies at their disposal to ensure more clearly defined parking habits and orderly public spaces. However, capacity and/or resource constraints may limit what a city can require and enforce. Local authorities will also need to consider tradeoffs—designating space for dockless bikes will likely mean less space for pedestrians (if bikes are parked on the sidewalk) or cars (if street parking is converted to bike parking areas).

OBJECTIVE 1:
EFFECTIVELY
MANAGING SPACE

FLEET SIZE CAP

The number of bikes operators can have on the street is limited. Without a cap, operators could flood cities with high quantities of bikes to capture market share. However, if the fleet cap is set too low, the system will never achieve reliability because it will be too difficult to find a bike. A balance needs to be struck between providing bikeshare service and overcrowding public space with infrequently used bikes. Fleet size caps could be designed to increase over time—for example, by a percentage each month for the first three months of operation, as is the case in Seattle—or remain static, as in Milan, which restricts each operator to a maximum of 3,000 bikes. Cities should also consider periodic adjustments to caps based on performance and ridership data (i.e. trips per bike per day).

TIME-BOUND RESPONSE TO PARKING COMPLAINTS

Operators are required to respond to complaints about mis-parked bikes within a certain time frame, typically two hours. The city then has the authority to fine the operator, or remove the bike from the street at the operator's expense.

USER EDUCATION

Operators must include information on both proper and inappropriate parking locations on their website and on their mobile app, which users must read through and agree to follow in order to complete the registration process.

OBJECTIVE 1:
EFFECTIVELY
MANAGING SPACE

LOCK-TO REQUIREMENT

Cities can limit dockless bikeshare operation to companies that can provide bikes that must be locked to existing infrastructure (bike rack, sign post, etc.) for a user to end a ride. This has been shown to substantially reduce instances of tipped-over bikes and bikes blocking rights-of-way and other public spaces. Several operators including JUMP, Zagster, nextbike, and BCycle already offer this feature, and other operators are developing prototypes. The city should work with operators to invest in additional bike parking, given the significant increase in demand for racks this requirement would yield.

DOCKLESS BIKE PARKING AREAS

Physical parking areas are sited and installed by the city for use by all dockless bikes. Bike racks should be installed so that lock-to dockless bikes and personal bikes can utilize the parking area. Parking areas may be particularly beneficial in more congested areas where competition for sidewalk space is high. City staff will need to work with operators to ensure that: a) the GPS technology on their bikes is accurate enough to recognize bikes parked within the designated areas as complying, and b) parking areas are clearly defined (and users are incentivized to use them) across all real-time service maps. Parking area costs can be offset through operator fees.

OBJECTIVE

2 FOSTER EQUITY & ACCESSIBILITY



Flickr, Bike Share LA by Waltarrrrr

One of the strengths of dockless bikeshare is that it can bring fleets of shared bikes into cities, increasing visibility for cycling and creating immediate potential for more trips to be made by bike. Access to transit, jobs, and other destinations could drastically improve —especially in historically disconnected communities— if dockless bikes are consistently available. This will only happen if cities are mindful of the barriers that bikeshare can present to low-income communities and demand operators meet one or more of the following accessibility requirements. Additionally, cities should develop a comprehensive community outreach strategy for communicating the benefits of bikeshare and encouraging cycling as a cost-effective, sustainable transportation option.

BIKE DISTRIBUTION REQUIREMENT

An operator can only have a certain number of bikes (cap) in each zone (could be neighborhoods, wards, etc.) or must provide a minimum service level in communities identified as being underserved. This could help to ensure more equitable spatial distribution of bikes across the city, and that bikes can be more reliably found in less dense or less destination-heavy zones.

OBJECTIVE 2:
FOSTER EQUITY &
ACCESSIBILITY

FLEXIBLE & REDUCED PAYMENT OPTIONS

Accessibility to dockless bikeshare can be limited by the need for a smartphone to locate and unlock a bike, and a credit card linked to a user's account. Cities could require operators to provide at least one alternative payment option for users to top up their account (cash at local stores, using a prepaid card, etc.). To ensure bikeshare is affordable, San Francisco requires dockless operators to provide a reduced-fare plan to low-income customers that waives the initial deposit and offers unlimited trips less than 30 minutes.

TRANSIT INTEGRATION

Citywide accessibility rests heavily on the reach of the transit network, and bikeshare has the opportunity to extend that reach if it is well integrated, affordable, and efficient for users. Reduced-fare bikeshare trips that connect to transit (similar to reduced-fare transfers from bus to metro), as well as the ability to access bikeshare and transit using a common radio frequency identification (RFID) card could significantly expand first-last mile connections. Cities could require dockless operators to provide bikes that can be unlocked using an RFID card (preferably the city transit card), or work with operators to develop a payment platform that allows reduced-fare transfers between bikeshare and transit.

OBJECTIVE

3 IMPROVE PLANNING & ENFORCEMENT



Katherine Griffiths / City of Sydney

Dockless bikes with onboard GPS provide more robust trip data than previously possible with non-smart bikes. This data is particularly valuable to cities for its potential to inform a variety of planning decisions, as well as to shed light on how and why users are riding dockless bikes (perhaps compared to other modes). Real-time, verifiable data from dockless bikeshare operators is also critical for monitoring and enforcing compliance with city policies.

ESTABLISH DATA REPORTING STANDARDS

Cities should require operators to provide access to real-time data on the location of every operational bike via a publicly accessible application program interface (API) in a standardized format such as the General Bikeshare Feed Specification (GBFS). Anonymized trip data, maintenance activity data, and crash data should also be shared periodically with the city through a standardized format detailed in the permit.

OBJECTIVE 3:

IMPROVE

PLANNING &

ENFORCEMENT

USER SURVEY REQUIREMENT

Cities should require operators to distribute an annual survey to their users in order to collect data on the demographics of dockless bikeshare riders and how and why they use dockless bikes. This data may help analyze progress toward city goals, such as expanding access, and where and to what groups the city should target efforts to encourage bikeshare use.

OBJECTIVE

4 PROTECT USERS



Katherine Griffiths / City of Sydney

Cities have a responsibility to protect residents and visitors riding dockless bikes on city streets and trails. Cities should establish requirements for operators to educate users, provide equipment that meets industry standards, and take steps to ensure additional user protections.

CLEAR SAFETY INFORMATION

Dockless bikeshare operators should include safety information for riders on their website and in-app, which is triggered upon registration. Such information should include educating riders to wear a helmet, inspect the bike for damage before riding, submit a maintenance report, yield to pedestrians while riding, park in acceptable locations, etc. Some operators use credit programs to incentivize responsible use. Especially pertinent information, like the operator's contact number, should be displayed on each bike for easy communication to users.

OBJECTIVE 4:
PROTECT USERS

EQUIPMENT STANDARDS

All bikes in an operator's fleet should at least meet ISO 4210-2 standards for safety, however many experts agree that ISO standards do not adequately cover the safety of shared bicycles. Thus, cities should carefully examine each operator's fleet to ensure safety. Prior to receiving permission to operate, operators should be required to present proof of a process for users to notify the company of safety or maintenance issues involving their bikes. As standard practice, proof of liability insurance should also be required prior to commencing operation.

USER DEPOSIT REFUND PROTECTIONS

While many operators seem to be moving away from requiring user deposits, at least in certain markets, several still require a deposit upon registering. Cities may want to consider establishing a government or escrow account to house (and protect) user deposits, as well as a requirement for operators that are no longer providing service to refund user deposits according to an established timeline. Several dockless bikeshare operators in China were unable to refund user deposits when requested or following bankruptcy filings. In response, Tianjin, Beijing, Shenzhen and other cities established special municipal accounts to safeguard dockless bikeshare user deposits.

3

MONITOR & ENFORCE POLICIES BASED ON DATA



EFFECTIVE MONITORING AND ENFORCEMENT OF DOCKLESS BIKESHARE OPERATIONS REQUIRES DEDICATED GOVERNMENT STAFF CAPABLE OF VALIDATING THE DATA SUBMITTED BY PRIVATE OPERATORS AND A STRATEGY THAT IMPOSES PENALTIES FOR NON-COMPLIANCE.



A minimum suggested staffing requirement for any jurisdiction is one full-time staff member dedicated exclusively to monitoring dockless bikeshare. The bikeshare staff member should be able to understand and critically evaluate data submitted by operators to ensure compliance with city policies, which would likely include geographic information system (GIS) skills, an understanding of APIs, and how to field-verify operator data. Because this data will help to inform compliance checks, the position should be housed within or have a direct link to the department tasked with issuing fines to enforce dockless bikeshare policies. It is not recommended, however, that this staff member be directly or solely responsible for issuing fines, thus avoiding the potential for bribery by operators or other corrupt practices. Optimally, an additional staff member would be responsible for community outreach and education to encourage the uptake of bikeshare citywide and to help establish norms of behavior.

Compensation for dockless bikeshare monitoring staff can be funded through permit and/or administrative fees paid by the private companies to operate on the public rights-of-way. Given the potential for conflict of interest, funding for monitoring should not come from non-compliance fines imposed on companies.

To ensure policies are successfully minimizing operations-level challenges, cities should, as a prerequisite for operation, require operators to provide real-time data that is easy to validate. Verified operator data is critical for an accurate analysis of system performance and for carrying out effective enforcement. This analysis will quantify the impact the policies are having toward each operational objective. More broadly, using operator data to track progress toward city goals can also help evaluate the success of dockless bikeshare policies, and whether and how policies should be adjusted—for example, re-evaluating fleet maximums—if technology, business model, or other changes arise. Consistent, reliable data submitted by operators in a standardized format enables the city to be flexible and responsive to how these changes affect the bikeshare operating environment and to rework policies in order to stay on track to meet city goals.

A policy enforcement strategy should be implemented from the outset to establish norms that maximize policy compliance and minimize the need for future enforcement. A successful strategy will require: 1) reliable, real-time and historical data from operators and 2) government staff capable of interpreting that data and assessing penalties when appropriate. It is recommended that cities enforce policies through fines or other penalties levied on operators for non-compliance. As necessary, these fines may be passed on to users to establish user norms in addition to operator norms. Revenue generated from fines could be directed to bicycle and pedestrian infrastructure projects, but should not be used to compensate city bikeshare staff, thereby avoiding any appearance of conflict of interest.



4

EVALUATE AND ADJUST POLICIES



SYSTEM PERFORMANCE SHOULD BE PERIODICALLY EVALUATED BY THE CITY, OR A THIRD-PARTY MANAGED BY THE CITY, TO ENSURE THAT DOCKLESS BIKESHARE POLICIES ARE EFFECTIVELY MEETING ESTABLISHED GOALS.



Appropriate data that corresponds to progress toward each goal should be collected for this purpose. For example, to measure equity of the system, an annual, comprehensive survey that each operator distributes to users could help the city understand the demographics and needs of system users. These data could then be combined with modal split, accessibility, and other existing indicators for a more complete travel picture.

From this evaluation, policies such as fleet size caps, service area restrictions, equipment standards, etc. can be analyzed and adjusted as needed. Periodic evaluation may also shed light on the need for secondary or follow-up policies to bolster the effects of existing policies, such as adding physically marked dockless bike parking areas if operators are falling short on public space management requirements. It is important, however, to make this process as clear as possible to operators, which may be very sensitive to any significant changes in policy. This longer-term evaluation process should also include a review of technological, business model, and/or other significant changes that have emerged, and how these might impact existing policies. Funding for this periodic, larger-scale data collection and evaluation could come from permit and/or administrative fees paid by the dockless operators as part of their initial application to operate.





LOOKING FORWARD

THE ULTIMATE GOAL OF OFFERING BIKESHARE IN A CITY IS TO INCREASE THE SHARE OF TRIPS MADE BY BIKE AND DECREASE THE NUMBER OF TRIPS MADE BY PRIVATE VEHICLES.

This, in turn, yields myriad benefits such as expanded access to transit and jobs, increased physical health, improved air quality, new economic opportunities, etc. Dockless bikeshare operators offer an attractive link to realizing these benefits without the capital investment needed to launch station-based bikeshare systems. For cities to realize the full benefits of a dockless system, however, it will be important for them to develop outcome-oriented policies and invest in the monitoring and enforcement procedures and consistent evaluation needed to ensure that those policies are successful. Using more nimble regulatory approaches—compared to long-term station-based bikeshare contracts—enables cities to be both proactive about setting goals and standards that yield the outcomes they want and responsive to the rapidly shifting landscape of information, technology, and business models.





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