

Bikeshare Market Sounding Report

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The California Integrated Travel Project (Cal-ITP)



Table of Contents

1. Introduction.....	3
2. Market Sounding Overview.....	4
I. Key Goals.....	4
II. Market Sounding Process.....	4
3. Findings.....	6
I. A strong foundation... ..	6
II. Trust, “ownership,” and partnership... ..	9
III. Operating a successful bikeshare system is challenging... ..	11
IV. There are many business models and collaboration typologies... ..	13
4. Recommendations & Next Steps.....	15
I. Expand California’s internal capacity.....	15
II. Improve the quality and visibility of data.....	16
III. Optimize regulation.....	17
IV. Provide procurement support.....	17
V. Build and strengthen partnerships.....	18
5. Conclusion.....	18
Appendix: Bikeshare Market Landscape Assessment.....	20
I. Characterising the market.....	20
II. Operational and business models.....	20
III. Common city typologies.....	23

1. Introduction

California is home to a complex multi-modal transportation system, and leads the nation in policies and plans to reduce emissions and adapt to climate change in the mobility sector. To accelerate these efforts, the California State Transportation Agency (CalSTA) published the [Climate Action Plan for Transportation Infrastructure \(CAPTI\)](#) in 2021, which employs innovative strategies to encourage efficiency, sustainability, and affordability across all modes of transportation.

Today, Californians rely disproportionately on privately-owned passenger vehicles for personal mobility. Transitioning riders to sustainable modes, including biking, is essential. In addition to environmental benefits, biking contributes to public health by encouraging active mobility, helps alleviate transportation inequality by offering connectivity to previously underserved areas, and provides a fun and engaging way to move around. For these reasons, Caltrans envisions bicycles as an emerging and critical part of the transportation ecosystem and is committed to supporting the growth of biking in California. While state initiatives already support [micromobility access in marginalized communities](#), and will offer [incentives for personal E-bike purchases](#) for low income Californians starting this year, there has been no state-wide effort to support bikeshare specifically.

Bikeshare systems – where a shared fleet of bikes is made available to the public on a per-ride basis – make biking more accessible. Bikeshare users don't need to purchase their own bikes and can conveniently pick up and drop off bikes near the places they come and go to. There are already over 35 micromobility systems across California, a third of which include shared e-bikes.

Despite this success, bikeshare is struggling. In the past years, many providers have withdrawn services across California, and Caltrans has identified this trend as a risk to the transportation ecosystem. When bikeshare systems shut down – due to business and market conditions, regulations, changing ridership expectations, or any other reason – riders are left with fewer sustainable options and less confidence in biking as a viable mode of transportation. Reversing this trend is necessary if we are serious about making bikes a more central part of our mobility ecosystem.

To start addressing this issue, Caltrans initiated this market sounding exercise as part of the [California Integrated Travel Project](#), a Caltrans program aimed at improving the efficiency and convenience of passenger mobility across California. A tenet of Cal-ITP's philosophy is to engage in policy and program development that leverages the insights, technologies, and business models of leading private industry companies to support the public good.

2. Market Sounding Overview

I. Key Goals

To ensure that biking – and specifically bikeshare – continues to be a convenient and attractive way to get around California, Caltrans initiated this Market Sounding in the Spring of 2023. Our team spoke with private and public sector leaders in the bikeshare industry and tried to answer one central question: **what could California do to help bikeshare thrive?** Specifically:

1: Defining what success means

Which bikeshare systems (and business models) have succeeded regionally and globally, and which have failed? Which criteria can be used? And under which conditions?

2: Understanding pain points

What are the key factors, from government and service providers' point of view, that have prevented the success of bikeshare systems?

3: Identifying best-practices

What kind of regulations, incentives, programmes, and requirements can help bikeshare systems be successful? What are the relevant case studies worldwide?

4: Opportunities

What can California do to help bikeshare thrive? What are models that we can adopt and build upon?

Figure 1: Research Approach

While most shared bike systems are planned and managed at the local level, we believe that California can play important roles as a market maker, a regulator, and a funder of mobility infrastructure and services. Caltrans has the capacity to help ensure that bikeshare is:

- attractive to implement for providers and cities alike;
- easy to manage in alignment with policy goals; and
- delightful, convenient, and affordable to use for riders across California.

II. Market Sounding Process

In April 2023, Caltrans released a preliminary Market Sounding background document, providing an overview of assumptions for this initiative, and inviting participation from the private sector. The document included questions for private bikeshare operators. We concurrently released a separate survey for government-side managers of shared bike systems. This survey was intended to collect information from their perspective on the goals of their respective bikeshare system, since city-level officials are an important stakeholder group in any envisioned initiative.

To make sure we received an informed understanding, our team conducted targeted outreach to private bikeshare providers and operators, government-side

Bikeshare Market Sounding Report

Spring / Summer 2023



micromobility managers, and industry thought leaders from around the world. In addition to direct outreach, we advertised the market sounding in relevant online forums, circulated our survey among practitioners in the space, and encouraged respondents to refer other relevant parties to our team.

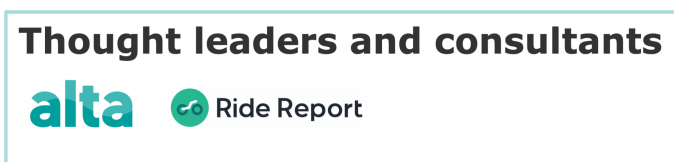
Following our outreach period, we used the written responses to the background document, collected survey responses, and our analysis of global bikeshare systems to identify key interview targets that represented a diverse selection of the market. Further exploration of the diverse business models and collaboration typologies we encountered can be found in the appendix, [Bikeshare Market Landscape Assessment](#). We then held in-depth conversations with these selected public and private sector experts, speaking with over 20 parties throughout May and early June. The names of interviewed parties can be found below in figure 2.



- Bicycle Transit Systems
- Cincinatti Redbike
- Drop Mobility
- Freebike
- Lime
- Lyft
- Nextbike (Tier)
- Shared Mobility Inc.



- The City of Los Angeles
- District Dept. of Transportation
- Federal Highway Administration
- Gemeente Amsterdam
- Gemeente Rotterdam
- Gobierno de la Ciudad de México
- Lantis (executive org. Vervoerregio Antwerp)
- Metropolitan Transportation Commission
- Minnesota Dept. of Transportation
- Oregon Dept. of Transportation



- Alta consultancy
- Ride Report
- Ryan Rezpecki
- Jay Walder

Figure 2: Market Sounding Participants

In each of these interviews we tried to answer our central question, “**what helps bikeshare thrive?**”, by exploring what each participant has learned to achieve success in the bikeshare industry. We also prompted respondents to consider what California’s role might look like in the future. These interviews were conducted under Chatham House rule to encourage transparency between all parties.

The findings in this report are reflective of the conversations we held, but will not be attributed to any specific participant to preserve confidentiality. In addition to

sharing these insights publicly, this report is meant to lay the foundation for Caltrans’s next phase of work in this arena.

3. Findings

Throughout our interviews, we observed that the perspectives of all parties – regardless of whether they are public or private – were remarkably well-aligned. For this reason, we did not separate findings based on which types of participants helped us reach these conclusions. Where we noticed stronger opinions among a subset of our participants, we called that out. Although our interview approach separated discussion of best practices and pain points, we found that these are naturally two sides of the same coin. For clarity, we have grouped these together wherever possible, and categorized them under the following key findings, shown in Figure 3, which will guide any future initiatives from Caltrans.

1: A strong foundation, especially in the bikeshare system’s governing agreement, is essential.

2: Trust, “ownership,” and partnership are essential, in both system governance and public perception.

3: Operating a successful bikeshare system is challenging, often more so than launching one.

4: There are many business models and collaboration typologies for bikeshare systems, but none are perfect.

Key findings on what helps bikeshare thrive

Figure 3: Key Findings

I. A strong foundation, especially in the bikeshare system’s governing agreement, is essential.

Nearly all the participants we interviewed, regardless of whether they characterized their bikeshare systems as successful or not, called out a strong foundation (or often a lack thereof) at the start of their system as a critical factor in success or failure. Our interviews showed that the following factors most commonly constitute a “strong foundation,” especially when they are reflected in the system’s governing agreement (which could be a permit, contract, concession agreement, or other binding document that sets the legal and financial terms of collaboration). These factors include:

A common vision among the relevant stakeholders for the goals of the system, accompanied by a clear roadmap to reach them.

At the start of a bikeshare system, before anything is codified in writing, it is important that the relevant stakeholders come to an agreement on what they want. This helps ensure that big decisions around the business model, collaboration typology, and system structure can support the desired outcomes. More detail on these considerations can be found in the [Bikeshare Market Landscape Assessment](#).

Without a “north star,” it can be difficult to generate the excitement and commitment among the key partners that can later translate into action. As a result, a shared vision becomes critical when the system is ready to start expanding. Having an idea of how a system should grow (which geographic areas it must eventually reach, which rider segments it must serve) is necessary to grow sustainably. Without such a vision, bikeshare systems can develop non-contiguous service areas that are costly to manage, or institute incentive structures that motivate providers to act in ways that do not support the intended outcomes.

In our interviews, we spoke with a few “successful” cities that started their bikeshare systems without a shared or clear vision. In each case, the lack of vision was either accommodated by other outstanding factors (e.g. unusually high, stable public subsidy of the system over its lifetime) or was solved by later interventions to institute a clearer roadmap to guide improvements and expansion.

Measurable, well-defined goals that can be translated into effective use of data throughout the system’s lifetime.

Participants emphasized that clear, measurable goals (e.g. transportation emissions reductions, improvements in public health, more trips connecting people to mass transit, improved access to transportation in marginalized communities) were critical in all phases of deploying a bikeshare system. In the early phases, the government partner should set these goals, allowing them to design agreements with providers that ensure progression towards the desired outcomes.

When goals are designed well, they can be tied to measurable outcomes, which are invaluable in ongoing system monitoring, management, and growth. One provider operating in numerous cities of different sizes shared how they have had success accommodating very different goals in different cities, and are able to generate useful data about their contribution to these goals. For example, based on the number and duration of rides in a given city, they are able to express carbon emissions reductions compared to the same number of car trips, and in another city use the same metrics to calculate the extra calories burned by the average rider. These metrics were then used to prove each system’s value to key stakeholders (policymakers, environmental advocacy groups, public health organizations, and system sponsors), and helped cities (1) monitor performance and (2) optimize incentives for providers to achieve specific policy goals. Without clear goals and measurable outcomes, it is almost impossible to “prove” the contribution

of the bikeshare system toward larger public goals, which is essential for securing funding, political support, and community ownership.

In addition to this, many participants noted that a failure to generate high-quality, actionable data is a missed opportunity to secure improvements outside the direct scope of the bikeshare system itself. Bikeshare data can be used to justify general investments in mobility infrastructure and to optimize public transit systems to better meet demand. It can also help identify the “low-hanging fruit,” to optimize service, as well as opportunities to integrate bikeshare systems with zoning and economic development decision-making.

Uncontested alignment on responsibilities between operators, managers, and other community partners.

Reaching a consensus early regarding how responsibilities are delegated helps to ensure all parties can manage their operations to deliver what is expected of them.

We heard many stories of how challenging it can be to solve problems when nobody has an explicit responsibility to act, even if everyone agrees that the problem exists and even on how to solve it. Providers also called out the pitfalls of misallocated responsibilities, or scenarios in which parties are contractually responsible to solve problems they have no control over, or are given responsibilities that would have been better-placed with other partners. An example of this dynamic can be seen with responsibility for vehicle parking in cities that have little or no bike parking infrastructure. Providers were “responsible” for unparked or incorrectly parked vehicles and faced penalties for them, but did not have the right to install additional parking infrastructure that would have helped solve the problem.

Making a comprehensive map of the required responsibilities at the system’s onset helps to avoid these kinds of issues and allows all parties to take initiative in delivering the aspects of the system that they are well-positioned to provide.

A good balance of contract length and flexibility to accommodate investment over the lifetime of the system.

Providers frequently mentioned that the length of governing agreements was a critical factor for success, as they must align with the required investment and pay-out period of the provider’s operational model. Government partners also shared that contract lengths of 6 to 10 years were ideal to facilitate the required investments.

With agreements this long, however, rigidity can start to limit the ability of the system to grow, improve, and adapt to changing market conditions and the pace of technological change. A handful of participants shared that because of contract rigidity, even in “successful” systems, they were not able to update bike fleets or improve certain infrastructure that would have significantly improved the rider experience. Some cities shared how they

were able to solve these issues in re-worked agreements that created, for example, a process for determining provider fees based on specific metrics over time (instead of fixed-fee agreements), and that incorporated add-on service options for anticipated needs to avoid additional procurements. Intentionally re-balancing the asset ownership model was also important to ensure flexibility to invest in the system over the long-term.

When the above criteria are not met, we saw two scenarios emerge. Either the bikeshare system failed to become successful, struggled to stay afloat, and headed towards closure, or these shortcomings were acknowledged by the public side, and the learnings were incorporated into new governing agreements or into a system restructuring.

Throughout our interviews, we identified a few reasons why systems can fail to meet these criteria at the start. Especially in smaller cities, there is often a lack of capacity and/or knowledge to design an effective governing agreement. As a result, cities will occasionally copy agreement language from other jurisdictions even if they aren't a good fit for their specific context - putting providers in a challenging position to meet these requirements. Furthermore, we learned of pervasive notions among public-side managers that bikeshare systems do not require public investment, or even that they could produce revenue for cities - notions which are unrealistic given ridership demand in many regions. With this mindset, cities can be reluctant to co-develop a vision, assign and balance responsibilities effectively, or commit to agreements that are lengthy and flexible enough to grow sustainably. This dynamic is explored further in later sections.

We also wanted to call out how existing infrastructure and availability of public transit are other controllable and important parts of a "strong foundation." Of course, conditions like weather, topography, and community density are also key drivers of success, but are beyond the scope of this assessment.

II. Trust, "ownership," and partnership are essential, in both system governance and public perception.

Across our interviews, we heard time and again about the value of partnership and "ownership" in creating successful bikeshare systems. We summarized the key elements that contribute to this, including:

Collaborative and supportive partnerships between public and private entities.

Collaborative partnerships between public and private stakeholders are key to creating resilient bikeshare systems that can improve over time. Especially when facing challenges, it is important to have open communication and a willingness to co-develop solutions among key system partners. We heard many stories about times where one bikeshare partner (either the government agency or the operating partner) was unwilling to listen to the

other, or assumed a “not my problem” mentality, to the detriment of the system.

“Support” can take many forms. Supportive partnerships are those between parties committed to understanding each other’s strengths and weaknesses, and to accommodating each other’s needs where necessary. This was especially the case with governmental partners understanding (or not) the business models of operating partners and private providers. In many cases, when a governmental partner doesn’t understand the financial impacts of public decision-making on their partners, they can set their provider(s) up for failure. This dynamic frequently emerged due to a common notion among government agencies that bikeshare should be free of public investment, or is inherently a “profitable” service that is funded by venture capital investments. This mindset has led many government partners to institute requirements that private providers could not financially sustain, eventually leading to system closure. This dynamic has also shaped governmental approaches to many other kinds of “support,” namely staff time and funding. In all cases, regardless of the financials, it is unrealistic for cities to believe that they can implement a bikeshare system without, at minimum, a meaningful investment of staff time to adequately plan the system. While this is constrained by agency capacity, especially in smaller jurisdictions, every operating partner we spoke with underscored the importance of public staff support and collaboration. Some even shared that after years of trial and error in tens or hundreds of cities, they now consider the ability to collaborate with the city as the most important factor when considering entering a new market.

Finally, an important aspect of support from the public side includes helping operational partners navigate the complex government stakeholder map in the local region. This was especially important for system buildout, as governmental partners are an important linkage point between the bikeshare operators and other stakeholders like local utilities (who need to provide electrical connections for e-bike stations), business development districts (who can play a role in station siting decisions), and other municipal offices responsible for public space (including parking and right of way).

Committed, predictable, and non-partisan partnerships are essential for building trust.

As mentioned in our first finding, long-term partnerships are essential for the investment timeframe often required to launch a bikeshare system. Many participants also mentioned the importance of *predictability*, as this allows partners to develop trust with one another, and implement changes to a system that may require longer-term investments. Through our interviews, we heard frustration about partnerships where the staff and priorities of one or multiple stakeholders would shift constantly, making it challenging to stick with initiatives long enough to realize them. This was especially the case in regions where politics played a large role in public support for bikeshare. We heard from both public agency staff and operating partners about how

frustrating and challenging frequent changes in political priorities can be. Highly politicized environments resulted in vacillating public support, which would frequently jeopardize support for bikeshare or necessitate constant pivots by staff and partners, distracting all parties from optimizing service delivery.

Local “ownership” can be a system’s greatest asset, even though it is often intangible.

A common theme among the most “successful” systems we engaged with was the level of local ownership they observed in the cities where they operated. This “ownership” is not financial and can be found in systems with varied asset ownership models. Rather, it described the way that the local community perceives the bikeshare system as something that belongs to them. Not only does community ownership contribute to high and persistent demand for bikes, but it also helps to prevent vandalism, theft, and improper user behaviour. Additionally, participants shared how local ownership made it much easier to build stations in convenient places that would otherwise receive public backlash. Fostering local ownership can be challenging, but our interviews highlighted several strategies, including branding the system locally (often with the city or public transit operator’s name), and setting predictable rates for key users. Additionally, well-received equity features beyond discounted pricing were key to achieving community ownership in marginalized communities, where bikeshare can be less common and culturally unfamiliar.

Local “ownership” was also frequently cited as a key catalyst for launching a bikeshare system, specifically by one or more “local champions” that spearhead system implementation. These local champions come from within the community and frequently represent local institutions like community centres, advocacy organizations, and biking clubs, and played an instrumental role garnering public support, partnerships, and ridership in the early years of several systems we interviewed. Additionally, the issue of local ownership also came up in conversations with regional bikeshare systems that operate in multiple cities. Across these systems, there was frequently one “main” city that spearheaded policy development and operated at a larger scale than the other jurisdictions. A subsequent lack of “ownership” among the secondary jurisdictions would often emerge, where the governmental partners and local riders in these secondary locations were not committed to the bikeshare system – reflected in low system utilization, insufficient system funding, and slow (or no) growth.

III. Operating a successful bikeshare system is challenging, often more so than launching one.

Through our interviews, we noted that four themes relating to operational challenges emerged:

Challenges relating to negative user behavior:

Nearly every provider we spoke with highlighted challenges relating to vandalism, theft and negative user behavior (e.g. incorrect parking of vehicles) as key drivers of cost and negative public perception. Responsibility for solving these issues has proven very difficult to allocate, and solving them frequently requires close collaboration between parties which is not well-defined in governing agreements. Financial cost allocation for these issues is frequently placed on the operators, though they are not able to resolve the underlying causes of these behaviors on their own. Many participants highlighted local ownership and subsidized pricing for key demographics as key factors influencing behavior. Systems that were honest and realistic about these challenges were generally better-equipped to mitigate negative user behavior than those that were not - even where foundational governing documents did not anticipate these issues

Challenges relating to operating bikeshare efficiently as a mode of transit:

We regularly heard that bikeshare systems evolved over their lifetime, often by emulating or integrating with local public transit. One interviewed party shared how their bikeshare system had started as an “innovation initiative,” which from a governance perspective was critical to introducing a disruptive service to their city. After a few years, however, operations improved dramatically when they migrated the service to their local transit operator. In their view, transit professionals were simply better-equipped to optimize and problem solve given their familiarity with fleet operations, operating in the public’s rights of way, and the local transportation context. Integrating bikeshare with transit, whether through branding, comparable or coordinated pricing, physical integration and colocation of stations with transit infrastructure, co-management, and even from a funding standpoint were all mentioned by participants as making a positive difference in their system operations.

Challenges stemming from poor design of foundational governing agreements and requirements for operating partners:

We heard a strong call for “balanced” operational requirements that matched the local context from both providers and public agencies alike. Balanced requirements align cities’ and providers’ interests on issues like the design of fees, KPIs and non-compliance penalties, the pursuit of public goals, and the system’s operational environment.

The providers we spoke with often mentioned that they feel a limited ability to influence requirements, although the impact on operational efficiency (requirements being actionable) or financial sustainability (requirements coming with high cost implications) can be very large. Well-intentioned, prescriptive regulations and requirements around policy goals (equity, sustainability) and service levels (service areas, fleet uptime, rider satisfaction) often make operations financially unfeasible for successful providers or difficult to monitor due to misunderstandings of what can be measured or acted upon. On top of that, all the providers currently active in multiple jurisdictions called out that it is difficult and expensive to tailor

operations to very different expectations and requirements in every city regardless of size.

Overall, we observed that the best practice regarding operational requirements was to focus on desired outcomes, not specific processes to meet them. This model allows providers to implement their services in ways that make financial and operational sense and align with the policy goals at the same time. Additionally, when requirements are not prescriptive about operational methodology, they can be changed to solve for problems as they arise without violating the terms of the governing agreements and triggering costly fines or legal review that may in practice stifle innovation and service optimization.

IV. There are many business models and collaboration typologies for bikeshare systems, but none are perfect.

Most financially sustainable bikeshare systems rely on robust and diverse revenue streams in addition to rider payments.

To fund the operation of their systems, providers must manage multiple volatile cost drivers, and meet them with whatever revenue streams they can access. Some of these revenue streams come from the public (direct subsidy, or indirect subsidy through staff support and infrastructure investment from city agencies), some come from private industry (sponsorship revenues, advertising revenues, group/event memberships), and some come from riders themselves (subscription fees, per-ride fees). While some systems can survive with one or two sources of revenue, this is only observed in very high density urban environments or in jurisdictions with unusually high levels of public subsidy. In almost all cases, revenue sources must be diversified to support the cost of running bikeshare, which is almost never self-sustaining from ridership revenue alone.

Bikeshare can be seen as a means of public transportation. For reference, public transit operators in the U.S. derive on average 20% to 30% of their operating costs from the farebox. Public transportation is accepted as a public service, and governments accept that they must pay to offer shared, efficient ways for people to move around with the understanding that the benefits pay off indirectly. Roads, bridges and other public infrastructure such as broadband are also subsidized. Bikeshare is no different.

Government agencies instituting a bikeshare system should acknowledge this reality, and in the absence of public subsidy should remove as many constraints on earning potential as possible through advertising, sponsorships, and other private sources of funding. It is also important to consider the impact that administrative/regulatory decisions regarding public support have on the cost to bikeshare users; impacts which will be necessarily higher in the absence of public subsidy. If bikeshare is a relatively

expensive transportation mode, it constrains demand for and impact of the system, with cascading impacts to system equity and access.

Finding the right model for hard asset investments remains a challenge.

In addition to operating costs, the capital costs associated with bikeshare infrastructure and fleet purchases can be significant. In the United States, government funding through federal and state subsidies are generally easier to access for capital expenditure than for operational expenditure.

Regardless of this fact, finding money for infrastructure, bike upgrades, system electrification, and system expansion are hard to meet under public ownership. The capital outlays required are significant and less predictable, and, to date, most major bikeshare systems have expanded through the private purchase of hard assets. During our interviews we spoke with a handful of large, successful systems that were initiated with public asset ownership models that were transitioning to private ownership to foot the bill for large-scale improvements.

We also heard about the risks of private ownership in times of financial uncertainty. When the public does not own the bicycles or associated infrastructure, there is a higher risk of the system being entirely withdrawn or shut down if issues arise with the private partner. In one region we interviewed, several local bikeshare systems shut down at the onset of the Covid 19 pandemic. All of the local providers failed quickly due to financial hardship, but the only system that survived in the long-term had publicly-owned assets, and replaced the prior private service provider after a relatively short period of closure.

Government-set costs like permit fees, penalties, and insurance costs can impose outsized costs on operators, sometimes to the point of failure in competitive environments.

Apart from the previously-mentioned costs related to infrastructure and hard asset investments, other cost-centers for providers are determined largely by the expectations and requirements of the managing government agency. Often inadvertent (due public sector misunderstanding of private sector business models), these costs can make bikeshare systems financially infeasible.

These government-imposed costs are critical methods that the government can ensure provider compliance and minimize its own liability. Despite this reality, government partners must be willing to acknowledge that being inflexible will pass on too much cost to providers and may ultimately result in a loss of the bikeshare system. Providers (especially in highly competitive environments) have little or no control over these costs and often assume them without pushing back. We observed that this can lead to a downward spiral where providers assume tighter and tighter margins in order to stay in business, ultimately to the point of market collapse and withdrawal from a given region. We also noticed that this issue is less prevalent in places where

bikeshare is viewed by the public sector as part of the broader public transit environment – where providers are considered to be public service providers and are not expected to cover all costs through earned revenue.

System amenities such as equity programs are not free, and their potential impact is balanced with the cost they impose on operators.

Understandably, government partners expect to provide an excellent biking experience to their constituents regardless of income, and request that providers implement system features such as equity programs, bicycle upgrades, and other technological innovations that improve the user experience. It is important for cities to understand that while these amenities are important in ensuring that bikeshare is affordable, fun, and convenient, these amenities are not free for providers.

If government partners want to achieve a robust impact through enhanced features (especially equity programs), they should expect to subsidize them. Requiring providers to offer an equity program or reduced-cost ride without offering a subsidy necessarily reduces the capacity of the provider at each use. This incentivises providers not to expand the usage of these features and to prioritize service for full-cost riders. Across our interviews, we found that the most successful equity programs were structured to have revenue-neutral impact (or even to positively impact) the business case for the providers as they serve eligible riders.

4. Recommendations & Next Steps

Based on the insights we gained through the market sounding, desk research, and our understanding of the market (which can be found in the [Bikeshare Market Landscape Assessment](#)), we propose five categories of recommendations (in no particular order) for Caltrans to consider, based on the key types of support Caltrans can provide to the market. They are shown below in Figure 4.

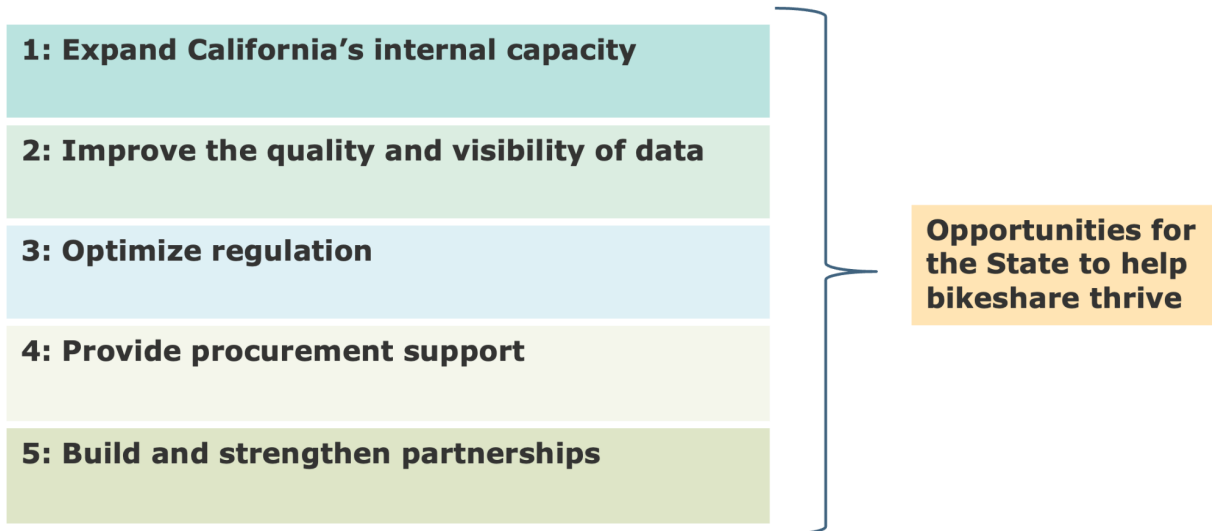


Figure 4: Overview of Recommendations

Each recommendation focuses on helping local partners create a successful bikeshare system. Based on what we learned about creating successful bikeshare systems, these recommendations are crafted to help solve real problems currently observed in the market. The level of effort and associated impact are to be determined after further evaluation.

I. Expand California’s internal capacity.

Hire a state micromobility coordinator.

Having a dedicated micromobility coordinator with expertise in the field would help to ensure that there is capacity at the state level to push for development of the bikeshare market. California would benefit, as such a coordinator could align key policy objectives across disparate agencies and initiatives, and could help develop and institute new policies consistently throughout the state. Having a micromobility coordinator would help local partners too, as the coordinator can serve as a “go-to” advisor for both providers and municipalities.

Improve data to help guide micromobility policy.

Across state functions, data-driven policy development is considered a best-practice to ensure positive outcomes. California does not currently have access to high quality, digestible data about bikeshare, and as a result is unable to generate in-depth insights that could be used to guide policy development and future initiatives.

II. Improve the quality and visibility of data.

Conduct surveys.

Caltrans should spearhead state-wide surveys to gain better insights from both current riders and potential customers of bikeshare directly. Surveys are an excellent way to increase knowledge about different user behaviors and preferences, and can inform the development of more attractive bikeshare systems.

Formalize micromobility data collection standards and processes.

Clear guidelines for data reporting are a necessary precondition to developing digestible, actionable data sets. As it stands, there are two micromobility data standards (GBFS, and MDS) that policymakers already require providers to support. But there is no state-wide consensus on what kinds of data and metrics should be considered the “bare minimum” to produce high quality data about micromobility services. Developing these guidelines will require significant upfront effort, but formalization will eventually yield benefits for many stakeholders. Cities – especially those with less capacity - will benefit from clear guidelines around micromobility data, saving them valuable time when setting up new systems, and will also be able to access best-in-class data about their micromobility services. Providers may benefit from a more standardized landscape statewide, allowing them to automate data collection

and replicate processes across cities, rather than developing custom practices and agreements in each city. Finally, California will benefit from more complete, standard data, which can be aggregated for analysis and publication.

Develop bikeshare data sets and insights at the state level.

Data from a bikeshare data platform and surveys should be brought together in publicly available data sets. In this way both public and private parties can enrich their knowledge of bikeshare which could potentially lead to better operating and business models.

Create a centralized, public-facing bikeshare data platform.

Generating digestible, actionable insights on the performance of bikeshare in different cities and jurisdictions would be very valuable. Currently, there is no centralized place to access this kind of data, and as a result there is no visibility on the collective health and contribution of bikeshare in California. Creating public access to these kinds of insights is valuable for a number of reasons, chiefly that it has the potential to demonstrate the value of bikeshare in achieving key statewide goals around health, the environment, and transportation connectivity.

III. Optimize regulation.**Help with station siting authority.**

Placing docking stations was noted as an incredibly important and challenging aspect of bikeshare buildout by participants in the Market Sounding. For a variety of reasons – unclear or unnecessarily restrictive zoning policies, lack of authority to convert streetscapes, and NIMBY-ism, among others – providers have struggled to place stations where they are needed. Caltrans may have the ability to ease this process through policy development, clarifying or amending the eligible uses of specific streetscapes to include bikeshare docks or to pursue legislation. Additionally, because Caltrans' right-of-way includes a significant portion of roadway throughout California, there may be additional opportunities to streamline or incentivise station siting along or near the state highway network.

Clarify the eligibility of bikeshare for existing transportation funding.

Some bikeshare systems already benefit from state funding for capital and operating expenditures, but many do not. It is possible that existing funding sources at the state level may already be eligible (or easily adaptable) for use in bikeshare, even though they are currently underutilized for this purpose. California should conduct further research and clarify which existing funding sources can be used for bikeshare systems. These findings should be communicated publicly by issuing updated guidance on funding applicability.

Remove barriers to funding access, streamline processes, and prioritize bikeshare uses in grant guidelines where applicable.

To ensure existing funds can be easily accessible, Caltrans can work to simplify and streamline application processes for state funding, making applications for bikeshare funding (among other project types) easier to submit. Additionally, bikeshare can be further emphasized as a priority in grant guidelines to encourage grant applicants to consider bikeshare as a good use for state funding.

IV. Provide procurement support.

Explore insurance / liability policies and pricing.

Current requirements around insurance and liability coverage lead to extremely high costs for many private bikeshare providers. These high costs not only make it a challenge for operators to achieve financial sustainability but increase costs for riders as well. Caltrans can further consider how to use the scale of the state of California to negotiate better pricing for micromobility insurance policies.

Explore a bikeshare procurement bench for smaller regions.

Small cities and regions often lack the deep knowledge and understanding of bikeshare required to establish a strong foundation for their system and procure one that meets their needs. California could explore if it may be beneficial to create a bench with selected bikeshare providers, allowing cities to access pre-negotiated, price-competitive agreements.

V. Build and strengthen partnerships.

Convene micromobility forums in California.

Convening knowledge sharing opportunities, on the state, national, and international level would help to catalyse innovation, make best-practices more accessible, and build partnerships between bikeshare stakeholders. These forums could allow local partners to co-develop resources and share knowledge, and would also provide a useful platform for a micro-mobility coordinator to engage with others in the industry.

Collaborate with electricity utilities (get better rates, streamline station electrification).

As e-bikes become an increasingly important part of bikeshare, station electrification has become a limiting factor in system expansion and improvement. Caltrans could collaborate at the state level with electrical utilities to improve bikeshare outcomes by negotiating lower electricity rates for bikeshare, streamlining permit applications for station electrification, and generally coordinating grid development with shared mobility streetscape development.

5. Conclusion

Bikeshare Market Sounding Report

Spring / Summer 2023



With these findings and preliminary recommendations, Caltrans will continue its work to ensure that shared bikes can grow as a part of California’s sustainable mobility ecosystem. Next steps include:

- Sharing the findings of this report with participants.
- Further mapping the relevant industry stakeholders and beginning the process of socializing this report with them.
- Begin further research and feasibility assessments for the recommended initiatives.
- Continuing engagement and collaboration with market parties and local authorities.

We thank all the Market Sounding respondents for their participation, and look forward to future engagements as we continue to hone California’s bikeshare strategy.

Appendix: Bikeshare Market Landscape Assessment

I. Characterising the market

Bikeshare systems (BSS) have become a component of transportation systems in the United States, particularly in California during the last decade. By mid-August 2022, over 170 active systems operated throughout the country, positioning the US as one of the world leaders in terms of vehicle supply. Out of those 170, around 10 to 15 operate in California, with Bay Wheels (San Francisco Bay Area) and Metro Bikeshare (Los Angeles) being California's two largest bikeshare systems. Bikeshare is also present in smaller cities and towns, occasionally rooted in local institutions like universities or community organizations.

Bikeshare systems have taken many forms over the past decade, varying significantly their business models, level and type of collaboration. Unlike other forms of micromobility such as e-scooters, which are predominantly dockless and electric, bikeshare systems can operate in a combination of docked, dockless, and hybrid models. In certain cities, multiple bikeshare systems of varying types, sizes, and technological capabilities coexist. Additionally, factors such as city density, topography, and weather conditions are influential, contributing to the success or challenges of particular systems.

II. Operational and business models

Considering the diversity of bikeshare providers, this section provides an overview of the key elements that currently shape their operational and business models. By segmenting the market, we were able to ensure that our market sounding process included perspectives from the full spectrum of bikeshare models.

Operating models

Station-Based: bicycles (electric or not) can be rented and returned at designated docking stations situated throughout the service area. Riders have the flexibility to pick up a bike from one station and drop it off at any other station within the network, assuming there are spots available. These systems require users to register for a membership or obtain a pass to unlock bicycles from the stations. Despite the latest developments of other modalities (e.g., free-floating), this modality is still dominant, and represents a majority of active systems, especially in major urban areas. This was reflected in the proportion of station-based bikeshare systems we spoke with (e.g., Cincinatti Redbike, Ecobici (CDMX), Nextbike by Tier, LA Metro, etc).

Free-Floating: bicycles (mostly electric) do not have designated docking stations. They are scattered throughout the service area and can be located and unlocked using a mobile app. Users can pick up and drop off the bikes anywhere within the defined region. GPS technology is often used to track bikes and ensure they don't leave the service area. Most frequently provided by private vendors, free-floating

bikeshare companies quickly expanded operations worldwide in the mid-late 2010s on the promise of convenience and flexibility. Over the years, governments, especially in California, have refined regulations and policies surrounding dockless bicycles in order to have more control over their operations and steer them towards policy goals (e.g., establishing permit systems, addressing equity concerns, setting pricing structures). In our assessment, we spoke with a handful of dockless providers, including Lime and Nextbike.

Hybrid: providers combine the characteristics of station-based and free-floating bikeshare. They have docking stations where users can rent and return bicycles, but they also offer flexibility to leave bikes outside of stations within designated zones. In our assessment, we spoke with Lyft, which powers Bay Wheels and Capital Bikeshare (among other large systems like Divvy in Chicago, CitiBike in New York, Biketown in Portland) and operates some hybrid systems, including both docked and dockless parking.

Bicycle libraries: bicycles are made available for borrowing or lending purposes, often with a focus on promoting cycling as a sustainable mode of transportation or to enhance access to jobs, services, and recreational opportunities to underserved communities. While not as prevalent as traditional bikeshare systems, some bicycle libraries exist in various communities in the United States. Shared Mobility Inc. is one of the nonprofit parties we interviewed which offer this modality of shared bicycle systems.

Business models

We can characterise the parties we assessed according to the main components of their business models. Having a good mix of business models represented in our analysis enabled us to develop a representative snapshot of the current state of the market. A handful of key factors influence the overall business model of bikeshare systems.

Asset Ownership and operations: different parties can own the physical assets (e.g., stations, docks, bicycles, and the IT system) and operate them. Some of the large station-based systems we assessed have a long history of public ownership combined with private or non-profit operations. Other models we encountered included private ownership of assets and operations, and combinations of the two where some assets are publicly or privately owned. The designation of ownership and operational responsibility impact the financial structure of bikeshare systems significantly, as the scale of capital investment, service quality, and technological adaptability, all depend on these agreements. Throughout our interviews, we have observed a growing preference for private ownership and operations over public ownership. Many participants noted that this model allowed for greater and more frequent investment and expansion of physical assets, though some interviewed parties noted that private asset ownership can reduce system resilience in the face of financial uncertainty.

Revenue streams: systems usually operate through a combination of one or more revenue sources, including revenue from riders for rides and subscriptions, group membership, event underwriters, support from private sponsors, direct public subsidies, and revenue from advertising. Revenue from riders is often insufficient to cover operations, specially in mid- and small-sized cities where demand for cycling is low. This can vary considerably among regions due to several factors, such as the reliance of inhabitants on other modes (e.g., privately owned vehicles) or lacking cycling infrastructure, which increases the need for alternative revenue streams to achieve financial sustainability. The presence of multiple revenue streams, made possible by contracting mechanisms, can provide greater resilience, allowing bikeshare systems to continue operating even when one particular source of revenue may be affected or limited.

Contractual and operation model of the governing agreement: the type of engagement between implementing public agencies of bikeshare programmes (e.g., cities, regions, public transit authorities) and vendors varies widely according to aspirations and/or capacity. Depending on their goals about the quality of services and their desire for a higher level of control over operations, governmental project sponsors may dedicate agency staff time and budget to acquire and operate bikeshare systems, or delegate most of the responsibility to private parties, which is reflected in the structure of their system’s governing agreement. In general, we identified two dominant forms of governing agreements – (i) public procurements that result in direct contracts with vendors and (ii) permits.

We found that most of the “successful” systems encountered in our assessment employed a direct procurement and contracting model, not a permitting model. Under these agreements, implementing agencies play a much larger and more active role in organizing the system, from functional design (e.g., siting stations or parking areas), to tendering, assessing financials, and coordinating infrastructure implementation. For tendering and contract design, the following features are most common: expected service levels, performance KPIs, fee structures, service area designation, data sharing agreements, and contract length, among other factors. An important and common challenge highlighted by some of our interviewees is the difficulty to expand or improve the technology of publicly procured systems (e.g., install new equipment, replace normal bikes by e-bikes) due to the more rigid structure of these agreements.

Systems in the second category, permits, are also widely adopted by cities in California and around the world. In theory, permitting requires far less effort on the city-side compared to the procurement model, since most major decision making can be delegated to private parties. After launch, implementing agencies need to monitor vendors’ operations, evaluate their performance, design requirements and deal with eventual nuisances on the Right-of-Way. Many elements present in permits are usually found in contracts from public procurements (e.g., performance KPIs, service area, data sharing, etc).

Between these two agreements, we find that cities employing the procurement model were providing greater subsidy to bikeshare, while permit-based systems

tended to require providers to pay the city for their right to operate. During the interviews, we encountered novel revenue agreements in both kinds of governing agreements, including fee structures that are variable based on ridership scenarios and contribution policy goals, hybrid asset ownership models, contracts that allow for infrastructural subsidy from providers, and flexible requirements regarding operations).

In the figure below, we summarise different features that characterise the business models assessed:

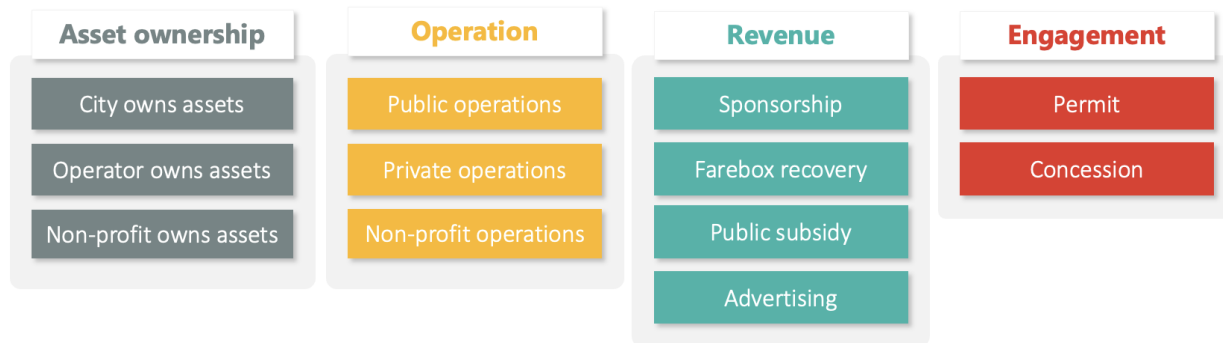


Figure 5: Elements of diverse bikeshare business models.

III. Common city typologies

In our analysis, we examined individual bikeshare providers and also observed the various collaborations they have established with the cities in which they operate. This evaluation took into consideration the size of the cities, the different types of contracts in effect, operational models, among other aspects.

Single long-term partnerships: bikeshare systems such as Ecobici CDMX, Bikeshare Toronto, Bilbaobizi, Bay Wheels or Metro LA are among the examples we assessed that fit this typology. These systems are typically characterized by long-lasting (>5 years) full-service contracts with strict service level expectations. In most of the cities we assessed, companies have been contracted to operate their assets, although a small number of cities are transitioning towards private ownership and operation. The daily demand per vehicle can vary significantly across these assessed services, but it tends to be higher in locations where some of the mentioned success factors have been present, such as a strong vision, measurable goals, comprehensive master planning, and well-balanced design requirements.

Single or Multiple permits: Generally, cities falling under this typology (e.g., Antwerp, Amsterdam) can come in various sizes and forms, as long as private operators can achieve financial sustainability. In the United States, private companies often prefer to operate in cities that have a high density of target consumers, points of interest, and short trips connecting these two. Collaborations between private operators and cities typically involve permits that are designed and ideally monitored by policymakers. During interviews, operators in cities of this

typology emphasized the negative presence of highly specific operational requirements. According to interviewed parties, these requirements can make operations financially unfeasible and lead to tensions between policy-makers and providers when compliance problems arise frequently, such as issues related to data sharing, nuisances, and resident complaints.

Hybrid collaborations: Cities under this category stand out due to their high density of target consumers, large size, technical capacity of public servants to manage multiple providers, and other factors, which allow them to accommodate three or more active providers. Despite the competition from multiple permitted vendors for short trips, publicly-procured systems operating in this typology are able to maintain their position as the largest providers in terms of vehicle supply and market share. Several key factors contribute to this success, including competitive per-ride pricing compared to private vendors, utilization of up-to-date technology (such as a significant proportion of e-bikes), a strong sense of ownership provided by the brand, predictability, and extensive coverage resulting from strategic planning and vision.

Non-profits: providers such as Cincinnati Red Bikes (docked) or Shared Mobility Inc. (bicycle libraries) are among the assessed examples that operate in this typology. These systems have very often low farebox recovery from passenger rides (<50%) due to the low demand for cycling in general at small-sized American cities, very specific target groups (tourists, leisure trips) and the cities lack bicycle infrastructure. Non-profit organizations manage bikeshare in collaboration with the municipalities and the support of sponsors, which usually provide most of the revenue to enable operations. Due to the public value offered by non-profits, we observed from interviews that service levels can be rather flexible, however operations are monitored closely (e.g., bike-to-docks ratio, vandalism) in order to preserve existing assets. The recovery of lost bicycles, the strong financial dependence on few sponsors are frequent difficulties faced by non-profits.

In the figure below, we summarise different city typologies presented above:



Figure 6: Common city typologies

Market penetration:

After evaluating the components that make up the operating and business models, we categorized a global selection of bikeshare systems (derived from the GBFS data feed) according to their level of success in terms of market penetration (a blend of recent demand for trips and vehicle availability per capita), and longevity in years since system launch (see figure 7 below).

This exercise helped us develop a perspective on what “success” looked like, and to hone our interview/survey questions for specific types of systems. On one hand, we identified a group of systems that can be considered successful based on their extensive market penetration and long operational history, which led us to focus on questions about the factors contributing to their success. On the other hand, we observed another group of systems that have faced significant challenges, have shut down, or which require interventions in the near future, prompting us to ask questions about past challenges and potential future improvements. By conducting surveys and interviews, we believe we were able to obtain a comprehensive understanding of systems belonging to both ends of the proposed spectrum.

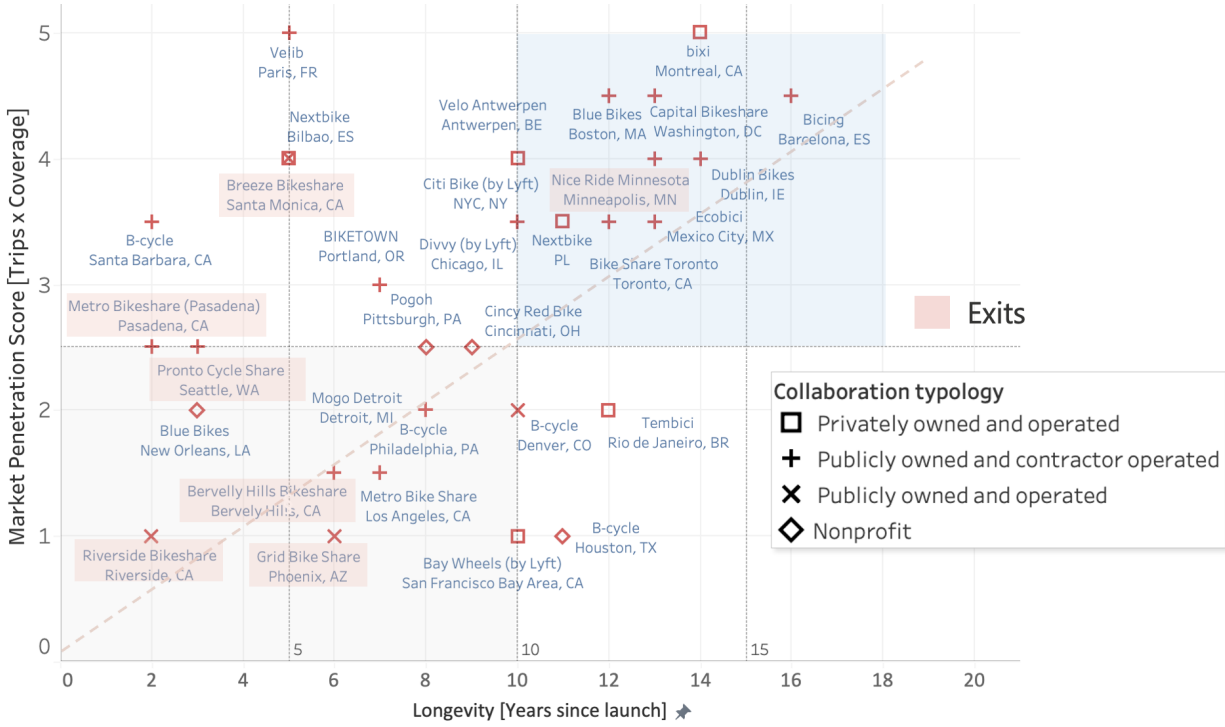


Figure 7: A non-exhaustive assessment bikeshare systems by 'market penetration' and 'longevity'