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# ***GET ON THAT BICYCLE AND RIDE***

**A COMPARISON OF METHODS TO PROMOTE  
CYCLING IN THREE CITIES**



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Cover photo: London Critical Mass

## **Abstract**

Many problems in the urban environment would be eased should more people choose to cycle instead of driving cars and many cities have a pronounced wish to increase cycling. This essay explores how three such northern European cities, Gothenburg with 9% of trips made by bicycles, Malmo with 29% and Groningen with 60%, work with infrastructure and information to encourage a greater use of the bicycle in everyday urban transportation.

The cities have been compared using data from publications, interviews with key people and field observations. The comparative approach revealed that there are factors in the policies that appear to contribute to the widely varying levels of cycling in the three cities. We conclude that infrastructure design that puts the priority on bicycles rather than cars makes cycling more competitive. Such measures as making cycling quicker than driving and the provision of bicycle parking facilities at transport hubs extends the attractiveness of cycling for inter-city commuters. The compared cities have had different perspectives on information. The heavy focus on safety in Gothenburg is less effective in promoting cycling than the identity building efforts in Malmo. Finally we found that the integration of cycling policy into other policy sectors in the city hall seems to be beneficial for cyclists.

Key words: Urban transport, cycling, bicycle facilities, bicycle infrastructure, mobility

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# 1 Introduction

*In which we present the problematic field of urban transportation, the reasons behind this study and its aim. The chapter concludes with an outline of the following study.*

## 1.1 Background

In the first half of the 20<sup>th</sup> century the bicycle was a much more common mode of urban transport than it is today. Where are these thousands of everyday cyclists today? After the Second World War the ownership of private cars has increased continuously to today's level of more than six cars for every ten people in EU15 countries<sup>1</sup>. A great number of journeys that previously occurred by bicycle now are undertaken by car. In these times of increasing anxiety about climate change the question of environmental sustainability, in every aspect of our society, is of the utmost importance. Urban transport is just one of the sectors that needs to be reformed. The environmental problems caused by mass private car transportation in modern cities are many. Surely the bicycle can play a part in the resurrection of our cities to sustainable places?

The authors of this study are residents of the city of Gothenburg where there has recently been much discussion in the local media about the problems of air pollution<sup>2</sup> and congestion caused by traffic in the city. If more people were to cycle instead of drive a great number of these problems would be eased. This is not to say that the bicycle is the answer to all of the problems associated with urban transport but rather that it should be considered as an integral part of the solution. The basic premise of this study is that an increase in the proportion of people using the bicycle as a regular means of transport in urban areas is positive and should be encouraged as much as possible. This study compares two cities that have been especially successful in encouraging everyday cycling, Malmö and Groningen with Gothenburg.

This essay is concerned with cycling as a means of transport. That is to say the use of a cycle to get from one point to another. It is important to point out that this does not include cycling as a pastime or cycling solely as a method of keeping fit. The encouragement of cycling in our context is about methods of persuading people to either; replace their previous mode of transport, primarily private cars but also public transport, with the bicycle and encouraging those who already cycle to keep it up. It is important to make this distinction. Policy directed at promoting cycling where the actual physical activity of riding a bike is the aim, does not necessarily improve anything for everyday cyclists commuting to work. In some cases measures to encourage recreational cycling can be counterproductive to the promotion of cycling as a utilitarian means of transport. For example, facilities designed for recreational cycling tend to totally separate cyclists from motor vehicles on trails that often do not go anywhere useful. This can increase the assumption that cycling outside of the designated protected route is something dangerous<sup>3</sup>.

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<sup>1</sup> Banister David (2005)

<sup>2</sup> For a collection of articles see Miljöförbundet Jordens Vänner (2006)

<sup>3</sup> Cox Peter (2005)

## **1.2 Why promote cycling?**

So far we have defined what we mean by encouraging cycling but it is also important to briefly discuss why the bicycle as a means of transport instead of the car should be promoted by cities:

- Space is a crucial factor in cities. A bicycle takes up less space than a car, both whilst travelling on the road and parked. An increase in the number of trips by bike at the same time as a reduction in the number of car journeys would increase the road capacity and lessen the problem of congestion.
- Bicycles do not cause air or noise pollution. Here the benefits are not only locally improved health in the form of reduced traffic sound and ambient air pollution such as NO<sub>2</sub> and particles smaller than 10µm in diameter (PM10) but also globally due to the reduction of CO<sub>2</sub>. Minimising the risk of climate change is alone one factor that justifies a change to more sustainable modes of urban transport.
- The act of cycling is healthy as it provides the everyday cyclist with regular physical exercise.

All of these advantages related to the promotion of cycling give economic benefits to society. The Swedish national institute for the protection of nature (Naturvårdsverket) has calculated the economical savings that can be made by investing in cycle infrastructure. In a case study in the town of Linköping they find that certain investments would save society up to seven times the sum invested<sup>4</sup>. The level of savings possible to achieve by investment in cycle infrastructure varies from case to case but persuading people to change from car to bike has many economical advantages. The external costs related to car use disappear if a bike is used instead. Since the external costs of car use are highest in concentrated urban areas<sup>5</sup> investment to encourage cycling in cities is more likely to have a high level of remuneration. It is important to bear in mind that the investment must be effectively targeted and implemented. A new cycle path can be an enormous benefit for cyclists but a badly planned new cycle path can have little or no effect. Badly planned cycle infrastructure can even have a negative impact by discouraging cycling.

## **1.3 Aim and research questions**

The aim of this research is to explore how effective different planning strategies are in encouraging a greater use of the bicycle in everyday urban transportation by comparing two more successful cities, Malmo and Groningen to Gothenburg. This is not to say that Gothenburg is an unsuccessful cycle city. There can be a number of different reasons to explain the differences and we have tried to isolate certain key areas to concentrate on. Our choice of research questions has been decided so as to cover as many different aspects of cycle planning and promotion as possible in the limited time we had at our disposal. In other words the most obvious or apparent aspects of both hard and soft policy measures.

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<sup>4</sup> Naturvårdsverket (2005)

<sup>5</sup> Hultkrantz Lars (2000)

The key areas of cycle planning that we have compared are:

- What differences are there in the physical and spatial conditions for cycling?
- What differences are there in the overall cycling policy?
- What differences are there in the design of cycling infrastructure?
- What differences are there in the public information aimed at encouraging cycling?

## **1.4 Outline**

This concludes chapter 1 where the area, aim and research questions have been introduced. As we move on to chapter 2 we enter the world of mobility and cycling research. The chapter examine critical concepts, factors and previous research in the area. In chapter 3 we describe the methods of data collection and analysis we use in this study. Choice of cases, material and validity are also accounted for. The empirical data is next in chapters 4 to 6 in which the three cases are introduced and their respective policies are examined both with respect to hard policy measures such as infrastructure and soft measures such as information. Chapter 7 is a short summary of our observations in the three cities. In chapter 8 we compare the three cases in pursuit of similarities and differences in strategies to promote cycling. The closing chapter 9 is where we draw conclusions and present answers to our research questions as well as comment on areas in need of future research.

## 2 Theoretical framework

*Where concepts are defined, mobility research is discussed and actors/factors that may play a role are examined.*

### **2.1 Mobility – definition and aspects**

Mobility is the ability to overcome distances, rarely something we achieve for its own sake, it is a means to an end, or perhaps more specifically a destination. We live in a world with spatial separation of activities forcing us to move from one place to another. Geographic mobility or spatial mobility entails that an individual changes position in the geographic space.<sup>6</sup>

The concentration of services and the scattering of daily activities mean that spatial mobility is increasing among Europeans. The techniques of communication and transportation have also changed and become faster, quicker and more accessible enabling this development. The transport systems are integral to how far we geographically reach. While studies show that the average person undertakes more or less the same amount of trips and spend the same amount of time travelling today as they did a century ago, the distance covered has increased giving people a greater geographic reach. A wider reach gives more options when it comes to choosing not only work place but also where to shop and what leisure to pursue. At the same time the options are limited by the spread out structure of modern cities and lives. People need to reach wider as our lives today involve a number of destinations throughout the city and beyond. We become bound to our ability to reach further.<sup>7</sup>

### **2.2 An array of factors influence transportation choices**

When choosing mode of transport people have a number of basic constraints such as a shortage of time or limited economical resources. Time is a big factor; given the choice most people will chose the quicker mode. Individual, quick and flexible transport modes are preferred as they lessen time consumed on the journey and the waiting time. Other factors that affect choice are costs, even though there appears to be a rather large cost acceptance for car journeys, but also comfort and the ability to carry luggage of one form of another.<sup>8</sup> Another aspect that affects choice of transport mode is the size of the city, density is less important than actual area. A Swedish study shows that the proportion of cyclists is greatest in the medium sized towns in Sweden<sup>9</sup>. These towns are not especially dense but the smaller area means that every point in the town is within easy cycling distance. This is not the case in Stockholm and Gothenburg with long distances within the city.

When it comes to cycling, topography and climate also interfere. One should however not come to the conclusions that a rainy or hilly city is doomed to lack cyclists. In fact, people all around Europe cycle regularly despite various weather conditions. The climate is in any case not something that traffic planners can influence, at least not in the short term. What can be

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<sup>6</sup> Banister David (2000)

<sup>7</sup> Frändberg Lotta et al. (2005)

<sup>8</sup> Ibid.

<sup>9</sup> Vilhelmson Bertil (2005)

changed are practical aspects like speed and risk, and also subjective factors such as image, social acceptability and feelings of security.<sup>10</sup>

The European Commission sum up five initiatives that encourage people to purchase a bicycle or use it more often, as shown in table 1. The numbers are results concluded from interviews with cyclists, and show a big emphasis on physical infrastructure.<sup>11</sup>

*Table 1 Factors that encourage cycling, according to cyclists*

Cycling facilities, access, facilities, shortcuts and diversions for cyclists	70%
Restrictions to car traffic	28%
Supervised bicycle parking areas	21%
Promotion campaigns	11%
Hire or lease of bicycles	8%

*Source: European Commission (1999) p 11*

What we know about mobility and transportation choices gives us an indication that local governments can direct many different policies to encourage cycling. A Dutch scholar, Rietvelds has divided policies aimed at stimulating cycling into seven categories. One category is the *physical planning* policy, since the structure of a city and the functions within it lays out the distances and destinations that cause the need for mobility. Policies on *infrastructure* such as the provision of cycle routes, priorities and detours of different modes of transport also affect the attractiveness of cycling. Other policies that can have an effect on cycling include *regulation of transport* for example the creation of car free zones, *safety policies* such as minimizing accidents, improving lighting and measures to combat theft of bicycles. Also policies that concern *other modes of transport* either through traffic calming, detours or parking policy have impact on cyclists. Local governments are however not the only actors. Another category is therefore *organisational measures* stimulating other actors. *Financial measures* play a small part.<sup>12</sup>

Within the Netherlands there is a significant difference between cycle usage in different municipalities and a mathematical model<sup>13</sup> has been developed to calculate the expected level of cycling in trips per person per day. It finds that eleven specified factors explain as much as 73% of the variation in cycling. Most of the factors that affect cycling are obviously difficult for even the most ambitious of traffic planners to change such as weather and topography but some of the factors can definitely be adjusted by a willing municipality such as the cost of car parking and bicycle-car travelling time ratio. The study in question indicates that all in all 40% of the variation in cycling can be affected by planning.<sup>14</sup>

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<sup>10</sup> European Commission (1999)

<sup>11</sup> Ibid.

<sup>12</sup> Rietveld Piet (2001)

<sup>13</sup> Fietsberaad (2006) pp 12-14

<sup>14</sup> Ibid.

## **2.3 The debate on infrastructure**

There are a number of different types of cycle infrastructure and it is important to be quite clear what is meant. In this study we have chosen to use the following definitions; a cycle path is a separate path for cyclists. This can run alongside of a road or even have it's own course away from traffic. A cycle path is often shared with pedestrians with a range of different ways of separating, or not, bikers and walkers. By cycle trails we mean off-road tracks for recreational cycling, which are not the subject of this study. With cycle lanes we mean reserving part of the carriageway for cycles usually defined by on the road markings. When we use the term cycling route we mean a suggested or recommended course for cyclists regardless of how it is formed or segregated.

There are certain differences of opinion on the best ways to promote everyday cycling. One disputed area of cycle planning is the argument for or against separate cycle paths. An American researcher, Forester, has the view that separating cyclists from other traffic is more dangerous than allowing cyclists to share road space.<sup>15</sup> This is not as radical as it sounds. It would be highly impractical to construct a system of cycle routes in a city without some same level intersections with the road network. These intersections become conflict zones between the separated traffic flows. If instead the cyclist is sharing the road then these conflict zones disappear, as the cyclist is a part of the same traffic flow as other road users. Foresters theory has been criticized on the grounds that it doesn't appear to work. One critic, Pucher makes the case that the cities that have a comprehensive cycle network have a greater number of cyclists and a lower incidence of accidents than cities without cycle paths. Pucher suggests that Forester's view is based on the idea that cyclists are well trained with advanced cycling skills and are travelling at high speed. This group is a minority among cyclists. There is a larger group of cyclists travelling at more leisurely speeds that appreciate separated cycle ways.<sup>16</sup>

Regardless which of these gentlemen is most right, this disagreement shows that different cyclists prefer different types of infrastructure. Foresters view is based on riding at more or less the same speed as the motor traffic. Or to put it another way, using road space under the same terms and rules as other vehicles. It seems reasonable that he might choose a bike path instead if he could ride on it as safely at the same speed or faster than he could on the road.

On road bicycle lanes are in reality less plagued by accidents than off road bicycle paths are. However, the off road facilities are by many regarded as safer. This is particularly the case among those who either don't cycle often or have recently taken up cycling and possibly lack the self-confidence in traffic of a hardened cycle courier. One might therefore come to the conclusion that off road paths are one investment that could bring more people to their bikes.<sup>17</sup>

## **2.4 The safety paradox**

It seems reasonable to suggest that an increase in the number of cyclists in a city improves the general safety of the cyclists. Empirical data from a variety of cities around the world backs this up, as seen in figures 1 and 2. The figures show that both the total distance ridden and number of journeys is inversely proportional to the number of fatalities. This is a concept of

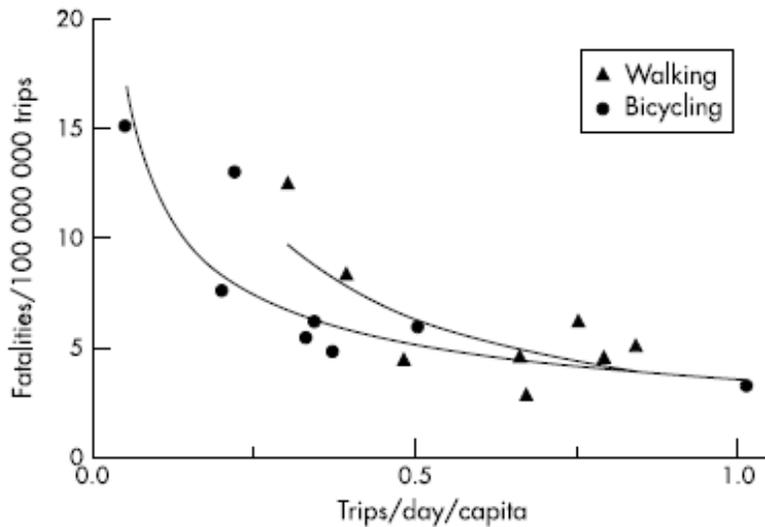
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<sup>15</sup> Forester John (2001)

<sup>16</sup> Pucher John (2001)

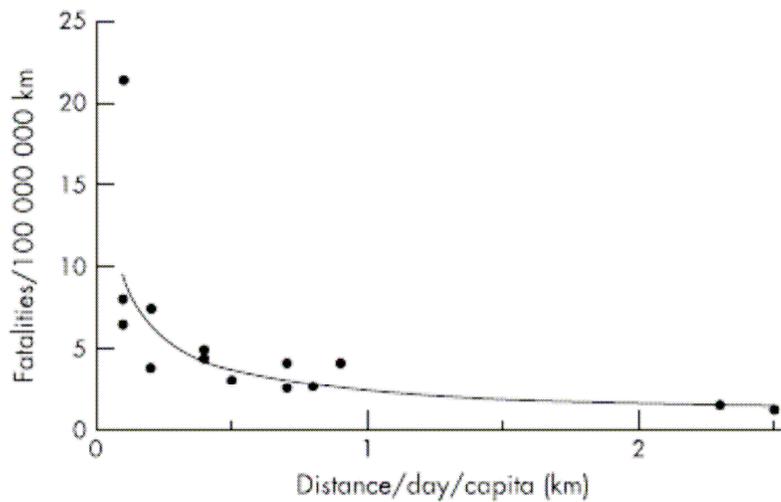
<sup>17</sup> Forester John (2001).

safety in numbers. A lone cyclist approaching an intersection is more at risk from other traffic simply because the cyclist is not expected. On the other hand if there is a constant stream of cyclists continually passing the same intersection other road users will be prepared and act accordingly.<sup>18</sup>



**Figure 1 The correlation between the number of trips and the fatality rate for walking and bicycling in eight European countries 1998**

Source: Jacobsen Peter Lyndon (2003) p 207



**Figure 2 The correlation between the distances cycled and the fatality rate in 14 European countries 1998**

Source: Jacobsen Peter Lyndon (2003) p 207

<sup>18</sup> Jacobsen Peter Lyndon (2003)

This leads onto the theory that one way of increasing the safety of cyclists is to induce a feeling of security rather than pointing out the dangers. If the citizens believe that a bike is an inherently safe mode of transport they are more likely to cycle regularly, leading to a tangible increase in cyclist safety. On the other hand placing too much emphasis on improving cyclist safety could induce the mind set that cycling is a dangerous business thus discouraging would be cyclists. This in no way means that safety is not a vital part of cycle planning and should be ignored. Rather that public information on bike safety should be toned down. A city policy focused on reducing the numbers of deaths and serious injuries suffered by cyclists, whilst being commendable, could be counterproductive to encouraging cycling if too much emphasis is placed on it in publicity.<sup>19</sup>

A study from Milton Keynes show that the likelihood of an accident is higher for those cyclists travelling on separated cycle infrastructure than for those riding in traffic on the road network<sup>20</sup>. Taken at face value this would suggest that building separate cycle paths is negative for cyclist safety. This is the paradox. As the figures in table 1 suggest, it is cycling facilities such as bike paths that are the major encouraging factor to persuade people to cycle. Where there is a comprehensive network of cycle paths more people cycle, which reduces the risk level for all cyclists. One explanation to the lower accident rates among cyclists on the roads could be that a cyclist who is prepared to ride in mixed traffic has a higher level of skill, is more concentrated and is used to and confident in traffic thus making them safer. Another possible explanation could be that cycle paths lull the cyclist into a false sense of security reducing their level of concentration.

This is not the only way to look at the problem. If there were no other kinds of traffic in a city than cyclists, it would be totally unnecessary to build separate infrastructure for cyclists. There is of course more traffic in a city than just cyclists. An alternative way to improve the sense of safety for cyclists could be to look at the other traffic in the city and steer that to the benefit of the cyclists. Instead of asking where cyclists want to ride, assume that cyclists want to ride everywhere and integrate the rest of the cities traffic with that.

## **2.5 Naked streets**

It seems that the arguments for cycle paths are strong but a new theory on traffic management is emerging and gaining weight. This involves taking away traffic controls and other related clutter in towns and cities. The problems with road safety are blamed on the separation of cars from pedestrians and cyclists allowing the cars to travel faster and providing a right of way for the driver travelling straight. This has been called apartheid traffic<sup>21</sup>.

If all the bike paths and lanes, pedestrian crossings, give way signs, traffic lights and pavements are taken away this creates a traffic milieu that is less predictable forcing drivers to slow down and pay more attention. This technique has been tried in Drachten Holland with positive results. The number of accidents has gone down and the speed of cars was reduced to around 30km/h. This speed reduction reduces congestion and somewhat surprisingly shortens journey times. The result is a living street encouraging more people to walk and cycle. This in

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<sup>19</sup> Cox Peter (2005)

<sup>20</sup> Franklin John (1999)

<sup>21</sup> Booth Philip and Lunnon Sarah (2005)

combination with better contact and communication between drivers and pedestrians improves the level of personal security.<sup>22</sup> This shortening of the average journey time by reducing speed limits is not as paradoxical as it at first seems. The major limiting factor for road capacity is intersections where two roads cross<sup>23</sup>. Reducing the speed increases the capacity of a junction allowing the traffic to flow more freely. The safe distance between two vehicles travelling in the same direction depends on the vehicles speed as the space needed to brake increases exponentially at higher speeds. The optimal speed for getting as many vehicles as possible through an intersection with a safe distance between them is around 32Km/h<sup>24</sup>.

## **2.6 Mobility management**

Whichever infrastructure one chooses there are more things to be said. In the recent years traffic planners and policy makers have been shifting towards softer questions, how to use the infrastructure. It is becoming evident that many of the problems associated with car traffic cannot be solved by repeatedly expanding roads. Building more infrastructures for cars has been proven to increase the amount traffic and thus the external costs.<sup>25</sup>

As a complement to the physical design, more and more cities are therefore bringing in tools enabling them to use the infrastructure more effectively, the objective being to reduce solo driver car traffic<sup>26</sup>. Instead of, as in traditional traffic planning see to the demands for mobility, mobility management seeks to influence the demand and achieve changes in transport behavior and attitudes. If the roads, paths and tramlines are the hardware, mobility management is the software with its emphasis on changing behavior and preventing unsustainable travel through information, promotion and education. This is not to say that cities and regions never have dealt with these questions before, but it is now more structured and often in cooperation with other actors. To achieve behavioral changes many actors need to be pulling together and this mean that Mobility Management integrates traffic planning with other areas and sectors such as environment and information.<sup>27</sup>

Methods used in Mobility Management include campaigns for cycling, support for local retailers, consultancy and advice to businesses<sup>28</sup>.

## **2.7 Problems with implementation**

As we have previously discussed the design of facilities for cyclists affects how effective they are. Another major problem is implementation and barriers that may occur to hinder or even totally prevent successful implementation. In a review of 61 measures to improve the sustainability of transport tried in various cities, only one of the measures did not come up against any barriers at all<sup>29</sup>. These barriers appear in various forms. According to the review

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<sup>22</sup> Ibid.

<sup>23</sup> Institutionen för trafikteknik, LTH, (1995)

<sup>24</sup> Berkovitz Aida (2001)

<sup>25</sup> Ljungberg Christer (2000)

<sup>26</sup> European Platform on Mobility Management (2006)

<sup>27</sup> REPORT MOMENTUM

<sup>28</sup> Persson Sara (2003)

<sup>29</sup> Banister David (2005)

the most common form of barrier to successful implementation is money or rather lack of it. 60% of the projects investigated met financial hinders. This resulted in 18% of the cases being unsuccessful. Other frequent barriers to implementation are political and social. This could be in the form of negative public opinion towards a project. For example any changes that restrict access by car to an area can stir up strong protest. The car lobby is one of the strongest in the world and have far more power than the fragmented cyclist organisations.<sup>30</sup>

## ***2.8 Attitudes to cycling and the bicycle***

The bicycle is more than just a machine with two wheels. It is also a fashion accessory. There are a large variety of different kinds of bicycle on the market and image is one of the factors that help to sell bikes. Cycle sports such as road racing or mountain biking have influenced the design of cycles, which are primarily intended for everyday use.<sup>31</sup> The more sporty type of bikes usually places the rider leaning forward. This provides better division of weight between the two wheels improving handling at the same time as reducing the amount of air resistance. Effective brakes and often more than 20 gears, allowing for a steady high cadence, are other elements that allow or even encourage the rider to go fast. Cycling becomes an exhilarating experience. On the other end of the scale more traditional roadster style bikes are still popular. Here the riding position is more upright with less weight transferred through the rider's wrists. This position is more comfortable and induces a more relaxed style of cycling. The purpose of this digression is to show the difficulties of designing cycling infrastructure. No matter what is done there will always be someone who isn't happy. Cyclists are not a homogenous group. The simple fact that 90% of Swedish people have access to a bicycle proves this<sup>32</sup>.

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<sup>30</sup> Ibid.

<sup>31</sup> Cox Peter (2005)

<sup>32</sup> Institutionen för trafikteknik, LTH (1995)

## 3 Method

*In which we describe the methods of data collection and analysis we use in the study. Choice of cases, material and validity are accounted for.*

### 3.1 Research approach

The design of the study is abduktive and explorative, meaning that it does not test theories or hypotheses but rather starts with the empirical data and looks for an explanation to fit them. We use a set of empirical data to construct an explanation of why it turned out the way it did.<sup>33</sup> The study is comparative with the aim to explore and come to a greater understanding of how different strategies can explain the different rates of success in promoting cycling.

This exploration can be done in two ways, quantitative or qualitative. A quantitative study often analyse a large number of units but looks at few variables while a qualitative study analyses fewer units but in a more extensive fashion. Quantitative studies are used to compare and draw general conclusions and qualitative studies give a more holistic picture and can focus on what makes a case unique.<sup>34</sup> This study is to its nature qualitative with a large amount of information about a relatively small number of cases, three cities. This does not mean that we have not used quantitative empirical data in this work. Our emphasis is on the various policies adopted by the cities. The measurement that we use to define the success of the combined cycling policies is inherently quantitative, the percentage of journeys undertaken by bicycle.

The triangulation by relying on multiple sources of evidence is something that distinguishes case studies. Contrary to an experiment the case study does not investigate factors in a controlled environment but includes the contextual conditions. A case study, such as this, investigates a phenomenon within its real-life context, and is especially useful when the boundaries between phenomenon and context are not clear. Case studies cannot simply be generalised to cities in general but can be used as a basis for theories and to explore patterns. Multiple case designs are often regarded as more robust because their evidence is based on more than one case is seen as more compelling. Our comparative approach focuses on identifying similarities and differences. The cases are not selected as samples from a homogenous pool; instead they are chosen to illustrate contrasting strategies for promotion of cycling.<sup>35</sup>

### 3.2 Demarcation

Our choice of examining the differences in the policy plans, infrastructure and in the public information regarding cycling of three cities means that we are not able to examine every policy decision and move to promote cycling these cities in minute detail. We are conscious that this study covers an awful lot of ground and that many details will be given only slight attention. The idea behind this study is rather to gather a general view of the overall policy directions.

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<sup>33</sup> Esaiasson Peter et al (2004)

<sup>34</sup> Halvorsen Knut (1992)

<sup>35</sup> Yin Robert K. (2003)

The comparison of policy documents and information materials has unfortunately been restricted because of language issues. This has meant that we have been unable to assess the content and angle of the publicity material from Groningen to the same degree as we have with the Swedish publications. Another problem concerns the statistical data and is that the cities themselves often lack long-term comparable numbers, and that the methods and indicators vary not only over time but also between the cities.

One factor that we have not been able to cover adequately is the different economic investments that have been made to encourage cycling. All three interviewees quoted an amount spent on cycling but in all three cities the budgets are divided up in different ways. This makes them useless to compare. To be able to make any useful comparison we would have needed to delve deeply into the budgets from the last 20 years of several different city departments in each of our case cities.

Similarly the different barriers to implementation that have arisen have proven to be difficult to pinpoint. Over the last few years we have been able to keep abreast of a good deal of the public and political attitudes towards infrastructure projects in Gothenburg but what was the public opinion about a certain measure in Groningen ten years ago? Or how did the local political balance in Malmo affect transport planning during the last fifteen years. Both of these points would be interesting to study but would require an amount of research greater than our limited time permits.

### **3.4 Selection of cases**

The selection of cases has been made to differentiate the share of trips made by bicycle. We have chosen three North European cities, Gothenburg, Malmo and Groningen that function as regional centres, all are home to large universities and are relatively similar with regard to climate and topography. They are all rainy, windy seats of learning that have fairly flat central areas. All three of the chosen cities have an extensive bicycle infrastructure and actively work to promote everyday cycling.

As we mentioned in chapter 1 we are both residents and regular cyclists in Gothenburg. The wish to understand our own city's traffic situation in a wider context and possibly to come up with suggestions on to how to improve the situation on the ground are the reasons Gothenburg was chosen. Groningen was chosen because it is the city in Europe with the highest proportion of cyclists. The choice of Malmo was slightly more complicated. We wanted to study another Swedish city with a higher proportion of cycling than Gothenburg. Both Västerås and Lund have a higher level of bike use than Malmo but we chose Malmo as it was the larger city and for that reason easier to compare with Gothenburg.

*Table 2 An introduction to the cities*

	Area (Km <sup>2</sup> )	Population (1000's)	Density (population/km <sup>2</sup> )	Students (1000's) (% of pop)	Cycling (Share of trips)
Gothenburg	450	490	1,08	60k 12%	9%
Malmo	154	270	1,75	20k 7%	29%
Groningen	84	180	2,14	42k 30%	60%

Source: *Compiled from each of the respective cities and their universities WebPages*

As is seen in table 2 the share of cycling is higher in the denser cities. Yet density alone cannot explain all the differences. The low level of density of Gothenburg could be misleading as large parts of the city area are used for farming and forestry. The city also encompasses a group of islands off the coast. It would also be expected that a large number of students in a city would mean more cycling, as it is cost effective. Both Malmo and Gothenburg have city centre universities but Gothenburg has the lower level of cycling although having a proportion of students in the population almost double that of Malmo. There are in Gothenburg University a number of students that commute in to Gothenburg from the surrounding areas. This is also true for Malmo but in Malmo there are also a number of students who commute to the nearby university in Lund.

## **3.5 Material**

### **3.5.1 Written material**

The empirical information collected can be divided in to two groups – primary and secondary data. The primary data in this study is represented by the three interviews we have carried out and the observations we have made through field visits, which we shall return to in chapters 3.5.2 – 3.5.3. The secondary data we have used are academic texts and empirical evidence process data form the three cases.

This study uses written sources for two purposes. In chapter 2 we have discussed previous research and identified where this study fits in with the existing knowledge. The chapter is based on books, papers and journals that are peer reviewed to ensure quality in the content both with respect to ideas and information. This does not mean that some of the ideas are not contested, as the previous chapter proves.

Our main access to these academic texts has been through electronic resources. Traditionally using the Internet as a source is viewed as exposing one self to criticism. This is of course still true, but it depends on who published the texts. Many esteemed journals provide full text electronic versions that can be accessed with a password provided by the university library. We have also used reports produced for authorities on regional, national and European levels. These were found though library searches, the search engine google scholar<sup>36</sup> that finds scientific literature online, and by following references and links from one report or paper to another.

The other way in which this study makes use of written sources is as a basis for the empirical results. What Halvorsen describes as process data, material that is produced for other purposes than science is used. This data consists of policy documents, maps, and information and campaign material and must because of its aims be viewed with care.<sup>37</sup> In connection to the interviews of key informants we received documents and Internet addresses from where we have been able to download electronic resources. The web pages of respective city have provided us both with downloadable reports and materials but have also been read as texts themselves.

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<sup>36</sup> <http://scholar.google.se/>

<sup>37</sup> Halvorsen Knut (1992)

### 3.5.2 Interviews

There are two types of personal interviews, respondent and informant. The respondent interview is concerned with a persons subjective perceptions and feelings. The informant interview on the other hand is used to access information and knowledge. What is said in this type of interview is more or less taken as being factual.<sup>38</sup> This should however be compared to other sources of information in order to strengthen the validity. The informant interview is therefore often used as one part in a method triangulation, as it is in this study.

The interviews were semi structured, with a list of themes and topics to be covered during the course of the interview. This makes for flexibility in the ordering of specific topics, and allows the informant to elaborate on his ideas<sup>39</sup>. Literature on the area was used as a basis for the interview guide, along with our own preconceptions (see appendix 1). It is worth remembering that even explorative studies do not start with a completely blank page.

Parallel with forming the guide the interviewees were selected. (For a discussion about the selected cities see 3.4.) The purpose of the interviews was to collect as much and relevant information as possible by identifying key persons. This was the criterion for selecting the person to be interviewed in each city:

- Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg
- Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo
- Cor van der Klaauw, Transport and traffic planner, City of Groningen

The selected key persons were contacted and all agreed to interviews. To prepare them for the interview, they were given the themes of the interview in advance. This meant that the informants had the opportunity to search for information before the interview. We did not need answers that were spontaneous we needed solid information. A miss in communications lead to van der Klaauw not receiving the themes in advance.

Field notes were used to record the first interview in Gothenburg. The notes from the interview were expanded shortly after. We recorded the interviews in Malmo and in Groningen as sound files, and transcribed them a few days later. We also took notes during these interviews, as a back up. This mean that the two later interviews are recorded in a much more precise way. The lengths of the three interviews were about the same, approximately one hour each. In Groningen this hour included a discussion around a slide show that the city previously has used to present its cycling policies.

The order that the interviews were carried out in followed the increasing curve of share of trips made by bicycle, starting in Gothenburg, moving to Malmo and last Groningen. Convenience did have its role in this ordering, but it also facilitated a more objective attitude. Had the order of the interviews been the opposite it is likely that Gothenburg would have had an unfair disadvantage. Our assumption has been that all the cities have a high standard of cycling policy. When studying Gothenburg first we have looked at how cycling has been successfully encouraged in the city. If we had taken the cases in the reverse order with Groningen first it would be tempting when we finally came to Gothenburg to look at what had not been done in the city rather than what has actually been done. This would be unfair on the hard working Gothenburg planners. The level of cycling in Gothenburg might be the lowest of

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<sup>38</sup> Esaiasson Peter et.al (2004)

<sup>39</sup> Denyscombe Martyn (2000)

the three but it has doubled in the last decade, which is a sign that the cycling planners are actually succeeding.

### **3.5.3 Observations**

As mentioned above, carrying out the interviews face to face presented us the opportunity to do field visits. We are residents in Gothenburg giving us a much broader view of the city than the other two. Nevertheless the short field visits in Malmo and Groningen provide a better understanding of the context of cycling in these cities. The direct observations of the sites serve as another source of evidence. Informal to their nature the observations have been made throughout the field visits and provide additional information about layout, cyclists and ambiance.

## **3.6 Source criticism**

### **3.6.1 Criterion**

All sources used should be evaluated with respect to the criteria of source criticism to determine the reliability. The first criterion is identification, to determine who has produced the material, in what situation and to what purpose. The second is the proximity between the author and the information supplied. The closer an author is in time and space the more credible is his account. The criterion of tendency is important to determine how a source can be used, as it refers to what interest the author has in influencing opinions one way or another. Dependency is an evaluation of the independence of sources from one another. Two accounts of a rumour stemming from the same gossip do not make the rumour truer. Last but not least an assessment of the selection of sources and their tendency reveals if something has been left out.<sup>40</sup>

### **3.6.2 Written material**

The documents we have received from the informants have been written for a purpose other than that of our study. By understanding this objective we are more likely to be correctly critical in interpreting the contents<sup>41</sup>. The documents show the picture that the respective cities want to portray. This does not mean that these documents are without value, on the contrary these self-images are important to the study. How each city defines its cycling strategies is integral to the study. We are aware that writing about something in a policy document not necessarily means that it is implemented, and the use of other sources such as the interviews and observation give us a better picture of what is being done in the respective cities.

We cannot say that our theoretical framework gives an all-embracing view on mobility research. It does nevertheless cover the relevant material for our study and it is based on peer-reviewed research. The purpose of this material is not the same as in the material produced by local governments and other directly involved actors in the planning process. An inspection of the references used in the articles gives an assessment of the value of the source, as it shows

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<sup>40</sup> Thurén Torsten (1998)

<sup>41</sup> Yin Robert K. (2003)

how the text is positioned compared to other researchers. We have also been able to see if other authors have referred to the papers by using that function in Google Scholar.

### **3.6.3 Interviews**

The face to face interviews increase the credibility as it allows for interaction and shows gestures and tone of voice giving hints on when to continue a line of enquiry. We also benefited from our observations, being able to walk around in the respective cities, observing on the ground the different cycle traffic solutions that were discussed in the interviews. With interviews comes also the possibility that the interviewer influences how the interviewee responds. As the topic of our study is not a sensitive one, and the respondents are used to answer questions about their work and city policies, there is little risk that they changed their answers. We are however aware that the respondents have an interest in portraying their work as meaningful and to the point.

The interviews gave an up-to-date picture of what the cities were working with and placing priority on. The down side was that the informants at times had a tendency to drift over to policy and projects that they would want to implement but they in fact did not.

### **3.6.4 Observations**

As we live and move about Gothenburg daily and only spent two days in the other respective cities we cannot say that the three cities have been treated equally in respect to the extent of our observations. This also raises questions of our objectivity, familiarity breeds contempt and we are both familiar with Gothenburg. The selection of the cities meant that we had gathered some information about them before we set foot in them and this could have influenced our expectations of what we would observe. We have therefore strived to not only look at the downsides of our hometown but to also be critical of our new acquaintances Malmö and Groningen. Being more than one observer has heightened the reliability of our observations as it has widened our scope and drawn our attention to how one thing can be perceived in more than one way.

## ***3.7 Validity and reliability***

High validity is ensured when the methods measure the relevant things whilst high reliability depends on the accuracy of the measurements. Validity means that the study deals with what is intended, or in other words has a stringent correlation between theoretical concepts and empirical investigations. Reliability is the absence of random faults and mistakes, for instance misinterpretations of data or in interview situations.<sup>42</sup> Given these criteria our data collection is correct and we have measured what we intended to measure. We have carefully recorded and transcribed the interviews giving them a high degree of reliability, and we interviewed the right people to give the study a high degree of validity. This study is based on multiple sources of evidence. To look at something from different perspectives and to be able to confirm the results increased the validity. When there is an overlap in results from the different methods the results are less constricted to a particular method of empirical collection and the analyses stands on firmer ground<sup>43</sup>.

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<sup>42</sup> Esaiasson Peter et al (2004)

<sup>43</sup> Denyscombe Martyn (2000)

## 4 Gothenburg

### A tree lined avenue where cyclists and pedestrians cooperate

*In the autumn darkness a steady stream of people move between the column like trees that section off the mixed cycle and footpath in the centre of the street. On either side the trams share a single lane with the city traffic, moving little faster than walking speed. On the mutual path in the middle the human powered traffic flows much more smoothly. The level of discipline is high. Pedestrians on the left and cyclists on the right is the more or less strictly abided by rule. Along the centre of this middle of the road passage is a double row of cobblestones implanted in the asphalt. This divides the walkers from the cyclists, each having a two-meter wide strip to travel down. The cyclists queue up behind the slowest waiting for a chance to overtake as soon as there's a break in the oncoming cycle traffic. Here the cyclists at least act as if they have right of way. Crossing their stream to get to the other side requires caution and sometimes patience.*

### 4.1 The city

Gothenburg is Sweden's second largest city with a population of almost 500,000 and is situated on Sweden's west coast. The city was founded in 1621 and the street structure in the city centre inside of the defensive mote remains more or less the same since that time. The city was built on the flat ground at the intersection of four large valleys. The area directly outside of the original centre, the stone city, was built in the late nineteenth century has wider streets and brick and stone houses normally five or six stories high. A narrow strip of parkland was left along the outside of the mote or canal. As the city has expanded it has crept up the sides of the hills surrounding it. Gothenburg's centre is relatively compact but the last part of the twentieth century has seen a large numbers of small houses and apartment blocks being built at a considerable distance from the centre.<sup>44</sup> In recent years the policy of the city has been to increase the density in the central areas with a view to reducing the demand for transport. With a change from largely heavy manufacturing industrial economic base to a high technological economy, large areas of brown field sites have become available for redevelopment in attractive central locations. The area on the north bank of the Göta älv, the river which divides the city and previously was the city's ship building centre has been rebuilt with a combination of housing, high technological industry and educational facilities. Other large areas remain to be exploited over the coming decades. Although there has been a shift away from manufacturing industry Volvo remains one of Gothenburg's largest employers.

The position of the city on the west coast gives it a maritime climate with a relatively high level of rainfall and a mild climate for its latitude of 58°n. Gothenburg has an annual rainfall of around 770mm, a total of 176 rainy days with at least 0.1mm precipitation and an average temperature of 7.1°C (normal year 1961/90)<sup>45</sup>. Other than the weather Gothenburg has a number of physical barriers that have a discouraging effect on cycling. The housing estates on the outskirts of the city are further than 5km from the centre. These estates are often situated on top of hills. The number of commuting cyclists visibly decreases the further out you come from the centre. The river running through the centre also causes a barrier. The most used

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<sup>44</sup> Hansson Einar (2003)

<sup>45</sup> Göteborgs Stadskansli (2006)

crossing is a bridge the Götaälvbron with 3000 cyclists a day<sup>46</sup> has a height of about 20m. In bad weather this means a high level of exposure to the elements for cyclists crossing.

With these geographical disadvantages there is a limit to the feasible level of cycling but Gothenburg is by no means built on the side of a mountain. Most of the centre is relatively flat and as long as the destination isn't on top of a hill, most hills around the city can be cycled around rather than over without enormous difficulty. The city's cycling policy from 1999 is optimistic that a considerable increase in the number of cyclists is possible. The city's environmental program for traffic predicts that the proportion of cyclists will remain at the same level in its prediction for 2010<sup>47</sup>. This appears to be a clear contradiction between the two documents.

From an historical perspective the number of cyclists in today's Gothenburg is low. In the 1950s approximately between 40 and 45% of journeys were by bike. In the beginning of the 1990s this figure had shrunk to between 4 and 5%. The nineties saw an increase in cycling's share of journeys up to around today's level of 8 to 9%. Since the overall amount of traffic has steadily increased in Gothenburg then figures showing that cycling has a stable share of journeys means that there are a steadily increasing number of cyclists in the city.<sup>48</sup> The national average for share of journeys by bicycle in Sweden is 12% so the number of cyclists in Gothenburg is also low on a national level<sup>49</sup>.

## **4.2 Overall policy**

Gothenburg's first cycling policy was produced in 1975. This policy was based on four points:

- Expanding the city's network of cycle paths
- Improving the quality of the existing network
- Better maintenance
- Changing the attitudes of both cyclists and drivers

These points were also the foundation for Gothenburg's next cycling policy, which came in 1988. The city's policy at this time concentrated purely on "hard" measures such as infrastructure and did not consider the encouragement or the future of cycling in Gothenburg. Cycling was looked at as a right. That is to say something that people should be allowed to do if they wanted to rather than something people should be encouraged to do. The cycle network was designed after three premises, safety, functionality and comfort, in that order.

The policy document that is in use today is from 1999. This is based on the previous policy from 1988. By 1999 the vast majority of the planned cycle network was complete. This meant that the emphasis in the 1999 policy was not the same as in the earlier policies. Improving cyclist safety became the priority. At the time of writing the policy, cycling in Gothenburg was statistically the most dangerous mode of transport with the most accidents per travelled kilometre. It is therefore not surprising that cyclist safety was highly prioritised. This was at about the same time the national Swedish Road Administration (Vägverket) launched its "Noll Vision" project aimed at eliminating all traffic related deaths in Sweden.

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<sup>46</sup> Göteborgs Stad Trafikkontoret (2006a)

<sup>47</sup> Göteborgs stad Trafikkontoret (2006b)

<sup>48</sup> Göteborgs stad Trafikkontoret (1999)

<sup>49</sup> Göteborgs Stad Trafikkontoret (2006a)

Another change in cycling policy 1999 was a more active promotion of cycling. The stated aim of the 1999 policy report was, (roughly translated) In light of the high causality rates among cyclists, is it desirable to promote cycling in Gothenburg? (*“Skall kommunen stimulera till en ökad cykeltrafik - trots hög olycksandel för detta transportmedel?”*)<sup>50</sup> The conclusions to this question in the policy rapport are that the benefits of cycling outweigh the disadvantages and that an increase in the amount of cycling is desirable. At the same time much weight was put on drastically improving cyclist safety.<sup>51</sup> In our interview with Johanna Stenberg, bicycle co-coordinator in Gothenburg, she explained that since 1999 the focus has been very much on safety. She went on to say that she felt that switching the emphasis from cyclist safety to functionality of the cycle network is likely to be more successful in attracting an increase in the number of cyclists.<sup>52</sup>



*Figure 3 Cyclists dismount for your own safety, Gothenburg.*

Photo by Liv Markström

Figure 3 shows a commonly used sign in Gothenburg, in this case it is quite difficult to see what the danger is as the only part of the road works that encroaches on the cycle path is the safety fence that blocked 20cm of the three meter wide cycle path. It raises the question of whether using such a sign has any positive effect. While we observed not a single cyclist obeyed the sign and dismounted. Surely it would be better if the sign were only used when there is a real need for cyclists to dismount. Its usage in the photo is more reminiscent of “The boy who cried wolf”.

The budget allocated to implementing cycling policy in Gothenburg has been on average 1.7 million Euros each year since 1999. 2007’s budget is set to be 2.8 million Euros due to a local political wish promote alternative means of transport to the car. This budget covers only a small amount of maintenance costs; most maintenance of cycle paths is included in a different budget.<sup>53</sup>

<sup>50</sup> Göteborgs stad Trafikkontoret (1999) p 5

<sup>51</sup> Göteborgs stad Trafikkontoret (1999)

<sup>52</sup> Interview with Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg, November 2006

<sup>53</sup> Interview with Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg, November 2006

## **4.3 The infrastructure**

### **4.3.1 The cycle network**

Gothenburg has a comprehensive network of 400km cycle paths throughout the city<sup>54</sup>. Generally the cycle network is separated from other motorized traffic while running alongside the city's major roads. In many places the topography dictates this need to lay the cycle path directly beside the roads because of shortage of space. Where there are cycle paths the law dictates that they must be used, the cyclist is not allowed to choose to ride on the road. In places the cycle route follows streets with a low volume of traffic and a speed limit of 30km/h, often residential streets, instead of on purpose built cycle paths. It is not always clear which streets are the recommended cycle routes and which ones are just ordinary streets. This can complicate navigation for cyclists when venturing outside of familiar areas.

In the historical central area inside the canal there are very few cycle paths. Cyclists there share the same road space as the other traffic, with the exception of the pedestrian streets where cycling is forbidden. Parked cars along the side of the road are one problem cyclists face in the city centre. In many places there is not enough space for a car to pass a cycle especially if the cyclist is to keep a safe distance from parked cars. The risk of a car door opening in front of a cyclist exists. Increasingly more streets in the city centre are being reclassified as so called "Gårdsgator" *living streets* these are streets that allow all traffic but give pedestrians right of way. On street parking of cars is strictly limited and speeds should not exceed walking pace. Outside of the centre the trams usually run on totally separated tracks but in the centre they run in the streets. Wet tramlines are one of the hazards Gothenburg's cyclists have to get used to. Where cycle paths intersect with side streets they are usually slightly raised with red coloured paving stones.

### **4.3.2 Traffic lights**

Where the cycle paths cross the major roads there are usually a separate set of smaller light signals for cyclists. When the cyclist comes to an intersection with a red light they press a button to register that they are waiting to cross. The next time the program controlling the lights comes to the cyclist's slot the light turns green and the cyclist is allowed to cross. This system has a number of problems. If the cycle path is following a road, which is also steered by the traffic lights then usually all traffic travelling in the same direction is given a green light at the same time. The signals for cars change one or two seconds before the signals for bicycles. This means that cars with a green light that are turning have to cross the path of the cyclist who also has a green light. The cyclist has right of way over the turning cars but conflicts can and do occur.

If a cyclist presses the button during the slot in the program that would be green the light does not change until the program has made a full circle and the next cyclist slot comes up. This means that the waiting time can be annoyingly long. Another problem is the tram traffic. In Gothenburg the tram has the highest priority in traffic and in many places automatically receives a green light at intersections. The problem here is that if a tram passes the intersection at the same time as the cyclists slot in the traffic signal program, the cyclists lose their turn and have to wait until the next slot comes round. If another tram should then pass the process is repeated. We have observed cyclists having to wait several minutes at these intersections sometimes missing their turn three or four times. We have also observed that a

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<sup>54</sup> Göteborgs Stad Trafikkontoret (2006a)

large proportion of cyclists are not prepared to wait and take the chance to cross against the red light. Considering a tram's relatively long stopping distance and the obstruction they cause to a cyclist's line of sight this could potentially be very dangerous.

### **4.3.3 Bicycle parking**

According to the department in charge of Gothenburg's traffic (Trafikkontoret) there are 3000 parking places for bicycles in Gothenburg. In addition to these official places cyclist are allowed and do park almost anywhere. Exceptions are made in the vicinity of several busy hubs in the public transport network and around the train station, where bicycles parked outside of designated areas are removed. Trafikkontoret have the responsibility for cycle parking in the city. They receive and act on complaints and wishes from the citizens and they also conduct their own inventories to determine where it is desirable to place new parking racks.<sup>55</sup>

Interviews conducted 2005 show that many cyclists often have problems finding parking space, but also that part of the problem is due to poor information. Some parking facilities are not very well known and therefore not used to their full extent while others are packed with bicycles.<sup>56</sup>

New guidelines are under development for design and norms for number of racks to be made available for different functions, but as of today Gothenburg does not have official standards for bicycle parking<sup>57</sup>. Most of the bicycle parking in the city is made up of racks along pavements and outside of buildings. These racks are often overcrowded partly due to active cyclists but also because of a large number of abandoned and or vandalised bicycles that are left behind. Most racks have been designed so that the frame can be locked to the rack, and this is important, as cycle thieves are an irritating problem for Gothenburg cyclists. Sturdy locks are all that cyclists can put their trust in to protect their bikes. There are few public cycle parking facilities that are roofed or in other ways protected from the elements and Gothenburg does not have any public cycle parking facility that is guarded.

### **4.3.4 Inter-modality**

In Gothenburg cycling is not fully integrated with other transportation systems. The public transport in the city does not allow for bicycles to be brought on trams or buses. It is however possible to bring a bicycle on the ferries that cross the river. The cyclist pays the normal fare but the bicycle is brought free of charge. On certain regional buses it is possible to take a bicycle with you if there is enough place in the luggage compartment. This costs € 3.30 above the ordinary price of the journey. On the commuter trains from Gothenburg to Kungälv and Allingsås it is also possible to transport a bike at the same price but not without problems. The older trains have a place for two cycles, whereas the new trains that are being phased in do not. As it is not possible to tell in advance what kind of rolling stock will be in use on a given departure there is an element of hit and miss when trying to utilise this service.<sup>58</sup>

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<sup>55</sup> Göteborgs stad Trafikkontoret (2006c)

<sup>56</sup> Grahn Johanna & Mattsson Ann-Marie (2006)

<sup>57</sup> Interview with Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg, November 2006

<sup>58</sup> Västtrafik (2006)

One option available for commuters is keeping a bicycle near the central station. In the vicinity of Gothenburg's train station cyclists can find six areas specially designated for parking their bicycles. In all, these areas contain place for around 350 bicycles.<sup>59</sup> Studies and repeated inventories show that although usage fluctuates over the seasons, the number of bicycles in the parking areas regularly outnumbers the racks. In May 2005 the parking area closest to the entrance was more than full, with three times as many bicycles as it is designed for. It seems to be safe to say that Gothenburg train station lacks adequate parking for cyclists wanting to change to or from other means of transport. This is also backed up by the fact that the city experiences a recurring problem with parked bicycles blocking other areas around the train station.<sup>60</sup> The city of Gothenburg is one of twelve cities taking part in a EU backed project called Bustrip. This involves traffic planners from the twelve cities visiting each other and in turn conducting a peer review of each cities infrastructure. Cycle parking facilities and accessibility for cyclists and pedestrians to Gothenburg's central station has received strong criticism from this review. Their recommendation is for provision of a guarded bike park with reparations facilities close to the station.<sup>61</sup> The general impression we have of the cycle parking at the station is that it is not always easy to find a space and a certain chaotic character pervades, added to by the number of damaged bikes. The fear of getting your bike stolen is equal to the fear of getting it vandalised.

Bicycle parking facilities in proximity to public transport centres is an important aspect of inter-modality. Bike racks are to be found at some stops in the tram and bus network but this is a long way from being the universal norm. A number of public transport nodes have been equipped with parking facilities and upgraded cycle paths, in line with the recommendation in the cycle programme from 1999<sup>62</sup>. Previously the responsibility for providing adequate cycle parking in the vicinity of public transport has been the realm of the regional public transport coordinator (Västrafik). Västrafik has according to Stenberg acted slowly when it comes to providing parking facilities around public transport hubs. This responsibility has now been taken over by Trafikkontoret because of problems with implementation. Now the same department deals with all public cycle parking, but the results are yet to be seen. Stenberg also voiced a demand that all park and ride facilities outside of Gothenburg should contain bicycle parking as well as parking for cars.<sup>63</sup>

#### **4.3.5 Safety and security**

In the 1999' cycle program for Gothenburg there is a great deal of emphasis on education and information to improve cyclist safety. The report states that studies both in Sweden and abroad find that building new cycle paths has limited or no effect in improving safety. Even improving the maintenance of the cycle paths has proved ineffective. One winter the investment in snow clearing and sanding of the cycle paths was doubled. This did not lead to any reductions in accident frequencies. Although half of the single accidents were caused by lack of maintenance, increasing winter maintenance did not reduce the number of accidents. This is accounted to the fact that better conditions led to an increase in speed. Limiting the speed of motor traffic to 30km/h where it comes in contact with cyclists is seen as an effective measure to improve cyclist safety.<sup>64</sup>

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<sup>59</sup> Interview with Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg, November 2006

<sup>60</sup> Grahn Johanna & Mattsson Ann-Marie (2006)

<sup>61</sup> BUSTRIP (2006)

<sup>62</sup> Göteborgs stad Trafikkontoret (1999)

<sup>63</sup> Interview with Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg, November 2006

<sup>64</sup> Göteborgs stad Trafikkontoret (1999)

One safety measure that is being implemented is to remove solid objects such as posts from the immediate area of the cycle path. Where there is a mixed cycling/walking path, lampposts and such are always placed on the side of the path designated to pedestrians. Thus reducing the cyclist's risk of collision with stationary objects. Another area where safety measures have been applied is in separating cyclists from pedestrians to avoid conflicts.<sup>65</sup>

The cycle network in Gothenburg is in many places separated from the busy roads and tram tracks. Effectively avoiding incidents with other road-users this also mean that cyclists can feel exposed and vulnerable on isolated routes, especially after dark. The city authorities have had focus on minimising accidents, and this is as previously mentioned the overall theme of the cycling program from 1999. Personal security on the other hand is not discussed in the city's cycling policy documents or studied in any previous reports. Efforts have been made to improve safety, mainly for women walking after dark; this has included the cutting or removal of vegetation and improved lighting along many combined pedestrian/cycle routes. Having a network that is continuous with clear signs so that cyclists easily can find their way is always important but it also impacts on feelings of security. Gothenburg has a separate direction sign system for bicycle routes, which is steadily improving.

## ***4.4 Cycling promotion and information campaigns***

### **4.4.1 Mapping the cycle network**

The City of Gothenburg have produced a map showing major cycle routes and recommended residential streets where gaps in the network exist. The map comes in three different editions with the same overview but with detailed focus on different areas and can be purchased from the city or from the tourist information for € 2.20. The maps are also available for download from the Internet. The city is also developing a journey planner for bicycles similar to the one for public transport, so that cyclists can choose the optimal bicycle routes.<sup>66</sup> (Gothenburg regional transport coordinator Västtrafik has a system there you type in your start point and destination and the system works out the best public transport alternatives.)

There are some problems with the cycle map. The legend has two types of markings for cycle routes. One, a solid red line shows the cycle paths, the other a broken red line shows the recommended routes along local streets with low traffic volumes. One problem is that the map does not show the street names. This makes navigating difficult when using the recommended routes. It also makes finding a destination on the map difficult. Another problem with the map is that it does not show all the navigable cycle paths in the city. Johanna Stenberg explained this as depending on standards of maintenance such as snow clearing and sanding<sup>67</sup>. A third marking on the map for second-class cycle paths without winter maintenance could help. The map does not show differences in height, which is an important factor for cyclists planning their route through the city.

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<sup>65</sup> Interview with Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg, November 2006

<sup>66</sup> Göteborgs stad Trafikkontoret (2006d)

<sup>67</sup> Interview with Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg, November 2006

#### 4.4.2 Information

The City of Gothenburg is working with bicycle promotion and information through a number of projects and through different mediums. Internet is one of these mediums, and cycling has been given its own web sub page where visitors can find information about traffic rules, work on bike routes and personal and societal gains from biking, such as health, environment, time and economy, in that order. The web pages also present information on activities that promote every day cycling.<sup>68</sup>

The information material promoting cycling is not surprisingly positive and has many pictures. Much of the information is concerned with the positive effects cycling have on health and on the environment, but other positive aspects like freedom, economy and speed also have a prominent place in the information. All information material also contains a section on safety and traffic rules. This seems to have effect as helmet use among cyclists in Gothenburg has steadily increased since measurements started in the early nineties, with the share of helmet users reaching 44.3% in 2006.<sup>69</sup>

To put a positive spin on cycling the city have organised cycle weeks in April since 2005 with activities, campaigns and has in other ways tried to draw attention to cyclists<sup>70</sup>. During events like the cycle week and on the car free day campaigners from the city's initiative *New road habits* (Nya Vägvanor) have been active. As a part of this campaign inhabitants of Gothenburg have received magazines critically reviewing car culture and its alternatives at the same time been informed on the city's work with mobility management.

Much of the promotion of cycling that takes place in Gothenburg has some connection to Lundby Mobility Centre, part of Trafikkontoret. Established in 2002 the centre takes a full grasp of mobility in one of the city's districts, Lundby. Being a pilot case, hopes are that the lessons learnt and solutions developed in this district can be implemented across Gothenburg. The mobility centre works with folders containing information and inspiration as well as more practical projects such as guided bike tours and rewards to cyclists.<sup>71</sup>

It is possible for companies and workplaces in Lundby to offer their employees free loan bikes whilst getting around the area during the day. Aimed at companies and their employees is also the inspiration network in which a number of companies in the area work in cooperation with the mobility centre to promote cycling as the means of getting to and from work and for transport during the working day.<sup>72</sup> The mobility centre has also worked more intensely with travel coaches who follow a smaller group of people over time and aims at changing habits instead of attitudes.

#### 4.4.3 Incentives

When it comes to policy decisions that could directly make cycling more attractive than driving, Gothenburg has very few. This is mainly a consequence of legal and administrative boundaries. Tax deductions for travelling favour private cars more than they do public transport and cycling. This is decided on a national level. The city does however according to Johanna Stenberg lobby national legislators on issues that could even out the playing field for

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<sup>68</sup> Göteborgs stad Trafikkontoret (2006d)

<sup>69</sup> Ibid.

<sup>70</sup> Göteborgs stad Trafikkontoret (2006e)

<sup>71</sup> Lundby Mobility Centre (2006a)

<sup>72</sup> Lundby Mobility Centre (2006b)

the bicycle as transportation to the workplace allowing tax benefits for those who cycle to work<sup>73</sup>. A recent report presented by Trafikkontoret suggest that increasing the costs of parking in the central areas of Gothenburg is a way to persuade car drivers taking the tram or to get on their bikes. The plan is to raise the cost of parking in the cheapest car parks in the city from today's €2.20 to €6.60<sup>74</sup>. Trafikkontoret also try to get around legislative obstacles by encouraging companies to inspire their employees to use bicycles by offering benefits. The argument used is that regular cycling improves employee health and thus reduces the number of sick days<sup>75</sup>.

#### 4.4.4 Evaluation

To get an accurate picture of how many cyclists there are in Gothenburg, or anywhere for that matter, and how far they travel is not the simplest of tasks. On main cycling routes the city has strategically chosen six points where cyclists are counted. In recent years these measurements have shown that the increase in cycling during the 90's has flattened out to a relatively stable level of cycling today, but with so few points it is difficult to draw absolute conclusions. Two cycle barometers have also been installed and display the number of cyclists in one day and during the year. These barometers not only serve as a basis for statistical measurements but also show off cycling. In addition to the mechanical measurements of traffic flow, the city conducts interviews, asking about travel habits.<sup>76</sup>

A new project involving 1000 cyclists that will hopefully report back has been started in September 2006. This should provide useful feedback regarding possible improvements in the cycling infrastructure. So far no conclusions are published. There is also a reference group of cyclists in Lundby who meet regularly to discuss improvements for cyclist and to share ideas on how to promote cycling.

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<sup>73</sup> Interview with Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg, November 2006

<sup>74</sup> Sahlgren Anders (2006 December 15)

<sup>75</sup> Göteborgs stad Trafikkontoret (2006e)

<sup>76</sup> Ibid.

## 5 Malmo

### **Sweeping through the underpass without a care in the world**

*We walk along the side of a busy four-lane road in the centre of the city but only see a handful of cyclists and not a sign of a cycle path. Malmo should be a city of cyclists but where are they. Then approaching the city hall we catch a glimpse of the heads of cyclists disappearing into a tunnel under the road. The city has segregated its cyclists from the rest of the traffic. Leading to and from this broad and well-lighted tunnel is a smooth and wide cycle path running parallel to the main road one block in from it. Through the underpass it is made obvious to walk at the side and to cycle in the middle by the colour of the paving. The width of the passage makes it inviting with a clear line of sight right through to the other side. Crossing the stream of cyclists at the mouth of the tunnel was not difficult as there was an excess of space and good all round visibility. Although looking both ways first is to be advised.*

### **5.1 The city**

Malmo is Sweden's third largest city with a population slightly less than 300,000. Malmo received city status in 1437 but did not become a Swedish city until the signing of the treaty of Roskilde in 1658. Previously the city of Malmo and the surrounding region of Skåne had been a part of Denmark<sup>77</sup>. The construction of a road and rail bridge over the Öresund, the narrow straight separating southern Sweden from Denmark has helped to link Malmo with the Danish capital of Copenhagen. The journey time between the two cities is just 35 minutes by train with three trains an hour in each direction at peak times<sup>78</sup>. This bridge is one of the factors that have helped to swing Malmo out of a period of high unemployment into today's more prosperous regional centre along with the establishment of Malmo University with 20,000 students in the last half of the 1990's<sup>79</sup>.

Malmo and its hinterland are predominantly flat. The city structure is compact situated around the old town in the centre. The old town is surrounded by the medieval defensive canal system. The immediate area surrounding the old centre dates from around the turn of the 19<sup>th</sup> century and is similar to the stone city of Gothenburg with five to six story houses. Malmo also has a number of high-rise estates dating from the last half of the 20<sup>th</sup> century on the outskirts but still within fifteen minutes cycling distance from the centre. The old ship building docks close to the centre (Västrahamnen) have undergone a typical post-industrial waterfront redevelopment with new housing, workplaces and educational institutions.

Malmo is situated on Sweden's south west coast and also has, like Gothenburg, a relatively mild maritime climate for its latitude of 56°. The average annual temperature is 7.8° and the average annual rainfall is 602mm (normal year 1961/1990)<sup>80</sup> Malmo is one of Sweden's mildest and flattest cities. Added to this the city structure is compact and continuous. These factors mean that Malmo is a city geographically well suited to cycling.

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<sup>77</sup> Malmö stad (2007a)

<sup>78</sup> Statens Järnvägar (2007)

<sup>79</sup> Malmö stad (2007a)

<sup>80</sup> Malmö Stadskansli (2006)

## **5.2 Overall policy**

As was the case in Gothenburg during the 1940's and 50's there were considerably more cyclists on the streets of Malmo than there are today. The economical boom of the 1950's and 60's meant that the private car more or less killed the culture of cycling. Previously there had been cycle paths along the major streets but these were removed to create more space for the rapidly increasing volumes of car traffic. In the beginning of the 70's cycling saw something of a renaissance in Malmo. This led to calls from cyclists to rebuild the cycle paths. Also in the seventies there was a local politician who cycled and was influential in improving conditions for Malmo's cyclists. In 1973 Malmo introduced a policy specifically aimed at cycling. This policy from 1973 is basically, with a few minor adjustments, the same as is in use today. Malmo was the first city in Sweden to introduce a cycling policy.<sup>81</sup>

## **5.3 The infrastructure**

### **5.3.1 The cycle network**

Malmo has 389km of cycle paths<sup>82</sup>. The network is built so that the mesh size is not more than 500m. This means that a potential cyclist is never more than 250m from a cycle path. The design of this network is basically the same as was presented in the first cycle policy of 1973<sup>83</sup>. The general layout tends to place cycle paths away from the major traffic arteries. This is possible in Malmo because of the topography and lack of barriers such as rivers, motorways and railways in the city. This separation of the cycle net makes cycling in Malmo more pleasant as cyclists are not affected by the noise, fumes and in wet weather the risk of being sprayed by passing traffic. The negative side of separating the cycle paths from the major road network is that many feel unsafe whilst cycling at night outside of the centre. Along the major roads in the city centre such as Drottningatan and Föreningsgatan there are no cycling facilities but a number of cyclists apparently opting for the quickest way still use these streets.

Although the ambition in Malmo is that the cycle network shall be continuous and easily navigable without needing a map the network feels slightly disconnected in places outside of the centre. This can be explained by the way in which the network has been built. Instead of a directly city hall financed cycle path network the responsibility falls on individual projects. If an area is to be exploited, for example a new housing development, the cycle paths are included in the project. This is a result of the financial situation. It is fairly rare to get money that expressly goes to expanding the cycle network. This means that the architect working on the project designs the layout for the cycle infrastructure. Leif Jönsson explained that sometimes he has to jump in and argue for changes in certain plans, as the architect doesn't always share the same view of how a continuous cycle network should be built.<sup>84</sup>

### **5.3.2 Traffic lights**

The design of signal-controlled intersections for cyclists is basically the same in Malmo as it is in Gothenburg. That is with cyclists and motor vehicles travelling in the same direction

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<sup>81</sup> Interview with Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo, November 2006

<sup>82</sup> Malmö stad (2007b)

<sup>83</sup> Interview with Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo, November 2006

<sup>84</sup> Ibid.

have a green light at the same time. One major difference in Malmo is that the smaller signals for cyclists changes two seconds before the main lights on the road. In some places where cyclists share the same signal as the other traffic an area at the front the queue has been reserved for cyclists. Both these measures give the cyclist a head start over the other traffic. This means that the turning traffic will have to wait until all the cyclists who were waiting at the signals have crossed the intersection before they can turn.

Where the smaller signals have been used a cycle crossing a second signal has been placed on the other side of the road with the double intention of making it more comfortable for the waiting cyclist to be able to see the signal without having to twist their necks and also to warn turning motorists that they are about to cross a cycle way.<sup>85</sup>

### 5.3.3 Bicycle parking

Malmo has invested in parking facilities for bicycles. The city has standards for how many parking places should be provided in connection to different buildings. In the city centre there are large parking facilities in connection to squares and shopping areas. Despite this cyclists park their vehicles on streets as smaller parking facilities within shorter distances from the destination, for short time use are often lacking.<sup>86</sup>

Malmo was the first city in Sweden to introduce parking standards for cycles into the city's planning regulations. At the time, 1998, the level of cycling in Malmo was around 24%, roughly the same level as in the Netherlands. It was therefore decided to directly import the Dutch policy and use it in Malmo. It was however felt that the Dutch parking standards were too high for the peripheral areas of the city. There a lower standard is praxis. Basically cycle parking standards stipulate how many places shall be provided in proximity to a building dependant upon size and usage. The standards also dictate that the design of the cycle racks shall allow that the frame of the bicycle can be easily locked fast to the rack. Thus preventing a would be cycle thief from simply carrying the locked bike away.<sup>87</sup> The policy also stipulates that all cycle racks in the city should be factory painted in the colour Malmo green<sup>88</sup>.

The city of Malmo has no figures over how many cycle parking places there are in the city<sup>89</sup>. In the area around central station in Malmo there are as many cycle parking places as in the whole of Gothenburg, 3000<sup>90</sup>. It is therefore safe to say that there are considerably more places to securely lock your bike in Malmo than there are in Gothenburg.

Malmo has previously experimented with cycle parking where the bike can be locked in for a monthly rental fee. This project was quickly abandoned because of misuse and under use. Nobody was prepared to pay to park their bikes and the facility remained empty of bikes. It was not unusual to find people locked in the facility in the mornings. Usually associated with alcohol. The experiment was discontinued. Leif Jönsson is convinced that cyclists are not prepared to pay for anything. He sited a Dutch study showing that almost nobody was

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<sup>85</sup> Interview with Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo, November 2006

<sup>86</sup> Malmö stad (2001a)

<sup>87</sup> Interview with Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo, November 2006

<sup>88</sup> Malmö stad (1999)

<sup>89</sup> Ibid.

<sup>90</sup> Interview with Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo, November 2006

prepared to pay more than 0.50 Euros a day for secure guarded inside cycle parking. The problem is to make this kind of facility financially self-carrying.<sup>91</sup>

### 5.3.4 Inter modality

It is possible to bring the bicycle on the regional trains for 0.65 to 9 Euros depending on the length of the journey, and across the strait to Copenhagen without any extra charge<sup>92</sup>. As is pointed out in Malmö's handbook for parking the nodes in the public transport system are big destinations for cyclists and the need for secure parking is great<sup>93</sup>. Every year around 6000 bicycles are stolen in Malmö<sup>94</sup>. The risk of getting one's bicycle stolen lead many to use older bicycles sometimes in a bad state of repair. It is prohibited to park bicycles outside of designated racks in the area around the central station. Approximately 3 000 bicycles are parked outside the central station, many on a temporary raft in the canal. When the central station is expanded and the three new stations are completed the city expects 3-4 000 bicycles parked by each of the stations.<sup>95</sup>

The cyclists parked outside of the central station are both people commuting out from Malmö leaving their bicycle at the station over the day, and people coming in from other cities and use a bicycle to travel from the station to their workplace in Malmö. This is evident because the number of bicycles parked outside of the station is roughly the same during the day as it is overnight. There are for example many students who study in the nearby university city of Lund who cycle to the station in Malmö park their bikes and take the train to Lund where they usually walk. Conversely many who work in central Malmö but live in another part of the region have a, usually old cycle of low value parked at the station that they use to get about in the city when they hop off the train in the morning.<sup>96</sup>

Inter modality within the city comes down to parking facilities as it is impossible for the city busses to carry bikes due to lack of space. The City of Malmö has managed to negotiate with the regional public transport coordinator (Skånetrafiken) to get them to provide parking racks with space for five bicycles at every bus stop outside of the ring road. Skånetrafiken argued that this was unnecessary as there were no bicycles parked there. Since the bike racks were installed more and more people have started cycling to the bus now that they can leave their bicycles locked and safe until they return.<sup>97</sup> Skånetrafiken have taken this instruction to place cycle parking at bus stops outside the ring road to the letter. The bus stops on the ring road have cycle racks on one side, furthest from the centre, literally on the outside but not on the other side of the road, which is technically inside of the ring road.

### 5.3.5 Safety and security

Malmö's network consists both of separated cycle paths and cycle lanes painted on the streets. In areas exploited after 1970 traffic separation is the rule and cyclists have their paths away from the streets. Today feelings of security have come higher up on the agenda and it might be necessary to complement the older paths through green areas with lanes along major the

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<sup>91</sup> Ibid.

<sup>92</sup> Skånetrafiken (2007)

<sup>93</sup> Malmö stad (2001b)

<sup>94</sup> Malmö stad (2007c)

<sup>95</sup> Interview with Leif Jönsson, Project Manager for Bicycle City Malmö, City of Malmö, November 2006

<sup>96</sup> Ibid.

<sup>97</sup> Ibid.

roads. Where the cycle path crosses major roads they have been painted blue to increase motorists awareness. In many places this paint was almost totally worn away.

The use of helmets among cyclists in Malmo is low and in an effort to reduce fatality in accidents the city have produced an informational short film in cooperation with Vägverket, urging people to use helmets. With a humoristic approach hope is that cyclists will remember to put their helmets on. As a part of this a campaign has been aimed at employees in the city's administration and all parents to schoolchildren.<sup>98</sup>

## **5.4 Cycling promotion and information campaigns**

### **5.4.1 Cycle city Malmo**

Between 1995 and 2005 Malmo has run a campaign called Cycle city Malmo (Cykelstad Malmö). The aim of this campaign has been to increase the share of journeys by bike in the city by 10%. A target that was reached, in 1995 the share of cycle use was 20%, today the figure is closer to 30%. The following sections describe some of the approaches that have been used during the campaign.<sup>99</sup>

There is a special section of the city's official web site directed at cyclists. This includes a digital map of the city's cycle network that includes a find function. A cyclist can type in the address they wish to find and a square appears on the map showing the desired location.<sup>100</sup> According to the interview study conducted by the city shows 13% of respondents had visited this site, most of these visitors where young students who didn't own a car.<sup>101</sup> It seems reasonable to assume that students, who have recently moved to Malmo and consequently lack good local knowledge, can benefit from this map function. One of the pages on the site is titled eight reasons to cycle in Malmo. The reasons given are in order; lots of cycle paths and roads to choose from, Malmo has good weather (relatively for Sweden), Malmo is flat, the distances are short, and cycling is quick, inexpensive, healthy and finally environmentally friendly<sup>102</sup>.

### **5.4.2 Information**

Malmo city has produced several publications directed at cyclists. One of these was a book entitled "Famous people who've cycled in Malmo" (*Berömda människor som cyklat i Malmö*) and was especially aimed at young adults. Using famous icons and giving cycling a positive image the book was sent to all 25-34 year olds in Malmo together with a bicycle map. A large interview survey revealed that this cohort in particular were not cycling regularly.<sup>103</sup>

Another publication has been produced called "On the road in Malmo" (*På väg i Malmö*). This has not been solely aimed at cyclists but at all road users in the city. It is basically a collection of often asked questions about rules and regulations pertaining to all modes of

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<sup>98</sup> Malmö stad (2007d)

<sup>99</sup> Interview with Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo, November 2006

<sup>100</sup> Malmö stad (2007b)

<sup>101</sup> Innovera/ Gatukontorets trafikavdelning (2005)

<sup>102</sup> Malmö stad (2007b)

<sup>103</sup> Malmö stad (2007e)

transport.<sup>104</sup> The relevance of this in the promotion of cycling is that the book not only explains the rules that apply to cyclists but also the rules that apply to other road users. Not all cyclists have taken driving lessons but a good understanding of the Highway Code is hardly less important for a cyclist than it is for a car driver. A greater understanding of cyclists' special problems is also useful for drivers who don't themselves cycle.

### 5.4.3 Incentives

Malmo city have attempted to encourage cycling in order to reduce car usage in the newly redeveloped waterfront area, Västrahamnen, with mixed results. A positive result has been in encouraging bicycling among those employed in the area. The city employs a group working in the area with traffic problems mainly through information. The area is only a few minutes cycle ride from the railway station and within 15 minutes ride from almost any point in the city. This has been the main argument used. Anyone working in Västrahamnen can get where they want to go quicker by bike than by other means of transport. Another more practical policy has been to offer bicycles at a reduced price to companies in the area. An agreement was made with a local bicycle dealer and included in the price of 290 Euros were two service checks and a cycle computer. 53 cycles were sold and in the first year together have covered a distance equivalent to three quarters of the way round the planet.

With the residents of the area the results appear to be less promising. The area was designed and built with fewer parking places for cars than is normal to discourage car ownership and indirectly encourage cycling. According to Leif Jönsson the property values in the area Västrahamnen were inordinately high and affordable only for those in the high-income bracket. Many families living there own three cars and there is an acute shortage of parking spaces.<sup>105</sup>

### 5.4.4 Evaluation

The department responsible for traffic in Malmo has regularly telephone interviewed a randomly selected group of 500 individuals about how they experience the traffic situation in Malmo. These studies have taken place every four years since 1997; the most recent was published in 2005. The responses of Malmo's citizens in the interviews are reflected in the city's cycling policy. For example the most common reason given to why the respondent cycles is that it's quick<sup>106</sup>. This is reflected in the city's overall policy objective of making the cycle path network to allow cyclists quick, simple and safe access to all points in the city<sup>107</sup>.

Another method of evaluation in Malmo is measurements of cycle traffic flow on a regular basis throughout the city. Measurements in the central areas are conducted annually. In outer areas the frequency of testing is lower but not less than once every fourth year. By comparing the recorded data from different years in the same place over the same time it's possible to judge the trends in the number of cyclists. As the city has had a quantified policy to increase the amount of cycling by a tenth in ten years these measurements give a clear indication of whether or not the target has been reached.<sup>108</sup>

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<sup>104</sup> Interview with Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo, November 2006

<sup>105</sup> Ibid.

<sup>106</sup> Innovera/ Gatukontorets trafikavdelning (2005)

<sup>107</sup> Malmö stad (1999)

<sup>108</sup> Interview with Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo, November 2006

Along one of the busiest cycle paths leading through the commercial centre to the train station a large visible bicycle counter has been placed. It shows in a LED display how many cyclists have passed the spot so far that day and year. Next to the counter there is also a compressor so that cyclists can pump their tires up. Both the counter and pump are similar to the ones in Gothenburg, see figures 4 and 5.



*Figure 4 and Figure 5* **Bicycle counters in Gothenburg (left) and in Malmö (right).**  
Source. Lundby Mobility Centre (2006) and Malmö Stad (2006)

## 6 Groningen

### 10,000 cyclists a day pass the crossroads with no rules.

*Imagine the scene, a city park on a dark November evening where two busy cycle routes cross each other at 90 degrees. There is a constant stream of cyclists moving in every direction across this junction and no rules, no traffic signals, no give way sign, nothing. Nobody stopped; everyone just kept rolling on his or her way. To add to this there were also a minority of cars mixed in (less than one car to every ten bikes) doing the same thing in the same space. The only time that anyone needed to stop was when we tried to cross on foot. It was our fault; we stopped. When we were halfway across we paused to allow a bike to pass in front of us. That was our mistake. The cyclist seeing us in the road automatically steered directly at us. If we had just kept moving she would have neatly passed behind us. What was the cyclist's reaction, she stopped so we could finish crossing and smiled. The next time we tried to cross we just kept walking and that was it, no problem.*

### 6.1 The city

Groningen is the seventh largest city in the Netherlands with a population of 178 thousand. Located in the north of the country it is the capital of the region with about a half million inhabitants<sup>109</sup>. Groningen's university has 42,000 students; the city is also home to a large academic hospital<sup>110</sup>. With its old historical centre surrounded by a moat Groningen was badly damaged during the Second World War. The city is flat and compact, with 90% of all jobs and nearly 80% of inhabitants living within a 3 km radius from the main square<sup>111</sup>.

It is impossible to visit the city of Groningen without noticing the abundance of bikes. 60% of all journeys in the city are on a bike. Groningen doesn't need a map showing the cycle paths because every street is suitable to cycle down. In the centre there are almost no cars and the street design integrates different traffic forms in the same space rather than separating them as is usual in most modern urban traffic planning. During the day there are almost as many cyclists in the "pedestrian zone" as pedestrians. The amount of people moving around the whole city centre even late at night on foot or by bike is astonishing for a city of this size. Central Groningen is a very pleasant place to move around in, peaceful yet at the same time vibrant.

Situated inland approximately on latitude 53°N Groningen receives an annual rainfall of 829.9 mm spread over 175 rainy days with at least 0,1 mm precipitation. The average temperature calculated on a normal year 1971/2000 is 9°C<sup>112</sup>. The flat and compact city is inviting for cyclists, but a number of barriers do exist. A traditional trading city, Groningen is placed in between two rivers and is today also circled by a major ring road that in part is joined to the international E-road network. The many waterways are made crossable by evenly spaced bridges.

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<sup>109</sup> Fietsberaad (2006)

<sup>110</sup> Gemeente Groningen (2007a)

<sup>111</sup> Fietsberaad (2006)

<sup>112</sup> Weer Nederland Europa (2007)

## **6.2 Overall policy**

Like the Swedish cities Groningen had a large share of trips made by bicycle in the 40's and 50's, a share that declined as the economy and welfare improved. Not until the mid 70's did this decline in the number of cyclists stop, in part due to the oil crises, in part due to an upsurge in environmental concerns. So far the story is no different from that of Malmö, but the difference came in the length the local politicians were willing to go. In the 70's a string of political decisions meant that the city was kept dense and functionally mixed and that car traffic was restricted in the city centre. The city has since invested in cycle routes and levels of cyclist have risen again.<sup>113</sup>

In 1986 Groningen presented its first integrated bicycle policy document, including not only the infrastructure network but also policy on both traffic and social safety. Soon after the traffic department and the department of urban construction were fused and today mobility issues are administratively handled by the joint department of City Planning and Economic Affairs.<sup>114</sup>

Groningen was relatively early in implementing pedestrian and cyclist streets in the inner city. At first this caused loud protests, especially from shopkeepers but after a pilot scheme that closed part of the centre to traffic a referendum was held. After the local residents had experienced the advantages of a car-free centre 51% voted in favour of continuing the project.<sup>115</sup>

## **6.3 The infrastructure**

### **6.3.1 The cycle network**

In the central parts of the city, inside of the canal, car traffic is sparse and many streets are reserved for pedestrians and cyclists. Together with public transport these traffic groups are given priority in the city centre<sup>116</sup>. Streets through residential areas have a speed limit of 30 km/h to accommodate cyclists and pedestrians.

With nearly 200 km of bicycle routes the city of Groningen has set out to provide an extensive and comfortable network. To make the primary routes fast and safe they intersect with other traffic flows as little as possible and are drawn through populated areas. A fine web of secondary routes feed in to the primary network from residential areas<sup>117</sup>. The network consists of both separated bicycle paths that run along major roads leading to all areas of the city, and other streets are lined with cycle lanes marked in red. The combination of cycle paths, lanes and reduced speed on other residential streets make for many options when choosing which way to take. Our impression was that every street was in some way adapted or appended to facilitate cycling. The cycle paths and lanes have a breadth of 1.70 meters to allow two cyclists to be able to cycle side by side and talk. Where cycle lanes have been drawn on the road this width has been used even where space does not really allow it. In many places two cars can't pass each other without encroaching on the cycle lane. According to Cor van der Klaaw this didn't cause a problem and drivers slowed down and waited when

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<sup>113</sup> SMILE study tours: Groningen

<sup>114</sup> Fietsberaad (2006)

<sup>115</sup> Ibid

<sup>116</sup> City of Groningen's Planning and Economic Affairs dept. (2006a)

<sup>117</sup> City of Groningen's Planning and Economic Affairs dept. (2006b)

necessary.<sup>118</sup> All the cycle paths and lanes are laid using red asphalt to differentiate them from the normal road.

In central Groningen there is a bridge that needs to open regularly to allow the passing of barges that causes delays for both drivers and cyclists alike. This delay has been removed for cyclists effectively by building a separate higher bridge that doesn't need to open for cyclists and pedestrians next to the opening bridge. When there is no boat coming cyclists use the low bridge and when a boat comes they can either wait or cycle up an incline and over the high bridge.

### 6.3.2 Traffic lights

The signal-controlled intersections in Groningen have a radically different system than the Swedish cities. One system in place involves giving a green light to all cyclists and pedestrians at the same time instead of giving a green light to motorists and cyclists travelling in the same direction at the same time. A program loop at a cross roads would be first green for motorists travelling along a north south axis followed by green for cyclists in all directions. Then the motorists travelling on the east west axis are allowed to pass followed again where possible by a green for all cyclists. This has two effects; one is that the conflict of turning vehicles crossing the cycle path never occurs. Secondly the cyclists get two green lights for every one green on the road reducing the cyclists waiting time. This could lead to conflicts between cyclists and pedestrians travelling in different directions and all have a green light simultaneously. In the limited time we observed traffic light controlled junctions in Groningen we did not see any sign of problems here.



**Figure 6 Green light for cyclists travelling in all directions.**

Source “Groningen: number one of European Cycling towns” by Cor van der Klaauw 2006, paper presented to ECOMM, Groningen.

As with the uncontrolled intersection previously described the cyclists do not show any problems in interacting with each other. Rather than a question of who has right of way the cyclists of Groningen seem to see each other coming and ride in such a way that they do not collide with one another, as seen in figure 6.

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<sup>118</sup> Interview with Cor van der Klaauw, Traffic and transport planner, City of Groningen, November 2006

Other intersections have different solutions. At many intersections with on road bicycle lanes cyclists can pass cars and get in front of them while waiting for the light signal. This lessens the discomfort of breathing exhaust fumes at the same time gets cyclists rolling quicker and out of the way for motorists wishing to turn. In addition to this, cyclists turning right are wherever possible not obliged to wait for green light. This right turn on red enhances the cycle traffic flow. The free space in front the queuing traffic allows waiting cyclists going straight to move into the centre of the street allowing cyclists turning right to pass them on the inside.<sup>119</sup>

### 6.3.3 Bicycle parking

It is impossible to visit the city of Groningen without noticing the abundance of bikes everywhere. A car park can be full but when it comes to cycle parking it seems that there is always space for one more. Groningen has the same parking standards as is used throughout the Netherlands and has been adopted in central Malmo. Navigating the pavement outside of a popular café is not easy. Although the risk of being rundown by a cyclist in Groningen seems low the risk of injury due to entanglement with bikes parked on the pavement is relatively high. Cor van der Klaaw explained that cycle parking is a continuous problem. Complaints from shopkeepers that customers cannot enter their shop because of parked bikes are common. The problem stems from lack of space to install bike racks. Generally cyclists do not want to park at any distance from their destination. This point can be emphasised by van der Klaaw's answer to our question about his personal cycling habits. At the question he looked embarrassed and admitted that he was very lazy, he takes his bike even if he is only going 50 meters down the road.

One of the solutions to the problem of overcrowding has been to reallocate on street parking for cars for bicycles instead. Each parking place for a car can easily accommodate ten bikes (see figure 7). This however does not help in the city centre, as there are already almost no places to park a car that could be converted.



*Figure 7 Parking space for one car or ten bicycles.*

Source “Groningen: number one of European Cycling towns” by Cor van der Klaauw 2006, paper presented to ECOMM, Groningen.

<sup>119</sup> City of Groningen's Planning and Economic Affairs dept. (2006b)

There is a risk of having one's bike stolen although the existing racks are designed so that the bicycle can be locked to them. The rate of bike theft was 3200 bikes a year 2004<sup>120</sup>. To combat this problem and at the same time free public space from bicycles overcrowding it, the city has more than 20 guarded parking facilities located to schools, library, and other destination points throughout the city centre. In many cases these facilities include baggage lockers and can provide other services. Most users pay via annual subscriptions. The idea of guarded parking at schools is to encourage parents to buy a good quality bike for their offspring.<sup>121</sup>

### 6.3.4 Inter modality

Taking a bicycle with you on the local busses is not allowed in Groningen as in the other cities but trains allow cycle transportation. The national trains service allows bikes for a surcharge of € 6.00 but only after 9am This makes it possible to take a bike anywhere in the country. The local trains allow bikes at any time and charge the same, this is relatively expensive and many commuters choose instead to leave a bike parked at the destination station. The station in Groningen has 6000 indoor parking places for cycles. 1500 of these are guarded and charge a fee for parking, 4500 of them are free of charge. The guarded places cost € 0.90 for a day card and € 25.00 for a year, which works out at roughly 10 cents a day<sup>122</sup>. There are security personnel even in the free area but they don't take direct responsibility for cycle security. Rather they are there to maintain a high standard of personal security for people collecting and depositing their bikes.<sup>123</sup>

The cycle parking facility is built onto the station. At a central point in the station just inside the entrance to the parking facility is the station bike shop. The cyclists in Groningen can quickly leave in their cycle for repairs as they arrive at the station picking it up on their return mended. Apart from repairs and selling spare parts the cycle shop also rents out cycles for € 6.50 a day against a deposit of € 50. To cater for people who regularly find themselves visiting different cities in the Netherlands there is a plastic card based system called OV-fiets. This allows the cardholder to easily obtain a rental bike at 80 different train stations around the country<sup>124</sup>. Cor van der Klaauw explained how this works. The card costs € 10 a year, mainly a symbolic fee, and hiring a bike at a station costs € 2.75 each time. When he has to visit the capital The Hague he simply goes to the bike shop on the station presents his card and cycles away. The whole process from getting off the train to cycling away takes only two or three minutes. This saves waiting for a bus.<sup>125</sup> The cost is about the same as a single ticket on the local public transport.

### 6.3.5 Safety and security

The numbers of accidents involving cyclists have had a steady decline in Groningen over the last ten years. At the same time the numbers of cyclists have risen, suggesting that there indeed is safety to be found in numbers<sup>126</sup>. No attention has been given to improving the safety of cyclists by promoting the use of helmets. In our observation we could not see a

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<sup>120</sup> van der Klaauw Cor (2006)

<sup>121</sup> Fietsberaad (2006)

<sup>122</sup> Ibid.

<sup>123</sup> Interview with Cor van der Klaauw, Traffic and transport planner, City of Groningen, November 2006

<sup>124</sup> Ensink Bernhard, (2006)

<sup>125</sup> Interview with Cor van der Klaauw, Traffic and transport planner, City of Groningen, November 2006

<sup>126</sup> van der Klaauw Cor (2006)

single bicycle helmet in use, and this was explained by Cor van der Klaauw as part of the view of the bicycle as an instrument of transport rather than a risk. The high numbers of cyclists mean that drivers are on the lookout for them, but also that most drivers are cyclists themselves<sup>127</sup>.

Early on in the cities efforts to provide for the cyclists needs, much emphasis was put on not disrupting the movements of cyclists and thus not putting them at risk from other vehicles. In the 80's the social safety of the cyclists was introduced as a concept and social security is now an integrated factor in the planning of cycle routes and other facilities for cyclists<sup>128</sup>. The fact that the cycle route network in Groningen is so dense makes it possible for cyclists to choose which route to use to get to a destination. While some ways may be straight and fast and others pretty by day, the city has complemented them with routes that run along main roads or in other ways are safer to use during the lonely nights<sup>129</sup>.

When designing underpasses social safety aspects are considered and as was pointed out in the section on inter modality the city planners also consider the safety aspects once the cyclist dismounts and provide security guards in parking facilities.

## **6.4 Cycling promotion and information campaigns**

### **6.4.1 Information**

The city of Groningen provides practical information about cycling facilities and services on their web page where the bicycle is described as the most practical way of getting around the city<sup>130</sup>. There is no bicycle map available at all; instead bicycle routes are incorporated in the tourist map. In information about traffic and parking, again it is pointed out that cycling is a good alternative.

Most campaigns to promote cycling seem to have been aimed at specific groups or at promoting newly introduced facilities. These campaigns include information about the guarded parking facilities. The city have also aimed safety campaigns at schoolchildren and encourages parents to take their children to school by bike rather than car to avoid the risks of car accidents outside of schools<sup>131</sup>. The schools also participate in the European Mobility Week with cycling activities. According to van de Klaauw the city has increased the focus on health aspects of cycling in recent campaigns<sup>132</sup>.

Much has also been done in connection to Groningen winning the award for best cycling city, presented by the cyclists' federation. Being the "number one of European cycling towns"<sup>133</sup> has become an identity and a selling point for the city.

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<sup>127</sup> Interview with Cor van der Klaauw, Traffic and transport planner, City of Groningen, November 2006

<sup>128</sup> Fietsberaad (2006)

<sup>129</sup> Interview with Cor van der Klaauw, Traffic and transport planner, City of Groningen, November 2006

<sup>130</sup> Gemeente Groningen (2007b)

<sup>131</sup> van der Klaauw Cor (2006)

<sup>132</sup> Interview with Cor van der Klaauw, Traffic and transport planner, City of Groningen, November 2006

<sup>133</sup> van der Klaauw Cor (2006)

## 6.4.2 Incentives

Getting around Groningen on a bicycle is on average 30% faster than with a car and this is not a coincidence. Through-traffic in the central areas of the city is made impossible through sector-divisions and car parking is mainly situated outside of the city centre and the fees have gone up<sup>134</sup> and cost € 1.50 per hour. There is however free parking for cars at the five park and ride locations in the outer areas of the city where drivers can transfer to buses or bikes to reach the city centre<sup>135</sup>.

The parking policy thus makes it both quicker and cheaper to use the bike instead of a car when moving around in the city. As in the whole of the Netherlands business trips made by bike also give an opportunity for a tax deduction of 6 Eurocents per km<sup>136</sup>.

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<sup>134</sup> Fietsberaad (2006)

<sup>135</sup> City of Groningen's Planning and Economic Affairs dept. (2006c)

<sup>136</sup> Rietveld Piet (2001)

## 7 Comparisons

### Every cyclist is unique

*One way to endeavour to understand the differences between the three cities is to try and describe the difference between the cities' cyclists. As we stated earlier in chapter 2, cyclists are not a homogenous group. So any attempt to make a generalisation of all the cyclists in a city is doomed to be subjective and possibly says more about the writer than the cyclists but nevertheless we observed clear differences in cyclist behaviour between the cities. Differences that, if not discussed, would leave this work poorer.*

*In Gothenburg the typical cyclist is part of a cool trendy minority. To cycle, especially during the winter months, is possibly as much of a lifestyle choice as it is a transport choice. The Gothenburg cyclist will dress to cycle, an aerodynamic helmet tops an outfit of waterproof Gortex and often a neon coloured reflector vest. The choice of bike is a relatively expensive mountain bike with 21 gears but no mudguards. After covering the distance to work in the shortest possible time the Gothenburg cyclist arrives flushed and proud after braving hazards of the elements and the city's traffic, possibly with a feeling of smug superiority over workmates with a car parked outside.*

*The Groningen cyclist on the other hand is part of the majority. The choice to cycle is completely related to arriving at the destination. In Groningen the street design means that a car is not the "one size fits all" solution to a persons transport needs. Why drive 5km then walk 1km from the parking space, that costs 12 Euros a day, to get to work when the distance is only 2-3km as the crow flies, or as the cycle rolls. The cycle is quite simply the easiest way to get about. After leisurely rolling along the cycle path, not needing to hurry secure in the knowledge that they're getting there quick enough as it is, they arrive unflustered and start work. The choice of machine is traditional; three gears are quite enough if a single speed won't do. Mudguards and a chain guard to keep the suit clean are a must. The only time it seems a cyclist would attract any kind of special attention would be if they were wearing a helmet. Something Groningen's cyclists never do.*

*The behaviour of Malmo's cyclists is somewhere in between the other two cities. Cycling is usually the most practical way to get about in the city but driving a car is less impractical than in Groningen. The Malmo cyclist, to beat the cycle thieves, rides a 20-year-old second hand 10 speed racer; one of the brakes and probably at least one of the gear changers is not working properly. Mudguards, more a question of whether they have fallen off yet or not. They own a helmet, admittedly, but usually can't be bothered to wear it. The style of riding is closer to Gothenburg's hurry than Groningen's calm. Social status seems more conspicuous, the well off arrive in a car, the poorer people come by bike and bus, this difference is most obvious in the lower rent areas with a relatively high level of immigrants. There social status seems to be connected to whether or not you drive a BMW.*

### 7.1 Differences in conditions and in cyclist behaviour

To a degree some of these differences can be explained by the geography of the cities. For example the use of specialist cycling clothing in Gothenburg could be appropriated to the longer distances in the city in combination with the higher level of rainfall, the necessity of protective clothing being greater. The hills surrounding Gothenburg could explain an abundance of gears. The differences in helmet use are on the other hand almost certainly more a result of policy at some level than purely geographical elements. The use of reflective vests

increasingly in Gothenburg might be a result of the lower level of cycling making cyclists more aware of the need to be seen in traffic. In Groningen a motorist needs to wait for a break in the cycle flow to cross a cycle route, in Gothenburg its more a case of looking to see if there is a bike coming. Gothenburg's position at 58° North also means it is the city with the least daylight during the winter months.

The policy in Groningen of proximity combined with actively making it extremely difficult to use a car to get around in the central areas of the city must be considered one of, if not the major reason why cyclists make up the majority on the city streets. This seems to be a simple and inexpensive solution to the problem of promoting cycling but it's not that simple to just turn off the traffic.

## **7.2 Policies common to all three cities**

Due to constraint of time our research has certainly missed some of the differences. We have however managed to identify a number of the most obvious differences that we shall present. First though it can be useful to quickly lay out the most obvious similarities. There are in all three cases similarities in how the planners have handled cycling. Here are a number of measures that all three cities agree are a good basic standard praxis. This does not mean that these shared policies are universally shared in other cities that we haven't studied. Therefore a brief summary of what is common to our cases is necessary to place the differences in a wider context.

- All three cities actively promote cycling. That is to say there is a pronounced wish to encourage more cycling.
- All have an extensive network of separate cycle paths.
- There is agreement that cyclists should be separated from other traffic travelling faster than 30km/h.
- Cyclists have their own set of traffic light signals.
- All three participate in the European mobility week

## **7.3 Differences in overall policy**

### **7.3.1 Overall policy directions**

As we've previously mentioned in Gothenburg the recent policy has very much centred on improving cyclist safety. In Groningen and Malmo the focus has been more on increasing cyclists speed and comfort. The policy in Malmo is centred on completing the cycle network and in the recent years also on promotional campaigns. Groningen's policy includes infrastructure that facilitates for cyclist and keeps them safe both from accidents and from crime and is integrated into other planning sectors. In both Malmo and Groningen it seems the policy direction has been that the best way to increase cyclist safety is through increasing the number of cyclists. Our study of literature on this subject backs up this concept of safety in numbers<sup>137</sup>. A EU study of what makes people choose cycling showed that 70% are persuaded to cycle by facilities that make cycling comparatively quick and easy<sup>138</sup>.

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<sup>137</sup> Jacobsen Peter Lyndon (2003)

<sup>138</sup> European Commission (1999)

### 7.3.2 The organisation of cycling measures

Organisational measures are one policy area identified by Rietveld<sup>139</sup>. The three cities have in different ways and through various organisational measures tried to cooperate with other actors in integrating cycling policy with other aspects of their city. Both Gothenburg and Malmo have worked together with employers to increase cycling as a way to get to the workplace. In Gothenburg much of this work revolves around the Lundby Mobility Centre. The traffic managing departments of course also cooperate with other city planners. In Groningen this cooperation has gone one step further and cycling issues are handled by the joint department of city planning and economic affairs as opposed to the more single sector department of traffic in Gothenburg and the technical service committee in Malmo.

## 7.4 Differences in infrastructure

### 7.4.1 Thinking between the cycle paths

As we have previously mentioned all three cities have extensive networks of bicycle paths but there are several differences worth illuminating. The major difference in the layout of the cycle network in the Swedish cities is mainly due to topographical differences between Gothenburg and Malmo. Even in Groningen the main network has a similar layout to the other cities. The major difference in Groningen is not so much the cycle network as what is in between. In Groningen the planners have assumed that cyclists want to be able to ride everywhere in the city. In Malmo the mesh size of the network is around 500m, which is comparable to Groningen, but Groningen also has a secondary network connecting and complementing the major cycle routes. Whereas in Gothenburg and Malmo a cyclist needs to find the cycle path in Groningen it's very difficult to choose a route that isn't suitable to cycle.

In our theoretical framework we saw that infrastructure does play a very important role in promoting cycling, with cyclists claiming that cycling facilities, access and shortcuts would encourage them to cycle more often<sup>140</sup>.

In Gothenburg and Malmo cycling is prohibited on pedestrian streets, this is not the case in Groningen. This is possibly one of the more interesting differences between Groningen and the Swedish cities. In many parts of central Groningen no attempts whatsoever has been made to separate cyclists and pedestrians. As far as we could observe this has not lead to any serious conflicts between the two groups. In the Swedish cities pedestrians and cyclists are always separated with the exception of the *gårdsgator*, living streets, where cyclists and cars are allowed but the pedestrians have right of way. What is interesting here is that conflicts between walkers and bikers appear to be a recurring problem in Sweden. One of the most common complaints in the traffic study from Malmo is that of recklessly dangerous cyclists on pavements and in pedestrian areas. We shall return to this discrepancy in the next chapter.

The layout of the networks indicates something that also can be seen in other policy areas, there is a considerable difference between the Swedish cities and Groningen in what priority is given to cycling. Not being confined to certain routes and being allowed on all streets

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<sup>139</sup> Rietveld Piet (2001)

<sup>140</sup> European Commission (1999)

makes cycling faster and easier, but could also be important on a more symbolic level, making cyclists feel prioritised rather than a minority and a problem to be handled.

### **7.4.2 Traffic lights**

In both Groningen and Malmo cyclists have a reserved place at the front of the queue at traffic signals allowing them to move off first. Cyclists are not given any special priority in Gothenburg. Where a separated bike path at the side of the road has traffic lights in Malmo the cyclists signal changes a few seconds before that for cars travelling in the same direction. This gives cyclists a head start in front of right turning traffic. In Gothenburg the cyclist signal changes slightly later than the main lights. The problem here is traffic turning right and crossing the cyclists' path. If the cyclists go first it makes them more conspicuous in the intersection and less at risk. The slight delay in Gothenburg on the other hand allows impatient drivers at the head of the queue to try and nip round the corner before the cyclists have started rolling. Allowing cyclists to go first at traffic signals may not decrease journey time by any considerable amount but they give that impression. Who does not appreciate being allowed to the front of a queue?

Groningen has a different system where cyclists are given a green light in all directions at the same time, effectively removing any conflicts with motorised traffic at this kind of intersection. Bicycles usually have two phases minimising waiting time. The phases are also shorter. This reduces the capacity of the intersection for motorised traffic whilst speeding it up for cyclists. This can help to improve the bike-car travel time ratio. Giving priority to cyclists at traffic lights is one relatively simple policy that does not demand an enormous amount of money to implement. It is interesting that a city with so much emphasis on safety as Gothenburg isn't pursuing this type of solution at intersections. It is well known that speed is important when choosing a mode of transport, which suggests that all policies that improve the bike-car travel time ratio should have a positive effect on cycling<sup>141</sup>.

### **7.4.3 Inter-modality and bicycle parking**

Most journeys are in some respect inter-modal, a car driver walks from the parking lot and the commuter changes from the regional train to the local bus. Inter modality and the bicycle is about being able to use a bicycle in combination with other transport modes. This is very much associated with cycle parking facilities placed at transport hubs. In Groningen there are 6000 inside parking places for bikes at the train station, 4500 of which are free of charge. In the larger city of Malmo there is place to park 3000 cycles outside of the station. Gothenburg the largest city of the three has 350 places. The stations in Malmo and Groningen are both easily accessible by bike from all directions. This is not the case in Gothenburg.

The differences in parking facilities at the three stations are enormous and difficult to explain. It is surely no great surprise that some of the cycle racks in Gothenburg have three times as many cycles parked in them as they were designed for. A large proportion of the car traffic in Gothenburg consists of drivers who commute across the city's boundary by car. This is the group who first of all might be persuaded to have a parked cycle waiting for them at the station. The situation at Gothenburg station is not favourable for parking a bicycle there overnight. The situation in Malmo is considerably better than it is in Gothenburg but even here people might be reluctant to leave an expensive bicycle overnight at the station. The

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<sup>141</sup> Frändberg Lotta et.al. (2005)

price charged in Groningen for guarded cycle parking of €25 a year seems to be a nominal fee and it is questionable whether it covers the running costs of the facility. Here the question is how many other secondary savings can be made. The health improvement for anyone who swaps the car for a combination of train and cycle is one obvious saving as is the removal of the externalities associated with car use in the city. Another effect of guarded parking could be an increase in physical safety as people dare to use and leave more expensive cycles with fewer mechanical faults. The possibility of having repairs carried out at the train station should also lead to better overall cycle maintenance and better safety.

It is difficult to say what effect there is of being able to take the bike on a local train for everyday cyclists. Someone who is travelling to a city for a slightly longer period, say to work for a week might find it useful to take his or her own bike with them if it's possible. Also here a number of people may choose to drive instead of the train and bike combination just so they have the car with them to be able move around in the destination city.

Inter modality is one way to put the cycling facilities and policies in a larger perspective, and could be seen as an indication of how serious the city is in its efforts to promote and expand cycling, rather than merely accommodate the existing cyclist in the city.

## ***7.5 Differences in cycling promotion and information campaigns***

### **7.5.1 Helmets and safety**

Many bicycle accidents are single accidents, hence the attempts by all three cities to remove any stationary objects a cyclist might collide with. The use of cycle helmets varies greatly between the three cities. Gothenburg has driven a successful campaign based on the risks of cycling without a helmet. This has resulted in almost half of the cyclists using a helmet. Malmo has had a less intensive campaign with a humorous angle that has been less successful with fewer using a helmet in Malmo. In Groningen usage of cycle helmets has never been encouraged and nobody wears a helmet in the city. This seems to be solid evidence that campaigns to increase helmet use can work but it raises the question of whether this type of drive might not dissuade people from cycling. Is cycling a dangerous activity that requires protective clothing or is it a comparatively safe mode of transport? Could the helmet drive in Gothenburg be one explanation behind the lower proportion of cyclists in the city? One argument is that too much emphasis on safety discourages potential cyclists by over exaggerating the risks involved<sup>142</sup>. Information campaigns to improve cyclist safety it seems can, not only deter cyclists, they could potentially work to reduce the actual level of cyclist safety by keeping the number of cyclists down.

Whilst Gothenburg has focused on physical safety there has been little thought given to the cyclists feeling of security above the measures taken to improve visibility and lighting along the shared bike/footpaths. Malmo also has problems with cyclists feeling unsafe at night outside of the city centre but this is a problem Malmo's traffic office is aware of and are trying to solve. The problem is eased in Groningen by the choice of different routes available to cyclists, allowing cyclists to avoid dark stretches where there are only a few people moving about. A feeling of security is one factor that affects peoples travelling choices. When it comes to persuading people to cycle instead of using a car it is important that the whole

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<sup>142</sup> Cox Peter (2005)

journey from door to door feels safe. It can be enough that one short part of the cycle route, such as a narrow tunnel, feels unsafe to put a potential cyclist off.

### 7.5.2 Information

None of the cities appears to have a coherent focus on what factors should be used in their promotion campaigns aimed at getting more people on their bikes. As discussed in the theoretical framework people want to travel in ways that are fast, flexible and cheap<sup>143</sup>. The convenience and the low cost of cycling are seen as selling points in Gothenburg and Malmo as well as in Groningen. This is mixed with arguments for better health and to a lesser extent environmental concerns. One thing that does seem to be consistent in Gothenburg's information material is advice on how to avoid getting hurt whilst cycling. This type of information is also common in Malmo, but from what we have been able to study they have opted for more of identity and status building of cyclists with the prominent example of the promotional book "Famous people who've cycled in Malmo" ("*Berömda människor som cyklat i Malmö*")<sup>144</sup>. Groningen, it seems, is banking on its cycling culture and is not putting as much effort in to promotion campaigns as the Swedish cities.

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<sup>143</sup> Frändberg Lotta et.al. (2005)

<sup>144</sup> Malmö stad (2007e)

## 8 Conclusions and discussion

*In which we draw conclusions and present answers to our original questions which leads us to a series of suggestions for planners to encourage cycling. The chapter concludes with comments on possible limitations of the study and areas in need of further study.*

### 8.1 Conclusions

The aim of this research has been to explore how effective different planning strategies are in encouraging a greater use of the bicycle in everyday urban transportation by comparing two more successful cities, Malmo and Groningen to Gothenburg. The focus of the comparison has been on cycling infrastructure and public information aimed at encouraging cycling. We have found that there are fundamental differences between the cities such as size and topography that can explain some of the varying levels of cycling but much remains to be accounted for. It is not a coincidence that 60% of journeys in Groningen are made by bicycle and it is not futile for Malmo or Gothenburg to try to promote cycling. We cannot point to one policy or a specific infrastructure design as being the key to encourage cycling. Rather it appears from our research that a whole pallet of different measures used in coordination with each other is the most effective approach.

The differences in design of cycling infrastructure make a not insignificant but still apparently a minor difference. As we have seen there are major similarities between the cycling infrastructures in the three cities. Especially similar are Gothenburg and Malmo. Surely if the infrastructure was the most important factor there would be less of a difference in cycling between the two Swedish cities. Or to put it another way it would be extremely tenuous to suggest that the relatively small differences in infrastructure between the cities is the major factor. There are however both qualitative and quantitative differences.

In two areas the differences between the three cities can be illustrated with a scale from little to substantial attention. In these areas, priority of the bicycle over the car and the provision of cycle parking facilities at transport hubs, the difference is a question of degree.

Priority of bicycle over car

Gothenburg-----→Malmo---  -----→Groningen

While cyclists in Gothenburg seldom are given priority over cars, they are in Malmo allowed to the front of the queue or given a green light signal before the cars. Groningen also reserves the front of the queue for cyclists or gives them more slots in the light system as they are all allowed to move off at the same time. Cars are in Groningen led on detours while bicycles are more flexible and have shorter routes.

Parking facilities to promote inter modality

Gothenburg-----  -----→Malmo-----→Groningen

In Gothenburg the attractiveness of combining a train journey into the city with a bike handily parked at the station is comparatively low. Malmo on the other hand provides a large number of parking places by the train station although these are unguarded. There are also bike racks

at all the bus stops outside of the ring road. In Groningen cyclists have a choice between guarded or unguarded parking by the train station, where they also may rent or service a bicycle. The difference in the provision of cycle parking places close to the train stations is considerable. Simply allocating space for secure parking is not on its own going to increase the numbers of inter-modal cyclists but that is not to say it is not a vital factor. A person will not use a cycle parking facility just because its there but they most certainly will not use it if it doesn't exist.

In other areas, such as information and promotional campaigns the cities have gone down different roads and cannot be compared in quantitative terms. Differences in public information aimed at encouraging cycling appear to be at least as important as infrastructure if not more so. The information and promotion campaigns in Groningen are centred on informing the citizens of new infrastructure for bicycles, whilst Malmo are working towards building a more positive image of cycling and cyclists. This is also true in Gothenburg but to a lesser extent. Gothenburg is more focused than the other two cities on keeping cyclist unharmed should they have the misfortune to be involved in an accident. This is a good approach if the aim is to reduce head injuries from single accidents, but not if the aim is to increase the number of cyclists.

Integration appears to be a key aspect in several respects. In this respect Groningen is way ahead of the other cities. On an administrative level there is not even a department dedicated to dealing with traffic let alone cycling. The same department deals with all aspects of city planning. This could have resulted in cycling policy falling into neglect but it appears that the opposite happened. Cycling policy is an integral part of every aspect of city planning.

Then there are the differences in physical integration. Is it a coincidence that we found no evidence of conflicts between cyclists and pedestrians in Groningen where the two transport modes in many places sharing the same space. Whilst in Sweden, where cyclists and pedestrians are strictly segregated, there appears to be a large amount complaints arising out of conflicts between bikers and walkers. The integrated spaces in Groningen are mainly in the central area where space is limited. It seems that giving equal right of usage to pedestrians and cyclists in the same space could make each group more tolerant of each other. Where as in Sweden it is possible to walk on a bike path or ride on a pedestrian street, two common grounds for complaint, this is not possible in parts of Groningen as the space is common ground. It is hard to be certain if this is the case, the fact that almost everyone in Groningen is a cyclist at some point might also lead to a higher level of tolerance between the two modes. As with many things the truth probably lies somewhere in-between.

## ***8.2 Turning off the traffic***

Part of Groningen's success in promoting cycling has been due to reducing the amount of car traffic in the city centre. This has two clearly beneficial effects on cycling. Firstly by making car access harder it gives comparative easier access for bikes and secondly by reducing the number of cars cycling becomes more pleasant and relaxed. Reducing other traffic definitely appears to be a good way to promote cycling but it's not entirely without problems.

Anybody regularly using a car in central Gothenburg or Malmo is likely to be highly negative to any policy that reduces his or her mobility. This resistance could be put down to reactionary conservatism; it could also be a question of the bicycle's lower social status,

making the driver reluctant to lower their “standard of living”. Another possibility could be, as Peter Cox suggests, that many drivers don’t see the bicycle as a means of transport. They see the bike as a toy, cycling as something they might do on a holiday<sup>145</sup>. Denying the privilege of driving into the city to someone who’s set of values doesn’t even encompass the concept of a bicycle as an alternative might easily be regarded as totally denying them access to the central areas. Something that would explain a large degree of hostility to reducing car access. In Gothenburg approximately 75% of journeys in the city are made by car<sup>146</sup>. This means that drivers represent the political majority. If the political parties sitting in power alienated and consequently lost the votes of Gothenburg’s drivers they would almost certainly lose power in the next elections. Due to this problem any change needs to gradually allow for the benefits of reducing the level of car traffic on a street to be observed and appreciated before the next street is changed. But even here there can be opposition.

Some of the protests against reducing car access to certain streets are directed against the gentrification of the street that follows. In a recent article in an independent Gothenburg newspaper (Göteborgs Fria Tidning), the argument against changing the character of a street to make it a *Gårdsgator* or a *living street* illustrates some of the complexities of the problem of altering traffic access. The street in question is home to a number of businesses of a pornographic character. The other residents don’t really approve of these shops and clubs but they put up with them. Otherwise the street is a lively *mélange* of bars, cafes and small shops. If the street were restricted for cars, the sex clubs would lose their customers, raising the tone of the area and consequently the rents. Clearly those with businesses that fit in with the new character of the street would do well from the change but the smaller diverse non-pornographic shops and bars fear they would be forced to move. The argument is similar to that from Groningen in the 70’s. If the cars go we’ll be ruined only the reverse. If the cars go we’ll be forced to move because of rent increases. A look at the other streets in Gothenburg that have had reduced car access and been made *living streets* tends to support their fears of gentrification.<sup>147</sup>

It is ironical how the complaint has changed against restricting car access from the one used in Groningen, that removing cars from a street would lead to an economical demise. Now it is more the case of, don’t gentrify my street, let the dirty cars stay, they’re bad for business. It is possible that the gentrification problem stems from the fact that there are only a handful of living streets. The very name living street has positive connotations and it is not only our subjective view that it’s more pleasant to be in a streetscape that doesn’t have cars speeding by all the time. If this were the case then converting all the streets in a larger area at the same time to, let us call it, car-light streets could at least slow down the onslaught of gentrification and allow streets to maintain a diverse character. As we stated earlier politicians are wary of offending motorists, this seems to be something of a *Catch 22* situation. Any solution is going to have to be based on a democratic discussion between all the effected parties. It will surely require politicians and planners that dare to listen to the people and no less importantly ordinary people that dare to trust politicians and planners to forge a solution.

In the introductory chapter we suggested that increasing the number of cyclists could help to reduce the number of cars. This study’s conclusions point to the fact that reducing the number of car journeys is one of the best ways to promote cycling. This is hardly a chicken and egg scenario. It seems that the heavier the traffic, the fewer people are prepared to cycle.

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<sup>145</sup> Cox Peter (2005)

<sup>146</sup> Göteborgs stad Trafikkontoret (2006b) pp14

<sup>147</sup> Hagberg Mattias (2007 January 8)

Promoting cycling seems to be a relatively ineffective way of reducing car traffic but reducing car traffic on the other hand appears to be a remarkably effective way of encouraging people to get on that bicycle and ride.

### **8.3 Three easy ways to encourage cyclists and two that are not so easy**

- 1- Don't concentrate on safety; concentrate instead on increasing cyclists' average speed by removing obstacles.
- 2- Give the cyclists priority at traffic lights; let them go to the front of the queue and move away first.
- 3- Provide secure cycle parking at transport hubs such as railway and buss stations and park and ride facilities.
- 4- Assume that cyclists want to be able to ride everywhere in the city, restrict other motorized traffic when conflicts occur instead of the other way round.
- 5- Reduce the attractiveness of the private car within the built up area, by limiting car access and providing fewer places and higher prices for car parking etc.

### **8.4 Areas requiring further study**

As this study has come to its conclusion it has along the way given rise to a number of interesting questions. One area this study has not been able to cover yet is undoubtedly relevant are the political processes and attitudes to cycling in our three case cities. It is highly likely that in all three locations there has been a mixture of political opinion and a degree of lobbying regarding cycling policy. These differences of opinion could affect many important factors such as the level of investment. Both opinion and financial factors are known barriers to implementation of transport measures.

Connected to this, reducing car traffic as we have discussed is contentious and may have consequences that reach far beyond just traffic. The connection between access for different transport modes and the functions of neighbourhoods and areas deserves more research efforts.

Finally, our study of the cycling policies does give an impression of which policies are the most effective but the question of why a person decides to cycle or not to cycle is an inherently personal question varying widely from individual to individual. A further study with a large empirical base actually asking people why they cycle and possibly more importantly asking why people don't cycle would be invaluable in assessing the impacts of different policies. This is indeed something not only for scholars to consider, but also for planners to follow up on.

## Interviews

Cor van der Klaauw, Traffic and transport planner, City of Groningen, November 2006

Leif Jönsson, Project Manager for Bicycle City Malmo, City of Malmo, November 2006

Johanna Stenberg, Bicycle co-coordinator, City of Gothenburg, November 2006

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# Appendix

## Interview themes

### *Overall*

- **Why** - what is the motive behind cycling policy? Is it a matter of cyclists demanding better facilities, planners providing facilities to encourage cycling or something else?
- **Economy**- how much money has been spent on the promotion of cycling and how has this expenditure been justified by the respective city councils?
- **Other traffic measures**- what other traffic policies are followed in the respective cities that are not directed primarily at cyclists but can have an effect on them. Traffic calming, new roads for cars or facilities for pedestrians could all affect cycling. Which mode of urban transport receives priority in planning?

### *Hard*

- **Infrastructure**- what if any are the differences in cycle infrastructure between the case cities. This includes positioning, quality and maintenance of the cycle network, how are intersections where cyclists and motorists meet formed. How are barriers such as motorways, railways and rivers made crossable for cyclists? What measures have been taken to eliminate the need for starting and stopping, facilitating a constant pace?
- **Safety accident**- what has been done to improve safety for cyclists, this includes information directed both to cyclists and other road users. This also includes physical safety measures, how do these affect the functionality of getting from A to B?
- **Aesthetics**- how has the placing and spatial forming of the cycle infrastructure been used to create a more pleasant milieu for cyclists. Does this affect the functionality of the cycle route?
- **Parking**- what kind of cycle parking has been provided, does this include protection from the weather and would be cycle thieves?
- **Inter modality**- how is cycling integrated into the rest of the city's transport system,
- **Social safety**

### *Soft*

- **Information**- how have the respective cities promoted the idea of cycling. What angle of approach has been used in the information material, how has it been presented and how widely has the information been spread. The quality of maps of and direction signs for cyclists are also relevant in the promotion of cycling
- **Carrot and stick**- what policies have been implemented to make cycling more attractive than driving? This could include reduction or increased cost of parking places for cars, financial incentives for cyclists such as tax reductions or changes in traffic regulations such as giving right of way for cycles over cars at intersections.