

## **Who are bike sharing schemes members and how they travel daily: the case of the Lyon's "Velo'v" scheme**

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### *Objectives*

Bike sharing schemes (BSS) in urban areas have sprawled around the world at an accelerated pace over the last years, and announce unprecedented transformations in contemporary mobility and urban lives. The success of these schemes and numerous studies already published have provided significant knowledge gains regarding planning, operational management, public policy assessment and users attitudes or perceptions (Shaheen et al, 2010; Fishman et al, 2013) but only few regarding analysis of social transformations induced by this new kind of travel mode.

Most of the previous studies perform detailed analysis of anonymous bike flow data, yielding original insights on spatiotemporal patterns and dynamic performance of the systems. This is sometimes combined with some basic socio-demographic data recorded at the time of enrollment for annual users but even these are limited (e.g. gender, age, home postcode, see e.g. Morency et al, 2011; Vogel et al, 2014). Some specific additional surveys targeting scheme members cover perceptions of their own modal shift by respondents (Shaheen et al 2013; Bachand-Marleau et al, 2012) or exceptionally compare BSS members to traditional cyclists (Buck et al, 2012).

Especially knowledge is still to be elaborated on the way this travel mode takes part in the daily travel behaviour of the individual user, how this mobility behavior is modified and more generally how urban practices are modified. One reason of this lack of knowledge may be that registration data and automatic data recording of the flows of bikes provide only limited information on the socio-demographic profile of the users and their overall daily mobility. We overcome this limitation thanks to a survey of BSS members covering their overall mobility beyond the use of bike sharing.

### *Data and methodology*

In order to gain more information on users and uses of BSS we conducted a series of surveys on users of the BSS scheme named Velo'v in Lyon (France). This scheme started in 2005 and has now around 350 stations and 4500 bikes in operation, with approximately 50,000 annual registered users. It is an open scheme operating with fixed dock stations where customers can use a variety of smart cards to retrieve a bike, including credit cards for casual users (one day or 7 days) who can register instantaneously at the dock station.

As part of the empirical study a specific Internet-based survey was undertaken in September and October 2014 on registered annual members of Velo'v. More than 3,000 respondents were described by their detailed socio-demographic profile, their travel means and habits, a one-day activity-travel diary and additionally a seven days activity-travel diary log by around 800 volunteers. A specific care was exercised in recording walking access and egress time to bikesharing (and transit) stations.

By this way the survey aims at covering all travel modes (including intermodal uses) and day-to-day variations in travel behavior (multimodality), beyond the sole use of shared bike.

We analyze with discrete choice models the socio-demographic and spatial factors affecting the probability of being an annual member of the BS scheme. Then we explore with descriptive statistics their daily travel behavior involving as well bike sharing as other (traditional) modes. When possible this behavior is compared with the latest Household Travel Survey available in Lyon area (2006).

### *Findings*

Preliminary results show that BSS annual users are younger and more educated people when compared with the Lyon's reference population. They are fully multimodal in their travel behavior. Velo'v bikes are used as commuting modes and for other activities, like any other travel mode. Velo'v members use public transport as a complement to Velo'v in their trips, but car may be used too since they hold a driver's license and have access to a car.

Statistical analyses and econometric modeling in progress will show: whether registration is explained by socio-demographic profile or spatial proximity to stations; how Velo'v users have a different travel behavior when compared with reference population.

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