

Bike sharing: affordable convenience or unaffordable luxury?

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Outline



Bike sharing: the concept



What are the costs and benefits associated with bike sharing? What is the evidence?



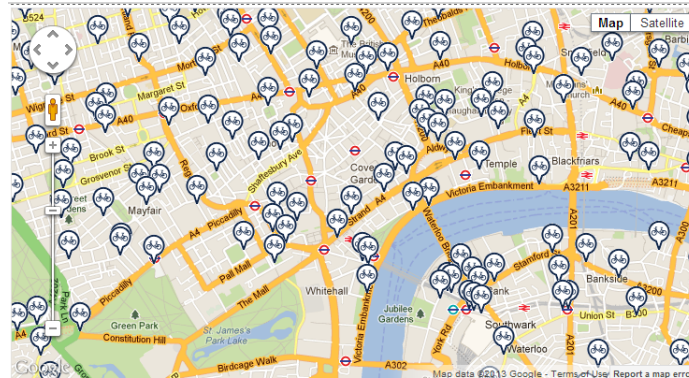
International examples, including Bike in Bath (CIVITAS Renaissance)



Overlooked benefits & conclusion

Bike sharing

- Network of publicly available bicycles
- Unattended
- Short term hire
- Smart card operation
- Different types of memberships available
- Planned or spontaneous journeys



Bike in Bath



Launched 15th Sept 2011
70 bikes (40 in operation)
4 stations

*“it’s time
to ride”*



Bike in Bath
cycle hire scheme.

Get your card at:
Bath Tourist Plus
Milday Chubbey
Mines Church Yard
Bath Spa 121

FOR INFORMATION:
www.bikeinbath.com

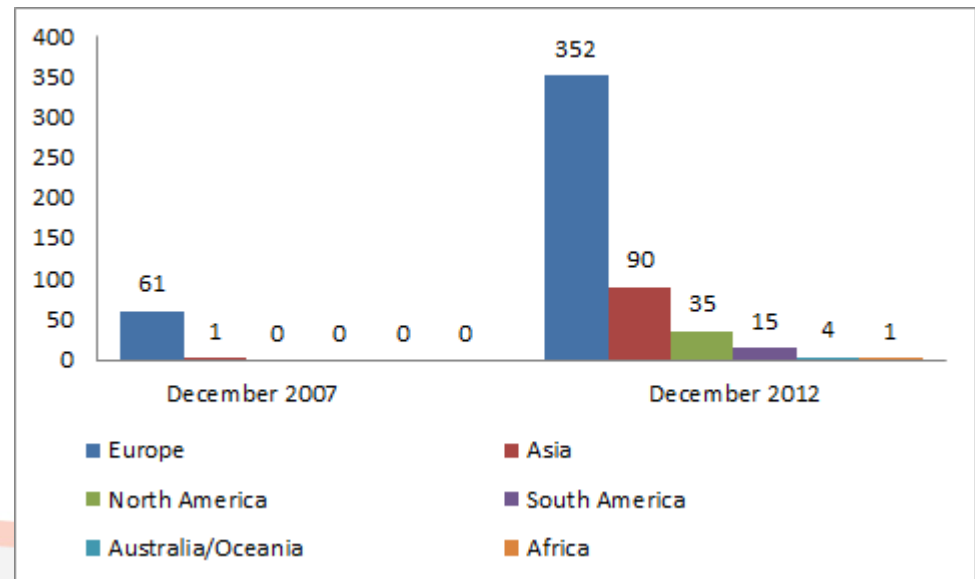
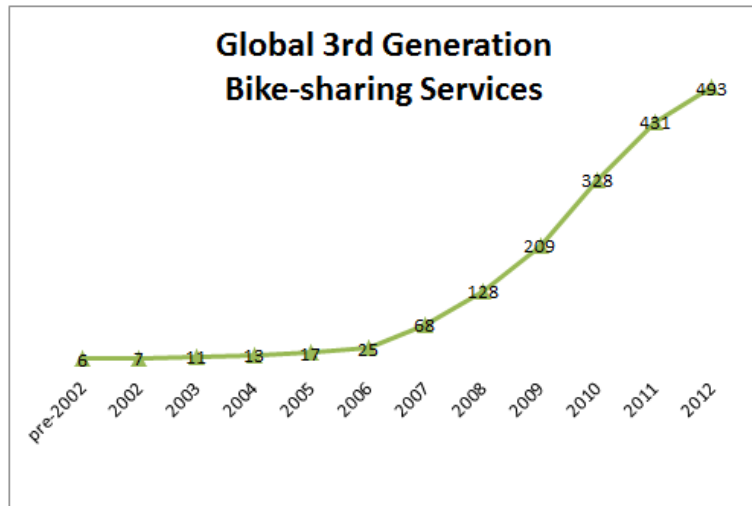


<http://www.bikeinbath.com>

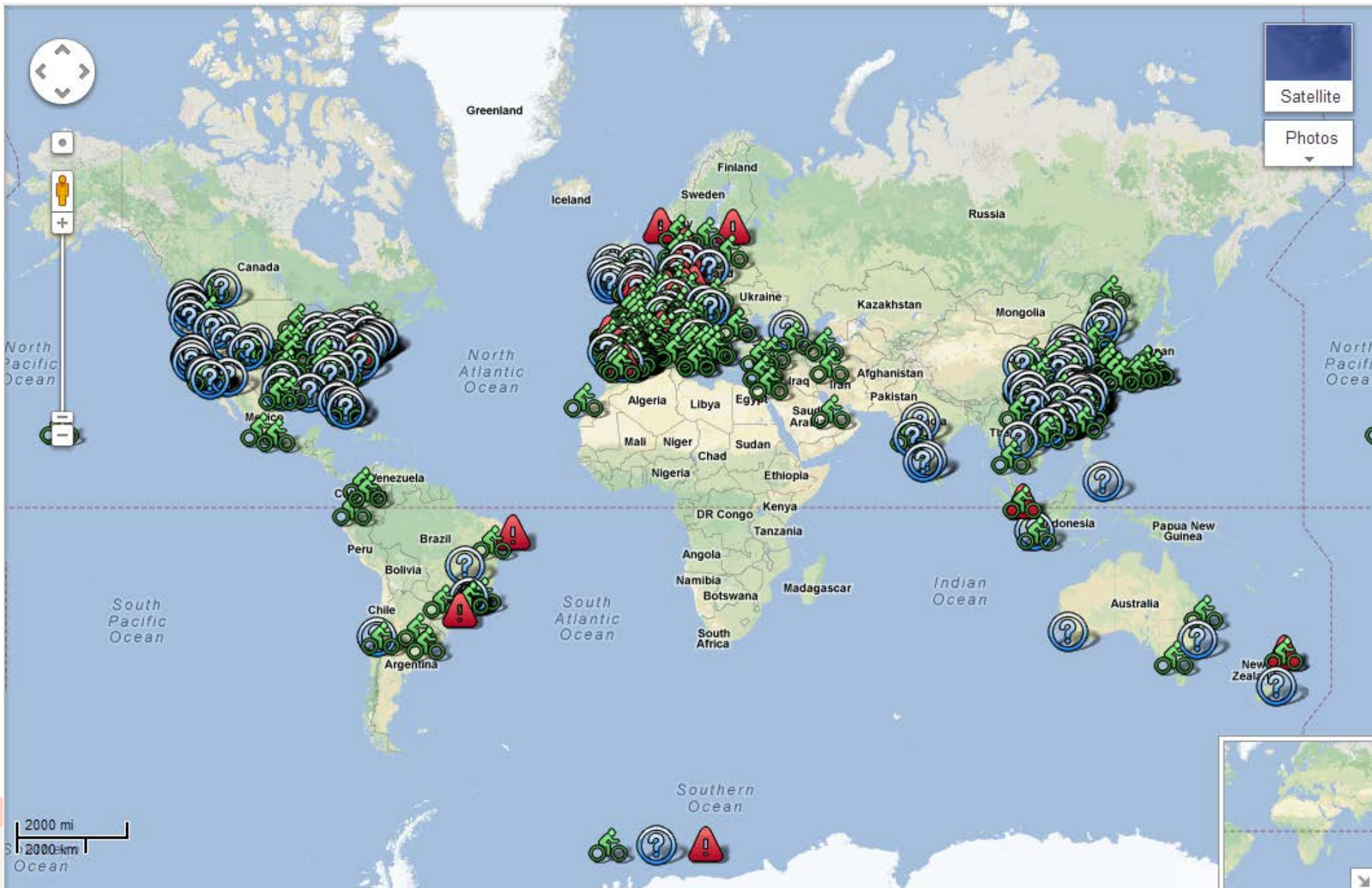
Bike sharing: evolution

*“There are two types of mayors in the world: those who **have** bike sharing and those who **want** bike sharing”*

Mayor of Lyon



Source: <http://bike-sharing.blogspot.co.uk/>
By Paul DeMaio



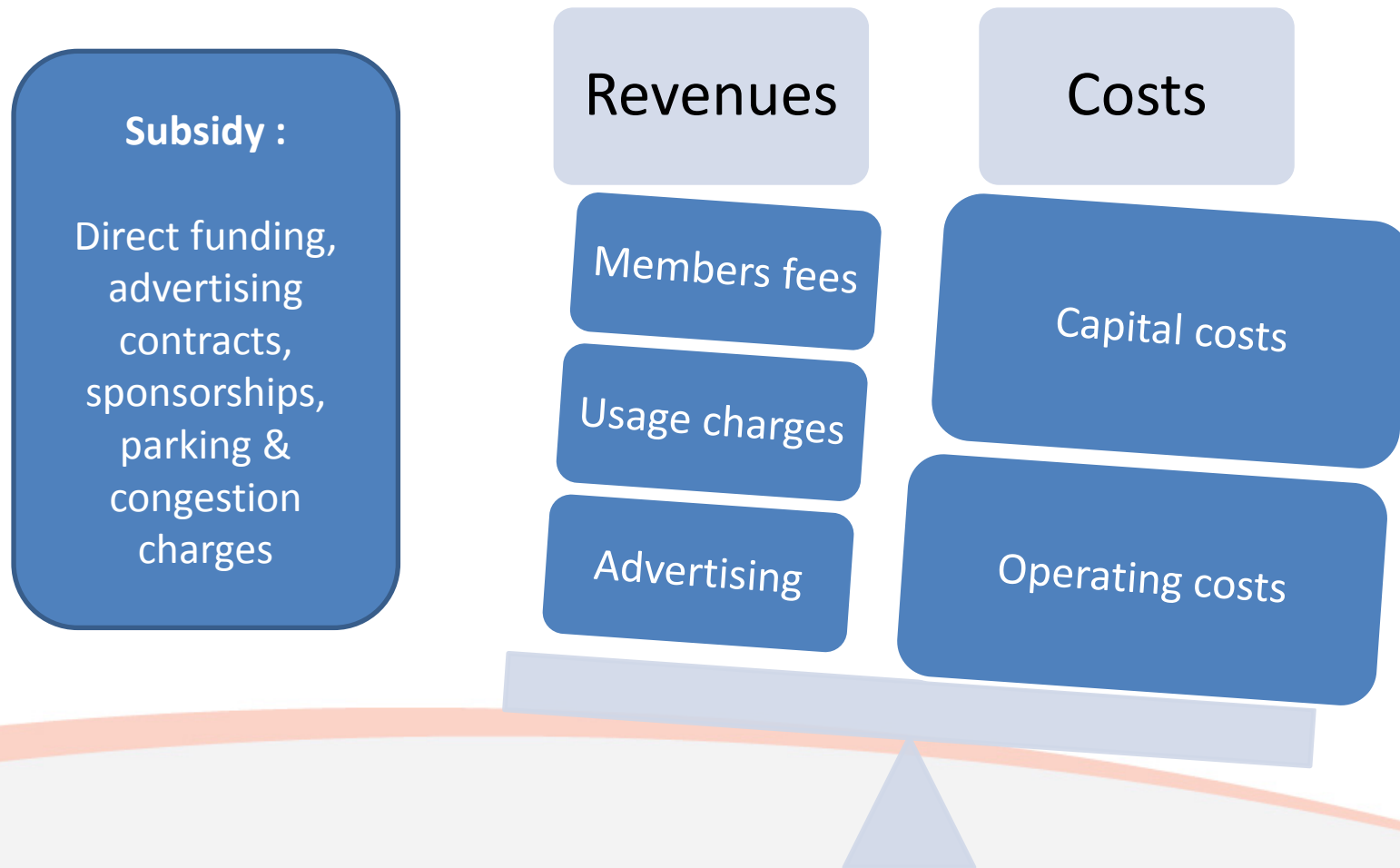
Source: <http://bike-sharing.blogspot.co.uk/>
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Bike sharing systems: examples

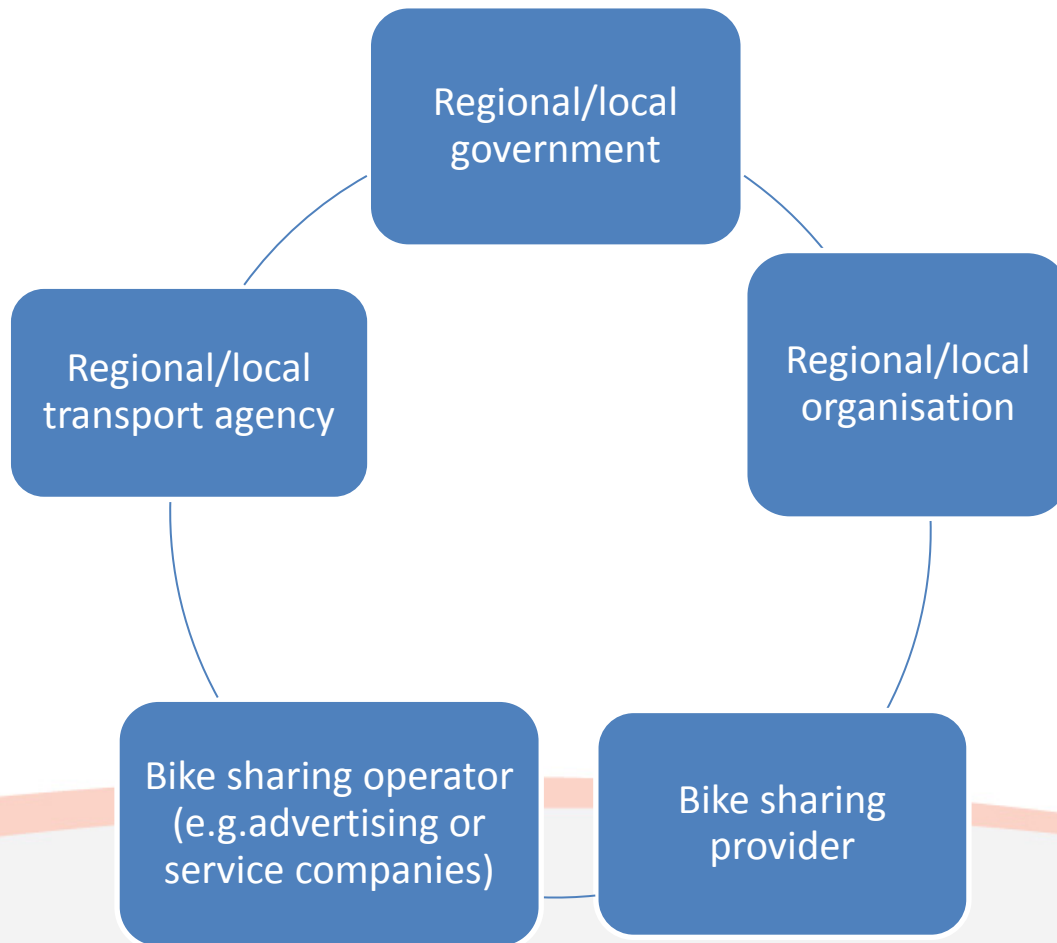


	Bikes	Stations	Trips generated
London (Barclays Cycle Hire)	8,300	570	Over 21M (since Dec 2010)
Paris (Velib)	20,000	1,800	1M in first 18 days, 50M in first 2 years
Barcelona (Bicing)	6,000	400	n/a
Montreal (Bixi)	5,050	405	n/a
Bath (Bike in Bath)	40 operating (70 in total)	4	764 (in 12 month trial period)

Financing bike sharing



Stakeholders



Examples:

Bath: Local authority (B&NES) + bike sharing provider (Comunicare), EU funding

Paris/Barcelona: Local authority + advertising company (JCDecaux/Clear Channel), subsidy masked as lost gains from ad space

London: Local transport agency (TfL) + service company (SERCO), Barclays Bank sponsorship, local funding

Bike sharing costs

Capital costs:
bikes, stations, software system, smart cards, distribution vehicles, installation

\$3,000-4,400 per bike
(£1,868-2,740)
DeMaio (2009)

€ 2,500-3,000 per bike
(£ 2,040-2,450)
Obis (2011)

Operating costs:
maintenance, distribution, staff, insurance, office space, storage facilities, website, insurance, electricity

\$1,600 (£ 997)
per bike per year
DeMaio (2009)

€ 1,500-2,500 per bike per year
(£ 1,225-2,040)
Obis (2011)

Bike sharing members' fees

	Daily fee	Weekly fee	Annual fee
London (Barclays Cycle Hire)	£2 (was £1)	£10 (was £5)	£90 (was £45)
Paris (Velib)	€1.70	€8	€29
Barcelona (Bicing)	n/a	n/a	€46.46
Montreal (Bixi)	\$7	n/a	\$80.50
Bath (Bike in Bath)	£8/9	n/a	£35




A controversial example: Barclays Cycle Hire

- Serco contract (installation & operation): £140M over 6 years - £23.3M per year
- Barclays funding: £50M over 8 years - £6.25M per year
- Revenues:
 - £323,545 in first 96 days (published)
 - About £3M per year (my calculation from members' fees only)

Budget deficit:
£14.05M per year

Forecasted revenues in
2009:
£110M in three years
i.e. £36.7M per year

Benefits of bike sharing

	Direct benefits	Indirect benefits	
	Increasing cycling modal share	Making cycling more visible	
	Additional mobility option/Improving accessibility	Encouraging cycling infrastructure development	
	Reducing congestion	Liveable streets	
	Managing public transport demand	Savings due to reduction of car infrastructure	
	Increasing attractiveness for tourists	Positive city image	
	Advertising opportunities	Improving cycling safety	
	Health benefits	Reducing CO2 emissions	
	Employment opportunities	Wider health benefits	

Source: Obis, Optimising bike sharing in EU cities (2011)

Increasing cycling mode share

- DeMaio (2009), in J Pub Transp:
 - **Paris:** from 1% in 2001 to 2.7% in 2007 (before Velib)
 - **Barcelona:** from 0.75% in 2005 to 1.76% in 2007 (before Bicing)
- Shaheen et al (2010), in TRR:
 - **Paris:** bicycle riding increased by 70% (as result of Velib)
 - **Lyon:** bicycle riding increased by 44% (as result of VeloV)
- Rojas-Rueda et al (2011), in BMJ:
 - Average increase in cycling is 3% as result of bike sharing
 - **Barcelona:** 30% increase in No of cycling trips

Contradicting evidence
Problem of attribution
No robust evaluation conducted

Health benefits

Rojas-Rueda et al (2011) The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study, *BMJ*

- Focused on Bicing (Barcelona)
- Benefit to risk ratio: 77 to 1
- Total No of annual deaths avoided: 12.28

Fishman (2011), reply to BMJ

“Evaluating the benefits of PBS needs to be undertaken carefully”

- Data on travel mode shifts as a result of Bicing could not be found
- Flawed assumption that 90% Bicing trips replaced car trips (9.6%)
- Does not consider effects from replaced walking trips (26.1%)

Decreasing CO2 emissions

- DeMaio (2009), in J Pub Transp:
 - **Montreal:** 3M pounds CO2 saved in a year
 - **Lyon:** 18.6M pounds CO2 saved since inception
- Rojas-Rueda et al (2011), in BMJ:
 - **Barcelona:** 9M Kg CO2 saved per year

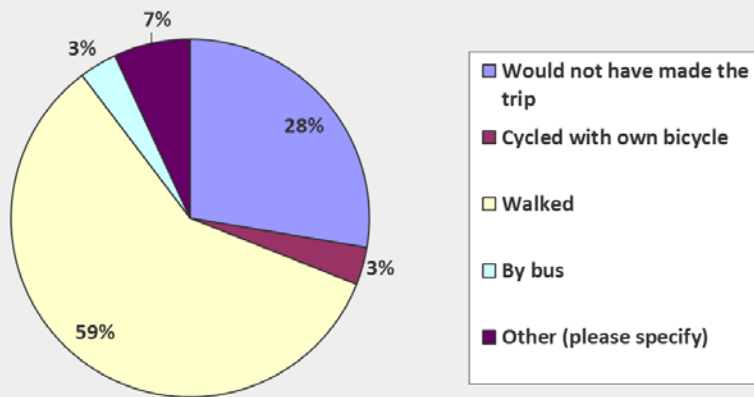
Tendency to overestimate car
trip substitution rate
Misleading figures

Car trip substitution: evidence?

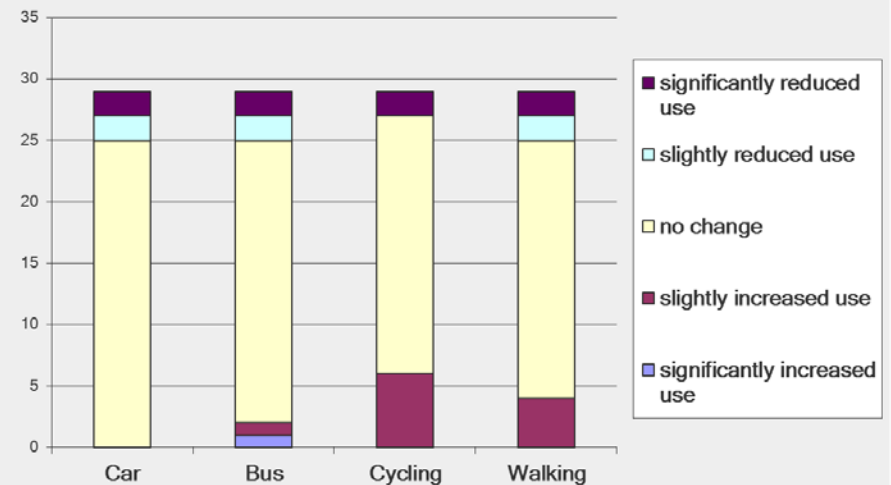
Trip replaced	Bicing Barcelona	VeloV Lyon	Call a bike Berlin	Capital Bikeshare VA, USA
Car	9.6%	7%	3.6%	7% (+6% taxi)
Public transport	55.1%	50%	25.8%	45%
Walking	26.1%	37%	21.4%	31%
Other bike	6.3%	4%	7.6%	6%
New trip	2.8%	n/a	n/a	n/a

Evidence from Bike in Bath

Please think about the LAST TRIP you made using a Bike in Bath bicycle. Had Bike in Bath NOT existed, how would you have made that trip?



As a result of using Bike in Bath, have you changed how often you use the following types of transport?



Bike sharing: summary

- Considerable capital and operating costs
- Comparably lower revenues
- Subsidy needed
- General lack of evidence on impacts
- Available evidence on benefits not robust

Are we looking for benefits in the wrong places?
Have we missed something?

Overlooked benefits? (1)

Improving accessibility:

- 89% Velib users agreed that BS made it easier to travel through Paris
- 79% users in Washington DC agreed that BS was faster or more convenient than other options
- 85% Capital Bikeshare users joined to get around more easily and faster
- Anecdotal evidence on <http://montreal.bixi.com/about-bixi/news/2011/April/top-25-2010-des-utilisateurs-bixi>

Increased spending in businesses/shops around the stations

[Shoner et al. on Minnesota Nice Ride bike sharing](http://www.cts.umn.edu/Publications/catalyst/2012/july/niceride/)
<http://www.cts.umn.edu/Publications/catalyst/2012/july/niceride/>

Overlooked benefits? (2)

Increasing cycling visibility and improving its image
Sherwin & Parkhurst (2009)



“Bike sharing is a way our cities communicate about themselves showing that they are vibrant and trendy”
Frédéric Héran, Lille University (quoted by DeMaio)

Thank you!