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## 03 Case Studies



Image: Alexandre Genest, Bicycle Michel Dallaire and Cycle Devinci, All rights reserved 2008 (www.flickr.com)

- Velib' (Paris)
- Bicing (Barcelona)
- SmartBike (Washington DC)
- Bixi (Montreal)
- Vélô (Toulouse)

## CASE STUDIES

Case studies of existing and proposed bike-share programs provide valuable lessons. Velib' in Paris is unprecedented in terms of its scale and program scope. Bicing, in Barcelona, and Vélô Toulouse in Toulouse, France demonstrate alternative funding options. SmartBike, in Washington DC, highlights the unique challenges posed by small programs. Bixi, scheduled to open in Montreal in 2009, suggests extremely important design modifications that may reduce capital costs. The following table provides a basic comparison of these programs in terms of city population and size, coverage area and number of bicycles and bike-stations.<sup>1</sup>

BIKE-SHARE CASE STUDIES					
PROGRAM:	VELIB'	BICING	SMARTBIKE	BIXI	VÉLÔ
OPERATOR:	JCDecaux	ClearChannel Adshel	ClearChannel Adshel	Stationnement de Montréal	JCDecaux
CITY:	Paris, France	Barcelona, Spain	Washington DC	Montreal, Canada	Toulouse, France
START DATE:	July 2007	March 2007	August 2007	Spring 2009	November 2007
CITY SIZE:	44 sq miles	39 sq miles	68 sq miles	141 sq miles	45 sq miles
PROGRAM COVERAGE:	Whole City	City Center	Select City Center Areas	City Center	City Center
CITY POPULATION:	2.2 million	1.6 million	588,000	1.8 million	435,000
CITY DENSITY:	53,000 people/sq mile	41,000 people/sq mile	9,000 people/sq mile	11,500 people/sq mile	9,700 people/sq mile
BICYCLES:	20,600	6,000	120	5,000	1,400
BIKE-STATIONS:	1,451	400	10	Unknown	135

Throughout this report, Velib' is used most often for comparison. Paris and New York are both densely populated urban centers with a widely used public transit system. The workforces of both cities are augmented by commuters, mostly using regional rail services, coming in from nearby suburbs. Tourism plays a major role in the economies of both cities. In 2006 Paris welcomed 27 million visitors, 56% of whom came for leisure purposes.<sup>2</sup> New York received 43.8 million visitors in 2006 and 46 million in 2007; about 75% of all visitors came for leisure purposes.<sup>3</sup> While unique and distinctive, the Parisian streetscapes bear resemblance to large portions of New York; stores, small markets, restaurants and cafes rely on foot traffic and a strong pedestrian presence. Paris prior to Mayor Delanoë did not have a strong bike lane network, and, like New York, it did not have a significant bicycle mode split.

New York is the larger city with 8.2 million people spread over 304 square miles. The greater New York metropolitan (Tri-State) area has 19 million people over around 6,700 square miles. Paris, in contrast, has approximately 2.2 million people and covers 44 square miles. The greater Parisian metropolitan area (Île-de-France) has around 12 million people over around 4,600 square miles.

<sup>1</sup> Expansion planned to Velib' for the winter of 2008 will add the Parisian suburbs to the coverage area and increase the program size to around 28,000 bicycles.

<sup>2</sup> Velib' Website, "Velib Press Kit," ([www.velib.fr](http://www.velib.fr)); Accessed 8/26/08

<sup>3</sup> NYC & Co. Website, "NYC Statistics," (<http://nycvisit.com/content/index.cfm?pagePkey=57>); Accessed 5/21/08

Paris has a higher overall average population density, about 53,000 people per square mile in contrast to New York's average 26,000 people per square mile. However, New York City's population density varies greatly. Manhattan's average population density is 85,000 people/square mile. The population density of New York's medium- and high-density areas (Manhattan, the south and southwestern Bronx, western Brooklyn and northwestern Queens) is virtually identical to Paris. These areas make up about a third of the city's land mass (around 113 square miles).

Weather in Paris is slightly milder than New York. Average January temperatures range from a high of 44°F to a low of 36°F and it snows on average 4 days per winter month.<sup>4</sup> New York in contrast has an average January high of 36°F and a low of 25°F.<sup>5</sup> Summers in Paris are hot, with temperatures mostly in the upper 80's and low 90's, similar to New York.

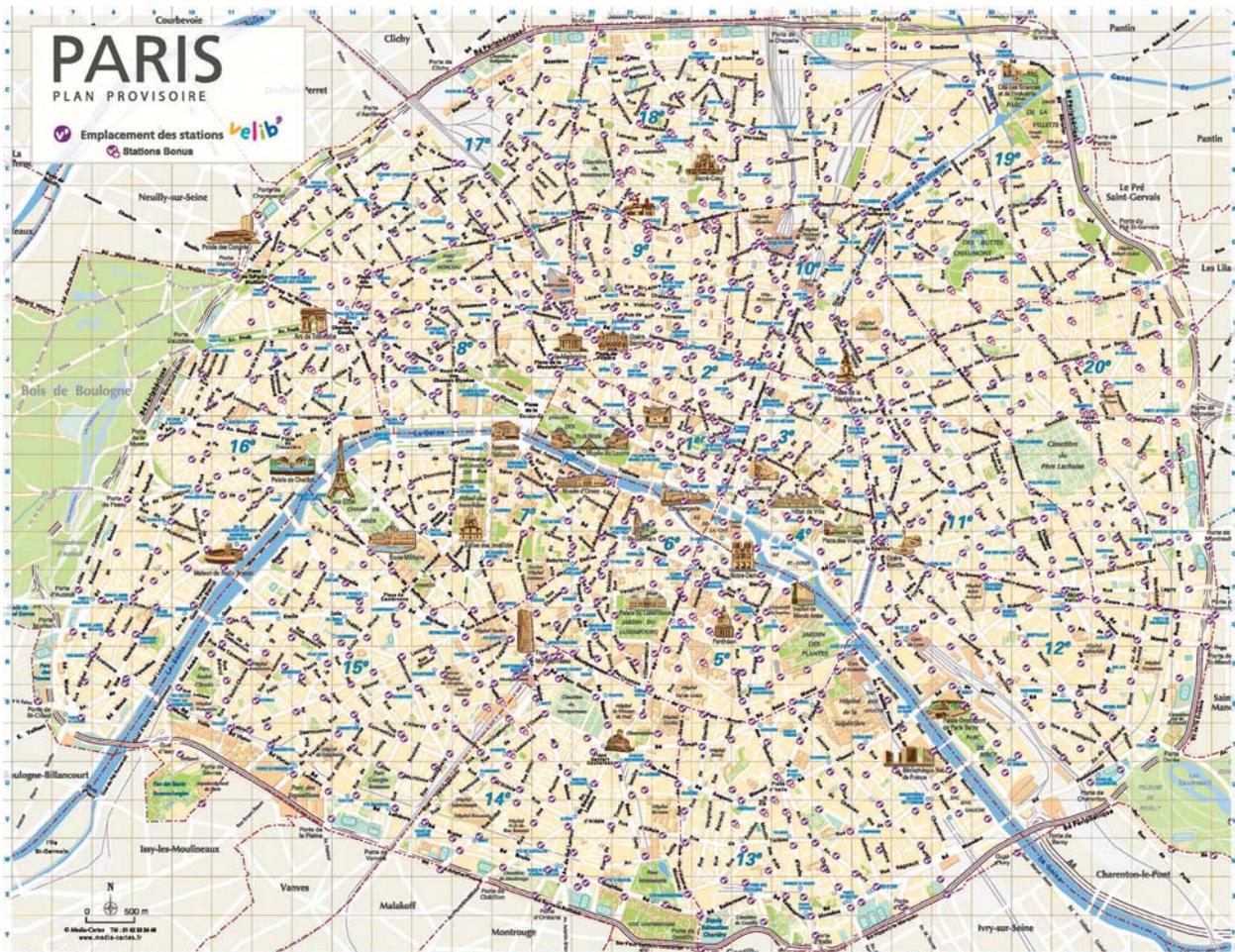
<sup>4</sup> Carr, Kelby, "Paris and France Travel in January," (<http://gofrance.about.com/od/francemonthlycalendar/a/franceinjan.htm>); Accessed 09/09/08

<sup>5</sup> Weatherbase Website, (<http://www.weatherbase.com/weather/weatherall.php3?s=108503&refer=&units=us>); Accessed 09/09/08

Paris  
France

VELIB'

JCDecaux



Velib' bike-stations cover the entire city of Paris. Each dot is a bike-station. Image: Mairie de Paris

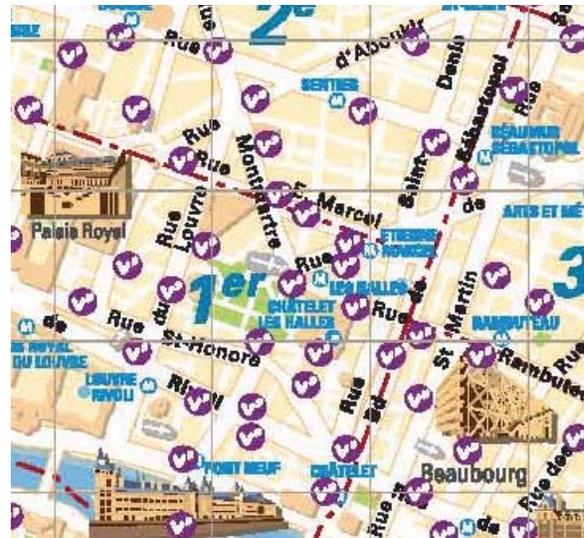
With 20,600 bicycles and over 1,400 bike-stations, Velib' is the world's largest bike-share program. Unlike any other bike-share program currently in existence, Velib' covers the entire city of Paris, making it a comprehensive addition to the Parisian transportation network. Velib' was launched in July 2007 as a joint venture between the City of Paris and SOMUPI, a JCDecaux/Publicis partnership. The program was introduced in two phases: 10,000 bicycles in July 2007 and 10,600 more in December of the same year. This rapid and large scale roll-out allowed the program to build on its own internal momentum and draw in users living or working outside of initial coverage areas with the promise that they would soon be able to take Velib' all the way home. With the addition of the second phase, the Velib' program coverage extended to the entire city of Paris. A third phase (3,300 bicycles) which will extend Velib' to the inner Parisian suburbs has recently been announced.<sup>6</sup>

<sup>6</sup> Velib' Website, "Le Vélib' en petite couronne : les travaux sont lancés!" ([http://www.velib.paris.fr/index.php/actualites/decouvrez\\_velib/le\\_velib\\_en\\_petite\\_couronne\\_les\\_travaux\\_sont\\_lances](http://www.velib.paris.fr/index.php/actualites/decouvrez_velib/le_velib_en_petite_couronne_les_travaux_sont_lances)); Accessed 1/20/09

Velib' is part of Paris's *Espaces Civilisés* ("Civilized Spaces") project, the overall greening and livability strategy introduced by Mayor Delanoë when he took office in 2001. The implementation of *Espaces Civilisés* has physically changed the Paris streets; reducing traffic congestion, prioritizing transit, pedestrians and bicycling, creating a robust bicycle network and introducing policies and programs to increase the presence of bicycles on Paris's streets.<sup>7</sup> Since Velib's introduction, Paris has seen a 70% increase in bicycle use and a 5% reduction in car use and congestion.<sup>8</sup>

Following density standards developed and tested in Lyon with the Velo'v program, Velib' docking stations can be found every few blocks throughout the city (approximately 28 bike-stations/square mile).<sup>9</sup> Bike-stations range in size from around 12 docks/station in less highly trafficked areas to up to 70 docks/station around major tourist attractions. Bike-station density typically increases around commercial/transit hubs, although individual bike-stations are often smaller (~15-25 docks/station).

Like all bike-share programs, Velib' membership and use fees are designed to be affordable. The majority (86%) of users say that they are satisfied with the current pricing of the program.<sup>10</sup> Annual membership costs €29 (about \$40), while daily and weekly memberships, designed mostly for tourists, cost €1 and €5 respectively. As is typical for bike-share programs, the first 30 minutes of use is free and users have a 15 minute grace period if docking stations are not available at their destination bike-station. Subsequent half-hour periods have escalating costs to encourage short trips, as opposed to longer recreational rides. The second ½ hour costs €1, the third €2. The maximum rental period is 4 hours. Velib' bicycles are the responsibility of the user once removed from a bike-station. JCDecaux charges €150 (about \$225) to the user's credit card for bicycles not returned within 24 hours.<sup>11</sup>



Approximately 1 square mile of central Paris. Each purple dot is a bike-station. Image: Mairie de Paris



A Velib' commuter. Image: M. Fernandez

7 Bennhold, Katrin. "A New French Revolution's Creed: Let Them Ride Bikes," *The New York Times*, 16 July 2007

8 Bremner, Charles & Marie Tourres, "A year on, the cycle experiment has hit some bumps," *The London Times*, 8 July, 2008

9 APUR, *Etude de Localisation des Stations de Velos en Libre Service*, December 2006

10 Velib' Website, "Now We Know You Better;" ([http://www.velib.paris.fr/les\\_newsletters/10\\_aujourd\\_hui\\_nous\\_vous\\_connaissons\\_mieux](http://www.velib.paris.fr/les_newsletters/10_aujourd_hui_nous_vous_connaissons_mieux)); Accessed 8/26/08

11 Users who report their bicycles stolen are charged €45

**Structure and Finances:**

Paris's bike-share franchise contract is held by SOMUPI, a JCDecaux/Publicis partnership. The program is run and administered by JCDecaux. In exchange for rights to 1,628 advertising panels on billboards and other street furniture, JCDecaux maintains and operates Velib' and carried the full cost of the initial start-up capital, around €90 million.<sup>12</sup> Velib' operating expenses, for 20,600 bicycles, are estimated to be €35 million.<sup>13</sup> JCDecaux expects to generate around €50 million in revenue annually.<sup>14</sup> The city of Paris receives all of the Velib' subscription and use fees, estimated at €30 million annually.<sup>15</sup> Velib' is overseen by Atelier Parisien d'Urbanisme (APUR), a city of Paris planning agency.

Prior to Velib', Paris' street furniture franchise contract, set to expire in 2010, was held by SOMUPI. In 2006, the city of Paris broke that contract, and released a new RFP which included bike-share. Initially, Paris envisioned a smaller program (6,000 bicycles). However, RFP responses from JCDecaux and ClearChannel Adshel (20,000 and 14,000 bicycles respectively) encouraged the city to begin with a larger program.<sup>16</sup> Paris re-awarded the street furniture contract to JCDecaux in February 2007. Velib's first phase opened six months later in July 2007.

**Ridership and Use:**

First year ridership numbers highlight the immediate success of the Velib' program. Velib' opened its doors in July with 13,000 annual Velib' subscribers ready to ride.<sup>17</sup> By October 2007, there were 100,000 annual subscribers.<sup>18</sup> As of July 2008, a year after its introduction, Velib' had sold 200,000 annual memberships. 33% of all annual subscription holders (~63,000 people) live in the Parisian suburbs, testifying to Velib's power to draw commuters from outside of its coverage area.<sup>19</sup> JCDecaux reported 27.5 million Velib' trips in the first year; an average of 75,000 trips/day.<sup>20</sup> During the Paris transit strike in Velib's first winter, ridership rates reached 73,000 trips/day, more than twice the typical winter ridership.<sup>21</sup> Tourists and short term members have also flocked to the bike-share system. Within the first six months, Velib' sold 2.5 million one day passes.<sup>22</sup>

An analysis of the number of bicycles docked at bike-stations located around Paris shows that Velib' is constantly in use.<sup>23</sup> At an annual level, despite sporadic dips, most likely due to extreme

12 Nadal, Luc; "Bike Sharing Sweeps Paris Off Its Feet;" *Sustainable Transport*, Institute for Transportation and Development Policy; Fall 2007, Number 19

13 Spitz, Eric, City of Paris; Email Correspondence: Spring 2009

14 *ibid.*

15 Nadal, Luc; "Bike Sharing Sweeps Paris Off Its Feet;" *Sustainable Transport*, Institute for Transportation and Development Policy; Fall 2007, Number 19

16 *ibid.*

17 Bennhold, Katrin. "A New French Revolution's Creed: Let Them Ride Bikes," *The New York Times*, 16 July 2007

18 Hervieux, Linda. "Paris' rent-a-bike program perfect for city, says advocates," *New York Daily News*, 1 October 2007

19 Velib' Website, "Now We Know You Better;" ([http://www.velib.paris.fr/les\\_newsletters/10\\_aujourd\\_hui\\_nous\\_vous\\_connaissons\\_mieux](http://www.velib.paris.fr/les_newsletters/10_aujourd_hui_nous_vous_connaissons_mieux)); Accessed 8/26/08

20 Erlanger, Steven, "A Fashion Catches On in Paris: Cheap Bicycle Rentals," *The New York Times*, 13 July 08.

21 Velib' Website, "Strike: Velib' Figures," ([http://www.velib.paris.fr/index.php/actualites/decouvrez\\_velib/greve\\_les\\_chiffres\\_de\\_velib](http://www.velib.paris.fr/index.php/actualites/decouvrez_velib/greve_les_chiffres_de_velib)); Accessed 2/2/09 & DeMaio, Paul; "Random Velib' Data," *The Bike-Sharing Blog*; (<http://bike-sharing.blogspot.com/2008/02/random-velib-data.html>); Accessed 6/25/08

22 DeMaio, Paul; "Random Velib' Data," *The Bike-Sharing Blog*; (<http://bike-sharing.blogspot.com/2008/02/random-velib-data.html>); Accessed 6/25/08

23 Velib' use data, which is a count of the number of bicycles at each bike-station in Paris, provides information

# Daily, Weekly, and Annual Trends in Velib' Use

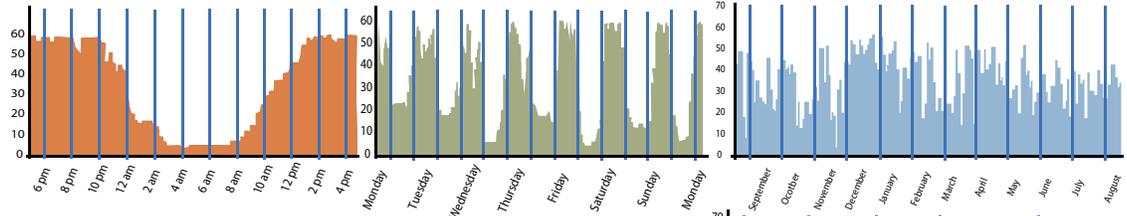
## Number of Bicycles at Velib' Bike-Stations

Daily  
(August 18, 2008)

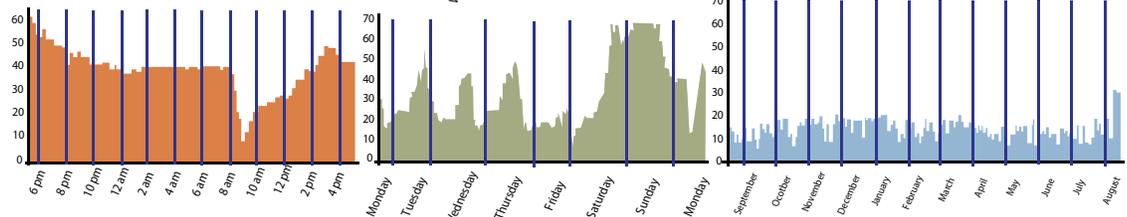
Weekly  
(August 11-18, 2008)

Annual  
(September 2007 - August 2008)

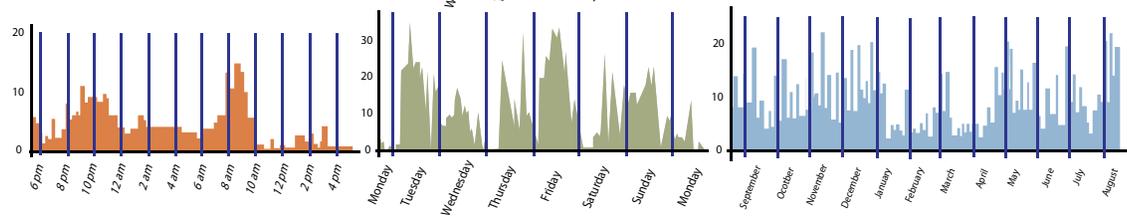
City Center  
Station #4016  
3 Rue Lobav



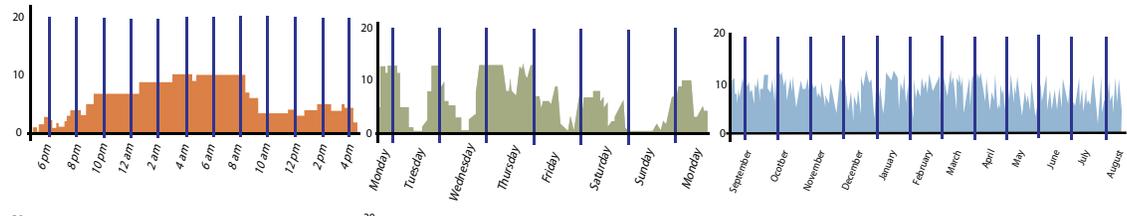
Tourist Area  
Station #7022  
3 Ave Bosquet



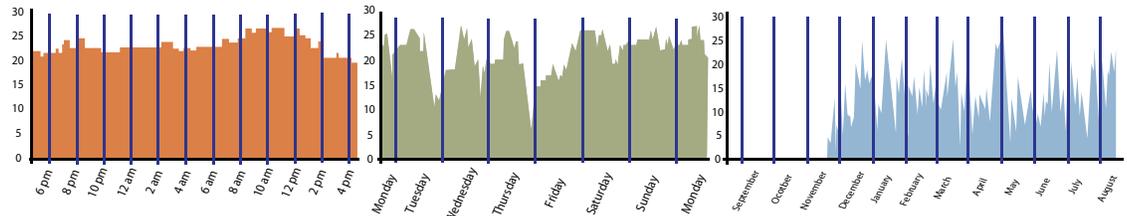
Transit Hub  
Station #14005  
2 Ave Rene Coty



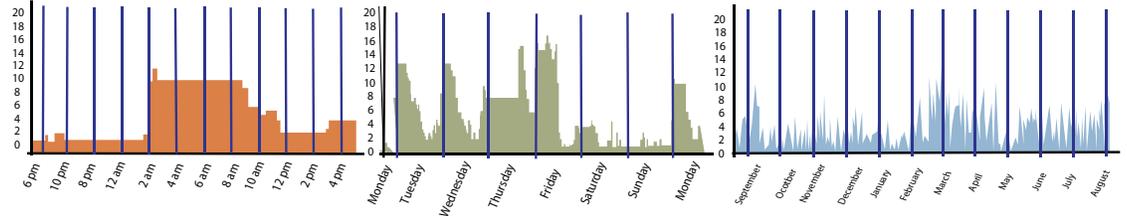
Residential  
Station #15062  
87 Rue de la Convention



Periphery  
Residential  
Station #17115  
22 Ave de la Porte de Saint Oven



Residential/Hill  
Station #19024  
30 Rue Botzaris



Different area-types have unique use patterns. Data gathered by Sebastien Gross, <http://velib.chezwan.org/>

weather, Velib' bicycles are in use year round. Bike-stations located in tourist or residential areas show the least degree of seasonal change. On a weekly and daily level, explicit conclusions are hard to draw.<sup>24</sup> Bike-stations located in central business areas (for example bike-station #4016 near Hotel de Ville) show very regular use patterns. Commuters arrive on bicycles around 8am and the bike-station fills up steadily over the course of the morning. In contrast, at bike-station #14005 near Denfer-Rochereau, a major transit hub, bicycles are stocked in the early morning in anticipation of the morning rush and almost entirely gone by 10am. Bicycles return in the late afternoon and early evening to major transit hubs and residential bike-stations (#15062). At Hotel de Ville, also a major nightlife area and a central late night transfer point, many bicycles are rented late at night. Another study indicates that 25% of all Velib' trips take place between 9pm and 3am.<sup>25</sup> The Paris Metro closes at 1am.

In order to ensure the smooth running of the system, JCDecaux redistributes the bicycles throughout the day. Clustering, especially at major destination points or at the bottoms of hills is particularly an issue. Bike-stations located at the top of large hills (bike-station #19024 near the Butte Chaumont) seem to need constant restocking as users rent bicycles in the morning to ride down but do not seem to ride them back up at night. The JCDecaux redistribution fleet team uses 130 motorized bicycles, 20 CNG service vans and electric cars, and a floating maintenance barge.<sup>26</sup> The overall satisfaction level with JCDecaux's redistribution efforts is mixed. According to the London Times, JCDecaux has been "unable so far to ease the problem of saturation in Paris when commuters arrive in the morning."<sup>27</sup>

### **Parisian Bicycle Infrastructure:**

While Velib' is perhaps the most well known element of *Espaces Civilisés*, the Parisian greening and livability strategy, it is not the only part. Starting in 2001, Paris began dramatically increasing the amount and quality of bicycle and pedestrian infrastructure, removing car parking spaces and redesigning many of the city's streets and boulevards. Paris invested €24 million to enhance the streetscape by widening sidewalks, planting trees and improving the bicycle network.<sup>28</sup> These efforts paid off. From 2001 to 2006, Paris saw a 48% increase in bicycle mode split, a 20% decrease in private car use, and an 11% decrease in trucks and tour buses.<sup>29</sup> Today in Paris, bicyclists have 230 miles (371 km) of bike lanes. Over 125 miles have been built since 2001.<sup>30</sup> Lane quality ranges from on street marked bike lanes to shared bus-bike lanes to fully separated bike lanes. Paris has also experimented with contraflow facilities which are a physically separated bike lanes with bicycle traffic that travels in the opposite direction of vehicular traffic. All total, bike lanes exist on about 17% of Paris' roads.

24 Data is collected at fixed intervals. While the total number of bicycles is known, which bicycles are at a given bike-station is unclear. A flat line can either mean that no bicycles were taken or returned (no users) or that one bicycle was rented at the same time another was returned (two users).

25 DeMaio, Paul, Director, MetroBike LLC; Phone Interview: 1 August 2008

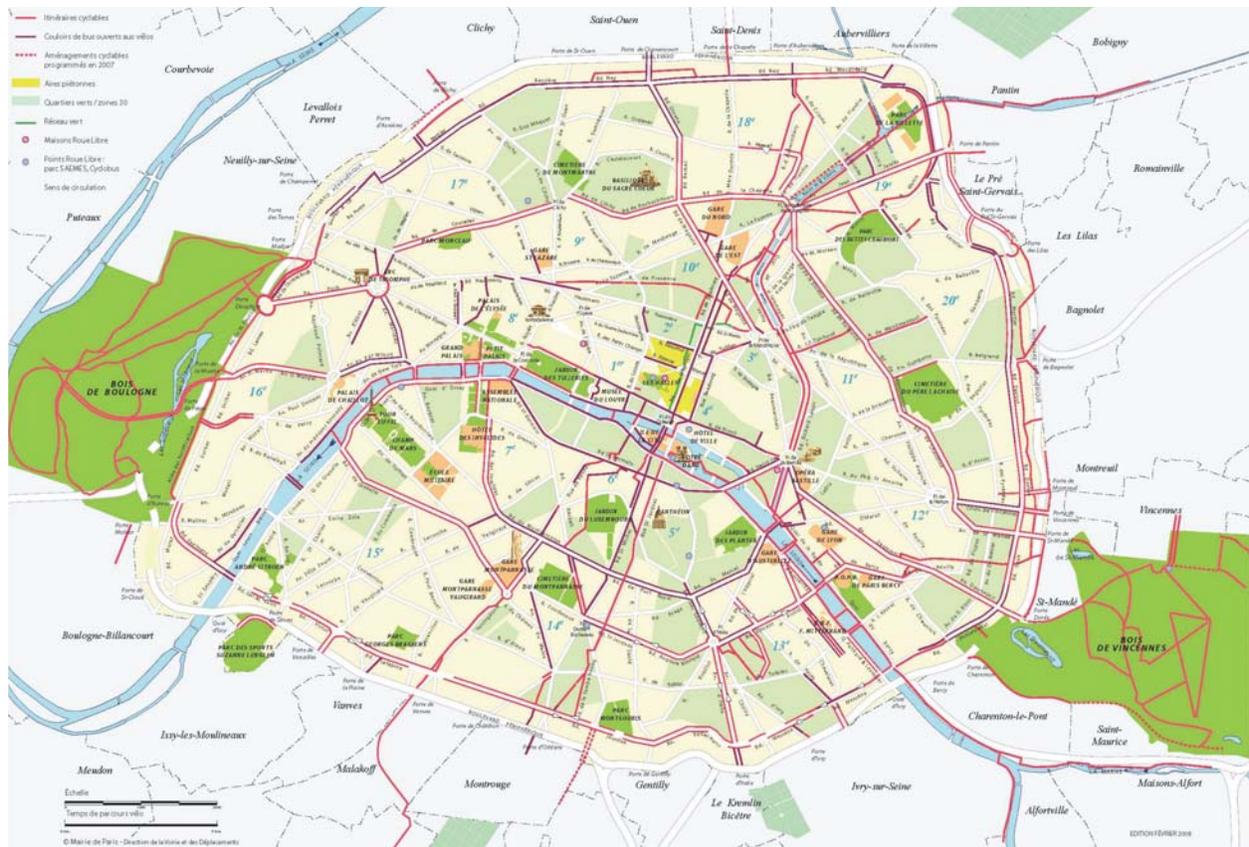
26 Velib' Website, "Velib Press Kit;" ([www.velib.fr](http://www.velib.fr)); Accessed 8/26/08, p.15

27 Bremner, Charles, "Paris offers drivers electric cars to beat pollution - for a small charge;" *The London Times*, 2 January, 2008

28 Nadal, Luc; "Bike Sharing Sweeps Paris Off Its Feet;" *Sustainable Transport*, Institute for Transportation and Development Policy; Fall 2007, Number 19

29 *ibid.*

30 Bennhold, Katrin. "A New French Revolution's Creed: Let Them Ride Bikes," *The New York Times*, 16 July 2007



The city of Paris has installed protected bike lanes on many major arteries throughout the city. Image: Mairie de Paris



While the average bike-station density is 28 stations/square mile, the number of bike-stations in any given area depends on density and the number of trips estimated to occur there. On the left, the density populated Gare Du Nord transit hub area. On the right, the lower density, primarily residential neighborhood surrounding Invalides. Maps are at the same scale.



Velib' bike-stations are typically found on side streets.  
Image: paspog ([www.flickr.com](http://www.flickr.com))

### **Bike-stations and Bicycles:**

Velib' bicycles are easily distinguishable from other bicycles on the roadway because of their grey color and unique handlebars. Developed in-house by the JCDecaux design team, the bicycles have 3 speeds. In order to deter theft, they weigh about 50lb (22kg). Velib' bicycles, like other 3<sup>rd</sup> Generation bike-share bicycles, are specially designed without exposed cables or gears, both in order to reduce the chances of riders getting dirty or snagged on the chain and to reduce vandalism or wear and tear on the bicycles. The bicycles have an adjustable, but not removable, cushioned seat and a mesh basket on the front so that purchases or personal items can be easily transported. Safety features include automatic lights which remain on whenever the bicycle is in use and numerous reflectors.



Membership passes can be purchased at bike-stations.  
Image: Mike Grenville ([www.flickr.com](http://www.flickr.com))

Velib's bike-stations are designed to blend into the surrounding streetscape. Docking stations are free-standing and look like small bollards. Subterranean wiring allows passersby to walk in between individual docking stations. This design feature makes the bike-stations less imposing, reduces visual clutter and allows the bicycles to take up less space on the street or sidewalk. The lock on Velib' bicycles is a thin metal fin located on the side of the frame. To return a bicycle, users roll the bike into the docking station. A red light indicates that the bicycle is properly locked.

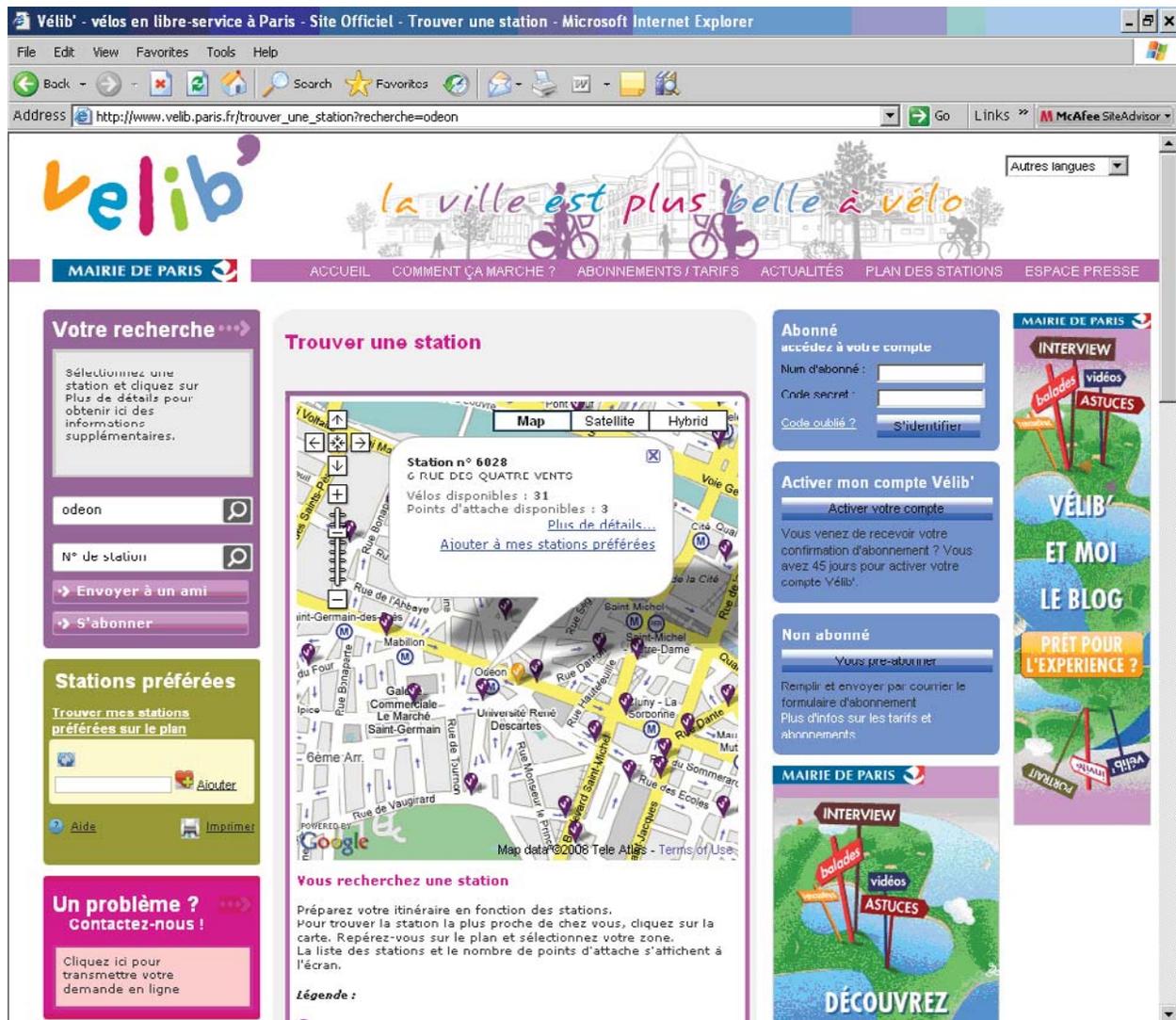


The locking mechanism is attached to the bicycle frame.  
Image: Richard Ying ([www.flickr.com](http://www.flickr.com))

Most Velib' bike-stations are found on the sidewalks, in line with other forms of street furniture or trees. On street bike-stations are located in the parking lane and protected from cars with a low concrete block. Larger bike-stations are found under viaducts and elevated Metro lines. Bike-station sizes were determined by the number of trips (residential, business/school, shopping) estimated to be made in the surrounding area. Often, in highly trafficked areas, APUR placed multiple

smaller bike-stations close together, rather than just one large bike-station. For example, in the densely populated areas immediately adjacent to the Gare Du Nord and Gare de l'Est (two major transit hubs) there are twelve small stations. In contrast there are fewer, but larger bike-stations (~60 docks/station) around the less densely populated areas surrounding the Eiffel Tower and Invalides.

Paris chose to prioritize sightlines to important monuments and so limited bike-stations on the city's historic boulevards such as the Avenue des Champs Elysees. As a result Velib' bike-stations are mostly found on side streets, just off main thoroughfares or along the edges of city parks. Special attention was also given to the pedestrian flow and access to the plazas around Paris' many monuments. Bike-stations were placed in proximity to the plazas and monuments but not directly in them. In addition, as Velib' was envisioned as an extension of Paris' transportation networks, bike-station placement rules ensured that bike-stations were located at each of Paris'



The screenshot shows the Velib' website interface. At the top, the navigation menu includes: MAIRIE DE PARIS, ACCUEIL, COMMENT ÇA MARCHE?, ABONNEMENTS / TARIFS, ACTUALITÉS, PLAN DES STATIONS, and ESPACE PRESSE. The main content area is titled "Trouver une station". On the left, there is a search sidebar with the text "Votre recherche" and a search box containing "odeon". Below the search box are buttons for "Envoyer à un ami" and "S'abonner". The central map shows a location in Paris with a pop-up window for "Station n° 6028" at "6 RUE DES QUATRE VENTS", displaying "Vélos disponibles : 31" and "Points d'attache disponibles : 3". On the right, there are sections for "Abonné" (with fields for "Num d'abonné" and "Code secret") and "Activer mon compte Vélib'", along with a "Non abonné" section. The page also features promotional banners for "INTERVIEW", "balades vidéos ASTUCES", "VÉLIB' ET MOI LE BLOG", and "PRÊT POUR L'EXPERIENCE?".

The Velib' website allows users to find a station ("Trouver une station") and learn how many bicycles are available ("Vélos disponibles") and how many docking points are free ("Points d'attache disponibles.") The underlying map is a Google mash-up with the real-time bicycle and station information managed by the Velib' central computer.

Metro and RER (regional rail) stations.

### **Information Technology:**

Like all other major bike-share programs, Velib' uses real-time technology to help users find bicycles and bike-stations. Velib' bicycles are equipped with radio frequency identification (RFID) tags which are read by the bike-stations, informing the computer which bicycles are there. As with other bike-share programs, the system is overseen by a computer system, which manages docking terminals, system activity, coordinates with the call center and generates reports and statistics. The "Trouver une station" ("find a station") link on the Velib' site takes the user to a Google map. Users can search for bike-stations using a location name, address or bike-station number or select a bike-station from the map. Information provided includes how many bicycles and how many docking stations are available.

### **Safety:**

As the number of bicyclists has increased—Paris has seen a 48% rise in cyclists between 2001 and 2006—other road users have been forced to be more mindful and share the road.<sup>31</sup> The number of bicycle accidents has remained stable (around 500 accidents/year) despite the dramatic increase in bicyclists on the road. There were 3 Velib' deaths in the first year out of over 27.5 million rides. The city of Paris reported a 7% increase in bicycle accidents in 2007 but a 24% increase in bicycling in the city.<sup>32</sup>

In preparation for Velib', and in response to a rise in accidents in 2006 before Velib' was introduced, the city of Paris initiated a massive public safety campaign to educate drivers, pedestrians and cyclists about the rules of the road. The campaign focused on illegal actions of all road users—overly aggressive drivers, bicyclists ignoring red lights or stop signs, jaywalking, and moving vehicles encroaching on crosswalks, bus and bicycle lanes—in order to remind people that most accidents occurred as a result of disregarding existing traffic laws. Posters with provocative captions were placed on the sides of buses and ran in newspapers. Major streets were lined with named cut-outs of accident victims stating accident facts and figures. To complement these ef-



"Julien, 34 years old, leaving the movies. He jaywalked. Today Paris says "enough." In 2006, dangerous behavior caused 64 deaths and more than 7,000 injuries." Image: Mairie de Paris/ DGIC/ Bernard Pedretti ([www.flickr.com](http://www.flickr.com))



"A license to drive is not a license to kill." Image: Mairie de Paris/ DGIC/ Arnaud Terrier ([www.flickr.com](http://www.flickr.com))

31 Velib' Website, "Velib Press Kit;" ([www.velib.fr](http://www.velib.fr)); Accessed 8/26/08, p21

32 Erlanger, Steven, "A New Fashion Catches On in Paris: Cheap Bicycle Rentals," *The New York Times*, 13 July 2008

forts, JCDecaux has distributed safety pamphlets to all Velib' annual subscribers and conducted safety demonstrations at Velib' stations.<sup>33</sup>

Paris police have also ramped up enforcement of traffic violations. The Paris police have begun a policy of issuing soccer-style "Yellow Cards" to bicyclists, pedestrians and drivers, who commit minor but dangerous traffic violations.<sup>34</sup> In 2007, police issued 7,000 moving violations to bicyclists, twice as many as in 2006.<sup>35</sup> Helmet use is also an ongoing challenge as most European bicyclists do not wear them.

**Theft and Recent Challenges:**

Velib' has seen higher than anticipated use, resulting in a number of operational challenges. Paris has received complaints that redistribution efforts are insufficient and that the 400 person maintenance staff may not be large enough to support the 20,600 bicycle program. In addition, high use rates (each bicycle is used 10-15 times per day) mean that bicycles must be repaired more often than initially expected. Recent reports indicate that the city of Paris may charge JCDecaux penalties for not maintaining the fleet in a state of good repair.<sup>36</sup> Bike-share programs still in development, like London, hope to limit such problems by using bicycle manufacturers who have proven track records for "service bicycles." CityByke, London's bike-share consultant and a potential operator for the London program proposes to use the bicycle manufacturer who builds bicycles for the Royal Mail.<sup>37</sup>

Theft is also a larger problem than expected. As of July, 2008, 3,000 Velib' bicycles (14% of the total fleet) had been stolen, about twice as many as JCDecaux initially estimated.<sup>38</sup> In February 2009, JCDecaux announced that 7,800 bicycles had been stolen, and suggested that the design of the locking mechanism, which may leave inexperienced users unsure of whether their bicycle is properly docked, could be at fault.<sup>39</sup> The city of Lyon, which uses an identical locking system as Paris, also saw higher than ex-



Velib' locking instructions. A green light signifies that the bicycle is available. An orange light indicates that lock is engaging. A green light accompanied by a beep indicates that the bicycle is properly locked. Image: Mairie de Paris

33 Velib' Website, "Velib Press Kit;" ([www.velib.fr](http://www.velib.fr)); Accessed 8/26/08, p23

34 Staff, "Vandals don't spoil party as Paris bike scheme turns one;" *Sydney Morning Herald*, 16 July, 2008

35 Bremner, Charles & Marie Tourres, "A year on, the cycle experiment has hit some bumps;" *The London Times*, 8 July, 2008

36 *ibid.*

37 Knight, Mark, Director, CityByke; Presentation: 4 August 2008

38 Erlanger, Steven, "A New Fashion Catches On in Paris: Cheap Bicycle Rentals," *The New York Times*, 13 July 2008

39 Bremner, Charles, "Paris self-service bicycles are vandalised, stolen and sold," *The London Times*, 10 February, 2009

pected theft rates.<sup>40</sup> In addition, both Lyon and Paris have high larceny rates, around 3,000 thefts/100,000 residents and 6,000 thefts/100,000 residents respectively in 2007.<sup>41</sup> In contrast, New York City's 2003 larceny rate was around 1,500 thefts/100,000 residents, and crime has decreased since then.<sup>42</sup> However, unlike previous generations of bike-share programs where stolen bicycles were often found, stripped for parts, in local trash heaps or canals, a significant number of stolen Velib' bicycles have been found intact in other cities around world, indicating that the publicity surrounding the Velib' program may be generating demand from collectors.<sup>43</sup> In addition to redesigning the locking mechanism, a higher theft penalty fee could help to minimize this issue, as the €150 security deposit is still far lower than the price of most new bicycles.<sup>44</sup>

### **Overall Program Analysis:**

- Strengths:
  - High bike-station density and availability of bicycles makes Velib' a viable transportation mode.
  - Phased roll-out generated program "buzz" and increased potential subscriber pool.
  - Paris sponsored series of road safety campaigns aimed at vehicles, bicycles and pedestrians before launching Velib'.
  - Significant source of skilled jobs.
  - Bike-station design is discreet and blends into the streetscape.
  
- Areas Needing Attention:
  - Bicycle redistribution may be insufficient to meet demand.
  - Relatively low security deposit may be insufficient to deter theft.
  - Unintuitive and potentially insufficient locking mechanism may also increase bicycle theft.
  - 400 person staff may not be large enough to manage 20,600 bicycle system.
  - Operating and capital costs are higher than any other bike-share program.
  - Excavation and trenching required for installation.

40 The Design Council, "Bike Hire Schemes Made Secure: Designing Out Crime Case Study," (<http://www.designcouncil.org.uk/en/Case-Studies/All-Case-Studies/Designing-Out-Crime-From-bike-hire-schemes/>); Accessed 12/2/09

41 Institut National de la Statistiques et des Études Économiques Website, "Statistiques Locales," (<http://www.statistiques-locales.insee.fr/esl/accueil.asp>); Accessed 12/2/09

42 Federal Bureau of Investigations, "Report of Offenses Known to Law Enforcement," 2003

43 Bremner, Charles & Marie Tourres, "A year on, the cycle experiment has hit some bumps;" *The London Times*, 8 July, 2008

44 Reports from other JCDecaux bike-share programs suggest that the replacement value of a bicycle is around \$600.

**Barcelona Spain** **BICING** **ClearChannel Adshel**



Bicing bike-stations cover central Barcelona. Red icons indicate stations without bicycles. Green icons indicate stations where bicycles are available. The base map is a Google mash-up with realtime information provided by the Bicing Central Computer.

**Program Background:**

Bicing, run by ClearChannel Adshel, is Barcelona’s bike-share program. It was launched in March 2007, with 1,500 bicycles. Like Velib’, Bicing has been far more successful than anticipated. The city anticipated 40,000 subscribers in the first year. Instead, Bicing sold almost 100,000 annual memberships in just six months.<sup>45</sup> To accommodate this success, Bicing has expanded twice since its inception and now offers 6,000 bikes at 400 stations throughout the city.<sup>46</sup>

Bicing bike-stations and bicycles are located in the most densely populated areas of Barcelona. However, unlike other programs, like Velib’ for example, Bicing is designed almost exclusively for Barcelona residents. The program only offers annual membership subscriptions; there is no daily or weekly pass available for visitors to purchase. Barcelona’s many pre-existing recreational rental bicycle programs supply bicycles to the tourist market.

**Program Financing & Political Climate:**

Bicing is directly paid for by the city of Barcelona. The contract term is 10 years. Financing is generated from Barcelona’s “Green Area” roadside parking program surplus and subscription revenue.<sup>47</sup> Advertising is not used, partially because JCDecaux currently holds the city’s street furni-

45 Scholtus, Petz; “The TreeHugger Interview with Mayra Nieto, Barcelona Municipal Service: Bicing, Barcelona’s Bike-Sharing System;” ([http://www.treehugger.com/files/2008/01/the\\_th\\_intervie\\_28.php](http://www.treehugger.com/files/2008/01/the_th_intervie_28.php)); Accessed 9/2/08

46 Grasso, Richard, Senior Vice President Business Development, & Martina Schmidt, Director SmartBike US; ClearChannel Adshel, Phone Interview: 30 April, 2008

47 *ibid.*

ture franchise contract. The amount of money Barcelona pays ClearChannel Adshel is negotiated each year, depending on estimated operating costs. This funding model has allowed Barcelona to expand the program in ways that other cities, like Washington DC, cannot. The initial 1,500 bicycle RFP offered €2.2 million for creation, operation and maintenance of the program.<sup>48</sup> In 2007, Barcelona paid Clear Channel approximately €4.5 million annually to operate and maintain 3,000 bicycles.<sup>49</sup> Figures are not available for the current 6,000 bicycles.

### ***Bike-stations and Bicycles:***

Bicing docking stations are connected by a long horizontal metal pole. Bicycles lock into the docking station via two 15mm stainless steel prongs located under the handle bars. Users lift the bicycle out of the docking station when returning or checking out a bicycle. Red and green lights on the bike-station inform the user if the bicycle is properly locked. Once the bicycle is docked, the bicycle RFID chip is read by the bike-station and the Central Computer is notified that the bicycle has been returned, ending the user's session. Bike-station and locking mechanism design may explain Bicing's low theft rate (180 bicycles or 3% of the total fleet in 2007).<sup>50</sup> This rate is substantially lower than Velib's despite the fact that Barcelona has a higher general theft rate than Paris, around 7,700 thefts/100,000 residents.<sup>51</sup>

The connected docking station design creates additional visual uniformity but can limit pedestrian flow. At the same time, Bicing bike-stations require less subterranean excavation and infrastructure than systems like Velib'; the initial Bicing bike-stations were installed within 3 months.<sup>52</sup> Like Velib', Bicing bike-stations are found both on



*A user lifts a bicycle from a bike-station. Image: Raquel Morrison (www.flickr.com)*



*On-street bike-station. Image: Miulina (www.flickr.com)*

48 Scholtus, Petz; "The TreeHugger Interview with Mayra Nieto, Barcelona Municipal Service: Bicing, Barcelona's Bike-Sharing System;" ([http://www.treehugger.com/files/2008/01/the\\_th\\_intervie\\_28.php](http://www.treehugger.com/files/2008/01/the_th_intervie_28.php)); Accessed 9/2/08

49 Nadal, Luc; "Bike Sharing Sweeps Paris Off Its Feet;" *Sustainable Transport*, Institute for Transportation and Development Policy; Fall 2007, Number 19, p. 11

50 BikeOff Project: Design Against Crime, "Bicing Barcelona: ClearChannel Adshel Public Bicycle System," ([http://www.bikeoff.org/design\\_resource/dr\\_PDF/schemes\\_public\\_bicing.pdf](http://www.bikeoff.org/design_resource/dr_PDF/schemes_public_bicing.pdf)); Accessed 12/2/09

51 Ajuntament de Barcelona Website, "Survey of Victimization in Barcelona 2006," (<http://www.bcn.es/estadistica/angles/dades/anuari/cap08/Co803030.htm>); Accessed 12/2/09

52 Clear Channel Outdoor Website, "SmartBike™," (<http://www.smartbike.com/>); Accessed 3/24/08

the street and sidewalk. On street bike-stations are marked by a thick red stripe and brightly colored protective bollards.

Bicing bicycles feature protected chain guards and tires to reduce wear and tear on the bicycles and protect users. Bicing bicycles also feature a smaller, 20", front wheel to increase maneuverability, however some users report that the smaller wheel may be more prone to get stuck in potholes and increases the risk of accidents.

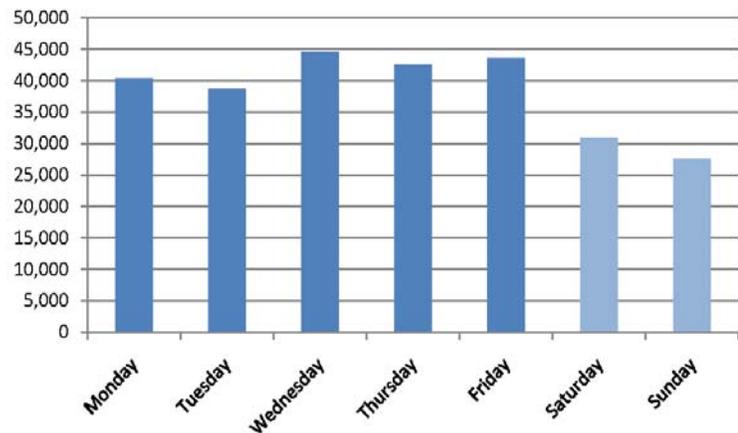
### **Customer Fee Structure:**

- Free period: First 30 minutes
- Each additional 30 minutes: €0.30
- Max rental period: 2 hours
- Annual Subscription: €24 (Short term "tourist" passes are not available.)

The commuter focus of Bicing's fee structure is apparent in bicycle hire rates. About half of all subscribers (45%) use Bicing more than five times each week.<sup>53</sup> Bicing hires are significantly lower on the weekends as short term visitors to Barcelona cannot use the program.

### **Bicing's Daily Bicycle Hires**

May 2008 (3,500 Bicycles Available)



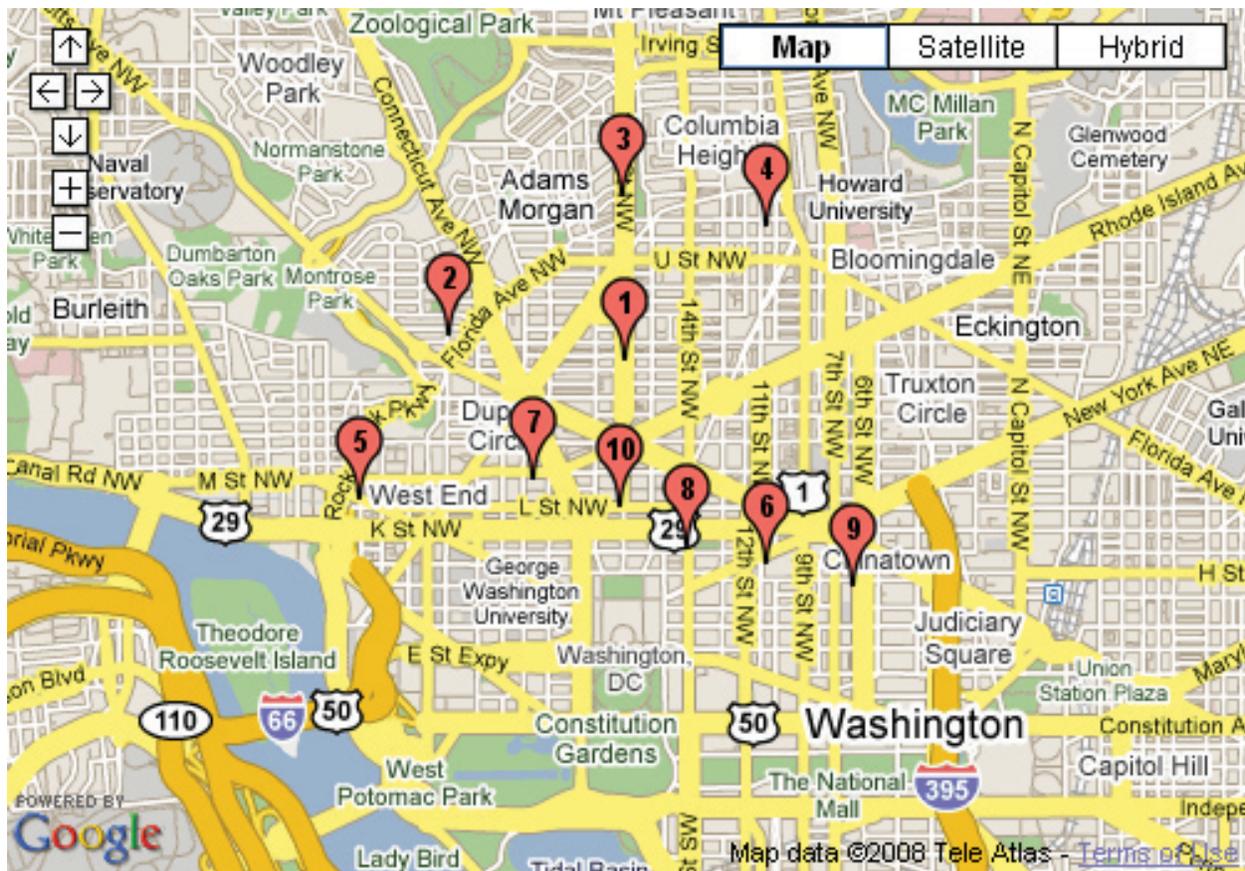
### **Overall Program Analysis:**

- Strengths
  - Simple bike-station design allows for quick installation.
  - Contract includes options to expand program to meet demand.
  - ClearChannel Adshel programs are, on average, less expensive to build and operate than JCDecaux programs.
  - Bike-station design and locking mechanism are sufficient to deter theft.
- Areas Needing Attention
  - No weekly or daily pass available thus eliminating tourist use/revenue.
  - Users must physically lift the bicycle in order to lock or unlock.
  - Bike-station design may limit pedestrian flow.
  - Excavation and trenching required for installation.
  - Limited hours; Bicycles can only be rented between 5am and midnight on weeknights. 24-hour service is only available on weekends.

<sup>53</sup> Clear Channel SmartBike document, provided by Richard Grasso, Senior Vice President Business Development, 10/01/07

Washington DC

## SMARTBIKE

ClearChannel  
Adshel

SmartBike has 10 bike-stations to serve the city of Washington DC. The distance between bike-stations can be more than a mile. The basemap is a Google mash-up. Realtime information about bicycle and station availability is provided by the SmartBike Central Computer.

### Program Overview:

Launched on August 13, 2008, SmartBike is the first 3<sup>rd</sup> Generation bike-share program in the United States and by far one of the smallest programs in operation. A small pilot program designed to target Washington's existing bicycle commuter population, SmartBike features 10 bike-stations and 120 bicycles and focuses on the NorthWest quadrant of the city. The small number of bike-stations over a sizable land area means that SmartBike users may be required to travel more than a half mile out of their way to find a bike-station with an open docking station if their intended destination bike-station is full. Unlike Paris or Barcelona, it is difficult to "stumble upon" a bike-station by accident. Despite its small size, SmartBike has had considerable success. As of January 2009, SmartBike had 1,050 subscribers.<sup>54</sup>

54 The Wash Cycle Website, "ClearChannel on SmartBike: Interview with Martina Schmidt," (<http://www.thewashcycle.com/2009/03/smartbike.html>); Accessed 3/20/09

A ClearChannel Adshel program, SmartBike uses the same bike-station and bicycle model as Bicing.

**Program Financing & Political Climate:**

SmartBike is part of the Washington DC's 2004 bus shelter franchise contract with ClearChannel Adshel Outdoor.<sup>55</sup> The original bus shelter RFP called for a 50-bicycle pilot, which ClearChannel negotiated up to the current 120. The contract term is 20 years and is exclusive. Revenue is generated from advertising panels on bus shelters, street furniture and free-standing bike-stations. Washington DC receives 30%-35% of those revenues. In addition, the city collects all the membership fees associated with the program. However, SmartBike's small size means that it is unlikely to draw in subscribers at the scale of Velib' or Bicing. SmartBike had just over 250 subscribers when it opened.<sup>56</sup>

District DOT is currently considering plans for SmartBike expansion to 500 bicycles. The new program is expected to cost \$1.8 million in capital and \$800,000 annually.<sup>57</sup> However, while the contract includes the option of expanding the program it would require renegotiation of the existing advertising revenue share.<sup>58</sup> Revenues from use fees and subscriptions will be insufficient to cover the cost of the expansion. Recent reports suggest that Stimulus Funds may be used.

**Bike-stations and Bicycles:**

SmartBike bicycles and bike-stations are identical to Bicing bicycles. To date, SmartBike has reported one stolen bicycle out of its 120 bicycle fleet. Washington DC's theft rate is on par with Lyon, around 3,000 thefts/100,000 residents.<sup>59</sup> SmartBike bike-stations are almost exclusively located on Washington DC's notoriously wide sidewalks. On street bike-stations are protected with a ring of flexible, reflective Davidson bollards.

**Customer Fee Structure:**

55 Grasso, Richard, Senior Vice President Business Development, & Martina Schmidt, Director SmartBike US; ClearChannel Adshel, Phone Interview: 30 April, 2008

56 Alice Kelly, Program Manager, District DOT; Phone interview: 14 August 2008

57 *ibid.* 19 August, 2008

58 Grasso, Richard, Senior Vice President Business Development, & Martina Schmidt, Director SmartBike US; ClearChannel Adshel, Phone Interview: 30 April, 2008

59 Federal Bureau of Investigations, "Report of Offenses Known to Law Enforcement," 2003



*On-street SmartBike bike-station marked by Davidson bollards and striping. Image: Pedal Power Pete (www.flickr.com)*

- Annual subscription: \$40
- Short term passes are not available
- Deposit/Bicycle Replacement Fee: \$250<sup>60</sup>

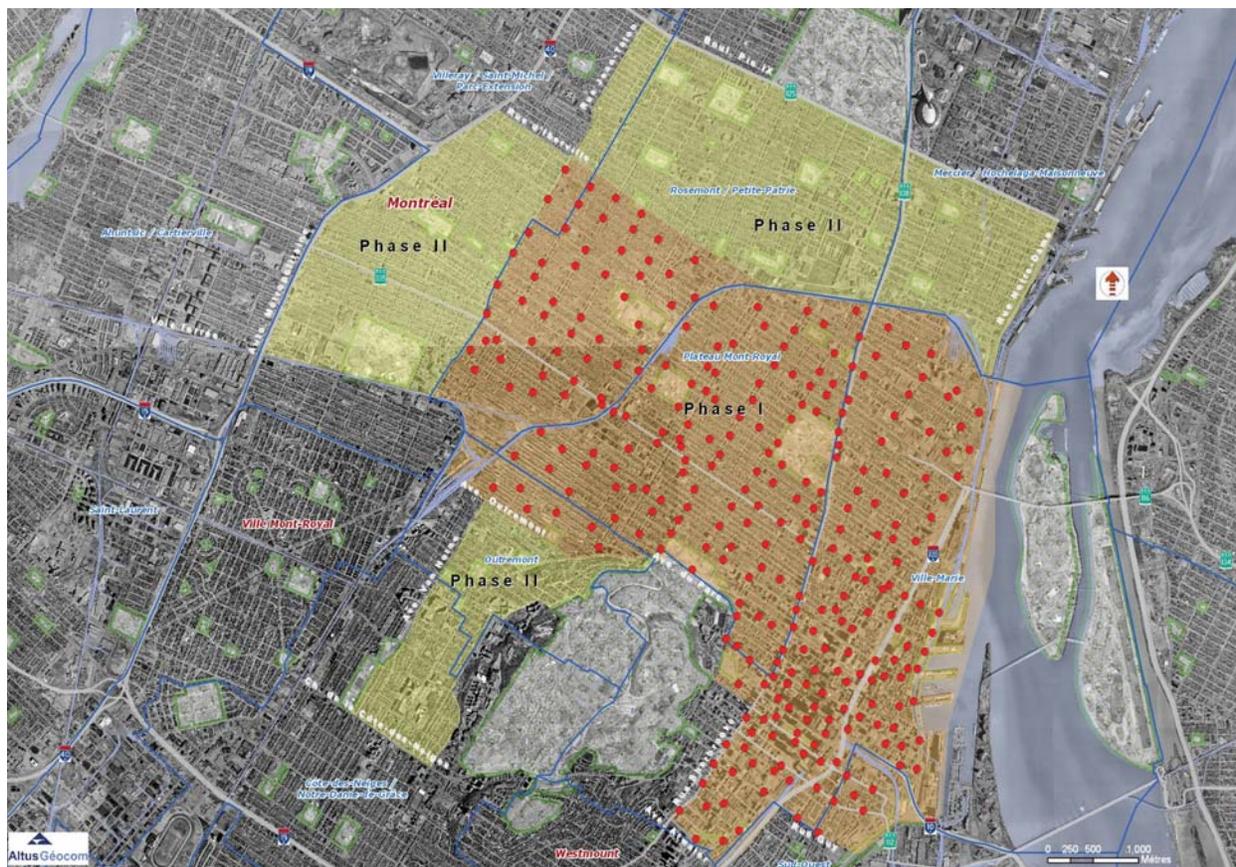
SmartBike combines the subscription options of a commuter program with the financial incentives of a recreational program. For example, SmartBike does not sell short term or daily passes, the passes typically used by recreational users or tourists. At the same time however, SmartBike also does not charge use fees, the small additional charges assessed by many operators after the first half hour which serve as incentives for users to return bicycles quickly and keep as many bicycles available as possible. Instead, SmartBike subscribers may check out a bicycle for up to three hours and can check out a second bicycle immediately thereafter if they want more time. This three hour free period is better suited for tourists than commuters for whom the majority of trips is around 30 minutes.

### **General Program Overview:**

- Strengths
  - Located near high traffic areas and public transit.
  - ClearChannel Adshel programs are, on average, less expensive to build and operate than JCDecaux programs.
  - Bike-station design and locking mechanism seem to deter theft.
- Areas Needing Attention
  - A small pilot program with too few bikes to accurately judge impact.
  - Bike-stations are located sporadically and too far apart.
  - Bike-station design may limit pedestrian flow.
  - Misaligned fee and membership structure (rate structure favors tourists; membership options favor commuters).
  - Excavation and trenching required for installation.
  - Limited hours; Bicycles can only be rented between 6am and 10pm.

<sup>60</sup> This could rise to \$550 which would cover the full replacement value of the bicycle but potentially deter users. Dizikes, Cynthia; DC Rolls Out Bike-Sharing Plan to Thin Traffic; *LA Times*; 15 August, 2008

Montreal Canada **BIXI** Stationnement de Montréal



Bixi's proposed extent and phasing. Phase I covers the Montreal city center.

**Program Overview:**

Bixi, Montreal's bike-share program, is scheduled to open in the spring of 2009. Bixi's operator, the *Stationnement de Montréal*, plans to introduce 2,400 bicycles in the initial phase and add 2,600 more bicycles by the summer of that year for a total of 5,000 bicycles.<sup>61</sup> A 40 bike demonstration program debuted in September 2008 to generate a "buzz" for the program. At this scale, Bixi will be the largest bike-share program in North America and one of the largest in the world. Bixi is intended to augment Montreal's existing transit system and is geared toward the needs of commuter cyclists. Bixi bike-stations will be located every 250-300 meters throughout a 15 square km section of central Montreal.<sup>62</sup> The city of Montreal has an extensive bicycle lane network with bi-directional cycle tracks in commercial and residential areas.

The *Stationnement de Montréal* is Montreal's quasi-public parking authority which oversees the city's 20,000 parking spaces and municipal garages. The *Stationnement de Montréal* will incorporate bike-station options into its existing real-time wireless parking meters, as well as building

61 Bixi Website, ([http://bixi.ca/index.php?page\\_id=1&lang=en](http://bixi.ca/index.php?page_id=1&lang=en)); Accessed 11/12/08

62 Alain Ayott, Executive Vice-President, Montreal Parking Authority; Phone Interviews: 3 & 11 July, 2008

new payment bike-stations.<sup>63</sup> At present, Montreal’s parking spaces are all numbered. Drivers enter the number of their parking space at a parking meter and can pay with a credit card. Parking enforcement is done via a wireless handheld device which tells parking police which parking spaces are paid for.

### ***Bike-stations and Bicycles:***

Montreal’s harsh winter and extreme snowfall (up to 12 feet on average) mean that Bixi will only be in service from April to November. As a result, Bixi was developed with a modular “drop and go” bike-station design.<sup>64</sup> Docking and pay stations are attached to a metal plate which is in turn bolted to the ground; no underground excavation or installation work is necessary. Bike-stations will be installed with a boom truck each spring and will be removed each winter or in case of roadwork or to adjust bike-station locations throughout the system. Bixi bike-stations can be erected or disassembled in 20 minutes, significantly decreasing capital costs.<sup>65</sup> Bike-stations can be moved easily to respond to demand or to provide “mega” bike-stations for special events.

Electricity is supplied to the docking stations and pay station via two 8 ½” x 11” solar panels attached to the pay station. No subterranean wiring is required. A number of energy saving techniques, such as having the pay station “sleep” when not in use and using a black and white pay screen, will ensure that the electricity supplied by the solar panel will be sufficient.<sup>66</sup>

In contrast to JCDecaux and Clear Channel Adshel bike-station designs, the front wheel of Montreal’s bikes roll right into the docking station instead of requiring the user to lift up the bike or match up a locking device.

### ***Program Financing & Political Climate:***

The *Stationnement de Montréal* will fund Bixi from user fees and possibly sponsorships. Operating costs for the full 5,000 bicycle program are expected to be approximately \$1,200/bike/year for the duration of the ten year contract. In the first year, capital costs will account for 60% of the initial budget.<sup>67</sup>



*Testing out bicycles at a Bixi demo bike-station.  
Image: ApollineR (www.flickr.com)*

63 *ibid.*

64 *ibid.*

65 *ibid.*

66 *ibid.*

67 *ibid.*



Because trenching and excavation are not required, the capital costs for Montreal’s modular system “drop and go” system are projected to be lower than other bike-share systems. Bixi estimates capital costs around \$3,000/bicycle.<sup>68</sup> Velib’s capital costs are estimated at \$4,400/bicycle.<sup>69</sup>

**Customer Fee Structure:**

- Annual membership: \$78
- Monthly membership: \$28
- Daily membership: \$5
- Free Period: First 30 minutes. Second 20 minutes is \$1.50. Fourth 30 minutes is \$6, and prices increase by \$6/30 minutes subsequently.<sup>70</sup>

**General Program Assessment:**

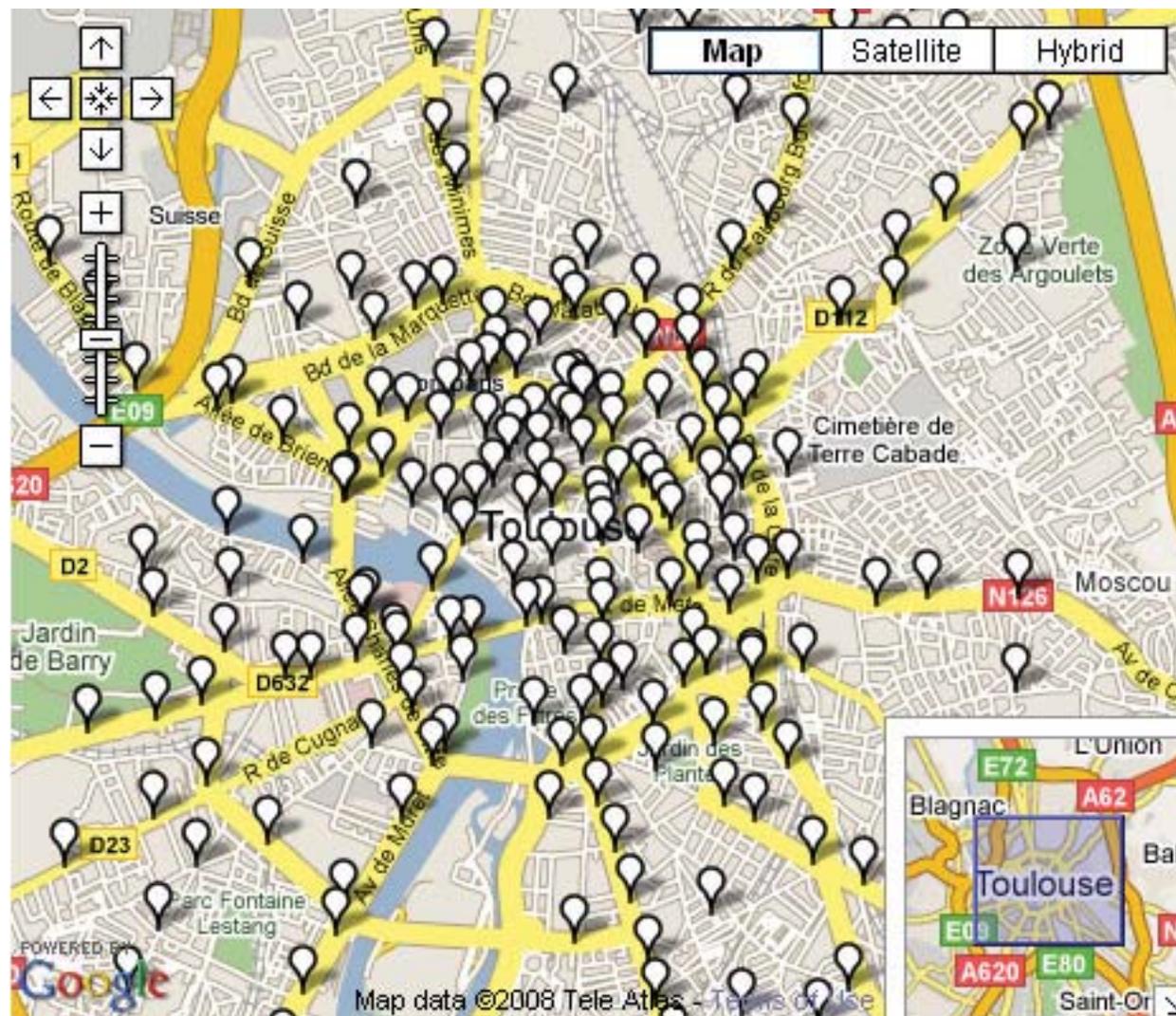
- Strengths:
  - Modular bike-station design (bicycle docks are mounted on metal plate) allows for a highly flexible program. Sidewalk or street excavation is not necessary and bike-stations can easily be relocated.
  - Bike-stations are powered by solar panels. Trenching to power sources is not required.
  - “Drop and Go” bike-station design allows for the creation of short-term mega-bike-stations for major events and allows program administrators to change the locations of bike-stations depending on demand.
- Areas Needing Attention:
  - Modular and solar bike-station design has not yet been tested.

68 Alain Ayott, Executive Vice-President, Montreal Parking Authority; Phone Interview: 14 October, 2008

69 Spitz, Eric, City of Paris; Email Correspondence: Spring 2009

70 Bixi Website, “Fees and Membership;” ([http://bixi.ca/index.php?page\\_id=3&lang=en](http://bixi.ca/index.php?page_id=3&lang=en)); Accessed 11/6/08

Toulouse France **VÉLÔ TOULOUSE** JCDecaux



*Vélo Toulouse extent. The underlying map is a Google mash-up with the real-time bicycle and bike-station information managed by the Vélo Toulouse central computer.*

**Program Background:**

Vélo Toulouse, which opened in November 2007, provides 1,400 bicycles at 135 stations. Operated by JCDecaux, the program is scheduled to expand to 2,400 bicycles at 253 bike-stations by the end of 2008.<sup>71</sup> Like Velib', Vélo Toulouse was an immediate success. Within its first year, Vélo Toulouse reported 2 million trips; an average of 12,000 trips/day.<sup>72</sup> Within the first six months, more than 268,000 day passes and 7,000 annual subscriptions had been sold.<sup>73</sup>

71 Emin, Patrick. "JC Decaux wins street furniture contract for Toulouse," ([http://www.mavilleavelo.com/index.php?option=com\\_content&task=view&id=279&Itemid=1](http://www.mavilleavelo.com/index.php?option=com_content&task=view&id=279&Itemid=1)); Accessed 8/26/08

72 Vélo Toulouse Website, "2 millions de locations, 2 millions d'occasions d'être heureux!," ([http://www.velo.toulouse.fr/actualites/actualites/2\\_millions\\_de\\_locations\\_2\\_millions\\_d\\_occasions\\_d\\_etre\\_heureux](http://www.velo.toulouse.fr/actualites/actualites/2_millions_de_locations_2_millions_d_occasions_d_etre_heureux)); Accessed 10/8/08

73 Vélo Toulouse Website, "VéloToulouse franchit le cap du million de locations!," (<http://www.velo.toulouse.fr/>)

Vélô Toulouse uses the same bicycle and bike-station model as Velib'. Current coverage is focused on the center of the city, with bike-stations radiating out from the core on main roads. Future expansion will extend the coverage out into the rest of the city.

**Program Financing & Political Climate:**

Financing for Vélô Toulouse comes from membership fees, city funds and advertising. However, unlike other advertising based programs, advertising revenue for Vélô Toulouse is generated from advertising panels located on the rear tire mudguards of each bicycle. In first year, the HSBC bank logo was featured on 1,000 bicycles, providing around \$1M in revenue.<sup>74</sup> JCDecaux also hold the street furniture contract in Toulouse but this is separate from the city's bike-share program contract.

**Bike-stations and Bicycles:**

A JCDecaux program, Vélô Toulouse uses the same bicycle and bike-station model as Velib'.

**Customer Fee Structure:**

- Annual Membership: €25
- Monthly: 10€
- 7 day Pass: €5
- Daily Pass: €1
- Free Period: First 30 minutes

**General Program Assessment:**

- Strengths:
  - On-bicycle advertisements offer an additional funding source and provide extra incentives for bicycle maintenance and upkeep
- Areas Needing Attention:
  - On-bicycle advertisements could seem overly commercial
  - Excavation and trenching required for installation.



Woman consults bike-map on a Vélô Toulouse bike-station. Image: thomascornardeau (www.flickr.com)



A Vélô Toulouse bike-station. Image: Noodlepie (www.flickr.com)

actualites/actualites/velotoulouse franchit le cap du million de locations); Accessed 6/16/08  
 74 JCDecaux & HSBC; "PRESS RELEASE: HSBC Wraps Velo Toulouse;" ([http://www.hsbc.fr/1/PA\\_1\\_3\\_S5/content/france/about-HSBC/press-releases/pdf/19-11-07\\_cp\\_velos\\_toulouse\\_GB.pdf](http://www.hsbc.fr/1/PA_1_3_S5/content/france/about-HSBC/press-releases/pdf/19-11-07_cp_velos_toulouse_GB.pdf)); Accessed 06/25/08 & Squire, Josh, Bicycle System Manager, JCDecaux; Phone Interviews: Spring/Summer 2008