

## China's App-Based Bike-Share Market

**IMPLEMENTING A BIKE-SHARING SERVICE THAT HAS A REAL IMPACT ON CITY TRANSPORTATION USUALLY MEANS,** among other things, getting the underlying system of docking stations right.

You'll need a "dense network of stations across the coverage area," advises *The Bike-share Planning Guide*, published by the Institute for Transportation & Development Policy. "The utility of dock-based bike-sharing systems depends on the presence of a fairly continuous network of stations," agrees the Shared Mobility Toolkit, from the Shared-Use Mobility Center, "and building the network is a relatively capital- and labor-intensive task." The process also requires careful planning to make sure the stations are arranged in the most effective locations—and that they don't have negative side effects on their built environs.

But what if you could build a bike-share system with no stations at all, as some new enterprises in China are trying to do in a handful of major cities? One high-profile example is mobike, which launched last year and already has a fleet in the tens of thousands in Beijing. Its chief executive is a veteran of Uber's operations in Shanghai, and it is backed by more than \$100 million in investments from financial firms such as Sequoia Capital and Warburg Pincus.

Mobike's approach relies heavily on its unique smartphone app and technology built into the bike's patented design. Most significantly, the bikes don't need a docking station or even a parking dock. Instead they are equipped with a special locking mechanism on the back wheel, meaning users can theoretically leave them almost anywhere except indoors and a few other locations. To locate an available bike, users consult the service's app, which presents a map that uses GPS technology to point out the nearest available mobikes; you can reserve one through the app to make sure nobody else snags

it first. The app also generates a QR code that's used to unlock the cycle.

The company is still too new to be fully proven, and it faces competition—including another dock-free enterprise called ofo. But its stationless model may be as intriguing from a planning perspective as from a consumer's point of view.

What if you could build a bike-share system with no stations at all, as some new enterprises in China are trying to do in a handful of major cities?



Ofo, one of China's stationless bike-share companies, aims to attract students with low prices and high distribution near universities. Credit: ofo

Zhi Liu has tracked the development of bike-share programs in China for years. Formerly with the World Bank, where he focused in part on urban transportation issues, Liu is now director of the China program at the Lincoln Institute of Land Policy and the Peking University–Lincoln Institute Center for Urban Development and Land Policy in Beijing. He notes that it's important to understand the context in which these new businesses evolved.

**Bikes are equipped with a special locking mechanism on the back wheel, meaning users theoretically can leave them almost anywhere.**

China has a long history with cycling. But even for enthusiastic bike owners, rough and heavily trafficked roads make for a challenging long-distance commute in modern Chinese cities. So when bike-sharing schemes emerged in a few cities around 2008, as a complement to metro and bus options, the idea was quickly embraced. In 2011, the National Transport 12th Five Year Plan explicitly encouraged urban centers to develop bike-sharing as a useful addition to existing mass-transit systems.

"Planners and municipal governments now consider shared bikes a key component of public transport," Liu explains, "because it helps solve the problem of the so-called 'last mile.'" That is: You use public transport, and arrive at a station—and you still have another mile to reach your real destination.

Government programs in China didn't face the same land-use challenges that might arise in a U.S. city, because urban land is state-owned. But other challenges persisted. By 2011, when a World Bank conference focused on domestic and international experiences with shared bikes, the major discussion was around "management and sustainability," Liu says. "What business model makes sense?"

A mix of solutions emerged. In Hangzhou, a government-led model involved setting up a

state-owned company; today this is reportedly the largest bike-sharing system in the world. Other cities have experimented with various public/private hybrids, searching for a balance that would make bike-sharing cheap enough to attract users but profitable enough to cover costs.

The latest wrinkle is businesses such as mobike and ofo, both of which also operate in other Chinese cities. These will clearly need to find that same economic equilibrium. But, perhaps because they're both lavishly funded, each seems more focused for the moment on building ridership and acceptance.

Ofo overtly targets students, using lighter bikes with combination locks, university-centric distribution, and a very low deposit (13 yuan, or about \$2). Mobike's target is more likely to be an urban professional and/or cycling enthusiast. The deposit is 299 yuan (a little less than \$50); rental is 1 yuan per half-hour. Its cycles are heavier but also more durable and distinct. "I do hear a lot of people talking about it," says Hongye Fan, a Beijing-based consultant for the Asian Development Bank and investment manager for China Metro Corporation who has tracked bike-share programs. "It's an innovative model in China and spreading very fast."

Fan, previously an infrastructure finance and asset management consultant at The World Bank, points out some of the more intriguing side effects of the stationless models. Rolling out a major bike-sharing system can be, by necessity, a top-down process that doesn't leave much room for flexibility once dock locations are built out—or, she notes, for "really thinking about and analyzing: What is the real demand from the citizens?"

Bike-sharing is a useful response to the last-mile problem, she continues, but "there is no universal last mile." In fact, a station fixed in a spot that's out of a particular user's way could turn the last mile into the last mile and a half. An almost Uber- or Zipcar-like system that's more overtly shaped by demand could avoid that.

And there are at least some experiments along similar lines elsewhere. A striking example is Copenhagen-based AirDonkey, essentially an app-based sharing platform that allows bike



Dock-free bike-shares in China help riders cover the "last mile" between their destination and the nearest transit stop. Credit: ofo

owners (including, notably, bike shops) to rent out their cycles to others. The startup hopes its model can work in other cities, even those where traditional share systems are in place.

Of course, such approaches involve other challenges and hurdles. Theft has been an issue for mobike, as it would surely be in almost any city in the world, although the company has said it's a containable problem. Also, the demand-driven model could mean lots of bikes end up clustered in spots that are more popular as destinations than as starting points—meaning they'd have to be physically redistributed.

And, as Fan points out, planning would still play a crucial role in addressing problems that startups can't—like designing and ensuring proper infrastructure, such as bike lanes, that makes bike riding safe and practical. But that's true everywhere. Bike-share programs have proliferated wildly in recent years—Africa just launched its first, in Marrakech—and with an estimated 600 systems in place around the world, funding and implementation strategies vary. "We have not found any particular model that fits all cities," Liu says.

**In Hangzhou, a government-led model is reportedly the largest bike-sharing system in the world. Other cities have experimented with various public/private hybrids, searching for a balance that would make bike-sharing cheap enough to attract users but profitable enough to cover costs.**

Truth is, we probably never will find a universal solution. And that's precisely why mobike and other new models—taking shape in China, the country with the most extensive bike-sharing systems anywhere—matter. Exploiting tech innovations in clever ways offers some compelling new potential routes to follow. Let's see whether others take these ideas for a spin and where that leads. □

**Rob Walker** (robwalker.net) is a contributor to Design Observer and *The New York Times*.