

2018
URBAN MOVE
REPORT

URBAN MOBILITY
FROM A HUMAN SCALE
– PROMOTING AND
FACILITATING ACTIVE
TRAVEL IN CITIES

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CONSIDERING
THE POSITIVE IMPACT
ON THE CITY AND ITS
INHABITANTS, ACTIVE
TRAVEL MODES SHOULD
BE PRIORITISED AND
HAVE THE BEST
INFRASTRUCTURE.

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1. INTRODUCTION

Stockholm, October 2017. In a competition to cross the city by car, public transport and e-bike, three reporters from the daily newspaper Dagens Nyheter start the trip at the same time, travelling from the city district Hammarby to their office. The winner?

The reporter traveling by e-bike. The competition was repeated the next day using a different route – from a Stockholm suburb to the city centre. The public transport traveller won this time because the destination was close to a subway station – but the cyclist was not far behind. The cyclist experienced some inconveniences, with inattentive car drivers, pollution and lack of signposts making the bicycle trip more difficult than it should have been. The car never won. Nevertheless, the bicycle's performance in these competitions illustrates the advantages and potential of this transport mode in a city environment.

Cyclists and pedestrians are so called vulnerable road users who encounter urban space that is not inviting and at times unsafe or even dangerous for them.

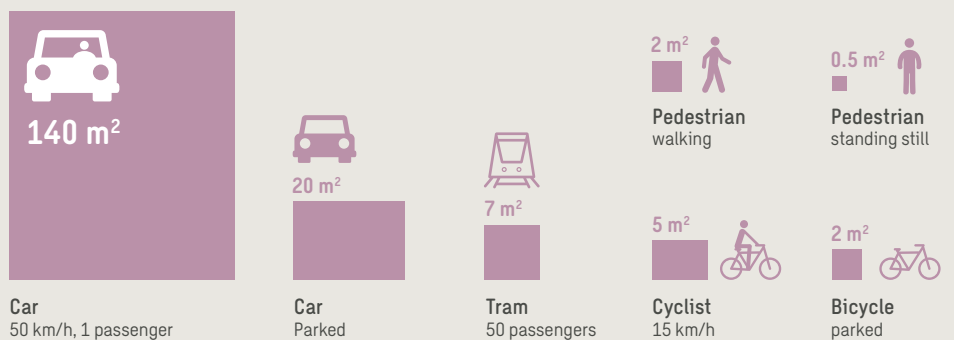
The potential of bicycle and pedestrian travel in the city has been underestimated in past decades and, as a result, there has been some deterioration of facilities and public space availability for these road users. However, in recent years the value of these transport modes has gained recognition and is being prioritised much more highly in cities' mobility policies.

In working to improve conditions for city walking and cycling, city planners and decision makers face challenges to transform infrastructure and change policies. At the same time, bicycle use in particular is developing rapidly thanks to new technology: modern bike sharing systems ensure better availability, electric bikes extend the radius of action, and more and more bicycle varieties (e.g. cargo bikes) are available to meet cyclists' needs. Pedestrians also have better facilities and helpful aids such as smartphone apps and maps.

Facilitating and promoting these active travel modes in cities has multiple positive effects:

- Reduces the transport systems' carbon footprint and other pollution with harmful effects on inhabitants, while also benefiting travellers' health through physical exercise, as illustrated by the “active travel concept”, often used in the UK to emphasize the importance of these travel modes for an active and healthy lifestyle.
- Cycling and walking infrastructure require much less city space than cars and car infrastructure (e.g. streets and parking), while also improving traffic flow efficiency. Active travel modes are well suited to city environments, where space is scarce and mobility is of great importance.

Figure 1. Space claimed by various travel modes. (Source: Municipality of Amsterdam)



- The economic benefits of cycling and walking are of growing interest and should not be underestimated – cyclists and pedestrians, for instance, make a substantial contribution to retail profitability, since strolling around and passing by shops increases the possibility for shopping.
- Walking and cycling infrastructure is, to a great extent, public and accessible space that is well adapted for city residents and visitors – and therefore helps meet the need for liveable and sociable city areas.

Cities worldwide continue to grow at a fast rate, presenting challenges when it comes to accessibility, liveability and sustainability. The benefits of mobility on a human scale, presented above, are therefore of increasing importance. To make our cities future-proof, city planning should focus on ways of promoting cycling and walking.

2. FOUR PERSPECTIVES ON CYCLING AND WALKING



2.1 THE IMPORTANCE OF THE BICYCLE IS GROWING

Although physical conditions are quite similar in much of Europe, the actual position of cyclists and pedestrians in city networks differs between countries. Denmark and the Netherlands are examples of countries with a strong tradition of cycling and high-quality infrastructure, where cycling is a “normal” daily activity. Other countries have a much lower share of bicycle use. In some countries cycling is viewed more in terms of “sportiness” (as in the UK), whereas in other countries the low-cost aspect dominates. The different results of a Google search of “cycling” in various languages speaks for itself. Results for “fietsen” (Dutch) have a strong focus on everyday cycling, while results for “cycling” or “cykling” (Swedish) have much more emphasise on the sports dimension.

Table 1 shows the degree of bicycle ownership in European cities. There are large differences, with the Netherlands leading in the number of bicycles per capita. It seems that bicycle ownership is most common in countries where cycling is perceived as an everyday means of transport. However, the absolute number of bicycles is high in some other countries, such as Germany, which is the largest bicycle country by numbers.

Table 1: Bicycle ownership in several European countries. (Sources: see references page 37)

Country	Inhabitants (million)	Bicycles (million)	Bicycles/Inhabitant
Netherlands	17	22	1.3
Denmark	5.6	4.6	0.8
Germany	80	67	0.8
Sweden	10	6.7	0.7
Finland	5.5	3.5	0.6
Belgium	11	7.0	0.6
UK	65	28	0.4
France	67	23	0.3
Spain	49	9	0.2

Table 2: Modal share in urban areas. (Sources: see references page 37)

Zooming in on the role of bicycles in cities also reveals major differences. Table 2 shows the breakdown of urban traffic by various transport modes in European cities with different characteristics.

Modal share	Amsterdam (2015)	Helsinki (2016)	Oslo (2016)	London (2014)	Copenhagen (2015)	Düsseldorf (2015)	Paris (2016)
Walking, %	23	37	18	21	19	28	48
Cycling, %	36	10	8	2	29	12	2
Pub. Transp., %	16	30	36	45	18	18	36
Car, %	24	22	36	31	34	41	13
Other, %	1	1	2	1	0	1	1

Bicycle use is becoming more prevalent in most cities. This is the case in cities where cycling is already prominent as well as in cities where cycling has traditionally had a minor role. Table 3 shows some examples of this development.

Table 3: Development of bicycle use in urban areas. (Sources: see references page 37)

City	Bicycle development
Amsterdam	Number of trips per day slightly exceeds increase of population and rose from 600,000 in 2006 to 670,000 in 2014
Rotterdam	Bicycle use on main streets increased from 55,000 per day in 2007 to 75,000 in 2014
Helsinki	Number of cyclists passing the border of the city peninsula increased from 20,000 per day in 2005 to 30,000 in 2015
London	Increase of bicycle use from 2005 to 2015 of 61 per cent
Paris	Increase of bicycle share from 1.3 per cent in 2001 to 3.0 per cent in 2010

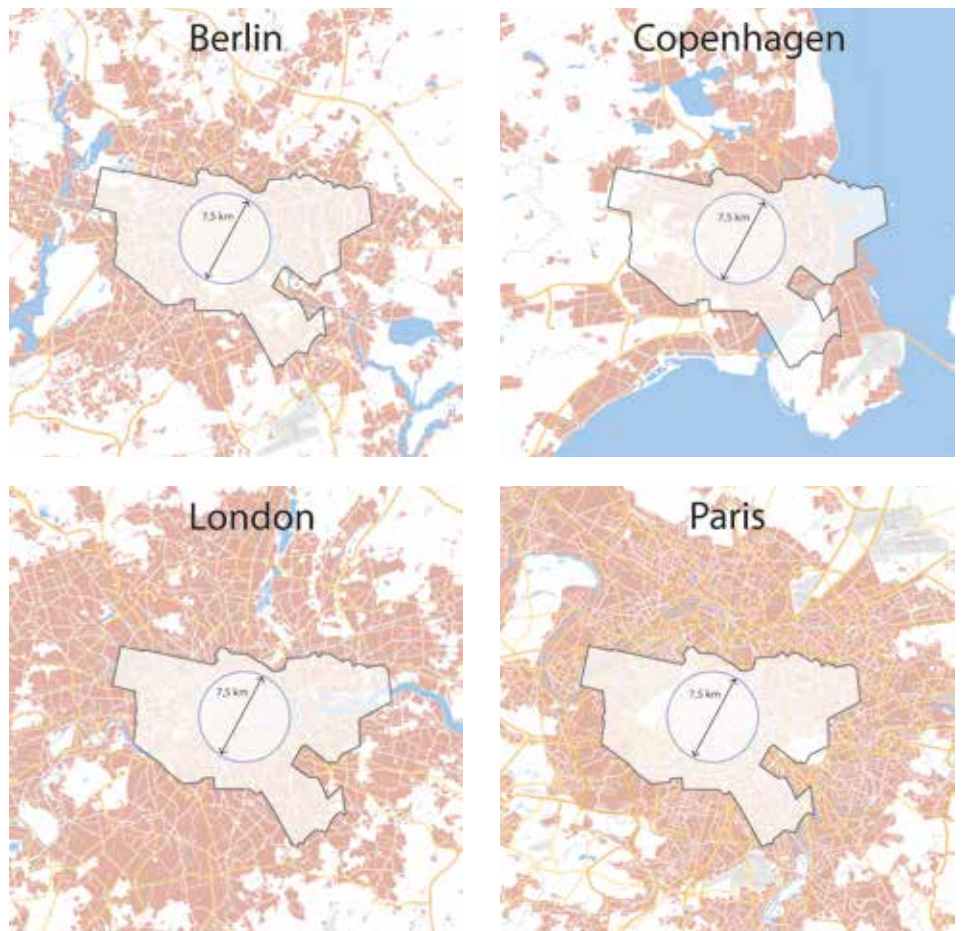
It can be difficult to find good statistics for making reliable international comparisons on bicycle use and facilities for bikes and pedestrians. Better and comparable data can help improve the position of active travel modes in all urban areas.



2.2 EUROPEAN CITIES: DEVELOPMENT AND MOBILITY

European cities have experienced substantial growth in recent decades. The Urban Insight report “Running to Stand Still – the Role of Travel Time in Transport Planning” clarifies that the size of a city is often closely related to the accessibility and speed of its main transport system. Some cities such as Amsterdam and Copenhagen are known as “bicycle cities”, and this may be an indication of their size. Other cities may be considered too large for cycling, but the size of cities is no reason not to cycle. The question is if Copenhagen and Amsterdam are cycling cities because they are small, or are they small because people cycle? A comparison of Amsterdam with four other European cities (as shown in Figure 2) provides additional insight. To place European cities in perspective, the municipality of Amsterdam created a tool to show the size of other cities in relation to Amsterdam City borders.

Figure 2. Amsterdam municipal borders as compared with Copenhagen, Berlin, London and Paris. The generally accepted regular cycling distance is 7.5 km. (Source: maps.amsterdam.nl)



We can conclude that Amsterdam and Copenhagen are approximately the same size and that the agglomerate of Paris, Berlin and London out-scale both of those cities. However, according to Dutch standards, all of the busy city centres in Paris, Berlin and London are within biking distance from the surrounding urban area. Although larger cities are more structured around public transport combined with walking to and from stations, the bicycle can play a role in all cities' mobility.

The total length of cycle paths in European cities (table 4) in relation to city size provides insight into the way streets are designed, but does not seem to fully reflect the current position of bicycles in the modal share. There appear to be opportunities for bicycles to play a larger role in some cities.

Table 4: Length of cycle paths according to several sources, in relation to city size. (Sources: COWI, 2017)

City	Total length of cycling infrastructure (km)	Size of the city (km ²)	Km cycle path per km ²
Amsterdam	767	220	3.48
Stockholm	760	188	4.04
Berlin	1,433	892	1.6
Vienna	1,222	414	2.9
Helsinki	1,200	185	6.48
Copenhagen	416	88	4.72
Paris ¹	700	105	6.66

1) Within Boulevard Périphérique.

So what did Amsterdam and Copenhagen do to end up being world-renowned bicycle cities? Simply put, they just did it. They drastically changed their priorities to favour cycling and walking, with many years of tough decision making resulting in cities with a cycling modal share of at least 30 per cent. Vulnerable road users were acknowledged and urban planning focused on walking and cycling. The cities also expanded their ambitions. Copenhagen, for example, specified a goal of being known as the world's best city for cycling – a goal they have achieved, according to several studies. This type of ambition, coupled with persistent efforts, creates other advantages and synergies in terms of city branding and tourism, in addition to the sustainability aspects mentioned above.

2.3 MORE DEDICATED SPACE FOR PEDESTRIANS

Walking is the most efficient, flexible, clean and healthy way of travelling and almost always represents one or multiple parts of a journey. Most European cities have a connected, city-wide network of pedestrian pavements and footpaths. Differences are found in pavement widths, means of crossing roads, quality of walkway surfaces, and accessibility for the disabled. A city's "walkability fabric" is also important – the structure of the pedestrian network and the directness of connections.

Today, an increasing amount of public space is designated as pedestrian-only: squares, streets and parking spaces are transformed into safe walking zones and attractive streets. An emerging issue may be separating cyclists from pedestrians. The two groups are often treated as equal in car-dominated cities or streets. This is unsafe due to speed differences, especially with the rising popularity of e-bikes. In order to make both walking and cycling safe and comfortable urban transport modes, dedicated footpaths and bicycle paths are crucial parts of the city network.

The economic aspect is also important. Cities benefit economically from creating pedestrian areas, beyond having a cleaner and attractive city and healthy inhabitants. Pedestrians and cyclists consume goods and services purchased in local shops and restaurants, and may even spend more money than motorists (Elly Blue, 2016).



2.4 SAFETY FOR VULNERABLE ROAD USERS

With increased pedestrian and bicycle traffic, an increased focus is needed on safe conditions for these vulnerable groups.

Statistics on pedestrian and cyclist road accidents show two tendencies. First, most casualties involve single accidents (e.g. sporting accidents and slippery roads in winter conditions). Second, the stronger the position of cycling and/or walking, the fewer cyclists are killed or seriously injured. Figure 3 illustrates this based on the results of OECD research. There is most likely a two-way causality, meaning that it is possible, and also desirable, to create self-reinforcing dynamics – improved safety conditions increase the number of active travellers, which in turn has a positive effect on safety.

The goal for city planners must be to increase and ensure the presence of pedestrians and cyclists in well-designed urban streets through better infrastructure and maintenance, separated cycle paths and “traffic calming” (example on page 20).

Figure 3: International comparison of bicycle travel and fatalities. (Source: OECD Cycling Health and Safety)



3. HOW TO IMPROVE THE POSITION OF PEDESTRIANS AND CYCLISTS IN CITIES



3.1 LESSONS FROM CITIES ACROSS EUROPE

Today, cities throughout Europe are investing in space for pedestrians and in connected networks of dedicated bicycle paths, reclaiming space from cars and separating cyclists from motorised traffic.

Examples from various countries illustrate this. In several German cities, bicycle paths are improved to create better conditions for cyclists. Cities in the UK redesign streets to create attractive bicycle routes: quiet streets are connected to create bicycle-friendly routes through the city, mini-Hollands are created as pedestrian and bicycle-friendly boroughs.

HELSINKI, FINLAND

Cycling in Helsinki has doubled since 1997 (Helsinki Bicycle Account 2017, City of Helsinki, 2017). The development of a high-quality bicycle road network (“Baanas”) and a well-functioning bike sharing system contributed to this success. Helsinki’s bike sharing system had 500 bicycles and 50 distribution stations in 2016, with 400,000 trips made during the cycling season (May – October 2016). In 2017 the system was expanded to 1,400 bicycles and 140 stations, gaining substantially more users. In 2017 every bike made 6 trips per day on average.

EDINBURGH, SCOTLAND, UK

The city has elaborated on the economic and social returns from active travel (City of Edinburgh: Active Travel Action Plan – Refresh, 2016):

- Good walking environments can encourage people to linger and spend more on consumption. Return on investment was determined by the UK Department for Transport, which found that investment in cycling generates an economic return of around £3 for every £1 invested.
- Social benefits: when people walk and cycle around their neighbourhoods they are much more likely to meet and interact, creating community cohesion. People walking and cycling provide “social supervision” that improves safety and security in the streets.

LONDON, UK

The planning of Cycle Superhighways is an interesting example of the way high-quality bicycle routes can be developed in dense, existing urban areas. This is done by creating dedicated infrastructure along main routes while reducing the number of car lanes, and by using quiet parallel routes with mixed traffic. An impressive example is the East-West Cycle Superhighway, visualised in Figures 4, 5 and 6.

Figure 4: Illustration of Cycle Superhighway planning in London's existing road network. (Source: Transport for London)

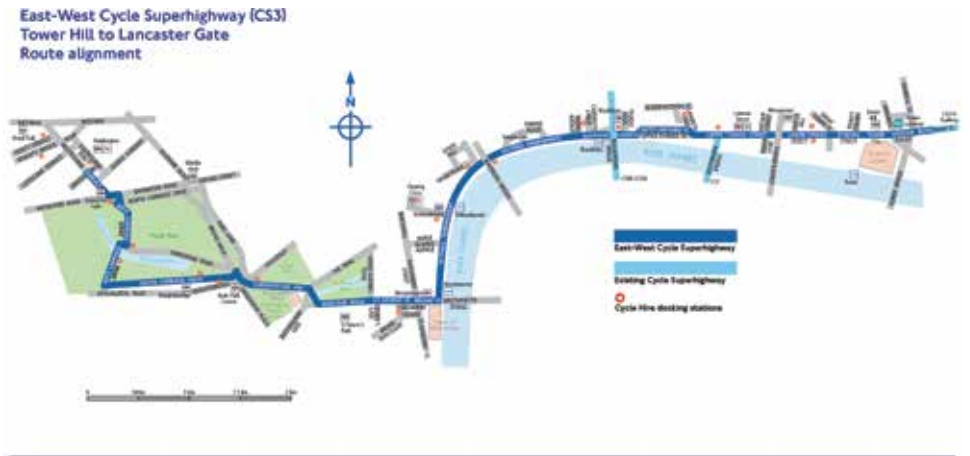


Figure 5. East-West Cycle Superhighway (CS3), before (to the left) and after (to the right). The 4-lane, 2-direction road with parking lane made way for wider footpaths, a 2-way cycle path, 3 eastbound car lanes and 1 westbound car lane. (Source: Google Street View)

To make the route safe for cyclists and other road users, the city created:

- An adequately segregated, two-way cycle track to separate cyclists from motor traffic.
- Junction innovations including early start and safe two-stage right turn facilities for cyclists.
- Expanded pedestrian space with widened footpaths, traffic islands and bus and coach stop waiting areas.
- Improved and new pedestrian crossings.

Figure 6: Cyclists on London's East-West Cycle Superhighway (CS3). One car lane has been turned into a cycle path. (Source: Transport for London)



DÜSSELDORF, GERMANY

Düsseldorf is an example of Germany's many strongly car-oriented cities where improvements to pedestrian and cycling infrastructure are being seen. Figure 6 shows an example of a new road design with improved bicycle space.

Figure 7. New road design in Düsseldorf, with space for bicycles.



New goals are being set in countries like the Netherlands and Denmark, where cycling in particular already represents a significant share of urban mobility, to make cycling even more competitive with car use in order to reduce traffic congestion. This brings with it a challenge of attracting new user groups to cycling – e.g. by referencing the new e-bike possibilities and emphasising health advantages.

In Copenhagen, cyclists during rush hours are prioritised over cars using a “green wave” between traffic lights that aims at a more homogenous speed pattern and a smooth and safe cyclist flow.

Figure 8. Street signal for a green wave cycle track in Copenhagen.
(Source: Copenhagenize)



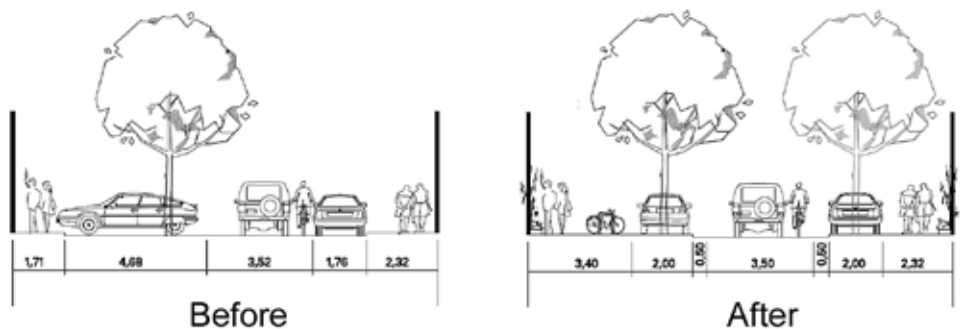
3.2 COMING FULL CIRCLE

Figure 9. Street in Utrecht transformed into a “bicycle street” where cars are guests. Upper photo is the old design, below photo the new design. Notice the red asphalt and parking solution. (Source: Google Street View)

Increased bicycle use presents a new challenge: cycle paths are becoming too narrow to handle all users and safety is becoming an issue. Part of the solution is to bring cars and cyclists together to share the same space again, but now with cyclists having priority and cars being “guests” on these “traffic-calmed” streets. We have basically come full circle, with cars and cyclists once again using the same space – but on the terms dictated by active travel modes.



Figure 10. Street profile of the “bicycle street” in Utrecht, before and after. Notice the space saved by altering parking direction – creating a wider road, a wider footpath and more space for trees. (Source: Municipality of Utrecht)



An interesting initiative was implemented in Amsterdam: traffic lights were turned off at certain road junctions in an attempt to improve traffic flow for cyclists. The results during a three-month trial period were so positive that the traffic lights were turned off permanently and were in some instances removed altogether. By letting cyclists sort things out for themselves, the City of Amsterdam managed to cut waiting times by 50 per cent without an increase in accidents.

Figure 11. Alexanderplein in Amsterdam with traffic lights on (upper left), during trial period with traffic lights turned off (upper right), and with no traffic lights (below left). (Source: Cyclomedia)



Figure 12. Marco te Brömmelstroet, Associate Professor at University of Amsterdam.



Marco te Brömmelstroet, Associate Professor in Urban Planning at the University of Amsterdam, is supportive of the measures being taken by the City of Amsterdam: “As soon as cyclists and pedestrians dominate traffic, external rules (traffic laws) can be phased out and mutual interaction, exchange of offers / agreements, and negotiation can become central. In short, the human dimension gains precedence. This means that a lot of “traffic space” can once again be set up primarily as a public space.”

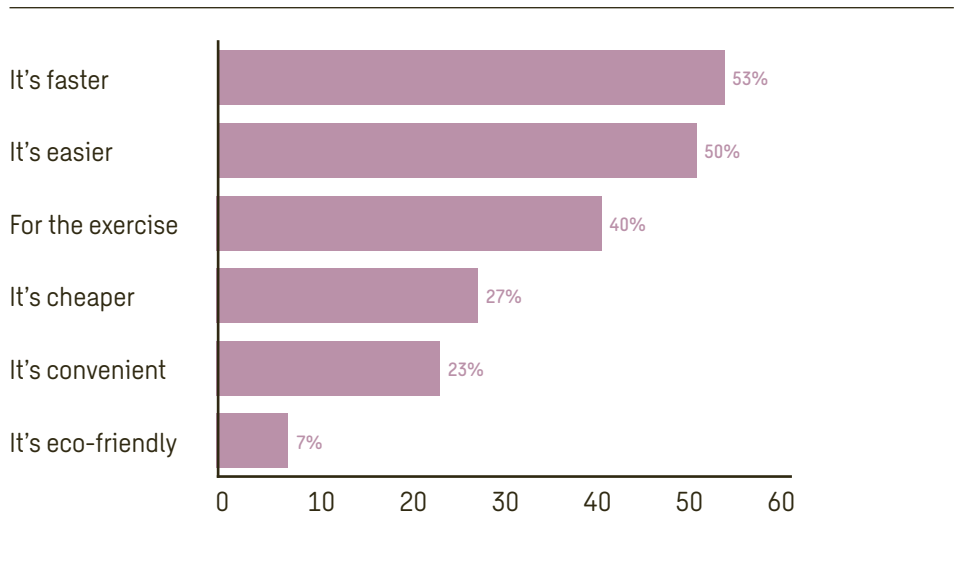
The significance of cycling in the mobility spectrum is developing. Where cycling has traditionally been viewed as an inexpensive and simple means of transport, we now see an emphasis on active living, health and sustainability, combined with improvements in accessibility and traffic congestion.

4. BENCHMARKING FROM A CITIZEN PERSPECTIVE



Cycling and walking as active travel modes are of great importance in creating liveable and accessible cities and are gaining a new position in the mobility spectrum, in urban public space, and in urban infrastructure. While it is important to highlight and develop various parts of the transport system, it is also crucial to maintain focus on the needs of people as travellers. The City of Copenhagen asked cyclists why they prefer the bicycle to other means of transport (Figure 13). Speed and simplicity emerged as the top reasons.

Figure 13. Reasons many Copenhageners prefer cycling to other means of transport. (Source: City of Copenhagen)



In the following examples, we look at fictitious people living in various European cities. The examples are offered for instructive purposes and to highlight the importance of planning cities with a clear citizen perspective.



KOEN, AN ELEMENTARY SCHOOL STUDENT FROM THE NETHERLANDS

All over Europe, elementary school children like to play outside in their streets and neighbourhoods, and they attend schools located near their homes. During their first school years they are accompanied when outside on the street, with adults making sure they are safe in traffic. As they get older, they go to school or visit nearby friends and family and become traffic participants themselves. Koen is a 10-year-old boy living in Breda, a mid-sized city in the Netherlands. He takes his bike to school because that is the fastest way to get there. He has to cross a busy street to do so, but there is a safe crossing and his parents have taught him to be careful. He needs to be most careful as he nears his school – there are many cars on the road near the school, with parents driving their children to school because they think it is too dangerous for children to walk or cycle. There are warning signs for cars rather than an attractive layout for children, which seems the wrong way round to Koen. He hopes more of his friends' parents will choose not to drive, which would make the traffic situation around his school safer and more pleasant.



LISA, A YOUNG URBAN PROFESSIONAL FROM GERMANY

Lisa recently finished her studies at Munich University and is happy to have found a job in the city and an apartment to rent in the popular Maxvorstadt area. As a student she lived close to the university, but now her trip to work is somewhat longer (around 5 km). With the salary from her first job and with rent to pay, she cannot afford to buy a car and actually does not even consider doing so.

Lisa does not need to spend money on owning a car, as there are plenty of options to use shared transport modes. She can find all the transportation she wants using her smartphone and the advanced MVG app, provided by the public transport authority and the local government. The app provides information on shared cars, shared bicycles and public transport. Just before leaving home for work she reserves a shared MVG bike, picks it up at the station on her streetcorner and rides off. Cycling to work in the morning is refreshing and healthy, and Lisa is pleased not to be adding to city pollution.

But cycling to work also presents challenges. Some cycle paths are on the pavements and Lisa has to be very careful not to collide with pedestrians. Many cycle paths are narrow and major road junctions are often a challenge, especially when she needs to turn left. Lisa hopes that the cycle paths will be improved as more people choose to travel by bike, making her journey safer and more comfortable.



KNUT, A RETIRED ENGINEER FROM DENMARK

Knut is a retired engineer living in Copenhagen. He owns an electric bike with a cargo box and uses it every day. The electric engine helps when he cycles against the wind, uphill or in bad weather. He likes to do his shopping with his cargo bike, which has enough space for all his needs. Cycling also helps keep him fit. Knut sometimes goes fast on his e-bike, and has noticed that not all road users realise that his bicycle is electric and that he is moving faster than expected. One of Knut's friends recently had an accident with his e-bike that was caused by a car driver underestimating the bike's speed. Knut hopes that car drivers will become more used to faster bikes so their judgement at road junctions will be improved. Although he uses his bike for almost all his trips in the city, when making longer trips he is sometimes worried that his battery will run out and he does not like to use the bike without the extra power. Charging points for public use would be helpful and would give Knut peace of mind. Older e-bikes in particular can have a shorter electric range due to loss of battery power over the years.



KAREN, A YOUNG MOTHER FROM THE UK

Karen lives with her husband Rory and their 4-month-old baby, Alex, in Manchester, in an area popular with young families. Like most areas in Manchester, the area is planned and built for cars. There are many one-way roads with parking strips on both sides of the road and, since motorised vehicles are the only users on these wide lanes, speeds are high.

Luckily, the area has many parks and playgrounds to escape the busy and dangerous roads, so Karen takes Alex in his pram on most days to enjoy the green areas, meet up with friends, or just relax. But getting there is not as relaxing as being there. Crossing the roads is a particular challenge. Being young, healthy and without physical disability, Karen is able to cross the streets safely – but she worries that Alex will be walking and riding his own “vehicle” on these pavements in a few years (albeit accompanied by an adult in the beginning). Still, Karen likes to walk and she wishes there were more places to walk to, like a neighbourhood shop for their daily needs. But those shops are just too far away for walking, so getting in the car is the best option.

HOW CAN CITY LIFE FOR INHABITANTS BE IMPROVED?

The stories above are about active city inhabitants and the ways they move around in their daily environment. The stories also show what cities can and are doing to improve residents' options for travelling in a safe and attractive way. Even so, as pedestrians and cyclists they remain a vulnerable group in the urban traffic system. Taking the next step in providing optimal facilities will reward their choice of travel modes and help cities achieve their goals.

For Koen, the elementary school child, the best improvement may be influencing the behaviour of the parents of other schoolchildren and encouraging them to leave their cars at home and switch to active travel.

Lisa from Munich appreciates and relies on satisfactory infrastructure and a modern bike sharing system that provides first-rate information on availability. She thinks that having more cyclists would lead to improved infrastructure – but city planners should turn that on its head and start with infrastructure.

Knut, the engineer in Denmark, may be best served by the creation of calm traffic areas with no cars speeding nearby. He would also appreciate having better charging facilities to ensure that he can always reach home.

Karen, the young mother who likes walking, would also appreciate improved options for street crossings, and she cares deeply about the situation for the future generation. Everyone involved in creating cities of the future should focus on this: providing the best infrastructure and facilities to make active travel a great way to move around.

5. LOOKING AHEAD – CONCLUSIONS AND RECOMMEN- DATIONS



Cycling and walking are active travel modes and are considered “remedies” for cities in their policies aimed at achieving a safer, more liveable urban environment with cleaner air, less congestion and more space for people. Employers notice less sickness absenteeism on the part of cyclists. Shops view cyclists and pedestrians as an important customer group. In some European countries, the bicycle is considered a tool for reducing traffic congestion as an alternative to car use. Electric bikes extend the range for which bicycles can replace car trips.

Cyclists and pedestrians are highly valued “mobilitists” in our cities, establishing and ensuring mobility on a human scale.

Figure 14: Busy traffic in Copenhagen.



5.1 INCREASING BICYCLE ABILITY

Bicycle availability is increasing through the development of ICT-based¹ solutions for bike-sharing, smart locks and travel information. The new systems enable local and regional governments and other actors to make bicycles more available to citizens. For instance, employers can provide office bikes and programmes to buy (e-)bikes for their employees. Local and regional governments can implement programmes to encourage and support their citizens to try, buy, use and share bicycles. All cities should investigate different strategies and measures to increase bicycle availability.



5.2 IMPROVING THE POSITION OF THE CYCLISTS AND PEDESTRIANS

With all of the positive contributions made by cycling and walking to city development and functionality, we may expect these active groups to be given a prominent position in cities' mobility policies and infrastructure. It must be noted that, despite the evidently positive development in many countries, the position of pedestrians and cyclists in many cities needs to be greatly improved. This is true for all countries. Cities in countries with a relatively low share of active travel need to improve the position of these travel modes. Here, the challenge is to identify the best division of public space among various user groups. Solutions to improve comfort and safety will require a thorough analysis of the interests of the various mobility groups.

In countries where walking and cycling are a more prevalent part of urban mobility (e.g. the Netherlands and Denmark), new challenges arise in dealing with sharply increased bicycle use, the rising number of e-bikes and the greater diversity of bicycle types – all of which cause congestion on bicycle paths and make cycling less safe.

To truly take active travel to the “next level” in urban policies, related campaigns such as bike sharing, bike use reward programmes and promotions are needed.

Developing a method of urban planning that prioritises the bicycle and the pedestrian from the outset, in all phases of the planning process and for all types of urban spaces, will create the best starting point to position these travel modes.

1) Information and Communication Technology

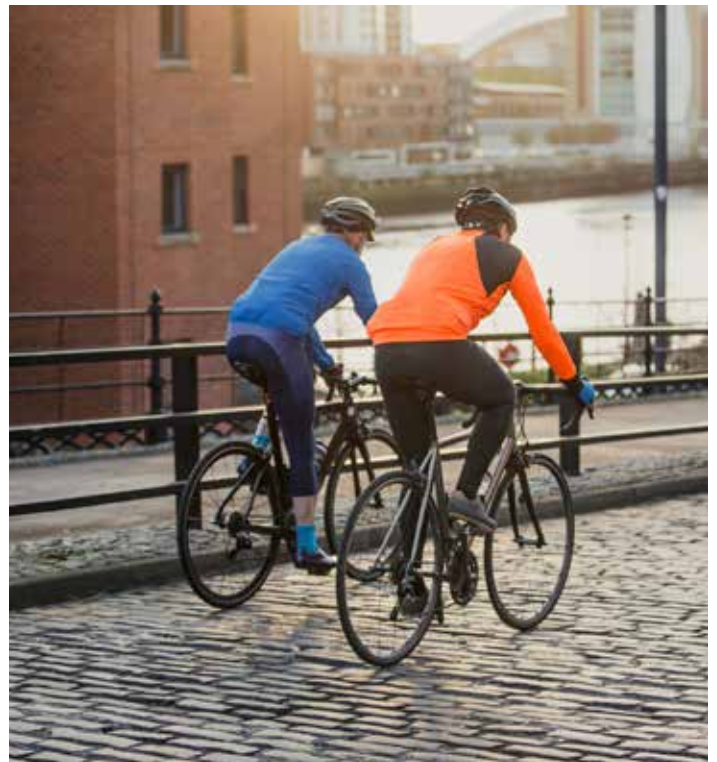
5.3 DEVELOPING SAFE INFRASTRUCTURE

It should be kept in mind that, although active mode travellers may be great in number and may even dominate a city's traffic (see the busy cycle paths in Amsterdam and Copenhagen and the dense pedestrian flows in city centres), they are still vulnerable groups. The examples of fictitious urban residents presented in section 4 emphasise the need for safe infrastructure. Consequently, considering the positive impact of active travel modes on the city and its inhabitants, active modes should have the best infrastructure.

Bringing the best infrastructure for active modes to cities may involve making fundamental choices regarding allocation of public space, which is very often still dominated by the car. This presents challenges for all cities. Cities with low bicycle and pedestrian use should formulate goals to accelerate infrastructure development, convert car lanes into space for bicycles and pedestrians, create dedicated cycle paths, and redesign crossings for safer active mode travel.

Cities in countries where active travel modes already have a strong position should aim at the "next step" in developing their transport networks to provide the greatest comfort and capacity for increasing bicycle flows. This will also require (further) conversion of car infrastructure to provide safer and more comfortable space for bicycles and pedestrians, as well as redesigning crossings to expand capacity and comfort for active modes. Allowing various transport modes to share the same space, but on active travel mode terms, will further encourage cycling and walking.

Improved signposting contributes to the comfortable movement of active travellers through the city. Destinations both near and far should be signposted to support active short distance travellers (cyclists and pedestrians) and longer distance travellers (e-bikes) in navigating the urban area.





5.4 CHANGING BEHAVIOURS

But the transition of cities into bicycle- and pedestrian-friendly environments should not be only about infrastructure. Influencing the behaviour of all travellers through promotions, bike sharing programmes and bike use reward programmes will go even further towards achieving the goal of reducing the carbon footprint of tomorrow's resilient cities.

There may be political objections to this transformation. But this development represents a major opportunity to make substantial improvements to traffic safety, reduce the carbon footprint, and improve public space quality on a human scale. Cities should clearly connect higher goals for society, such as health and sustainable development, with mobility and traffic. This provides arguments in the political arena to address motorists' objections.

It can be difficult to find reliable data and statistics on bicycle use and bike and pedestrian facilities. Better and comparable statistics and data will allow cities to benchmark and to challenge the status quo, which will go a long way toward improving the position of vulnerable groups in all urban areas.

Bicycles will play an important role in future mobility schemes, in which mobility providers will serve the needs of the (near) future's urban citizen. The planning of (new) urban areas will be increasingly focused on facilitating these developments and services.

Through promoting active modes of transport we can achieve more environmentally friendly, healthy and connected cities. Making European cities more pedestrian- and bicycle-friendly will remain a top priority for urban planners in coming years.

6. ABOUT THE AUTHORS



JEROEN QUEE is a Mobility Expert specialised in Sustainable Mobility Solutions and Innovative Transport Systems. Since the start of his Sweco (formerly Grontmij) career in 1992, he has had a keen interest in the interaction between urban development and mobility. In his view, this interaction is necessary to ensure that cities remain enjoyable and healthy places in future. Jeroen's projects involve research, policy making and feasibility studies. His customers are primarily local governments, urban developers, knowledge institutes (e.g. CROW Netherlands) and automotive companies (e.g. Daimler Germany).



HAYE BIJLSMA is a Mobility Advisor specialised in Bicycling. Before joining Sweco in 2016, he worked for the City of Amsterdam as Bicycle team project manager with a primary focus on bicycle parking at and around public transport hubs. He closely monitors the shift in global cities' modal share and the measures taken by governments to promote different travel modes. In the Netherlands, Haye advises municipalities, during the initial planning phase, on improving conditions for cyclists with a focus on bicycle routes, safety and parking and encouraging bicycle use.

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ILLUSTRATIONS

Figure 1:

- Municipality of Amsterdam
<http://www.fietscommunity.nl/projecten/van-wie-is-de-stad/>

Figure 2:

- Self made, inspired by Municipality of Amsterdam (maps.amsterdam.nl)

Figure 3:

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Figure 4:

- Transport for London – Cycle Superhighways
<http://content.tfl.gov.uk/east-west-cs-overview-map-18-12-17.pdf>

Figure 5:

- Google Streetview, own selection

Figure 6:

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Figure 7:

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Figure 8:

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Figure 11:

- www.cyclomedia.nl (not public), own selection

Figure 12:

- Photo: Tessa van Overbeeke

Figure 13:

- Source: City of Copenhagen, presentation of traffic planning on 1st of September 2017 for Sweco delegation.

Figure 14:

- Sweco Denmark

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