Implementing bikesharing systems in small cities: Evidence from the Swiss experience

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ABSTRACT

Research on bikesharing has largely focused on systems operating in large cities. Based on the Swiss experience, this paper explores the challenges that small cities (< 100,000 inhabitants) face in implementing such systems. It presents four types of evidence: (1) historical evolution of bikesharing in Switzerland; (2) current configuration of the systems; (3) usage rate; and (4) strategies and policy choices. Results show that the challenges in terms of usage rate and economic sustainability of bikesharing systems in small cities are considerable. The density of bikesharing networks, the existing modal share for each city, and possible target groups are elements that must be taken into account to improve the performance of bikesharing systems. The Swiss experience also suggests that the ability to develop partnerships as well as communication and accountability play a critical role.

1. Introduction

Since early 2000s, bikesharing systems have been extensively diffused across the globe. These systems enable bicycles to be picked up at any self-serve bicycle station and returned to any other station. In contrast to previous generation systems, the bikesharing systems developed over the 2000s have incorporated information technology and are currently running with smartcards and electronic bicycle locking. Different objectives are commonly associated with bikesharing systems: increasing mobility options and the use of public transit; reducing transportation operation costs based on modal shift; reducing traffic congestion and fuel use; increasing health benefits and environmental awareness (De Maio, 2009; Midgley, 2009; Shaheen et al., 2010; Shaheen et al., 2012). The number of bikesharing programs operated globally has evolved over recent years: 100 programs in 2010 (Shaheen et al.), 375 in 2011 (Midgley) and over 700 in 2015 (Fishman et al.). Bikesharing systems have benefited from a clear political and public support (Ricci, 2015) and new programs will likely be launched in the future.

However, bikesharing systems also face numerous criticisms. Based on a literature review of peer-reviewed and grey literature, Fishman et al. (2013) conclude, for example, that bikesharing systems did not favour modal shift from private car to the bike. Concerns about social equity have been also raised. Shaheen et al. (2014: 95) show that in North America bikesharing users are "more likely be male, Caucasian,

wealthier, younger, and have attained higher educational degrees" compared to the general population and conclude that bikesharing needs to "serve all socio-economic classes and ethnicities in an urban area". Fishman et al. (2015) also show that bikesharing members have higher income than other groups, due to localization of stations in inner cities. Ravalet and Bussière (2012) and Murphy and Usher (2015) reach a similar conclusion in theirs analyses of bikesharing systems in France and Ireland respectively. In contrast, Goodman and Cheshire (2014) suggest, based on the case of London, that bikesharing systems have the potential to become more equitable over time. Equity issues are even more evident in developing countries (Jennings, 2015). Accessibility and safety related barriers in many contexts restrain the use of bikesharing systems (Fishman et al., 2012; Lathia, 2012). Also, even those considered as successful bikesharing systems, such as the BIXI service in Montreal, can encounter serious financial difficulties (Béland, 2014).

Due to the media coverage of some systems in large cities, bikesharing has been frequently associated with mobility services in larger cities. However, Parkes et al. (2013) show that bikesharing systems are highly adaptable to different contexts, something which explains their rapid diffusion. Bikesharing systems are thus often developed in medium to small cities in countries such as Italy, Spain and France. Indeed, the first city implementing a system using smartcard technology was the medium city of Rennes in France (200,000 inhabitants). However, the challenges facing smaller urban

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areas in implementing and managing bikesharing systems are considerably different. Some scholars suggest that in such areas, "local authorities have to deal with a much more complex situation, and the system doesn't always meet the success which was expected" (Richard and Jouannot, 2014: 8). These authors consider that small cities may face a dilemma between trying to introduce improvement measures and, more radically, reconsidering the whole system. Bührmann (2007) consider that a population of at least 200,000 inhabitants is needed to ensure a successful service. In contrast, the research conducted by the OBIS consortium[1] (Optimising Bike Sharing in European Cities) concludes that even is small cities with up to 100,000 inhabitants, bikesharing systems "can be a useful addition to existing means of transport" and that "funding can be obtained with the help of local sponsors, labour market initiatives and social organisations" (OBIS, 2011: 14). Equally, based on the Spanish experience, Steer Davies Gleave (SDG, 2011) notes that bikesharing systems are not only viable in larger urban areas.

This paper seeks to further investigate the opportunities and challenges related to the implementation of bikesharing systems in small cities (< 100,000 inhabitants) focusing on the Swiss experience. In Switzerland, three bikesharing systems (PubliBike, Velospot and Nextbike) operate around thirty networks[2] involving approximately fifty municipalities. The average population served by each network is around 60,000 inhabitants and most of the municipalities have less than 20,000 inhabitants. We propose to answer two questions. Can bikesharing in small Swiss cities be considered a successful experience? What are the opportunities and challenges facing bikesharing in small cities based on the Swiss experience?

We adopt two different and complementary methodological approaches. A qualitative perspective based on press articles, grey literature and personal interviews with operators and local authorities shows the evolution of different systems, their current operation models and the main challenges they are facing. Interviews were conducted between Mai and August 2015 in parallel with numerous email exchanges and telephone consultations. A quantitative analysis completes our study by providing a set of indicators in terms of the configuration of different systems and usage rates based on available data. The combination of both qualitative and quantitative methodologies highlights the different logics (transport-related, social-oriented, political, urban planning-related) underpinning bikesharing systems and provides a more complete and critical view of the policies implemented.

The analysis proceeds as follows. The next section shows the evolution of bikesharing systems in Switzerland starting in the 1990s. We then describe the current configuration of the systems from the point of view of fare system, technological choices, territorial distribution and network density. A third part shows different indicators measuring the usage rate of the two main bikesharing systems (PubliBike and Velospot). The fourth part discusses the strategies and policy choices concerning bikesharing in Switzerland.

2. Evolution of bikesharing in Switzerland

Early free bike loan and rental services in Switzerland have been promoted by different local associations since the middle of 1990s in collaboration with local authorities (Table 1). The first such system was developed in the city of Zurich in 1994 by the association Zürich rollt. Subsequently, additional services were launched in other Swiss cities

by similar associations under the nationwide network Suisse Roule. These services included free bike loans and bike rentals along with maintenance assistance for cyclists. They were part of a social initiative to reintegrate jobseekers into the primary labour market.

In December 2009, the association Lausanne Roule created the private limited liability corporate entity Velopass. Velopass sought to create a nationwide bikesharing system, to ensure the compatibility between different cities (Velopass, 2011). It developed a bikesharing service based on automatized stations and a unique nationwide subscription. Different social organizations were in charge of the operation of each local network. By the end of 2012, Velopass operated 11 networks including a total of 91 stations, 900 bikes and 12,000 subscribers (Velopass, 2013).

In May 2012, Velopass was acquired by CarPostal a subsidiary bus company of the Swiss Post. CarPostal, together with the Swiss Federal Railways (SBB) and the company Rent a Bike,[3] had launched in August 2011 the bikesharing system called PubliBike with the implementation of a network in Lucerne. PubliBike was conceived as a part of an intermodal strategy in order to ensure the "last kilometre" of the mobility chain in combination with public transport system (CarPostal, 2011). In 2012, PubliBike system comprised of nine networks including a total of 10 stations and around 70 bikes located in German-speaking Switzerland and the Jura area (Velopass, 2013). A year later, with the acquisition of Velopass, PubliBike proposed a unique subscription giving access to 1000 bikes (including e-bikes) distributed along 100 stations.

PubliBike initiative is directly linked to a previous collaboration between Rent a Bike and the SBB. Between 2009 and 2012, these two entities collaborated in the implementation of the Nextbike system (a product originally developed in Germany) in 25 train stations and 15 touristic facilities located in central Switzerland (Nextbike-Rent a Bike, 2011). In 2012, Rent a Bike decided to get out of the project. Nextbike is now operating in the cities of Lucerne and Sursee by the social organization Caritas Lucerne.

In 2010, the city of Biel launched a new bikesharing system called Velospot. Together with different local firms and high schools, it developed a new system better adapted to local needs. The system sought to propose a daily mobility service to local population encouraging the use of bike. Maintenance tasks were attributed to a social organization dependent of the city. Private local sponsorship agreement was also reached with a store chain. In 2011, the network counted nine stations and 30 bikes. In 2013, the operating rights of Velospot were acquired by Intermobility SA which is since then in charge of the commercialization of the system. Subsequently, several cities have adopted and developed the Velospot system. In 2014, the Swiss Velospot Association was created by Velospot cities in order to coordinate the different offers, exchange experiences between members and address common petitions to Intermobility (AVS, 2015).

3. Description of bikesharing systems and networks

This section describes the way in which the three IT based bikesharing systems (PubliBike, Nextbike and Velospot) operate in Switzerland (Fig. 1).[4] Compared with the small cities (< 100,000 inhabitants) included in the OBIS sample, Swiss bikesharing networks are characterized by technologically advanced schemes, 24-h services

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[1] 51 schemes in 48 cities located in 10 European countries were included in the OBIS project. The OBIS sample includes Austria, Belgium, Czech Republic, France, Germany, Italy, Poland, Spain, Sweden and United Kingdom.

[2] We propose to distinguish systems from networks. System refers to a particular operational model of bikesharing which can be implemented locally creating individual networks. Thus, in Switzerland, we identify three bikesharing systems operating different local networks.

[3] Previously to the creation of PubliBike, Rent a Bike, in collaboration with the SBB had developed a bike rental system since 1987 allowing to rent a bike in train stations. Subsequently, new partners have been involved (private railways, hotels, youth hostels, campings, etc.) in the project and electric bikes have also been introduced. In 2012, Rent a Bike possessed 4500 bikes at 200 rental points in Switzerland. This service is mostly oriented to leisure and touristic activities.

[4] The free bike loan services provided by some associations of the Suisse Roule Network and the bike rental services proposed by the SBB and Rent a Bike are not considered.