

The economic and social efficiency of bike sharing systems in French Cities

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INTRODUCTION

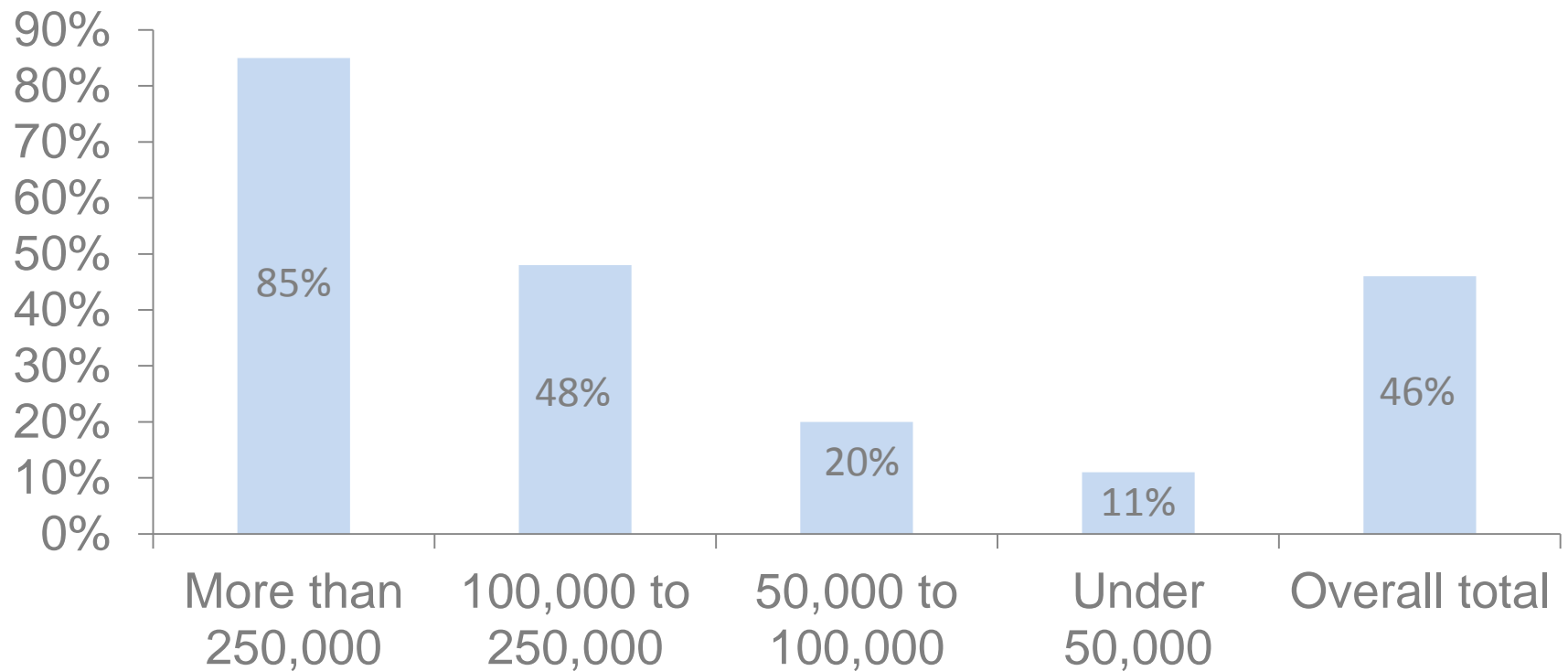
Heavy involvement of French urban areas

38 schemes
48,000 bikes

INTRODUCTION

Bike sharing systems (BSS): a matter of size

Figure 1: BSS by size of French urban area (number of inhabitant)



Source: Survey of Cycling Cities and Territories in France, 2016



INTRODUCTION

Fairly substantial financial involvement

Overall annual cost of a BSS : **€1,300 to €3,400**
per bicycle per year (Certu, 2012)

Local authority bears a significant share of the cost: 85%

What do French urban areas aim to achieve?

Change travel behaviour: increase the modal share of cycling

Reduce car and public transport congestion

Reduce greenhouse gas emissions

Improve the health of inhabitants

OBJECTIVES

1. How does travel behaviour change once bike sharing systems have been made available?
2. How can be explained the gap between realities and expectations?

METHODOLOGY

Literature review

Analyzing bike sharing uses and French cities
mobility surveys

1. IMPACT OF BSS IN TRAVEL BEHAVIOUR

1.1. Marginal change in travel behaviour

Table 1: Use of BSS in French cities in 2016

| Number of inhabitants | Number of bicycles per 1,000 inhabitants | Hire per bicycle per day | Hire per inhabitant per year | Hire per inhabitant per day |
|-----------------------|--|--------------------------|------------------------------|-----------------------------|
| More than 1,000,000 | 4.7 | 6.3 | 10.9 | 0.03 |
| 500,000-1,000,000 | 2.96 | 4.33 | 4.68 | 0.01 |
| 250,000-500,000 | 4.87 | 1 | 1.8 | 0.00 |
| Less than 250,000 | 1.84 | 0.97 | 0.65 | 0.00 |

Source: Enquête des villes et territoires cyclables, 2015/2016

- Low penetration among population
- Contrast between use of BSS in large and medium-sized areas, between use of BSS in city centre and outlying areas

1. IMPACT OF BSS IN TRAVEL BEHAVIOUR

1.2. Stable and low modal share of cycling

Table 2: Bicycle mobility in several French cities according to recent mobility surveys

| | Total number of journeys per inhabitant per day | Number of bicycle journeys per inhabitant per day |
|-------------------|---|---|
| Lille 2016 | 3.71 | 0.06 |
| Lyon 2015 | 3.18 | 0.05 |
| Dunkerque 2015 | 4.06 | 0.07 |
| Nantes 2014 | 3.81 | 0.11 |
| Douai 2013 | 3.39 | 0.08 |
| Toulouse 2013 | 3.59 | 0.08 |
| Valenciennes 2011 | 3.21 | 0.06 |

Source: Mobility surveys, Cerema Nord-Picardie

1.2. Stable and low modal share of cycling

Table 3: Change in modal share in the Lyon urban area since 2006

| | Bicycle | Car | Public transport | Walking | Other modes |
|------|---------|-----|------------------|---------|-------------|
| 2006 | 2% | 48% | 16% | 33% | 1% |
| 2015 | 2% | 42% | 20% | 35% | 1% |

Source: Mobility surveys, Cerema Nord-Picardie

Table 4: Change in modal share in the Lille urban area since 2006

| | Bicycle | Car | Public transport | Walking | Other modes |
|------|---------|--------|------------------|---------|-------------|
| 2006 | 1.6% | 55.40% | 9% | 31.80% | 2% |
| 2016 | 1.5% | 57% | 9.90% | 29.60% | 2% |

Source: Mobility surveys, Cerema Nord-Picardie



2. Why does the introduction of BSS not change French travel behaviour?

➔ ECONOMIC ANALYSIS OF MODAL CHOICE

2.1. Cost of time and cost of using BSS (F. Papon, 2002)

Table 5: Cost of using and time per kilomètre according to travel mode for journeys of under 5 km

| | Bike sharing | Regular Cyclist | Occasional Cyclist | Urban public transport | Car | Walking |
|-------------------|--------------|-----------------|--------------------|------------------------|------|---------|
| Cost of using (€) | 0 | 0.4 | 0.15 | 0.1 | 0.21 | 0 |
| Speeds (km/h) | 9.9 | 9.9 | 9.9 | 9.16 | 18.5 | 3.7 |
| Cost of time (€) | 0.87 | 0.87 | 0.87 | 0.94 | 0.46 | 2.23 |

Source: author's calculation based on the French Comptes des Transports 2013



2.2 Cost of insecurity and discomfort



Widespread of BSS → increase in cycling → « safety in numbers » effect (Jacobsen, 2003)

CONCLUSION AND PROSPECTS

BSS does not increase the modal share of cycling.

Why?

→ BSS is not unbeatably the best travel solution for individuals.

How to optimize BSS' impact and change travel behaviour ?

→ Severe restrictions on car use (Mathon, 2012)

Reduce traffic speeds and restrict the parking of cars.

Is this a socially acceptable solution?

Thank very much you for listening!

Especial thanks to:

- Cerema
- Club des Villes et Territoires Cyclables

