

Bicycle theft prevention : impact, solutions, and side-effects.			
Author: Name, Forename	Giroud, Monique; Martin, Nicolas; Petit, Michel; Alessio, Lucien ; Bassetti, Frédéric ; Bedouet, Bernard ; Chevassut-Rosset, André; Héran, Frédéric ; Parbeau, Alain ; Perrot, Christophe ; Raverdy, Christophe ; Renou, Bernard		
Contact Details: Institution, Postal Address, E-mail	Monique GIROUD; FUBicy Fédération française des Usagers de la Bicyclette; 12 rue des Bouchers, F-67000 Strasbourg m.giroud@fubicy.org		
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As theft is one of the 2 major obstacles to overcome for encouraging people to choose their bicycle for everyday transportation, theft prevention (*including performing locks tests, and monitoring bike coding*) became one of the FUBicy's leading projects. We would like to convince other cyclists' organisations or collectivities that it is worth getting involved in such an activity.

Impact of bicycle theft

The study of IFRESI-CNRS & Altermodal is the most reliable available in France so far. It gives an estimate of nearly 400'000 stolen bikes per year in France, i.e. approximately twice the number of bicycle thefts registered by the Police. This represents 15% of the number of new bikes sold in France every year (3 millions bicycles).

It also showed that :

- only 1 / 4 of cyclists re-buy a new bike after a theft, and most of them buy a cheaper bike than they had before (20% cheaper on average)
- another 1 / 4 does not buy a bike at all in the year following bike theft. These cyclists are "lost", they will use another transportation mean, and they will not buy any other cycle equipments or accessoires.



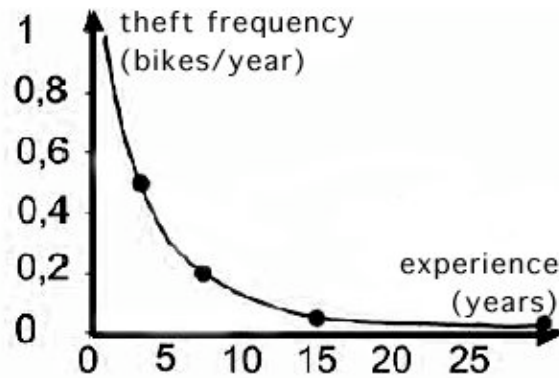
One could naively expect that theft, by increasing the number of bike sales, would not be bad for cycle industry, but it is false. Overall, the study estimates that cycle theft induces a loss of 140'000 bicycle sales per year in France, both because of cyclists who do not re-buy a bike (and thus no accessories either) and because of dumping by second-hand stolen bikes sales.

The cyclists who do no longer cycle after a theft also induce health expenses : in several european countries, experts seem to agree that cycling half an hour per day is enough to save nearly 800 € per year and per person. The indirect cost of bicycle theft may thus be estimated to more than 70 M€. With these figures in mind, bicycle theft clearly is an important issue, as it has significant detrimental impacts both for cyclists, cycle industry, and public health.

Reducing theft risk : locks break tests, towards a standard

In countries like France, 20 % of stolen bikes were not attached at all, and 90 % of those which were attached were not secured with a high quality lock. Retailers often report that customers just do not consider buying a high quality lock, because it looks expensive, and "the bike will end up being stolen anyway".

This is however not true. The 2003 study of IFRESI-CNRS & Altermodal shows that theft frequency decreases a lot when the cyclists becomes more experienced and buys a better lock. Providing cyclists precise informations about risks and locks quality is thus very important.



FUBicy, the french federation of urbain cyclists, decided in 2003 to perform locks break tests, and to do its best for informing cyclists about tests results. We started this activity in november 2003, with the technical support of the french motorcyclists federation FFMC, who performs locks break tests since 1983, and succeeded to reduce motorbikes theft frequency by a factor 3.



Locks break tests require some “know how” and tools, but no expensive equipment. A few days training with experienced testers is enough for activitsts who have a basic knowledge in mechanics. The only relatively difficult test is the picking test, but most bicycle thieves do not even try this sophisticated method. Buying locks is not very expensive either. Some manufacturers would even be ready to provide locks for free, but one may not be completely sure in this case that samples provided by the manufacturer are really representative of the average locks found in retailers' shops.

Break tests are thus much easier than most mechanical characterisations (hardness, stiffness and so on), which require more sophisticated equipment. And as far as cyclists are concerned, the real behaviour in a break test is the only essential feature of a lock : thieves don't care about all mechanical specifications, they just need to find one way to break a given lock. This means that in countries where a locks standard does not yet exist, a cyclists' federation, even if it is not yet very powerful, can start the process.

FUBicy published its first break tests results in april 2004, and updated the locks list every year since. Our results can be downloaded from <http://bicycode.org> > infos > Antivols. The list now includes 70 differents locks (cables, chains, D-locks, frame-locks). We disseminate 20'000 copies of our tests results per year (nearly 50% download, 50% paper), but we do not know how many readers each copy may have.

This work sets the basis for a possible future collaboration with AFAQ-AFNOR, the french national standards organisation, and cycle locks manufacturers. The french standard shall be coherent with the European Commission locks standard, expected in 2008. FUBicy, on behalf of ECF, European Cyclists Federation, participated to the work of the CEN technical group in charge of setting this european standard for bicycle locks. AFNOR is of course able to perform tests (break tests as well as all other mechanical tests). But the collaboration with a network of cyclists spread all over the country is very useful. It enables AFNOR to get really random samples for control tests.

Increasing chances of recovering stolen bikes : bike coding systems


Locks quality is the most important tool against robbery. But once a bike is stolen, it is worth trying to give it a chance to return back to its owner. In France, over 70% of stolen cars are found, but only approximately 3% of stolen bikes are returned to their owner. In Denmark, where bike coding is mandatory, 40% of stolen bikes are returned to their owner !

FUBicy thus compared bike coding systems already existing in several European countries . We only discuss systems which have been operated at large scale (national level) and where the bike coding number is engraved on the frame, as they turn out to be the only really effective and affordable solution as long as chips detectors are not widely disseminated :

- **Belgium** : the system has been initiated by the belgian federal government. It is the cyclist's identity number (11 digits) which is engraved on the bike frame. So, the bike number will be obsolete as soon as the cyclist gives or sells his/her bike. Moreover, the identity number is considered as a "sensitive data" in France : many people would not be ready to display it on their bicycle.
- **Germany** : the bike coding system is run by ADFC local clubs, Police and some retailers. The code engraved on the bicycle is based on the cadastral code of the cyclist's house or appartement, plus the cyclists' name initial letters. 1 million bikes have been engraved since the creation of the german bike coding system. Police owns the registers who gives the relationship between postal address and cadastral code, so that the german bike coding system is not associated to a central database for finding a bicycle's owner. Nevertheless, the code engraved on the bike will be obsolete not only if a bike is given or sold, but also if the cyclist moves. This is a very serious drawback.
- **Netherlands** : same principle as in Germany. Also recent experiments with chips in recent bikes, and with a unique number engraved by some cycle manufacturers.
- **Denmark** : any manufacturer or importer has to engrave the bicycle frame before sale. The bike code is not related to the cyclist identity. The system requires an independent database, but once the bike is registred, any legal change of owner or of owner's address can be managed without any problem. The central database is monitored by the Police, and insurances companies pay an access fee. There is no free access to the central database. Norway also has such a mandatory bike coding system.

After studying the advantages of these different systems, FUBicy created Bicycode.

Features and advantages of Bicycode french coding system

- the bike number is independent of the cyclist identity, like in Denmark
 - inter-operability : the coding has been defined in such a way that a Bicycode number cannot be confused with a bike code from countries where a bike coding system already exists.
 - all bike numbers are registred in a central database before being dispatched and engraved. The central database is monitored by the FUBicy.
 - the cyclist has to register change in his/her bike status (stolen, returned, deleted). Every bike number has its individual password, so that only the bicycle owner will be able to register any data concerning his/her bike.
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- the database can be accessed without charge by any person who finds a coded bicycle, either abandoned or for sale, so that he/she can know immediately whether this bike has been stolen or not. This access is possible by internet or by phone. The URL and the phone number are printed on a sticker which covers the frame around the bike code : <http://bicycode.org> or <http://fubicycode.org> , and voice serveurur 0825 560 030 (*country code +33*).
 - according to privacy laws, our server does not display the cyclists' personal data, it gives the address and telephone of the Police Department who recorded these data. But the Police officers can receive a master login + password for reading the complete data.

Implementation and results of the Bicycode project

Bicycode was created in june 2004, with the support of 7 french cities (Chambéry, Nantes, Strasbourg, Haguenau, Grenoble, Toulouse and Paris). By the end of 2004, there were already 15 cities involved (the first 7 ones, and Amiens, Besançon, Bordeaux, Calais, Dunkerque, La Rochelle, Lyon, Tours). After 3 years, we now have 58 partners — associations, municipalities, or retailers — in 49 cities. The number of retailers is still low, because engraving machines are relatively expensive (≈1600 to 6000 €). It usually takes 5 to 10 minutes to engrave a bicycle and explain the cyclist how the system works. FUBicy receives 1,1€ par bike, half of it for administrating the system, and half for the documents that are provided (Bike Passport, notice for use, results of locks break tests). We estimate the total cost for coding a bike of the order of 5 € per bike.

Participating in this project offers interesting advantages :

- in velostations, where the staff has busy hours when commuters arrive/leave, it is an opportunity to generate extra income during quiet hours, even without hiring new employees
- for cyclists users groups where part the manpower is provided by volunteers, bike coding may generate a new income.
- in both cases, bike coding attracts new cyclist customers / new members. Some local FUBicy users' groups reported that it increased their number of individual members by nearly 30% in 2 years. It gives us the opportunity to explain our activities to a larger number of people, and to give them valuable information about cycle locks quality.
- as spreading information about cycle locks quality is very important for reducing theft frequency, an insurance recently accepted to propose a special guarantee for cyclists who have their bicycle engraved, and attach it with a good quality D-lock. A small part of the insurance fee will finance the associations' activity.

More than 23'000 bicycles have been engraved since june 2004. 2% of them have been stolen, and approximately 9% of stolen bicycles have been returned to the owner. But results may vary a lot from city to city. From our experience, we believe that further improvement will be achieved by :

- a better information of the Police staff. In fact, in cities like Chambéry, Lyon, Strasbourg or Nantes, where FUBicy local groups organised a meeting with the Police, the Police expressed interest for our system. The national bike officer of the french government is just organising a meeting at national level, between FUBicy and the Direction of *Police Nationale*.
- a large increase in the number of coded bikes, so that a large number of people know about it (cyclists, police agents, and... thieves). For this, FUBicy recently initiated contacts with cycle manufacturers. It could boost the number of coded bikes from nearly 8'000 per year to 50'000 or 100'000 per year within 2 years. We also have preliminary contacts with the Italian cyclists' federation, who might consider developp a Bicycode-like system in Italy. Using a coherent system on the two sides of the border can help improve the system efficiency.

References :

- *Bicycle theft in France* , F.Héran and N.Mercat, 2003, in *Sustainable transport. Planning for walking and cycling in urban environments*, R.Tolley, Cambridge, Woodhead Publishing, pp. 641-649. The complete french version can be downloaded from <http://bicycode.org> > [Marquage](#) > [Pourquoi](#)
- *Results of cycle locks break tests* can be downloaded from <http://bicycode.org> > [infos](#) > [Antivols](#)
- More explanations about Bicycode bike coding system and results can be found on our web site <http://bicycode.org> or <http://fubicycode.org> (site in french + summary in english)