Zurich University
of Applied Sciences

School of
Engineering

Shared Mobility 2019

Collaborative Mobility Services in European cities - a comparison

research project VS18a Transportation Systems

Imprint

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This study was part of the 2019 third semester course “Intramodality in Transportation: Passengers and Freight” of the degree program “Transportation Systems” at the ZHAW School of Engineering.

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Survey Period: October and November 2019
Release Date: 20. December 2019

Recommended Citation Method

Auf der Maur et al. (2019): Shared Mobility
Collaborative Mobility Services in European Cities - a Comparison, Winterthur.

Data collection

The first and at the same time the largest hurdle of this study was the acquisition of the fleet numbers and the price models for the different shared mobility providers. To obtain the required data the companies were contacted through various channels.

In addition to companies which voluntarily provided the figures, there were others which were not interested to reveal their data. In some cases, this has also been stated by the inquired companies in a reply to our request. However, some companies did not respond at all. The reasons were very different. For instance, some companies did not have enough capacities, or they had already too many inquiries concerning the desired numbers. The most cited reason, however, was the fierce competition in a constantly changing market. They wouldn‘t want to suffer from a competitive disadvantage by giving away their fleet numbers.

In order to be able to write a representative study, metadata was used for the companies procured from third channels in order to determine the number of vehicles of the individual companies. These figures come from previous studies, newspaper articles and city information sources.

Disclaimer

The prices for the different types of shared mobility are given in Euro. For the calculation of the Big Mac Index, the original currencies were converted directly into US dollars. The key date for all exchange rates is October the 1st, 2019.

There is also a cut-off date for the fleet figures of the various providers. September the 31th, 2019 has been set for this date. Suppliers, which changed their fleet, withdrew from the market before that date or entered the market after this date are not considered in this work.

If the use of a sharing offer required a subscription in addition to the price per time or price per route, the subscription fees were added to the price determination. The price of a subscription was calculated for the individual trip.

The male form chosen in the study always refers to both female and male persons. In favour of readability, this study does not contain any double designations.

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1 Sharing Mobility - a highly competitive market

What exactly is shared mobility?

You can «share» a taxi or an Uber ride with several people. However, vehicles can also be shared by making your vehicle available to other people, or by enjoying the benefits of the different sharing offers. Rather than buying your own bike, you can rent one for the time you want and need one. The latter type of sharing, the sharing of vehicles, is the subject of this study.

Bike and car sharing have been an integral part of the world of shared mobility for a long time. The development of new types of shared mobility, such as scooter sharing or e-kickboard sharing, started the hype of Mobility Sharing in recent years. Particularly in urban areas, shared mobility is gaining more and more importance. Another reason for this is that not only new vehicles, but also new service models are being developed.

New service models, such as the free-floating principle have unleashed new potentials of shared mobility. In this model, the vehicles can be positioned in a defined perimeter (the city area for example) and can be located and unlocked via smartphone. Once the journey is complete, the vehicle can be parked on any suitable spot within the designated area.

E-kickboard sharing has been a trend since 2018. These vehicles have proven to be ideally suited for the free-floating service model. The space requirement is small, and the maximum speed of 25 km/h means that no additional equipment is required. The «hype» concerning the e-kickboards is already turning into negative headlines at some places. In Berlin there is bein talked about a «flooding» of the city and after less than two years, the introduction of a cap in vehicle numbers is being considered.[1]

Particularly in view of the current discussions on the limited amount of space in urban areas, the capacity limits of public transport and, last but not least, the climate debate, it is obvious that shared mobility can be a main driver in order to gain a large number of customers. If an attractive sharing offer can provide an alternative to the established types of mobility (public transport or private car), there would be an opportunity to make people think about it. Do I really need my own car? Do I want to get on the crowded bus or do I rent a bicycle or e-scooter?

The development of shared mobility was analysed in a total of seven cities. For each city, five different types of shared mobility are examined in terms of fleet size and price.

This study is the fifth edition to be published by the students of the bachelor degree course «Transportation Systems» at the Zurich University of Applied Sciences, School of Engineering.

2 Shared Mobility

The term «shared mobility» can be understood as a broad range of different types of sharing. For example: instead of vehicles, also a journey can be offered or shared. An example for this is «Uber Pool», where you can share a cab ride in a similar direction with strangers. Also a time limited car rental can be considered a sharing concept. These concepts are not considered in this paper.

2.1 Terms and symbols

The different types of shared mobility are offered in different sharing services. When using car sharing, different vehicle sizes can be chosen. These sharing services are defined below and marked with symbols.

Sharing services

Round-Trip-Service: The rented vehicle is assigned to a station, where it is picked up and returned. The journey begins and ends at the same station.

One-Way-Service: The rented vehicle can be picked up at a station and after usage it can be returned at any other station.

Free Floating Service: The vehicle can be rented without a station in a defined area and can also be returned at almost any point in the designated area.

Vehicle sizes

Small: The car offers seats for 1 to 2 people and has a small trunk. It is small, agile and excellent for short distances. Example: VW Polo, Renault Clio, Smart.

Medium: A limousine or a station wagon with seats for up to 5 people and a large trunk.
Example: Skoda Octavia, VW Golf Variant, Volvo V60.

Large: A compact van which offers plenty of space and the possibility to unfold two additional seats in the trunk. Example: VW Touran, Citroën C4 Picasso, Opel Zafira.

2.2 Sharing types

In this study, the sharing types «car sharing», «P2P-Car-Sharing», «scooter sharing», «bike sharing» and «e-kickboard sharing» are discussed and described in more detail below:

Car sharing

Car sharing providers offer several vehicles in different sizes from which the customer can choose and rent through an app. Repairs, maintenance and insurance are included in the price. The vehicle can be unlocked either with a smartphone or with a badge, depending on the provider.

Car sharing is offered as round trip, one-way and free-floating services.

P2P-Car-Sharing

Peer to peer providers offer a platform which private individuals use to make their own car available to other users.[2] The advantage of this is that your own car is parked in your parking lot and causes costs while not being used most of the time. With this service model, money can be earned with the vehicle while not used. Since it concerns private cars, different systems to unlock the cars are used.

Smart-Door-System: A special device in the rented car allows the car to be connected with the app of the provider and to be unlocked. The key to start the vehicle is located inside the vehicle.[3]

Personal key handover: Via a chat app, a message can be sent to make an appointment for handing over the key of the rented car.

Scooter sharing

The scooters are very well suited to relieve inner-city car traffic. There are station-bound scooters for scooter sharing and free-floating offers. The scooters can also be located and unlocked with an app. Besides fuel powered vehicles, electric scooters are also offered. In contrast to bike- or e-kickboard sharing, a category A or B driving licence is mandatory for hiring a scooter. In addition, most of the users are required to be at least 18 or 21 years old.[4] To guarantee safety, there are two different helmet sizes available.

Bike sharing

Bike sharing is very similar to car sharing and has been established some time ago. The bikes can be unlocked with the help of an app or user card. This requires a registration with the relevant provider. There are one-way-services and free-floating services available. Free-floating services are enjoying increased popularity in many cities. Another trend in the field of bike sharing are e-bikes, which are becoming increasingly popular. The electronic drive support increases comfort and speed, and even steeper slopes can be mastered effectively.

E-kickboard sharing

The e-kickboards are currently on the upswing in Europe. As with bike sharing, a smartphone is equipped with the App of the respective provider in order to rent an e-kickboard. In e-kickboard sharing the free-floating method predominates. The only restrictions are so-called «no-parking zones», in which the parking of an e-kickboard is prohibited. The app can be used to locate the e-kickboards. One pays a basic fee to unlock the device and then the fare is calculated depending on the provider per time and/or distance travelled. The vehicles move at a speed of up to 25 km/h.[5] In cities where the e-kickboards are defined as bikes, it is forbidden to ride them on the sidewalks.

2.3 The Big Mac Index for the comparisons of the cities

It is difficult to compare the prices of the various sharing offers across the cities, as all the cities differ in purchasing power and partly also in terms of currency. If one calculated the prices at the respective exchange rate and then compared them, a falsified outcome would result. To adjust purchasing power in different cities, the 1986 by the British newspaper «The Economist» introduced Big-Mac-Index is intended to help.[6]

The Big Mac Index is an instrument to compare the purchasing power of different countries and currencies. The Big Mac is the most popular burger of the fast food chain McDonald's and is offered nearly all over the world in an identical form. This makes it ideal for this comparison. To determine the Big Mac Index, the local price of a Big Mac is calculated in dollars. The prices of the various sharing offers are then no longer expressed as amonetary value, but in the number of Big Macs you would receive per trip. This shows how expensive the sharing-offers are to each other.[7]

3 Portrait of the cities

In order to compare the various offers across the cities, the sharing offers in Zurich, Berlin, Barcelona, Vienna, Paris, Copenhagen and London have been investigated. These places have already been studied in previous reports, which offers the possibility to analyse certain developments in the individual cities.

Zurich

Price per Big Mac:	6.53 $
Population:	428,737
Population density:	4,660 pers./km^2
Persons transported per year:	302.1 M
Tram	202.6 M
Trolleybus	54.1 M
Bus	45.4 M

Zurich is the largest city of Switzerland and is one of the most expensive cities in the world. Public transport in Zurich is well established and used extensively. 41 % of all daily journeys are covered by public transport.[8] Commuters use the public transport even in 65 % of all their journeys.[9] Also the bikes are gaining more and more importance: In 2018 50 % more cyclists have been counted than in 2012.[10] With 351 vehicles per 1,000 inhabitants, Zurich is one of the cities with the lowest motorization rate.[9]

Vienna

Price per Big Mac:	4.16 $
Population:	1.90 M
Population density:	4,572 pers./km^2
Persons transported per year:	979.6 M
Subway	463.1 M
Tram	305.5 M
Bus	211.0 M

Vienna is known for its wide range of cultural activities. In addition, Vienna has been selected the tenth time in a row as the city with the highest quality for employees living abroad by the management consulting firm Mercer.[11] The local public transport system is particularly distinct. Thanks to a bike network of 1,400 km, 7 % of the total traffic are cyclists. At three counting points, more than one million cyclists have been counted.[12]

Paris

Price per Big Mac:	4.59 $
Population:	2.21 M
Population density:	21,000 pers./km^2
Persons transported per year:	3,311.0 M
Subway	1,560.0 M
Tram	315.0 M
Bus	1,436.0 M

Paris is the most densely populated city in Europe and has a very well-established public transport network. All places of the city are well attainable. For tourists, special tickets are available, which are particularly affordable.[13] On Sundays and public holidays, large parts of the city center and certain streets are closed. The aim is to make driving less attractive for local residents. To support public transport, the municipal public transport company RATP leases out bikes, trying to relieve the congested streets.

London

Price per Big Mac:	4.05 $
Pobulation:	9.18 M
Population density:	6,000 pers./km^2
Persons transported per year:	3,972.7 M
Subway	1,752.0 M
Tram	30.7 M
Bus	2,190.0 M

London is the most populous of the investigated cities. Compared to the other cities, London is the cheapest (Big-Mac-Index). The city has an iconic public transport network. The red double-decker buses and the London underground subway, “the Tube”, are world-famous. This means that transports do not only carry the local working population, they also transport thousands of tourists each day. Because of these crowds, London is in the first place concerning passenger numbers.[14] The city also offers various car sharing services.

Copenhagen

Price per Big Mac:	4.39 $
Population:	1.33 M
Population density:	6,800 pers./km²
Persons transported per year:	186.5 M
Train	124.1 M
Subway	62.4 M
Bus	No data

Due to often bad weather conditions, **Copenhagen** is not the most attractive city for cyclists. Nevertheless, it has been elected as the best bike city by the sustainability homepage "Treehuger" for the second time. Reasons are the numberous wide and well used cycle paths of the city.[15] Approximately 42 % of all Copenhageners ride their bikes to work or training schools. According to the Bicycle lobby «Cyclists' Federation» this number should raise to 50 % by the end of the year.[16] No other of the investigated cities could reach such numbers. The city has a low degree of motorization and attaches great importance to the environment. In addition it has a well-developed public transport network which operates around the clock.[17]

Berlin, the biggest city in Germany attracts many people, either for residential, work or leisure purposes. Due to the current housing shortage, the commuters are faced with long travel times. Subsequently, sharing offers are high in demand.[18] With a motorization rate of 326 sharing vehicles per 1,000 inhabitants, the number is very low compared to the other investigated cities. Due to the topography, the bike is a very popular vehicle in Berlin. 850 out of 1,000 inhabitants own a bike.[19]

Berlin

Price per Big Mac:	4.52 $
Population:	3.75 M
Population density:	4,203 pers./km²
Persons transported per year:	1,579.8 M
Subway, Tram, Bus	1,101.8 M
Train	478.0 M

Barcelona

Price per Big Mac:	4.31 $
Population:	1.62 M
Population density:	15,987 pers./km²
Persons transported per year:	632.1 M
Subway	407.5 M
Tram	20.2 M
Bus	202.9 M
Ropeway	1.5 M

Barcelona attracts millions of tourists with its Mediterranean charm, many attractions and the mild climate. In comparison to the other investigated cities, Barcelona has a very high population density. In the case of smog an environmental zone taking effect, in which only registered vehicles may operate. Apart from 2020 on, the low emission zone will be permanent.[20] In order to minimize individual traffic in the inner city and thus solving congestion problems, super blocks, traffic-free cross- and parallel roads to the larger main axes have been erected.[21]

4 User groups

In order to compare the prices of the individual cities, two user profiles were created per sharing type. These are characterised by their frequency of use, the duration of use and the distance travelled. In the case of car sharing offers a vehicle size is additionally defined.

Car sharing

Weekly buyer

The weekly buyer rents a car once a week to do his weekly purchase. In order to have enough storage space and sufficient capacity for the family, he requires a station wagon with five seats. The distance of 20 km and the duration of 2 h were determined, since it is assumed that the weekly purchase is done in several shops and not in only one. The weekly buyer doesn‘t mind whether the car is rented via Car- or P2P-Car-Sharing, so the weekly buyer is used in both types of sharing.

Freelancer

In order to do his job, the freelancer normally moves around in urban space. He uses public transport or bikes. For some jobs or meetings (on average once per week) outside the city, however, he is dependent on a car. Since he doesn‘t own a car he uses the offer of car sharing. He always uses the rented vehicle alone, therefore he only needs a small car. The duration and the distance to the external jobs vary a lot, which is why the required rental period was estimated to be 2.5h and the driven distance 60 km.

P2P-Car-Sharing

Weekly buyer

This user group represents the same weekly buyer in the car sharing example. The same requirements apply accordingly. For the weekly buyer, it doesn‘t matter which car sharing service he uses. This is why he is also listed in P2P-Car-Sharing.

Familiy

The family living in the city is in general not dependent on a car to cope with everyday life or only on a small one. But to guarantee an adequate level of comfort while doing monthly excursions, they use the service of P2P-Car-Sharing. Another reason why P2P-Car-Sharing is suitable is that the car can be booked in advance and enough time is remaining to organize a car with seven seats.

Scooter sharing

Tourist

A city trip is often planned in a short time period, for example if you only want to stay over the weekend. The trip gets even more stressful when there are many attractions and activities on the program. In order to explore the city in the given time, scooter sharing is ideal as an alternative to public transport. The average journey is about 3 km and takes 9 minutes. Due to the fact that the scooters are often offered with two seats, they are also suitable for couples or friends.

Occasional driver

The occasional driver always uses the means of transport that suits him best. If the offer fits his interests he will use public transport. Alternatively he likes to take the bike. From time to time, however, the public transport system does not have the right offer and it is too far for the bike or he has not enough time. Then the occasional driver uses scooter sharing. This happens on average once a week.

Bike sharing

Tourist

The circumstances for the tourist here are similar to scooter sharing: Little time and a lot of activities and attractions on the daily program. In parks or pedestrian zones the city can be explored by bike and in addition, you can make rapid progress. This is why it is assumed that the trips will be longer than with scooter sharing.

Optimizer

In the evening after work the optimizer arrives at the station. Since the bus service to his place of residence is not attractive recarding waiting time, he would have to wait 15 minutes for the next bus to arrive. In order to save time, he rents a bike via bike sharing instead and manages the 3 km to his home in 9 minutes. He does this every working day. Since this optimization of the way to work is his only benefit from using a bike, it is not worth to buy his own one.

E-kickboard sharing

Tourist

In this case, the tourist takes the public transport for longer distances between places of interest. He uses an e-kickboard for short and easy routes. Especially in summer it is a good alternative to trams, buses or subways. The average distance between the attractions is 1.5 km.

Last Mile

For commuters, the train is undoubtedly the best mode of transport to get to their workplace. However, the short journey from home to the train station is very tedious due to overcrowded buses. To avoid this, he uses the e-kickboard for the last mile. Due to the high availability, the vehicle is always available at the station, especially during peak hours.

5 Suppliers, fleets and prices

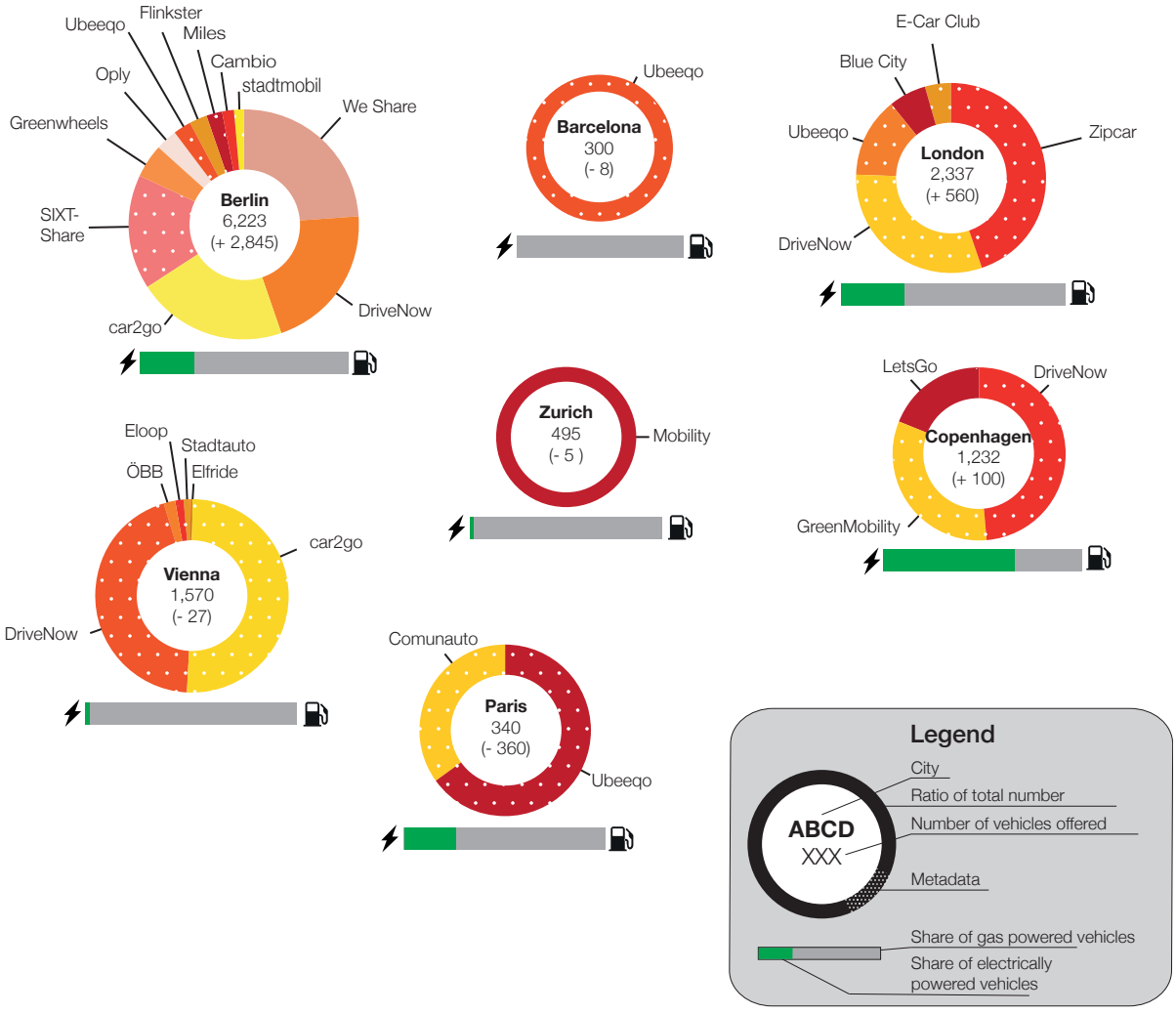
The following chapter shows the fleet sizes per city and the price diagrams for each of the five shared mobility types: Car sharing, P2P-Car-Sharing, scooter sharing, bike sharing and e-kickboard sharing. The price diagrams show the cheapest and most expensive trip per city using a price range. The price for the cheapest trip is then converted using the Big Mac Index and compared across the cities. The price range and the Big Mac Index are considered separately for each shared mobility type for the two user groups.

5.1 Car sharing

The development of car sharing was very different across the cities that were investigated. In Zurich, Vienna and Barcelona the number of vehicles decreased slightly. In Paris, the figures fell more sharply, but not as sharply as in the previous year. In Berlin, on the other hand, car sharing was booming. Four new providers entered the market and there was an enormous increase in the number of vehicles. Vehicle numbers also rose in Copenhagen and London. Due to the growth in Berlin, the total number of vehicles in all the cities surveyed increased compared to the previous year.

Elfride in Vienna is a special case. Behind Elfride is an association that owns one single car and makes it available to its members as car sharing. Anyone can join this association, but there is already a waiting list. For this reason, Elfride was not further considered for the price comparison.

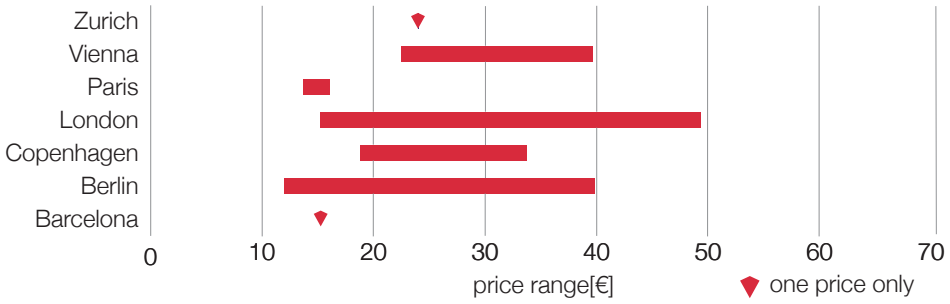
Depending on the car sharing provider, the service models available are round-trip service, one-way service or free-floating service.



Weekly buyer

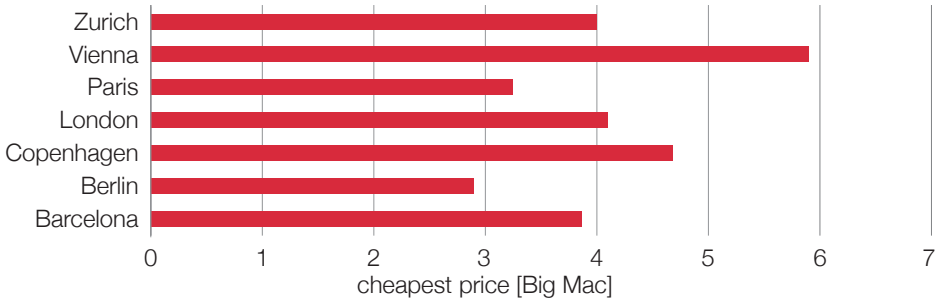
The chart below shows an extremely large price range between the cheapest and the most expensive provider for the «Weekly buyer» in London, Vienna, Copenhagen and Berlin. In London the range is equal 34.15 euros. In Zurich and Barcelona there is only one provider, so there is only one price. Zurich and Vienna are the only cities where the cheapest offer for a trip is more than 20 euros.

Price ranges user groups «weekly buyer» per trip



If we consider the purchasing power adjusted prices of the cheapest providers in each city, Vienna stands out as the most expensive city. Zurich is in the same range as London and Barcelona. Berlin is the less expenisve city in which the cost for the cheapest trip are equivalent to 2.9 Big Macs, half as much as in Vienna.

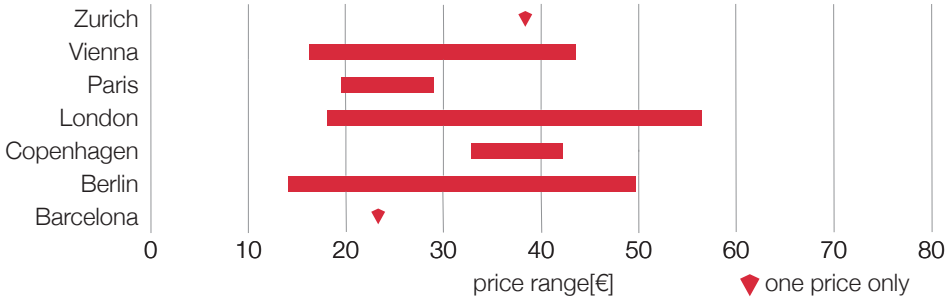
Cheapest price «weekly buyer» in Big Macs



Freelancer

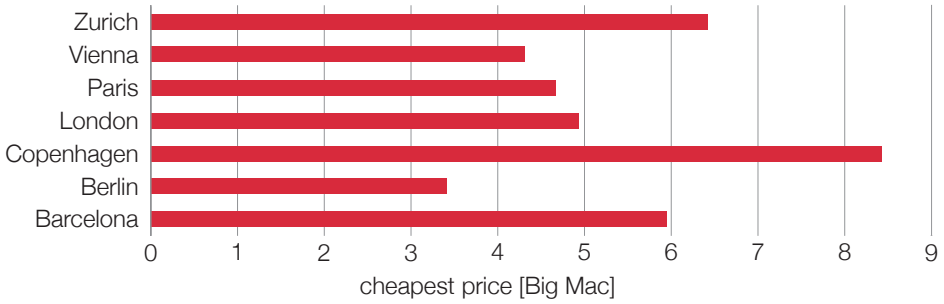
The chart below shows a wide price range between the cheapest and the most expensive «Freelancer» provider in most cities. However, this is not the case in Barcelona and Zurich, where there is only one provider on the market and therefore only one price is given. In Paris and Copenhagen, the price range is 9 euros. The biggest price range is again in London, where it is 38.15 euros. Zurich and Copenhagen are the only cities where the cheapest offer for a trip is more than 25 euros.

Price ranges user group «freelancer» per trip



If we consider the purchasing power-adjusted prices of the cheapest providers in each city, Copenhagen stands out as the most expensive city. Zurich ranks second among the cities surveyed. Berlin is once again the cheapest city. The cheapest trip there corresponds to 3.4 Big Macs and is in this case even 2.5 times less than in Copenhagen.

Cheapest price «freelancer» in Big Macs



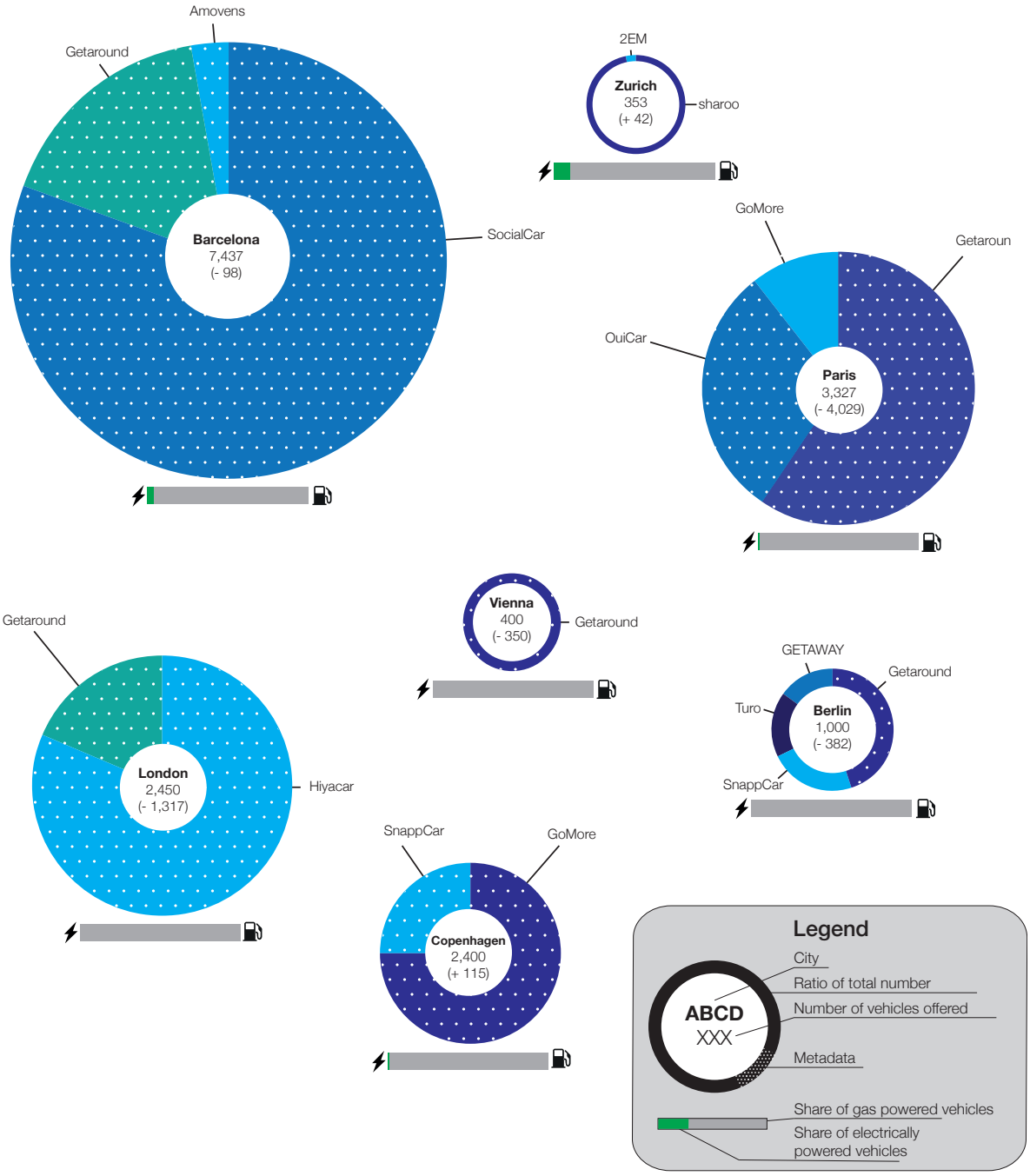
Car sharing - comparison pays off

In cities with several providers, it is worth comparing the prices of the respective providers for both user groups. Berlin is a very attractive city for the concept of car sharing, as many needs of individual user groups are covered at very fair prices.

5.2 P2P-Car-Sharing

The initial upswing of P2P-Car-Sharing has ceased in most cities. A glance at the graph shows that only Zurich and Copenhagen experienced a slight upswing. The largest decline can be seen in Paris. This is due to the fact that Getaround (formerly Drivy) recorded a noticeable decrease in their fleet. The number of vehicles also fell considerably in London. This is mainly due to the withdrawal of two suppliers. In the other cities, with the exception of Zurich and Copenhagen, the fleet figures decreased marginally.

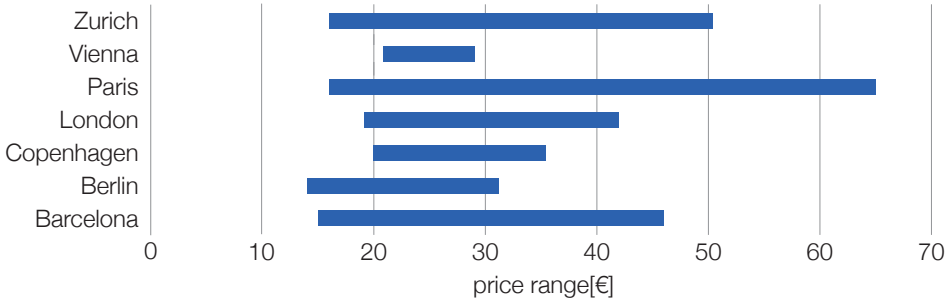
As P2P-Car-Sharing is a pure online platform and the vehicles are offered by private individuals the term «fleet» of the providers is only conditionally correct. The determination of «fleet sizes» was therefore particularly demanding. For metadata, an attempt was made to determine the offer with the help of the respective platform. This results in constantly (in some cases strongly) changing fleet numbers, without any guarantee of correctness. Statements on developments in the field of P2P-Car-Sharing must therefore be considered with caution. P2P-Car-Sharing is only available as a round trip. The vehicle must be collected at the owner's premises and also be returned there. Since there are no defined stations for P2P-Car-Sharing, the offer of locations is very big.



Weekly buyer

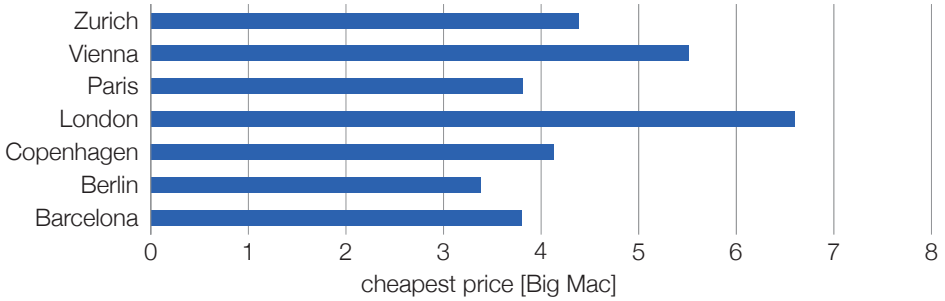
For the «Weekly buyer» the different price ranges are relatively small. This is due to the short duration of use and the distances covered. The largest price range between the most expensive and the cheapest offer can be found in Zurich. The cheapest trip here costs 16 euros, whereas the most expensive trip costs 50.40 euros. In Berlin you will find the cheapest trips with 14 euros.

Price ranges user group «weekly buyer» per trip



The following figure shows that London is also the most expensive city considering the Big Mac Index. P2P-Car-Sharing is also relatively expensive in Vienna. Berlin, Barcelona and Paris have the lowest prices.

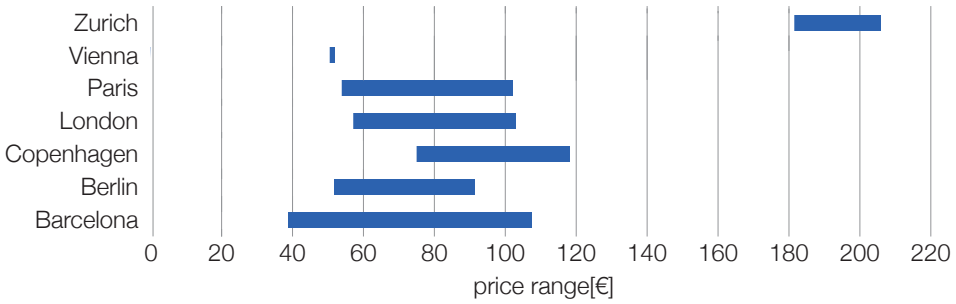
Cheapest price «weekly buyer» in Big Macs



Family

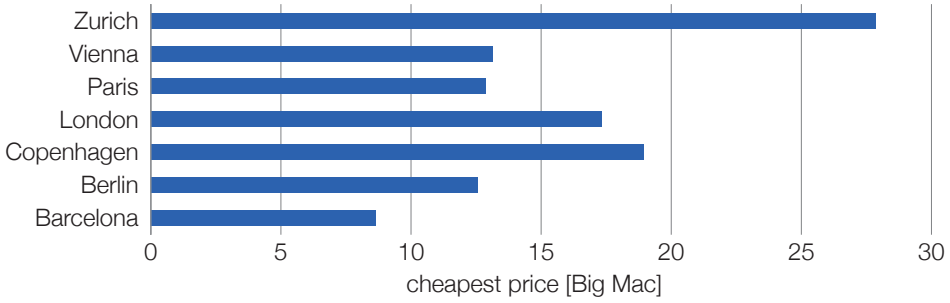
The user group «Family» performs very consistently in the city comparison. The only outlier is Zurich, which is massively more expensive. This can be explained by the fact that the providers in Zurich do not offer free kilometers. The offers in Vienna and Zurich are highly limited. Therefore it is very difficult for families to find a suitable vehicle. The largest price range is in Barcelona with prices between 39 and 107.60 euros. In Vienna, the scarce offer is clearly noticeable in the price range.

Price ranges user group «family» per trip



The Big Mac Index also shows that the cities move at very uniform prices. Only Barcelona, which is the cheapest, and Zurich, which in turn has the most expensive offers, stand out. However, the difference in the Big Mac Index is much smaller. All other offers range between 10 and 20 euros.

Cheapest price «family» in Big Macs



P2P-Car-Sharing - Stable offers with stable prices

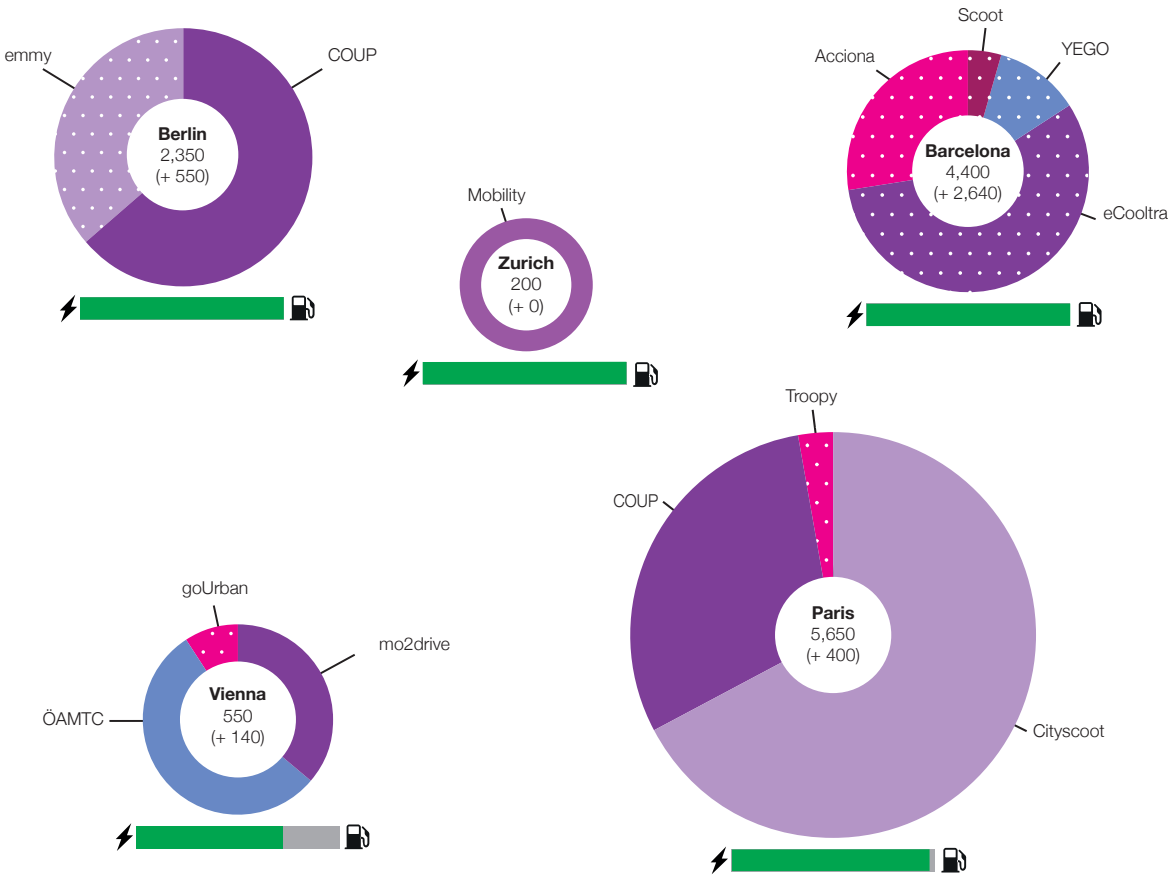
P2P-Car-Sharing remains a very good and inexpensive alternative to car sharing. For weekly buyers, P2P-Car-Sharing has equivalent or cheaper offers in almost all the cities surveyed. In contrast to last year, the price ranges between P2P and car sharing have become significantly more uniform. P2P providers have a larger price range due to the different offers of free kilometers.

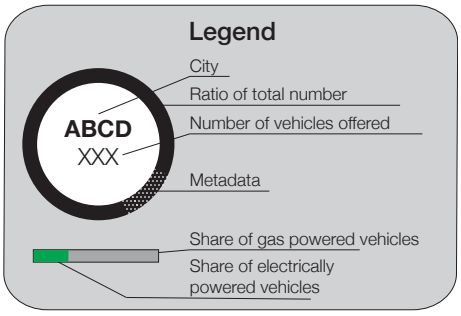
5.3 Scooter sharing

A scooter sharing service has been available in the investigated cities for several years. As in the previous year, the largest fleet is found in Paris. Since last year it has been extended by 400 scooters and now counts 5,650 scooters in total. The fleet was also expanded in most other cities.

The exception is Zurich, where the number of fleets has remained the same as in the previous year. Zurich is the only city with only one supplier. In Vienna, the fleet was expanded by 140 vehicles, even though one supplier left the business. The situation is similar in Barcelona, where there is one supplier less than in the previous year. Nevertheless, the fleet in Barcelona has more than doubled compared to last year and is thus growing the strongest.

All scooters except «mo2drive» in Vienna and «Troopy» in Paris are electrically powered. In London as well as in Copenhagen there is no scooter sharing offer available. The situation is similar in Barcelona, where we also have one less supplier than in the previous year. Nevertheless, the fleet in Barcelona has more than doubled compared to last year and is thus growing the strongest. Depending on the scooter sharing supplier, there are one-way services and free-floating services available.



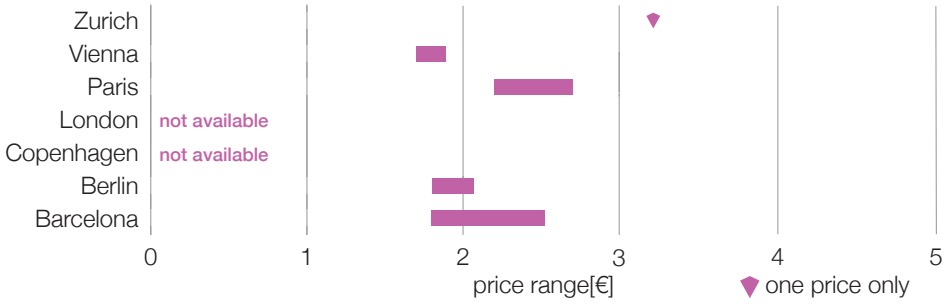


Tourist

The chart below shows the price range between the cheapest and the most expensive provider for «Tourists» in Barcelona, Vienna, Paris, Zurich and Berlin. In Barcelona the price range is the largest with 0.72 euros and in Vienna the smallest with 0.18 euros. In Zurich there is only one provider and therefore only one price. Zurich and Paris are the only cities in which the cheapest offer for a trip costs more than 2 euros.

5x/Day
3 km
9 min

Price ranges user group «tourist» per trip



Looking at the purchasing power adjusted prices of the cheapest providers in each city in the diagram below. Zurich stands out as the most expensive city, closely followed by Paris. The cheapest trip in Zurich costs 0.54 and in Paris 0.53 Big Macs. In Barcelona and Vienna, the cheapest trip costs between 0.45 and 0.46 Big Macs. By comparison, Berlin is the cheapest city. The cheapest trip costs as much as 0.44 Big Macs.

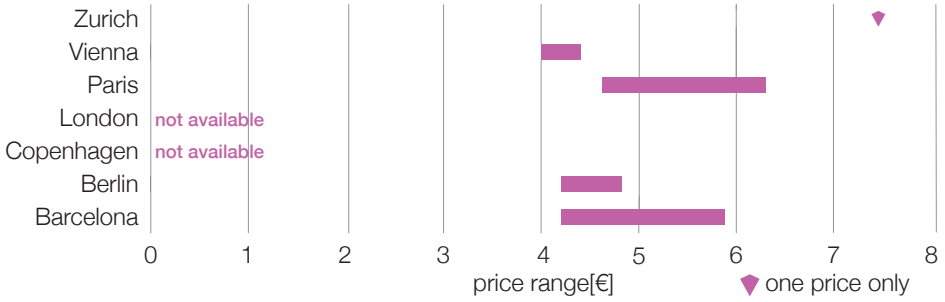
Cheapest price «tourist» in Big Macs

Occasional driver

The chart below shows the price range between the cheapest and the most expensive provider for «Occasional drivers» in Barcelona, Vienna, Paris, Zurich and Berlin. The highest price was found in Paris and Barcelona at 1.68 euros and the lowest in Vienna at 0.42 euros. In Zurich there is only one provider, which is also the most expensive in the city comparison. Zurich and Paris are the only cities where the cheapest offer for a trip costs more than 6 euros.

1x/Week
7 km
21 min

Price ranges user group «occasional driver» per trip



Looking at the purchasing power adjusted prices of the cheapest providers in each city in the diagram below. Zurich stands out as the most expensive city. The cheapest trip in Zurich costs 1.26 Big Macs. Paris is the second most expensive city with 1.12 Big Macs. In Barcelona and Vienna, the cheapest trip costs between 1.06 and 1.07 Big Macs. Berlin is also the cheapest city for the occasional driver, as it costs as much as 1.02 Big Macs.

Cheapest price «occasional driver» in Big Macs

Scooter sharing - Growing offer

In cities with several providers, it is worth comparing the prices of the respective providers for both user groups. The prices do not differ much between the individual cities. By comparison, Berlin is the cheapest city.

5.4 Bike sharing

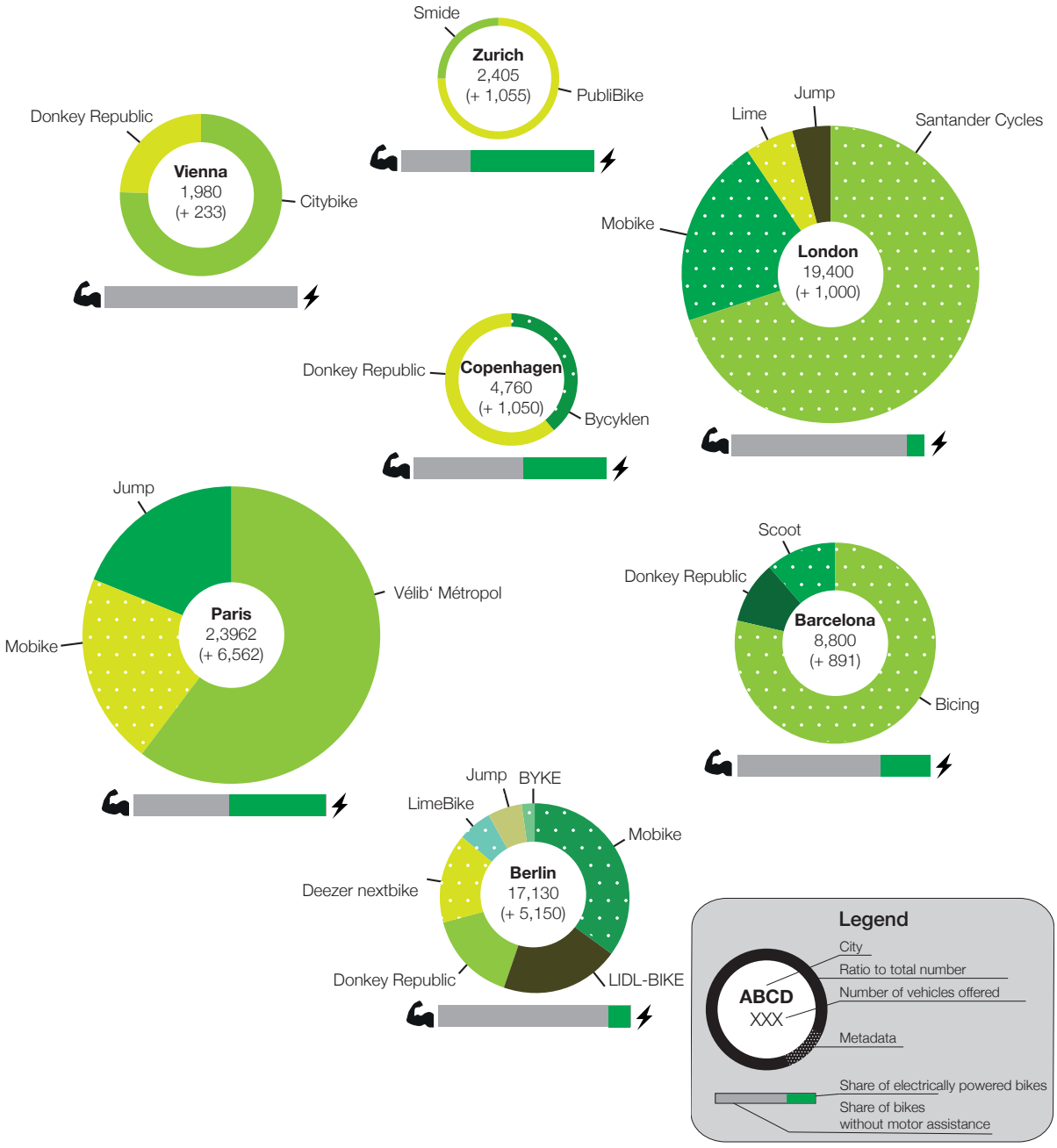
The bike sharing market continued to expand last year. The number of bikes has increased in all cities.The cities of Paris and Berlin stand out in particular. Although many bikes were already available in those cities last year, that number has risen by more than one-third this year. Even though there have been market entries and exits, some providers have been able to establish themselves as fixed players in all cities. The largest competition takes place in Berlin with seven suppliers.

The Uber subsidiary Jump, using the free-floating principle, is a newcomer to the market. Since November 2018, the offer was successively expanded in the cities of Berlin, Paris and London. With the market entry of Jump and LimeBike in London e-bikes became available in the British capital. Vienna remains as the only city without an e-bike supply.

Due to financial difficulties, the Chinese supplier Ofo has withdrawn from the European market. Before the withdrawal, Ofo was present in Paris and London.

The provider Donkey Republic was able to further expand its fleet in Barcelona, Berlin, Copenhagen and Vienna. In Paris though, Donkey Republic has decided to leave the market.

Bike sharing is available as a one-way and free-floating service, with the free-floating service growing vastly.



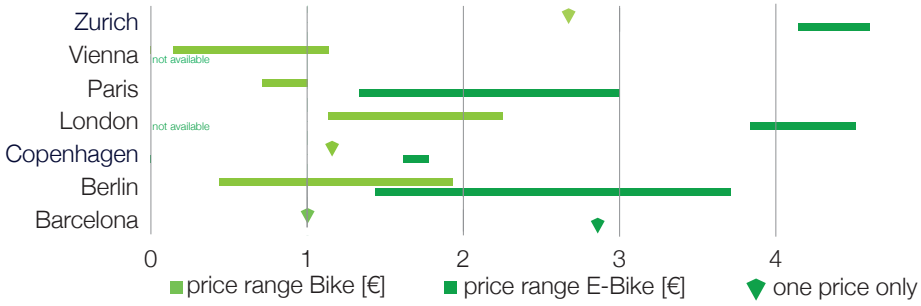
Tourist

As in the last years, it is still possible to use the bikes of the provider City Bike in Vienna for one hour freely by paying an administration fee of one euro. That means Vienna has the cheapest offer in bike sharing for the user group «Tourist». By far the most expensive city for the tourist is Zurich with a price of 2.67 euros per trip.

When choosing an e-bike for sightseeing, higher prices must be expected. The cheapest offer in the cities of Paris and Berlin starts at over one euro per trip. London and Zurich are the most expensive cities to rent an e-bike.

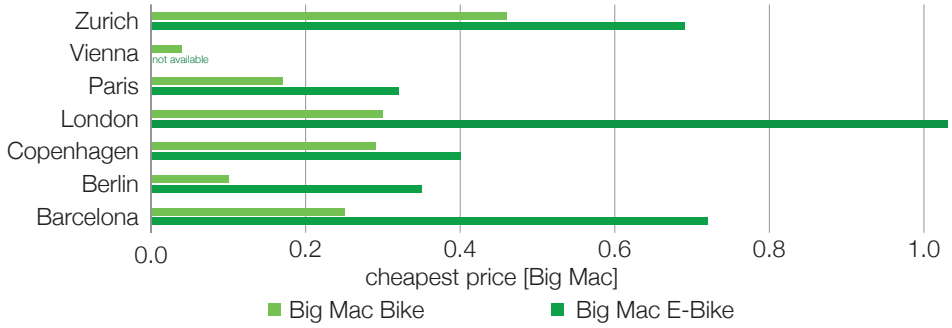
In Barcelona, Bicing continues to offer its bikes only to residents of the city, which makes them unavailable for the tourist. That means only the suppliers Scoot and Donkey Republic remain. The provider Scoot offers only e-bikes, so the rental of a bike without electric drive is only possible at Donkey Republic. As in the years before, there are no e-bikes available in Vienna.

Price ranges user group «tourist» per trip



Even after using the Big Mac Index to adjust the results to the purchasing power, Zurich remains the most expensive and Vienna the cheapest offer for regular bike sharing. In the e-bike category, London is by far the most expensive city. Zurich is only the third most expensive city, since in Barcelona moves to the second most expensive spot.

Cheapest price «tourist» in Big Macs



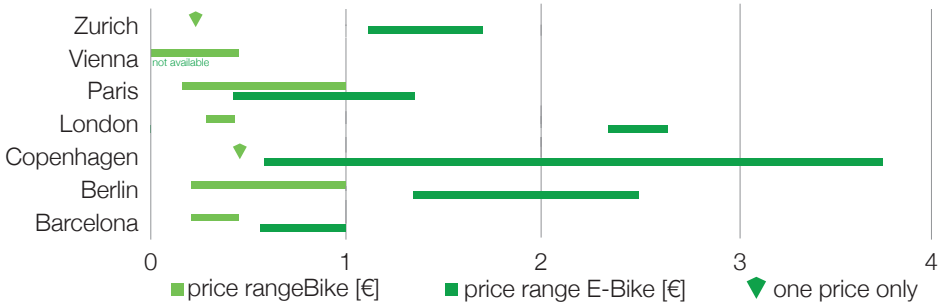
Optimizer

In some cities the prices differ a lot for the user group “Optimizer”. If the provider offers a monthly or annual subscription, the costs per trip can be reduced due to a regular use and the short travel time. If the possibility of a subscription is not available, the prices per trip are notably higher. That means the city of Paris has both, the most expensive and the second cheapest offer. The offer in Vienna is even cheaper for this user group due to the one-time registration fee of one euro. That means the cost per trip can be less than one cent.

Using an e-bike can be up to three times more expensive. The most expensive offer can be found in Copenhagen, the cheapest in Paris.

5x/Week
3 km
9 min

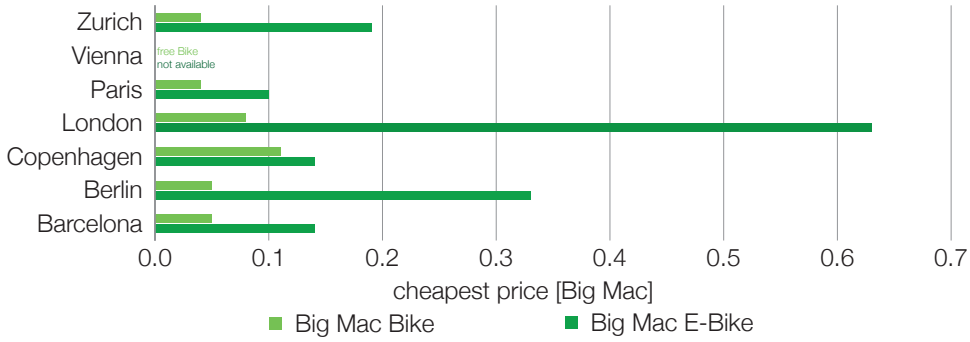
Price ranges user group «optimizer» per trip



If the purchasing power adjustment is considered, the most expensive offer in the category bike is found in Copenhagen. Surprisingly Zurich has the cheapest offer together with Paris.

London clearly stands out as the most expensive city among e-bikes. The cheapest offer can be found in Paris.

Cheapest price «optimizer» in Big Macs



Bike sharing - A lasting success in European cities

The further increase in the fleet numbers proves that bike sharing is in great demand and will continue to be a key factor in transportation for the future in European cities.

The price comparison between the providers is worthwhile both for regular drivers and for tourists. Due to different pricing policies, the optimal provider can be selected based on the duration and frequency of the trips.

5.5 E-kickboard sharing

The E-kickboards are the newest of the considered shared mobility types. The first vehicles were found in 2018 in the examined cities. It is therefore difficult to identify trends, since the data pool for a meaningful development analysis is missing.

For the cities of Berlin, Copenhagen and Barcelona there are no comparable numbers from previous years and in London E-kickboards are banned until today.

The prices have not changed significantly in comparison to 2018, but what has increased enormously is the number of providers. In all the cities, except for London and Barcelona, several providers share the market.

Paris is an exception because the number of providers decreased from four to two providers over the last year.

However, the total number of E-kickboards available has also increased in Paris.

The origin of the prices differs from the other sectors of shared mobility. Only one price model is existing, and the customers do not have the possibility to get more favourable conditions by subscriptions.

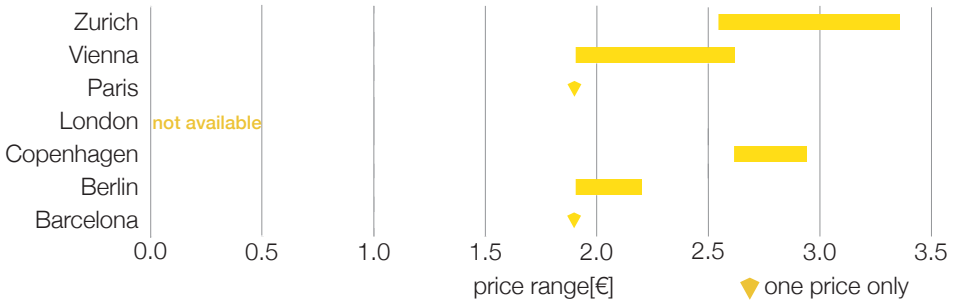
The system is similar for all providers. The e-kickboards can be unlocked at a basic rate. This unlock fee is about one euro in every city. On top of the basic rate, you pay a price per minute the e-kickboard is used. The prices per minute differ a little but are in a range of a few cents.

If you use the e-kickboards for a longer time like the tourist, this range can make a bigger difference in the total price. Due to the large amount of metadata used, deviations cannot be ruled out.

Tourist

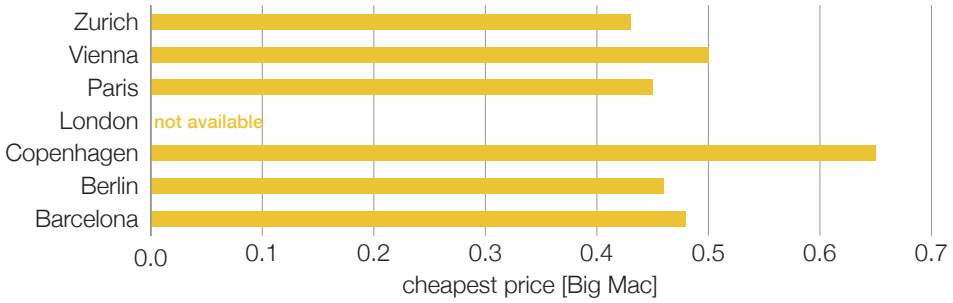
For «Tourists», the e-kickboards are ideal for moving quickly from one landmark to another and capture more impressions of the city in between. For the comparison of the prices a riding time of 6 minutes is used. For the «Tourist», both the unlock fee and the price per minute are important. In Zurich and in Vienna, the difference in price between the cheapest and the most expensive provider can be as much as one euro per trip. In the other cities, the choice of the provider is less relevant for the price.

Price ranges user group «tourist» per trip



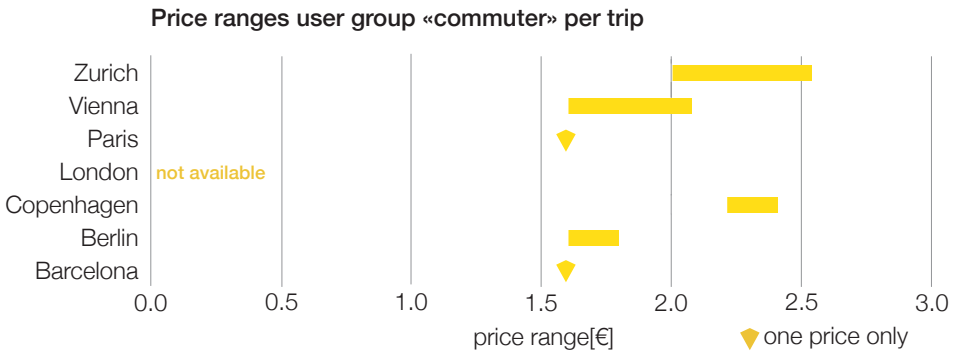
After adjusting to the purchasing power, Copenhagen is identified as the most expensive city. The difference between the prices in the remaining five cities are very low with Zurich offering the lowest price. The average cost of a trip in the respective city is about the same as half a Big Mac.

Cheapest price «tourist» in Big Macs

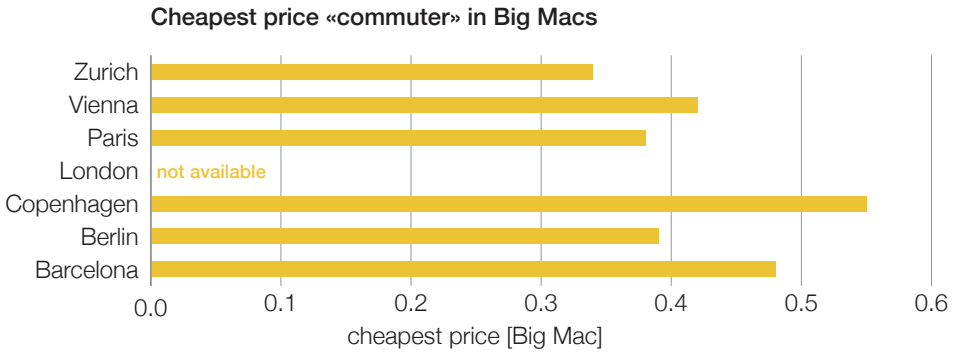


Last Mile

The typical commuter uses the e-kickboard 5 times a week to travel the «Last Mile» or «First Mile» from home to the nearest station. For the last mile, the unlocking fee is more decisive, since the covered distance is usually very short and the price per minute is less important.



Purchasing power adjusted, the cheapest pricees per city look similar to those of the tourist. Copenhagen has the most expensive price and Zurich the cheapest.



E-kickboard sharing is booming

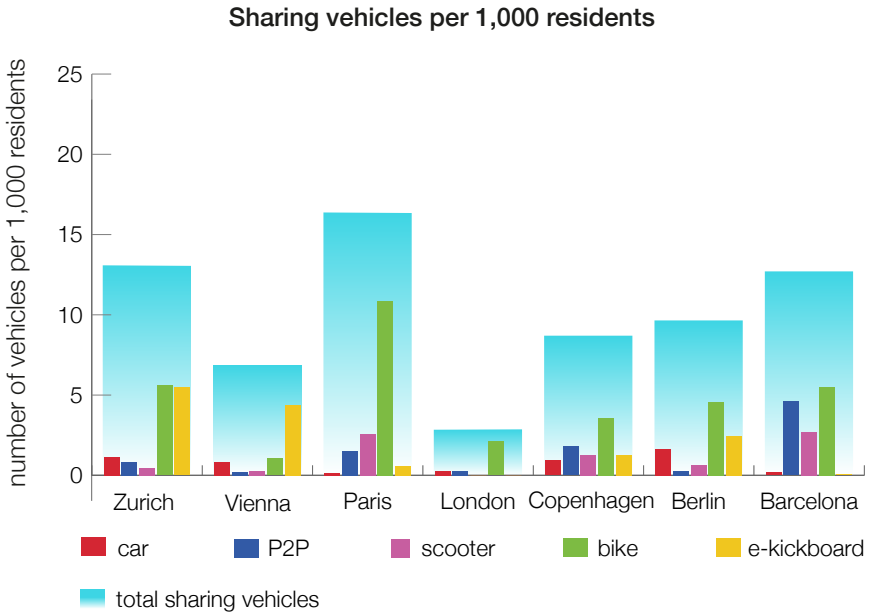
In all cities, except London, a strong growth in the fleet is visible. In 2018 the total number of vehicles was 1,990. By 2019 the number increased up to 22,918 vehicles. Responsible for this growth are mainly the cities Zurich, Copenhagen, Berlin and Vienna. In Barcelona and Paris, the numbers are growing slowly, but even there a growth trend can be seen.

The only city that stands out in the price department is Copenhagen because a trip there is remarkably more pricy than in the other cities.

6 Fleet development

When the absolute fleet figures are considered, it can be concluded that Berlin and Paris have the cheapest sharing offers. In Zurich, on the other hand, relatively few vehicles are available.

However, if the fleets are viewed shown in proportion to the inhabitants, a new picture emerges.



Of all the examined cities, Paris offers the highest densities of sharing services. There are alomst 20 vehicles per 1,000 inhabitants. A large proportion of those vehicles are the sharing bikes. Also the scooter sharing density in Paris per 1,000 inhabitants is at an above-average percentage.

Zurich offers the second highest number of vehicles per 1,000 inhabitants over all types of shared mobility. In Zurich, the bike- and e-kickboard sharing densities are particularly convincing.

Barcelona has a convincing offer as well. Particularly eye-catching is the large number of vehicles in the P2P-Car-Sharing. Barcelona has the largest number of vehicles in that area in absolute numbers as well as relative per 1,000 inhabitants. Those numbers rely to a big part on the good offer from Socialcar. In scooter sharing, Barcelona has the most vehicles per 1,000 inhabitants.

Berlin is often the leader in absolute numbers in many shared mobility types. However, if the number of vehicles per 1,000 inhabitants are considered, Berlin is only the leader in car sharing because of its large population of 3.75 million inhabitants.

London and Vienna are at the lower end of the ranking comparing all shared mobility types. In London, scooters and e-kickboards are not available but also the other types of shared mobility are not well represented. Vienna as well offers less vehicles per 1,000 inhabitants compared to the other cities.

In summary, Zurich is in a very good position compared to the other cities. In Paris, Barcelona, Berlin and Copenhagen, the sharing offer is good as well. Vienna and London still have to do some catching up compared to the other five cities.

The bike sharing is the most represented shared mobility type because in the most cities it offers the most vehicles per 1,000 inhabitants. E-kickboard sharing has a good offer as well in most cities except for Barcelona and Paris.

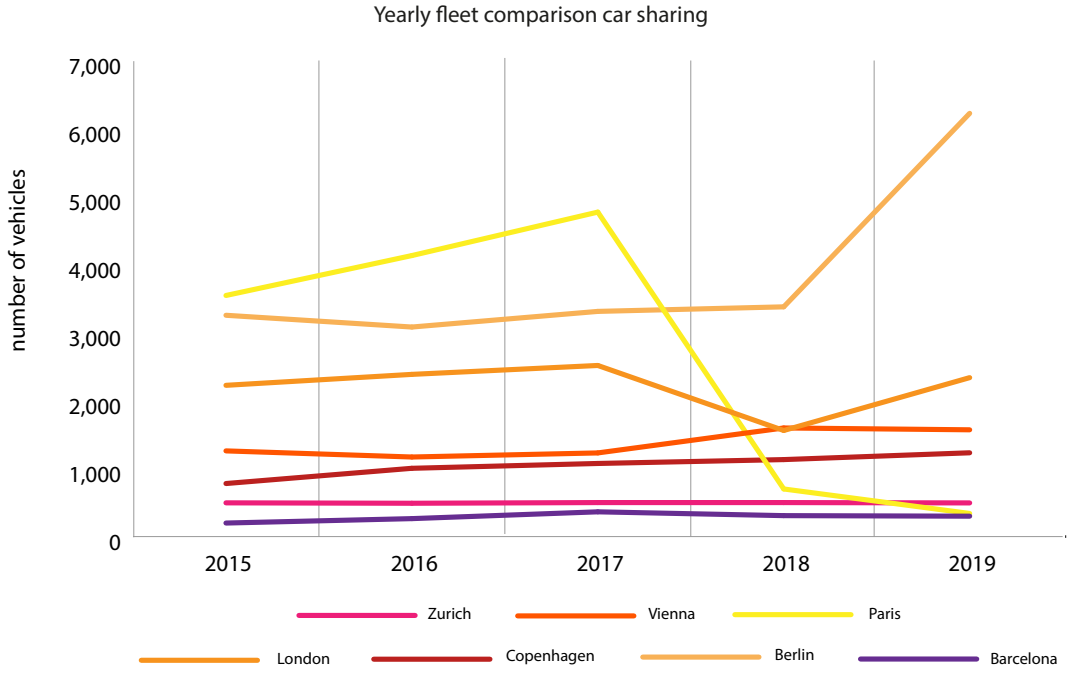
The results of car sharing and P2P-Car-Sharing are varying. P2P-Car-Sharing for example is very well represented in Barcelona, but not in Paris and London. Car sharing is similar, although only in Berlin and Zurich more than one vehicle per 1,000 inhabitants is provided.

7 Boom and stagnation

For several years, there have been articles in newspapers about new sharing providers who are launching their services, or from those who suddenly disappeared into thin air. The market of suppliers and vehicles has seen turbulences in the last years. Sometimes the terms «boom» and «hype» are used. But is this the case? Are vehicle fleets growing exponentially? The following chapters will compare the fleet sizes of the car sharing and the e-kickboard providers with the studies of past years.[22]

7.1 Car sharing

Looking at the fleet development of car sharing from 2015 to 2019, many different development can be observed. In Zurich and Barcelona, fleet numbers have hardly changed at all. In Copenhagen and Vienna, the number of the vehicles slightly increased. London has recovered after a small slump again and has 2019 the same fleet size as in 2015. The most extreme changes can be observed in Paris and Berlin.



The battle in the car sharing market is tough. For the big changes in the automotive industry, providers such as BMW and Daimler are not strong enough to finance the forthcoming investments from their own resources. Therefore, BMW and Daimler bundle their strengths in mobility services. This is how they want to offer their services in the area of car sharing, ride-hailing (taxi services), parking, charging infrastructure and multimodalities.[23] Apart from 12 November 2019, the car sharing companies DriveNow (BMW) and car2go (Daimler) will be joining forces and become ShareNow.[24] The new company is present in 30 cities worldwide. From the reviewed cities ShareNow will be available in Berlin, Vienna, Paris, London and Copenhagen. The development of car sharing market will be particularly exciting next year, because it will be interesting to see how big the influence of ShareNow will be in these cities.

From 2015 to 2017, Paris was the leader of the fleet size. The enormous slump after 2017 is due to the fact that Paris dispossessed the company autolib the concession due to high debts and quality losses. Even after the first shock, the number of fleets continues to decline in 2018. In January 2019, Zipcar left the market.[25] The number of fleets continues to decrease, and Paris now has the second smallest fleet size of the cities which were compared.

While the fleet size in Berlin shows only slight fluctuations between 2015 and 2018, an enormous increase suddenly occurred in 2018. Miles, SIXT Share, We Share and Oply have recently entered the market of Berlin. Miles and SIXT Share have a large vehicle fleet and are driving up the number of vehicles together with DriveNow and car2go.

In Zurich, the number of Mobility fleets decreased for the first time. This development is not in line with last year's forecast of the Shared mobility study, which expected a strong increase in the fleet. Reason for this justified expectation was that Mobility wants to introduce the one-way system and wants to use exhibit vehicles and replacement vehicles of garages for car sharing to increase the range of services. A one-year pilot project for the cooperation between Mobility and car garages was launched in December 2018. There were 60 garages participating, whereupon these additional vehicles are not yet included in the fleet size in 2019. According to Patrick Eigenmann of Mobility, they are very satisfied with the pilot test: «There was a lot of interest from the garages, we could have clearly outdone this number». Around the end of January, they will communicate whether the pilot project will become a fixed cooperation and what the next steps will be. That's why it will be interesting to see how the situation will develop during the next year.

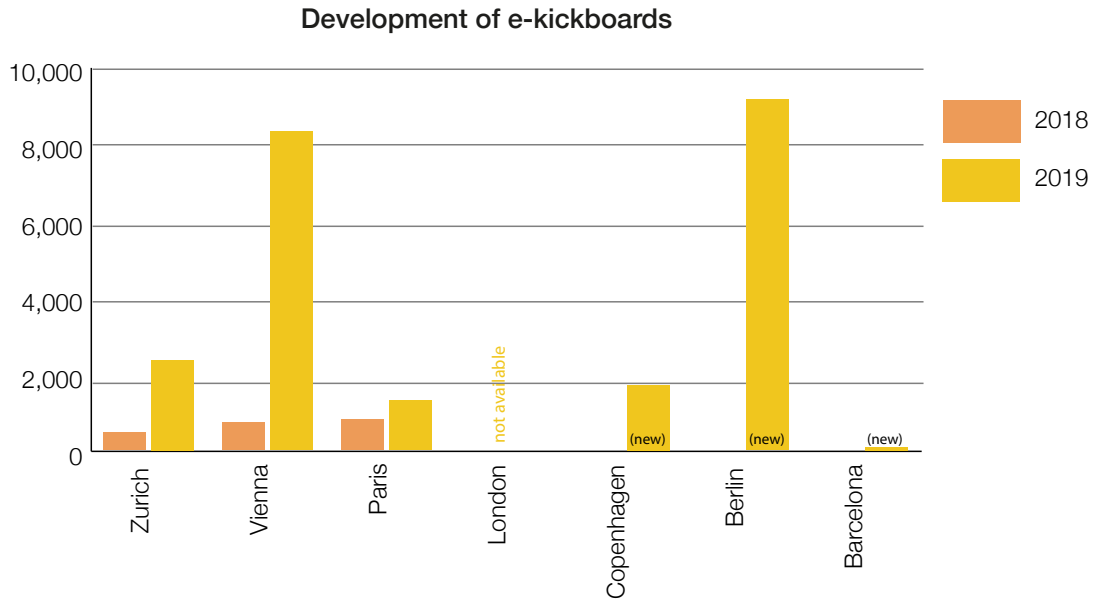
After last year's slump in London, the fleet size is rising again. This is probably due to the fleet increase at DriveNow. DriveNow now has 180 electric vehicles. Their goal is to increase the part of electric vehicles by 2025 in its fleet to 80 %.[26] Zipcar has managed to increase its fleet of electric vehicles to 325 vehicles as planned.[27]

Barcelona loses some car sharing vehicles because Zipcar has left the market and it is now only Ubeeqo as a supplier there. Just as in Paris, Zipcar also complains about disappointing results in Barcelona.[25] But in November 2019 SEAT announced that after a successful launch of its Respiro car sharing concept in Madrid, it will now also launch it in the L'Hospitalet de Llobregat district of Barcelona. The local city administration supports Respiro in order to combat climate change and air pollution.[28]

While fleet numbers have declined in Vienna, there has been an increase in Copenhagen, as in the years before. In both cities the change was not big. Every year, providers are occurring or disappearing again. It can therefore be said that there is a stable demand in both cities.

7.2 E-kickboard sharing

It is still very early to formulate a meaningful development analysis. The e-kickboard sharing is still in its infancy, but there are already clear trends visible, which show the potential of the e-kickboard.



The e-kickboard experienced an explosive growth in Berlin and Vienna. In 2018 the German capital had no offers for sharing. In comparison to the six cities surveyed, Berlin is now the number one with a fleet size over 9,000 available vehicles. Even in Copenhagen in 2018 there were still no e-kickboards to be found and within a year the number had risen to a remarkable 1,700 vehicles.

The fleet size in Zurich has also increased fivefold. However, this increasement is not that big compared to the enormous growth in Vienna and Berlin.

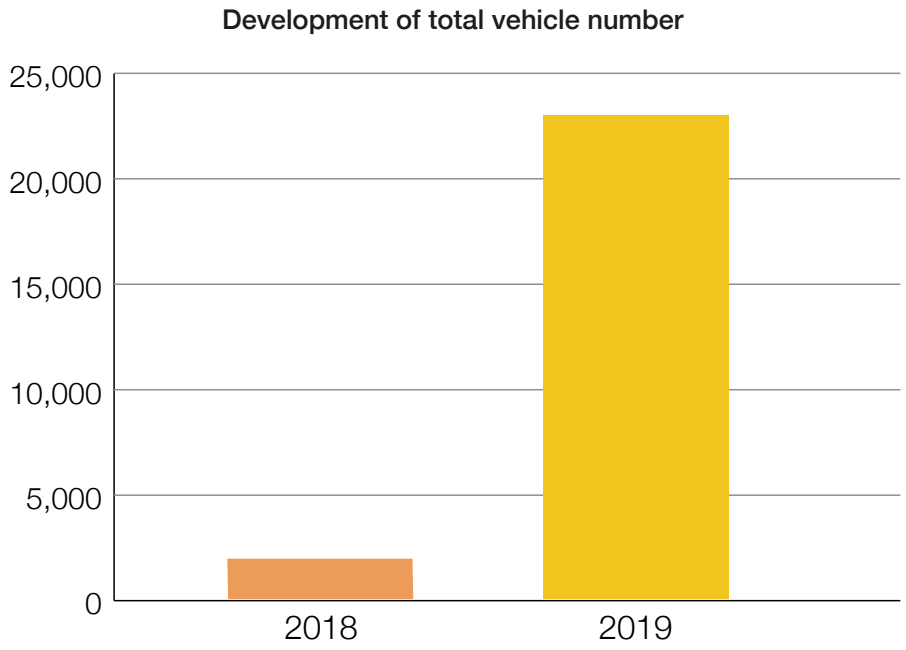
In Paris and Barcelona, the growth trend appears to be less pronounced. In comparison to the German-speaking cities and Copenhagen, the growth is almost sluggish.

Since the vehicles are offered exclusively in the free-floating service model, they are distributed throughout the city. This seems to be positive, as it shortens the journey time to find the e-kickboard. But with over 9,000 vehicles, the pedestrian zones in Berlin are literally overcrowded. The German capital is therefore discussing measures, in order to prevent blocked sidewalks by e-kickboards.[29] In Zurich and Vienna too regulatory measures have already been taken to be discussed.[30]

In London, the rental of e-kickboards is prohibited. This is because the city classifies the vehicles as «powered vehicles». Their use is permitted in London only on private property. However, more attempts are being made to persuade the city to adapt its laws.[31]

The total number of vehicles in all six cities rose from 1,990 in 2018 to 22,918 in 2019, which corresponds to a growth of more than 1,100 %! It can be seen that the e-kickboards do not boom the same way in every city.

It will be exciting to see how the numbers develop. Will the stock continue to grow explosively, or will the initial boom fizzle out and the e-kickboards were just a trend? Will the boom also start in Barcelona and London?



8 Sharing - A market with a future?

In this year‘s study, the strong growth of e-kickboard sharing is particularly eye-catching. Compared to the 2018 study, the fleet numbers of e-kickboards have increased by more than 1’100 % across all cities surveyed. However, it should be clear that the supply cannot continue to grow at this rate. In some cities there is already a trend towards limiting the number of e-kickboards.

The other established types of shared mobility, such as car and bike sharing, are only partially growing. In many places there has been a stable supply for several years. Major fluctuations, such as in car sharing in Paris or Berlin, are due to the entry or exit of large providers. In car sharing in particular, it can be observed that the existing providers often do not specifically increase their fleet numbers, but want to produce better quality with the current capacity. Among other things, investments are being made in more modern or environmentally friendly fleets. The service models are also constantly being optimised. E-kickboard sharing has shown that the free-floating model in particular has shown very good response.

From previous studies it can be seen that P2P-Car-Sharing has also stabilised after strong price fluctuations and has arrived in the sharing market as a reasonable alternative to already established car sharing. Scooter sharing, which experienced similar growth in 2017 to e-kickboard sharing in 2019, also stabilized in the market.

The partially stagnating fleet numbers (excluding e-kickboard sharing) could give the impression that the sharing market is levelling off and lacking innovation. This conclusion would be wrong because the market is very vibrant and competitive. The price does not seem to be the main argument for choosing the offer, but rather the availability and the service itself. The reasons given by a large number of suppliers in response to enquiries about fleet numbers and price models also show that this is not the case. Many providers did not want to publish these numbers because they feared that they would be at a market disadvantage compared to their competitors.

A forecast for the sharing market is very difficult due to its high dynamics. For one thing, it will be exciting to see whether the providers of the established shared mobility types will continue to focus on optimising their services, or whether they will also have to increase (or possibly reduce) their fleet numbers. Furthermore, the development of e-kickboard sharing can be observed with interest. It is obvious that the current percentage development cannot be sustained. It remains to be seen, however, whether there will also be a stable supply of e-kickboard sharing.

« Shared-Mobility has established itself in the market. Because of the current discussion about environement and the wish to be more flexible in mobility in the cities. Sharing providers could profit strongly this year. Regarding the future development in traffic, Shared-Mobility will remain an important offer. »

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