



# COMMUNICATING DANISH BICYCLE CULTURE TO VISITORS IN COPENHAGEN

## The Design of a Cycling Guide for the Dansk Cyklist Forbund

An Interactive Qualifying Project submitted to the faculty of Worcester Polytechnic  
Institute in partial fulfillment of the requirements for the Degree of Bachelor of  
Science

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This report represents the work of three WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review.

## ABSTRACT

This project, sponsored by the Danish Cyclists Federation, deals with enhancing the communication of Danish bicycle culture to visitors. The goal of this project was to create a resource to help visitors to Denmark effectively learn about cycling culture. In addition, the resource is meant to aid in decreasing the intimidation factor of cycling in Denmark, thus encouraging visitors to cycle. In order to determine the best methods of communicating bicycle culture and the most important aspects of bicycle culture to communicate to the target audience, interviews of international students, cycling experts, and people knowledgeable about Copenhagen tourism were conducted. Also, the group members kept observation logs noting behaviors that seemed strange or unexpected to them. The project deliverable was a blog with videos, pictures, and written explanations of various aspects of bicycle culture would be most useful. The guide was made in the form of a WordPress blog titled, Cycle Guide ([cycleguide.dk](http://cycleguide.dk)). Cycle Guide provides an effective and accessible way to communicate and learn about bicycle culture online.

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## AUTHORSHIP

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## EXECUTIVE SUMMARY

The city of Copenhagen has a historical and established culture with many unique characteristics distinguishing it from other cities around the world. One particularly unique element of Copenhagen's culture is its bicycle culture. The term bicycle culture encompasses many different aspects related to cycling. Bicycle culture is used to discuss a region's or a group of people's cycling infrastructure, cycling ridership, learned behaviors, attitudes, practices of cyclists, cycling safety and policy, cycling organizations, and cycling subcultures. Denmark as a whole, especially the city of Copenhagen, has a world-renowned and established bicycle culture. Since bicycle culture is a complex entity, it is a difficult concept to grasp for those who are unfamiliar with it. Previously, there was no existing cycling resource in Denmark to inform visitors about either the practical or unique aspects of Danish bicycle culture. Visitors who wish to cycle in Copenhagen could benefit greatly from an informative cycling resource. In fact, the Danish Institute for Study Abroad, a school for American students studying in Copenhagen, and the American Embassy in Copenhagen contacted the sponsor of this project, the Danish Cyclists Federation, asking for such a resource. The Danish Cyclists Federation displayed the egalitarian nature of the Danish people by wanting to facilitate the inclusion of visitors to Copenhagen into Danish bicycle culture and responding to this request by initiating this Interactive Qualifying Project in collaboration with WPI.

The goal of this project was to assist the Danish Cyclists Federation in communicating bicycle culture to visitors and tourists planning to cycle in Copenhagen. The group created a web-based cycling resource called Cycle Guide ([cycleguide.dk](http://cycleguide.dk)), which is intended to inform users of the basics of cycling in order to cycle safely and without intimidation. Along with safety and practical information, the guide is meant to be used as a way to explain other elements, and provide a means of facilitating immersion into Danish bicycle culture.

Many strategies were implemented to learn about bicycle culture to an extent great enough to effectively convey it to visitors in Copenhagen. Extensive research, interviews, on-site observation, and fieldwork were conducted on the history of cycling in Denmark, elements of Copenhagen's bicycle culture (cycling infrastructure, cycling ridership, cycling organizations, etc.), bicycle cultures from other countries, existing cycling resources, our target audiences' make-up and needs, potential forms of media for the guide, and methods of increasing awareness of the guide.

One of the key findings was the dynamics of the cycling infrastructure. The roads were categorized according to their safety for cyclists, and annotated pictures were created for each road type. The group found a resource that explains the different intersection types. Also, a complete list of road signs along with explanations in Danish was obtained. For the confusing signs that one would see regularly, the explanations were translated into English.

Additionally, information on the cycling rules and behaviors of cyclists in Copenhagen was obtained. This information included the full list of formal rules such as the rule for turning right on a red light, and how to legally perform a left turn. The common cyclist behaviors, including illegal behaviors, were investigated through interviews with the Copenhagen Police and Danish Cyclist Federation workers as well as through fieldwork. The group also learned about what cycling tips are useful for people cycling in Copenhagen for the first time from interviews with a representative from Wonderful Copenhagen (the primary tourism company in Copenhagen), owners of bicycle renting companies such as Københavns Cyklebørs and Baisikeli, International Students, and from the group's own experience.

Analysis of the target audience was another important objective. The target audience was divided into two main groups: short term visitors, and extended stay visitors. Through interviews of target audience members as well as people knowledgeable about the target audience, the group determined what content would be most useful to the target audience and what mode of communication would be best suited for relaying this information to the target audience.

Aside from Copenhagen's bicycle culture and the target audience, research was done into various media that could be used to communicate the information that was gathered. This included research into pamphlets/leaflets as well as web based media such as Wikis, blogs, Youtube videos, and Facebook groups.

From the analysis of this information, several strong points of the web-based blog media were identified. Blogs are easily accessible, facilitate online communication, and do not require one to build a website from scratch. For example the popular, well-established blog platform WordPress has premade themes and layouts that can be easily customized. Many of the interviewees confirmed that a blog was a form of media that they would use to learn about cycling culture. The concept of using a blog was also well received by the bike renting companies that were interviewed; interest was expressed in linking to the blog.

Based on this analysis, the group decided to create a WordPress blog to effectively communicate Danish bicycle culture to visitors to Copenhagen. The blog created, Cycle Guide (cycleguide.dk), serves as a means for tourists to have access to what the group determined to be the most important and relevant information on cycling in Copenhagen. Figure 1 shows the blog in its initial state. The groups that have an interest in promoting Cycle Guide were contacted and informed of the blog's existence. Many of them agreed to link to Cycle Guide and thus increase awareness of it. Additionally social media such as Facebook and Youtube were utilized to increase awareness of Cycle Guide. Also the group developed strategies to continue increasing awareness and creating content for Cycle Guide after the group leaves Copenhagen.

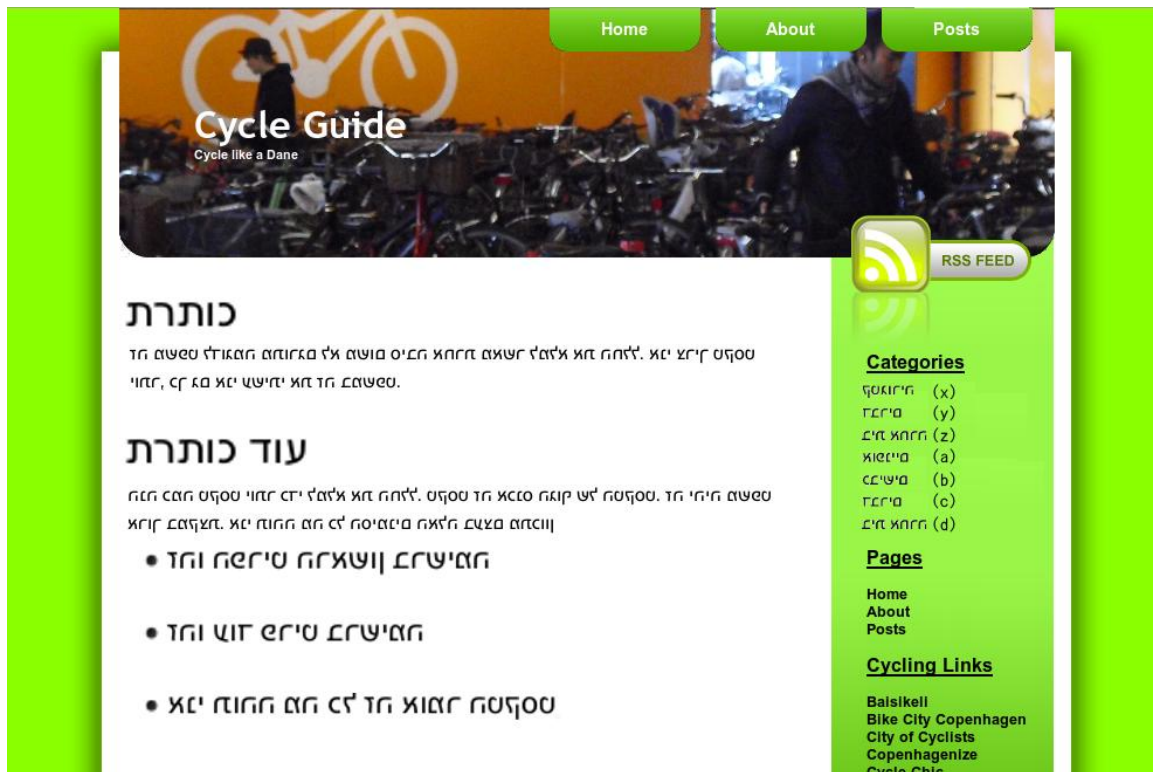


Figure 1: Showing the blog in its initial state. The content has been filtered out of the screen shot.

Cycle Guide has two main focuses. One focus is articles and media that discuss the practical matters of cycling. This section includes items such as: instructional videos, written explanations of certain maneuvers and traffic signs, top ten cycling tips, basic advice, road rules, and infrastructural related posts. The other focus is content that discusses unique aspects of Danish bicycle culture. This section contains photos of cycling Danes doing what they perceive as everyday and normal, but outside observers would perceive as out of the ordinary. Users will also be able to make posts on the blog themselves, allowing them to communicate with one another. Cycle Guide also provides users links to a variety of well-established cycling websites. The content, usability, accessibility, and interactive capabilities of Cycle Guide should help facilitate the communication of Danish bicycle culture to visitors in Copenhagen.

Aside from the creation of Cycle Guide, it was also suggested that a pamphlet be created. Due to time constraints, the group could not create and prototype the pamphlet so instead the pamphlet content was recommended. Also, the group contacted several bicycle renting companies and arranged for the pamphlet to be prototyped at the renting companies once it is created.

## CHAPTER 1: INTRODUCTION

In recent years, cycling as a mode of transportation has been gaining popularity around the world. Cycling has many positive attributes, and there are many reasons why it can be a preferred mode of transportation. Increased cycling traffic decreases overall traffic congestion by reducing the number of cars on the road. In addition, cycling is a sustainable way of traveling since there are no harmful emissions, no excessive noise, and no fuel required. Cycling regularly to destinations such as work or school enables one to maintain a healthy lifestyle and reduce risks such as diabetes, cancer, obesity, and heart disease (ECMT, 2004). All of these positive attributes are part of the reason that cycling has been a popular mode of transportation in places like Copenhagen for many years, and has become a prominent aspect of the culture. Culture in general can be defined as “a set of learned behaviors, attitudes, and beliefs” (Culture, 2010). For the purposes of this study, we define bicycle culture as consisting of the cycling infrastructure, bicycle ridership, learned behaviors, attitudes, practices of cyclists, bicycle safety and policy, cycling organizations, and bicycle “subcultures”, such as those constituted through blogs, websites, and films relating to cycling. From this definition, it is clear that bicycle culture is a complex entity comprised of many parts, and that bicycle culture varies from place to place.

As a result of this complexity, it can be difficult for outsiders to understand and participate appropriately in unfamiliar bicycle cultures. Danish bicycle culture is unique, due to the substantial number of cyclists. This exacerbates the difficulties for outsiders to experience Danish bicycle culture, because even people familiar with cycling may not know the nuances of cycling in Denmark. In order for a cyclist to understand Danish bicycle culture, these nuances must be learned. For example, an experienced cyclist in America will likely be unfamiliar with the Danish use of sidewalks. In America, even though there is a rule forbidding cycling on the sidewalk, many cyclists still choose to cycle on the sidewalk because the roads are not safe for cyclists. Alternatively, in Copenhagen, most roads have high quality bike lanes so cycling on the sidewalk is not acceptable, and one can be charged a fine of 500 kr (as seen in appendix D, fines for cyclists). Small details such as these can easily confuse a cyclist unfamiliar with cycling in Copenhagen. This creates a problem for both the visiting cyclists and the local Danes since the visiting cyclists would interfere with the flow of traffic.

To help ease outsiders into unfamiliar bicycle cultures, some countries have released bicycle guides. For example, there is a particularly high quality bicycle guide for the Netherlands (Dutch Ministry of Transport, 2009). Also, organizations such as the European Cyclists' Federation (ECF) have been hosting events to promote bicycle awareness, such as Velo-City, a yearly cycling conference (City of Copenhagen). In Copenhagen, a member organization of the ECF called the Dansk Cyklist Forbund (DCF) promotes bicycle tourism by making it easier for outsiders to experience

the Danish bicycle culture. To accomplish this, the DCF has had students at Worcester Polytechnic Institute (WPI) conduct projects such as the creation of guided bicycle tours around Copenhagen (Moore, 2002).

Despite the effort that has gone into making it easier for foreigners to experience bike culture, it could still be easier for foreigners in Copenhagen. One part of the problem is that there is not an easily accessible and comprehensive set of bicycle rules or a bicycle guide written in English. This is a problem for people not familiar with the bicycle culture that choose to cycle in Copenhagen, because they would not know how to behave on the road. Additionally, this also poses a problem for local cyclists who may be inconvenienced by unsure cyclists. Compiling a set of rules, however, is just one part of the larger issue of ensuring that foreigners in Copenhagen can safely and actively participate in the bicycle culture. It is also vital that the bicycle resources contain information on other aspects of bicycle culture in Denmark. This includes information such as history of cycling, interesting bicycle routes such as the green wave (Colville-Andersen, 2008), bicycle fashion, etc. In fact, several organizations, such as bicycle renting companies and the American Embassy, have been asking for such a resource. Not much research has been done regarding how people unfamiliar with Copenhagen's bicycle culture can learn it, and how this process can be enhanced.

To remedy this situation, the Dansk Cyklist Forbund (DCF) has requested that cycling information resources, targeted at visitors, be created. This project fulfilled the DCF's request by providing a means to facilitate communication of Danish bicycle culture between local Danes and tourists through various media. To accomplish this goal, the group became accustomed to the cycling culture in Copenhagen through observation, research, and experience. Additionally, the group decided which forms the cycling resources would take, and what information would be contained in them. Finally, the group increased the target audiences' awareness of the project's outcome through marketing to maximize the usability.



## CHAPTER 2: BACKGROUND

The Dansk Cyklist Forbund (DCF) is trying to create a way to ease visitors into Danish bicycle culture. Currently, there is no comprehensive reference for cycling in Denmark that is easily accessible for visitors. Several organizations, such as bicycle renting companies and the American Embassy, have been asking for such a cycling reference to distribute. The lack of such a reference causes a problem because it makes it harder for visitors to participate appropriately in Danish bicycle culture. This chapter will give a brief history of cycling in Copenhagen, and define and explain bicycle culture, particularly Danish Bicycle Culture. Additionally, this chapter will highlight existing bicycle resources in Denmark and elsewhere. This information was the foundation for understanding what forms the project outcome took, and what information the resource contained.

### 2.1: DANISH BICYCLE CULTURE

A bicycle culture is comprised of the cycling infrastructure, bicycle ridership, learned behaviors, attitudes, and practices of cyclists, bicycle safety and policy, cycling organizations, and bicycle subcultures. The following sections of our research contain the information gathered about these specific components of bicycle culture. The group will focus on Denmark's bicycle culture, but the bicycle cultures of other countries were researched as well, to maximize our understanding of its uniqueness, and to better understand the perspectives that visitors from different countries will bring, so that we can communicate more effectively to visitors from these countries. Examining the different events that have led to Denmark's present bicycle culture is a good initial step in this research.

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#### HISTORY OF CYCLING

During the first half of the 20<sup>th</sup> century, cycling gained significant popularity in Denmark. The bicycle became more utilized due to the fact that cycling became an easy way to travel in urban areas. In the early 1900s, few people could afford a bicycle and it was considered a luxury item. The advantages the bicycle offered, such as wider range of mobile activity and greater speed than walking, soon became realized. The gradual increase in bicycle popularity due to an increase in affordability caused a shift in road construction. The cobbled pavement was hazardous due to the uneven surfaces. Additionally, nails from horseshoes posed a significant threat of tire punctures. Once bicycling started to gain attention and participation, there was a higher demand for improved road conditions. Bridle roads were then utilized by bicyclists due to their smooth stone surface. Bridle roads were trails originally made for horses, but were later developed and used for a wide

range of purposes (Lesotho, 2007). These paths were the first cycling paths since they provided a suitable surface for riding, and created a way for separating cyclists from other travelers.

During the period prior to World War II cycling became increasingly popular with almost a 30% increase in bicycle traffic from 1934 to 1939. Biking began to dominate larger cities due to the fact that biking to any essential destination was feasible. Cities had urban developments in close range, making cycling an accessible and desirable mode of transportation (City of Copenhagen, 2002).

During the German Occupation of Denmark from 1940-1945, the bicycle was favored even more because it did not require fuel. The fuel rationing that was occurring at the time made the bicycle the preferred mode of transportation. Bicycles become a large part of the urban scene, and due to the rise in popularity and necessity, bicycle theft became a significant problem (City of Copenhagen, 2002).

During the 1950s the bicycle trend rapidly changed due to the large increase in car traffic. The decline in bicycling traffic coincided with the increase in car use until the 1970s and the beginning of the 1980s. Several factors contributed to the re-population of cycling: the energy crisis, introduction of speed limits, and increasing environmental awareness (City of Copenhagen, 2009).

The energy crisis that occurred in the 1970s was a key ingredient in shaping Denmark's bicycle culture into what it is today. During this period, the decrease of transportation via automobile led to the increase of transportation via bicycle, and caused a need for change within the urban structure of cities in Denmark. The gradual improvements to and additions of "cycle-friendly" infrastructure within Denmark's cities over the past few decades helped pave the way for the number of Danes who choose to cycle rather than use other modes of transportation (City of Copenhagen, 2009).

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## CYCLING INFRASTRUCTURE

The infrastructure of a city greatly affects bicycle usage. A well planned cycling infrastructure encourages more people to cycle. For instance, the high proportion of bicycle trips that are made in Copenhagen is directly related to the well-planned cycle infrastructure of Copenhagen. In Copenhagen, the traffic primarily consists of cars, cyclists, and pedestrians. All types of commuters are taken into consideration in the planning of urban areas in Copenhagen. Urban planning has an impact on how the traffic flows, and how all types of traffic can integrate and coincide with each other with minimal safety concerns. One big challenge for any urban designer is

rush hour, primarily because many workers travel home from work by car. One way to reduce the problem of rush hour is to encourage more people to ride bicycles. To do this, the already extensive bicycle infrastructure in Copenhagen is constantly being improved.

There are numerous activities and initiatives aimed at improvements of the roads, cycle paths, and cycle lanes in Denmark. Cycle paths or cycle tracks have a pavement path and a curb, whereas cycle paths are painted directly on the pavement. Cycle lanes are usually painted as a blue path with a bicycle symbol indicating the direction of the bicycle flow. The main goals of these activities are ensuring safety, improving traffic flow, and increasing comfort. One initiative that is simple yet effective in improving cycling conditions is the implementation and use of bicycle railings. Copenhagen has implemented double railings, such as the one shown in Figure 2, as a convenience for cyclists who are continuing straight through intersections. The railing design consists of a high railing to grasp with his or her hand and a lower foot railing to rest his or her foot. Additionally, the foot railing serves as a way to push-off and quickly cross the intersection when the light changes (MacMichael, 2010). This is an innovative idea simply because it is low technology, low cost, and it caters to basic human behavior.

For example, when a cyclist in Copenhagen approaches a red light, the cyclist will wait with a foot on the curb. If there is a type of post, such as a traffic post, close enough to the sidewalk, the cyclist will rest a hand on it and thus maintain his or her balance while waiting at the intersection. This is necessary for a cyclist due to the fact that in most cases, the cyclist cannot touch the ground and balance without dismounting from the seat. The railings provide support for a foot or hand in a convenient location and enable the cyclist to remain seated. This solution is not practical to implement at every intersection, but it can be useful at specific intersections where having something to lean on is useful.



Figure 2: A picture of a Copenhagen double railing

In addition to improving the roads and cycle paths, there are initiatives set in place for increasing motivation for cycling. In the Netherlands, for example, employers have established motivating methods to encourage their employees to cycle to work. One of the methods is a system called “Trappers”. “Trappers” is a recording sensor at the workplace that tracks when a bicycle is within the vicinity of the work building. Whenever an employee chooses to cycle to work and is recorded on the Trapper system, he earns “points”. These points can be used to purchase products on the designated “Trapper” website (Dutch Ministry of Transport, 2009). This system offers an innovative way to encourage employees to cycle to work.

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## CYCLE PATHS

Denmark holds a long-standing tradition of building and maintaining cycle paths. The standard Danish urban cycle path or cycle track is positioned between the roadside and the pavement and is separated by a curb. Although factors such as topography influence the amount of bicycle traffic, well-built cycle paths can help alleviate discouragement such as hilly terrain. In general, due to consistent improvement, cycle paths serve the Danish population well. Figure 3 shows how the city of Copenhagen has worked to improve their cycling infrastructure over the past decade.

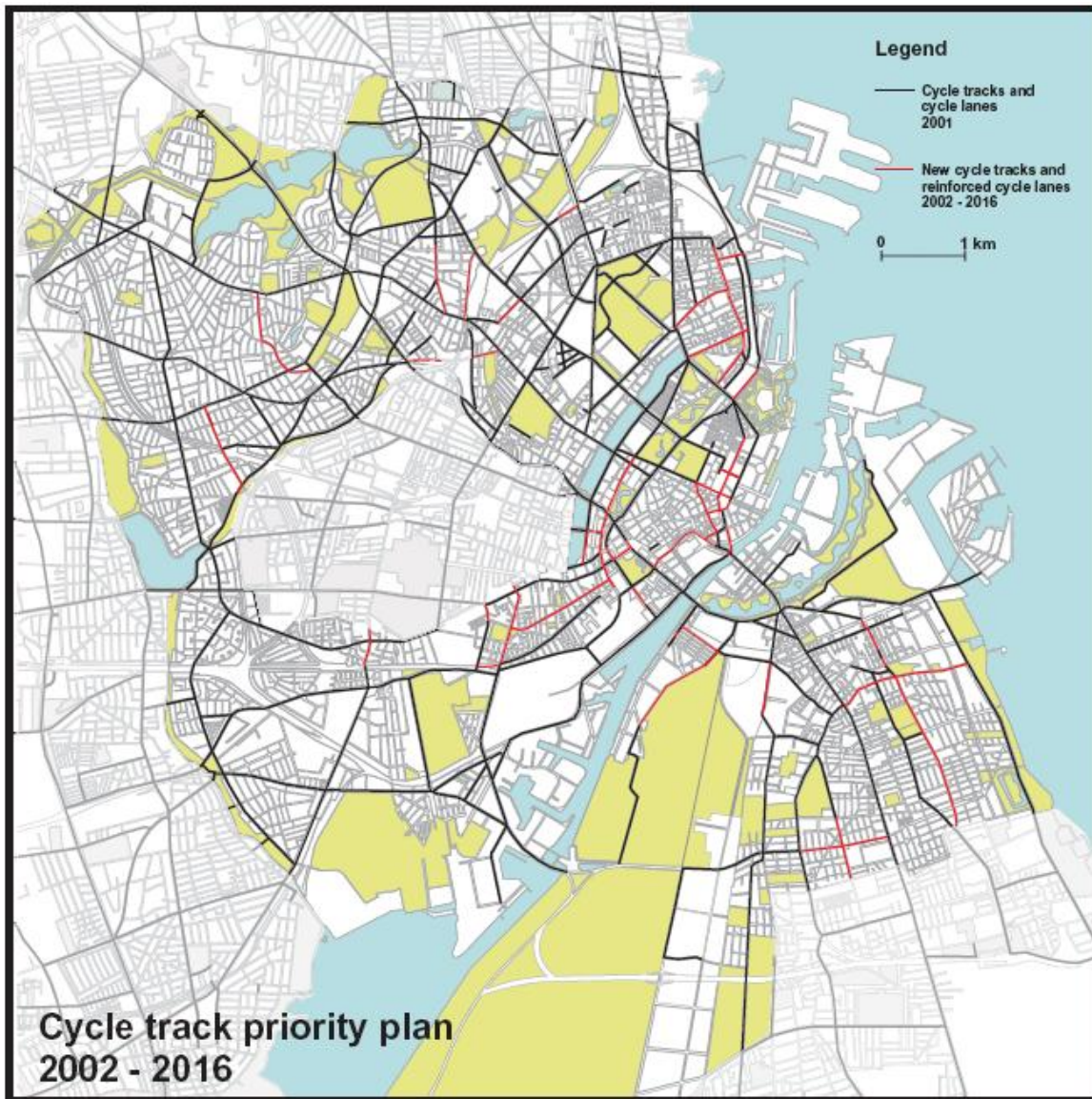


Figure 3: Cycle track priority plan 2002-2016. Source: City of Copenhagen, 2002

There currently is a total of 350km of cycle tracks in Copenhagen. These cycle tracks make up the backbone of Danish cities, enabling cyclists to cycle safely and comfortably.

#### BICYCLE HIGHWAYS AND GREEN BICYCLE ROUTES

Another interesting aspect of bicycle infrastructure is bicycle highway systems. The current bicycle highway system that is in place in Copenhagen is the “Green Wave” (Colville-Andersen, 2008). The Green Wave was first implemented on Nørrebrogade, and it has regulated traffic signals for cyclists. The traffic lights are coordinated to allow continuous traffic flow over many intersections in one direction. This system enables cyclist traveling at 20km/h to not be stopped by traffic lights. The green wave reverses direction during rush hour. This way, cyclists can ride the Green Wave on the way to work, and then again on the way home. The width of the lanes is over five meters wide

in order to accommodate the 38,000 cyclists that ride on the stretch daily. The Green Wave has been such a large success that it has now been extended on Østerbrogade (18,000 cyclists daily), and Amagerbrogade (17,000 cyclists daily) (City of Copenhagen - Roads & Parks Department, 2002). A map of these routes is given in section D of the appendix.

Aside from the green wave, the Green Cycle tracks in Copenhagen are another innovative and intuitive set of routes that run through parks and waterfront areas. The routes are not near heavy traffic, which makes the roads calmer and easier to cross. Crossing the roads is done by means of bridges or special traffic signs and signals. These tracks are designed to minimize the stops that cyclists need to make due to other traffic on the road. This offers a new option for cycling to work and home, and also serves a recreational function. The primary reason for cycling on the green paths is the opportunity to experience cycling through green and automobile-free surroundings (City of Copenhagen, 2010)

The report, *Proposals for Green Cycle Routes: Home-Workplace Routes and Recreational Routes* was approved by the City of Copenhagen, Building and Construction Administration, Roads and Parks Department in 2000 with the plan to further development green cycle routes. The plan focuses on building 22 cycle routes, totaling on 110 km. The first 40 km have already been established, and the rest are projected to follow within the next few years. The routes are planned to be marked with signs indicating the direction and distance to certain key destinations (City of Copenhagen, 2010). This will become particularly useful when the entire track network is complete, since users will be able to locate and easily cycle to their desired destinations.

The cycle-friendly urban design of cities like Copenhagen allows for a multitude of Copenhageners to cycle. The number of cyclists (or cycling ridership) as well as their motivations, behaviors, and attitudes, are integral parts of bicycle culture in general.

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## CYCLING RIDERSHIP, MOTIVATIONS, BEHAVIORS, AND ATTITUDES

In Denmark, 19% of all transportation is done via bicycle (Cycling in the Netherlands, 2009) with its capital, Copenhagen, having 37% of its commuters opting for the bicycle (Colville-Andersen, 2010). The hundreds of thousands of Danish cyclists learn the accepted norms of cycling at a young age. Focusing on Copenhagen, the group has discovered some examples of customary behaviors of cyclists. One example is abiding by basic rules such as hand-signaling to indicate turns or slowing pace, ringing the bell to indicate when one is passing, staying to the right if one wishes to cycle at a leisurely pace, etc. (Siracusa, 2010). Whether young or old, Danish cyclists on the road expect these behaviors because they have been raised with them; these practices are considered to be second

nature. Another accepted norm that Danish Cyclists are accustomed to is cycling at a relatively high speed of 16kph, even reaching 30 – 40kph down steep hills (Danish Road Directorate, 2001).

A main aspect of Denmark’s bicycle culture is the idea of utilitarian cycling. Utilitarian cycling is defined as using the bicycle simply as a transportation method, rather than for fitness, recreation, or sport. This basically means the bicycle is used mainly as a tool in Denmark; an example of this is pictured in Figure 4. Mikael Colville-Andersen, a filmmaker/photographer/journalist who is also Copenhagen’s leading bicycle ambassador, (Copenhagenize Consulting, 2010) states,

“In Denmark bicycles are like vacuum cleaners: we all have one and we all use them every day, but we don’t think about them all day, we don’t have ten of them, we don’t polish them before we vacuum. The bicycle is a tool. It helps me pick up my children and my groceries.”(Barton, 2009)



Figure 4: Example of utility cycling in Copenhagen Source: Copenhagenize Consulting 2010

This wide-spread utilitarian cycling within Denmark leads to the shared lack of acknowledgement of the expression “bicycle culture” from the average Dane. They cycle because it is the norm not necessarily because it is healthy or green. Cycling enables them to travel from A to B efficiently.

“The majority in Copenhagen, when polled, say that they choose the bicycle because it’s easy and fast. 54%. 19% say they do so because it’s good with a bit of exercise. 1% says they ride because of environmental considerations. The average citizen does not wish to be a ‘cyclist’ or an

‘environmentalist’. They merely wish for it to be made possible for them to get to and from with the least amount of hassle possible.”(Copenhagenize Consulting, 2010)

Whereas the average Dane may not recognize the concept of a bicycle culture, the several national-level cycling organizations and cycling advocates in Denmark are conscious of the existence of Danish bicycle culture. With the recurring themes of the green and health benefits of cycling in mind, these organizations continually seek to improve the already well-established bicycle culture. Other bicycle cultures throughout the world share Denmark’s motivations for cycling, while others may be motivated solely by economic purposes.

Even though cities around the world look to improve their bicycle cultures using Copenhagen as a model cycling city, the Danish capital continues to seek improvement to its bicycle culture. Every two years since 1995, the city of Copenhagen publishes a “Bicycle Account” which assesses the city’s achievements regarding its cycling objectives. Copenhagen uses statistics, telephone interviews, and surveys in the Bicycle Accounts to determine how Copenhageners as a whole feel about cycling in Copenhagen. An example of a question in a survey of 1025 Copenhageners included in Bicycle Account 2008 asked them to rate on a scale of 1-10 their sense of safety as a cyclist in Copenhagen. The average rating was a 5. The city of Copenhagen used information gathered in Bicycle Account 2008 to set three specific goals for 2015:

- At least 50% will go to their place of work or education by bike.
- The number of killed and seriously injured Copenhagen cyclists will be reduced by more than 50% compared to 2005.
- At least 80% of Copenhagen cyclists will feel safe in traffic.

As the number of cyclists continues to increase, safety starts becoming more of a concern. The fact that Copenhagen is continually improving conditions is the reason why it is considered a model cycling city (City of Copenhagen, 2009).

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## SAFETY AND POLICY

Bicycle safety is a major concern in any place where bicycles are a major mode of transportation. One important factor in bicycle safety is the policies put in place by organizations such as the ECF. These policies, when followed, ensure the safety of cyclists. As shown in Figure 5, the amount of cycling that goes on is inversely related to the proportion of accidents that occur. The bicycle policy in Denmark is a key factor in ensuring that cyclists stay safe even in heavy traffic situations.



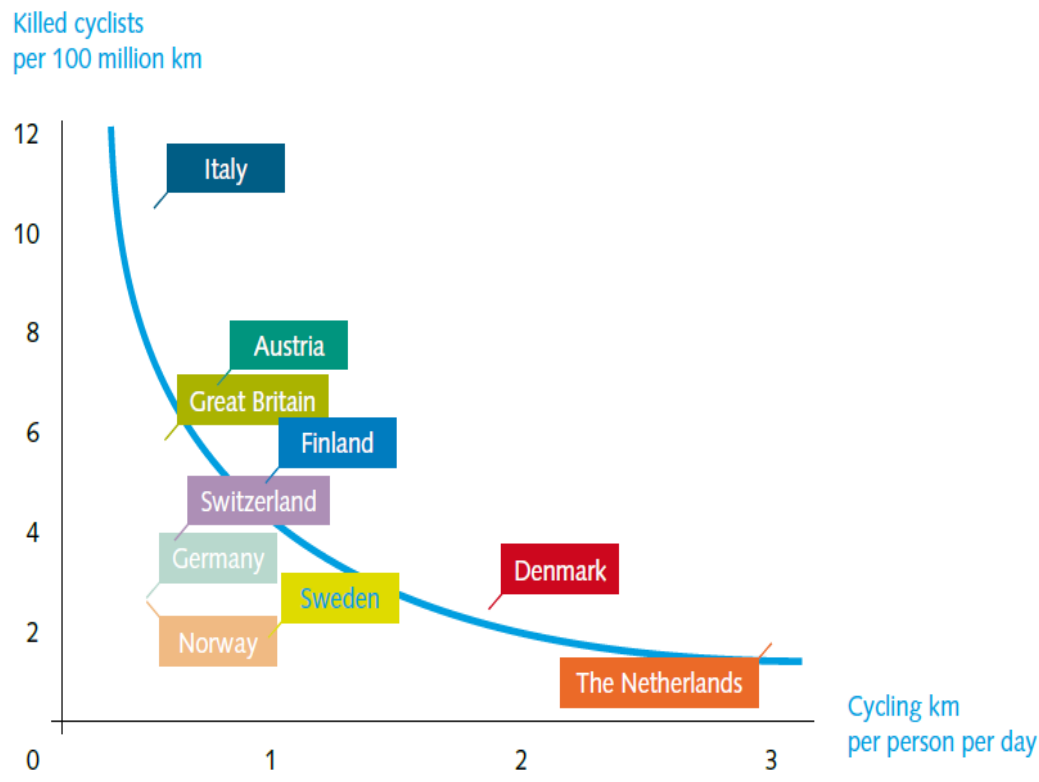


Figure 5: Relation between accidents and bicycle usage.

This graph illustrates the positive outcomes that can result from successful policies enacted to increase cycling safety. While Denmark has relatively more km cycled per person per day, it has the second least number of killed cyclists per 100 million km cycled.

Source: Dutch Ministry of Transport, 2009

## EUROPEAN CYCLISTS' FEDERATION (ECF) POLICY

Cycling throughout all of Europe is quite common, but the extent varies from country to country. Figure 6 shows the percentage of trips made where bicycles were used as transportation for several countries in Europe. Note that this graph considers countries as a whole. So, even though Copenhagen is the most bike friendly city in Europe, the inhabitants of Denmark do not bike as much as the inhabitants in the Netherlands.

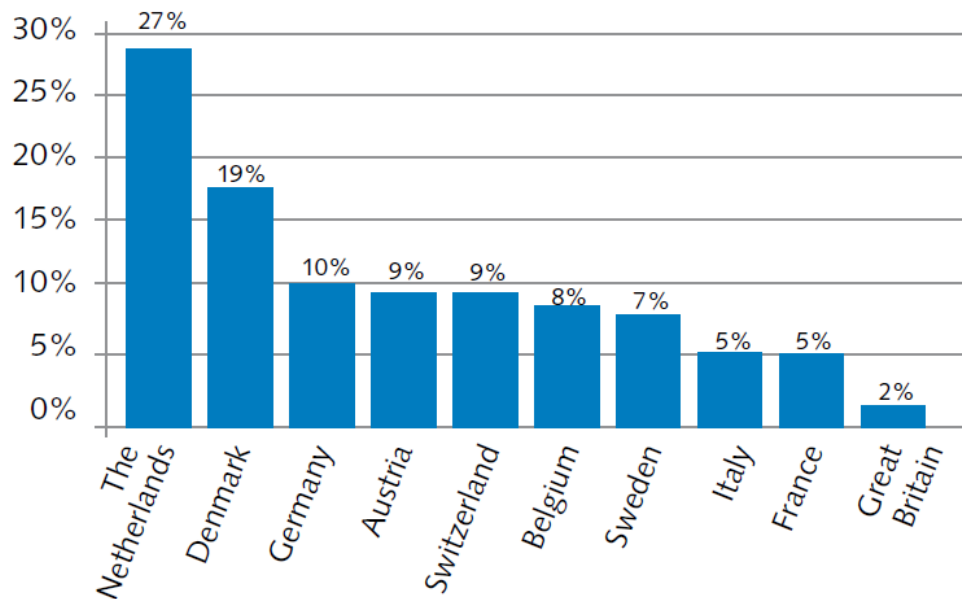


Figure 6: The bicycle's use as a percentage of all modes of transportation in some European Countries based on trips.

Source: Dutch Ministry of Transport, 2009

Whereas the numbers indicate differences in bicycle usage between these countries, European cyclists as a whole are enthusiastic towards the promotion of cycling safety and policy. The European Cyclists' Federation (ECF), founded in 1983 by 12 bicycle user associations, now has 60 member organizations in 37 countries world-wide. Their mission statement reads:

*"The European Cyclists' Federation (ECF) is pledged to ensure that bicycle use achieves its fullest potential so as to bring about sustainable mobility and public well-being. To achieve these aims, the ECF seeks to change attitudes, policies and budget allocations at the European level. The ECF will stimulate and organize the exchange of information and expertise on bicycle related transport policies and strategies as well as the work of the cyclists' movement."  
(ECF Annual General Meeting, 21.06.98, Trondheim)*

The ECF works along with the European Conference of Ministers of Transport, the United Nations Economic Commission for Europe, with the EU parliament, and the EU Commission to lobby for the benefit of cyclists at both European and global levels. The ECF also provides their member organizations with useful information regarding cycling planning and policy. In 2004, the European Conference of Ministers of Transport (ECMT) published "National Policies to Promote Cycling," which provides a survey of the national policies to promote cycling in various European countries. This report includes topics such as motivations for cycling, cycling policy, promotion, and safety. The report also emphasizes how national-level assistance and dedication play a big role in thoroughly establishing bicycle culture. The ECF recognizes the importance for national-level support to improve upon bicycle culture, which is why their member organizations pledge to:

- Be active at local, regional and national levels.
- Promote the bicycle at European as well as international levels and create a favorable climate in transport, environmental and tourism policies.
- Put forward the views of cyclists.
- Link a dense European network of cyclists and user groups with politicians, industry, media, planners, railway companies and tourism industry.
- have expertise in cycling issues such as town planning, cycling facilities and tourism, and legal matters.(European Cyclists' Federation, 2010)

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## ORGANIZATIONS

The European Cyclists' Federation member in Denmark that carries out these objectives is the Danish Cyclists Federation (DCF). The DCF works to promote cycling as a mode of transportation, as well as recreation. The organization's main concerns are cycling safety and awareness. Every year, the DCF runs three campaigns: All Children's Bicycles, We Cycle to Work, and Green Cycling day. The main goals of these campaigns are to encourage all Danes to participate, promote cycling awareness, and promote bicycle use (DCF, 2010). Some of the campaigns are run along with the Cycling Embassy of Denmark, the Road Safety Council, the Road Directorate and the municipalities, attaining the highest nation-wide level of exposure possible (Cycling Embassy of Denmark, 2010). The success of these campaigns that promote health and environmental improvement display the importance of national support for bicycle cultures. The national-level participation in cycling policy is another reason why Denmark has a model bicycle culture for other eco-conscious governments to emulate.

The national-level participation in cycling policy highlights another similarity between Denmark and the Netherlands. The ECF member organization in the Netherlands is the Dutch Cyclists' Union. Along with other nation-wide organizations such as the Dutch Bicycle Council and the Ministry of Transport, the Dutch Cyclists' Union acts similarly to the cycling advocacy organizations in Denmark to promote and improve cycling in the Netherlands. Other ECF member organizations throughout the world that operate similarly to the DCF but in their respective countries are full member *ConBici* in Spain and Portugal, associated member the *Bicycle Federation of Australia*, and associated member *Vélo Québec* in Canada.

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## EXAMPLES OF RULES AND LAWS

Bicycle policy dictates the behaviors of the cyclists, and can be thought of as the formal rules. There are other important aspects of bicycle culture in Denmark, but the formal rules are a vital part of bicycle safety. The main purpose of the rules is to ensure the safety of cyclists. Cyclists

can be subjected to penalty fines of DKK500 (USD 91.51) for violating some of these rules. For example, some of the rules pertaining to cyclists from the Road Traffic Act are:

- “Cyclists must while driving have both feet on the pedals and at least one hand on the handlebars.”
- “Child under 6 years may not ride a bicycle without being under escort and control of a person aged 15 years”(Danish Cyclists Federation, 2010)

Some rules regarding bicycle lighting state:

- “An ordinary bicycle must have headlights and rear lights. If the bike as has more than two wheels, a headlamp must sit more than 50 cm from the bike's extreme left edge.”
- “If your bike is over a meter wide, you must have two rear lights. The rear is to sit more than 40 cm from the edge. There must be at least 60 cm between the lamps.”(Council for Safe Driving, 2010)

These bicycle rules demonstrate how cycling policy, if followed, reduces dangers for cyclists. Specifically, the rules regarding bicycle lighting greatly increases the visibility of bicycles and therefore reduces the chances of a bicycle collision. The Danish bicycle policy is a key factor in the overall success of the Danish bicycle culture.

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## HELMET POLICY

Despite all of the effort put into establishing these specific rules to ensure the safety of cyclists, cyclists in Denmark are not required to wear helmets. The general consensus of cycle-policy makers is that wearing a helmet while cycling does not directly correlate with safe cycling. The attitude is such that making it compulsory to wear helmets would cause a significant decrease in cycling. Helmets offer protection primarily in head on collisions, but they do not prevent the accidents from occurring. The ECF supports the idea that instead of making it mandatory for cyclists to wear helmets, the focus should be put on preventing accidents. Helmet advocacy would not be the most effective way for improving the safety of cyclists (ECF, 2010).

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## BICYCLE SUBCULTURES: BICYCLE WEBSITES AND FASHION

One important aspect of bicycle culture that has recently emerged is the various web-based media about bicycles. Most notably, Mikael Colville-Andersen, Copenhagen's leading bicycle ambassador, has several web logs about cycling in Copenhagen. Two particularly interesting ones are titled: “Copenhagenize” and “Cycle Chic” (Colville-Andersen, 2010).

Copenhagenize is focused on bicycle culture and advocacy. Mikael regularly posts information on what is happening in Denmark, and occasionally other parts of the world, with regards to cycling. Copenhagenize is a great way to keep up with all the current bicycle movements. On Copenhagenize, Mikael posts about subjects such as: bicycle poetry in Lisbon, campaigns to increase the number of cyclists in Aarhus (Denmark's second largest city), and advice on how to market cycling. Overall, Copenhagenize is a great resource for learning about current Danish bicycle culture as well as bicycle culture worldwide.

Cycle Chic is dedicated to bicycle fashion. Mikael posts photos or videos of people in Copenhagen riding their bikes, and writes commentary. This website provides a visual insight into Danish bicycle culture, and is an interesting and informative way to become familiar with some aspects of the bicycle culture, specifically bicycle fashion. The term "cycle chic" is meant to describe the culture of riding in non-conventional bike wear, or fashionable clothes. Many cyclists color coordinate their outfits to match their bikes. It is seen in places that are known for utilitarian cycling, such as Copenhagen.

## 2.2: TARGET AUDIENCES

The project outcome was targeted at people in Copenhagen who are interested in learning the rules of the road. Within this large group of people, there are several smaller groups: people living in Copenhagen that are unfamiliar with the biking rules (such as students at the Copenhagen International School), tourists in Copenhagen, and people visiting Copenhagen specifically to learn about the bicycle culture (such as the Velo-City Global participants). Each of these groups wants different kinds of information out of the project's final product. Also, for each of these groups, certain modes of communication will be more appropriate and accessible than others. This section will give a brief overview of these groups in terms of what they might want out of the bicycle resource. This information was gathered before arriving in Denmark which allowed an informed decision to be made as to the best method of communicating this information to these target groups. Further investigation of the target audiences was done on site, and this information is in chapter 4.

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### VELO-CITY GLOBAL 2010

Since 1980, the European Cyclists' Federation has held Velo-City Conferences in various cities such as Paris, France and Barcelona, Spain, encouraging cycling as daily transport and recreation. It is the most renowned international cycling planning conference in the world. Velo-City Global will take place June 22-25<sup>th</sup> in Copenhagen, Denmark. It marks an important turning point for

the conferences because it is the first Global conference, extending its reach outside Europe. Participants include cycling experts, city planners, decision makers, NGOs and researchers from all over the world. Since the range of attendees, as well as the range of their origins, is wide, we should look to include anything and everything about Copenhagen's bicycle culture in our project outcome. Of course this is an unrealistic goal, and on site the project team focused their study in the interest of time (ECF, 2010).

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#### THE STUDENTS AT THE COPENHAGEN INTERNATIONAL SCHOOL

The Copenhagen International School (CIS) is a private non-profit organization. The main language of instruction at the school is English. CIS provides education from prekindergarten to 12<sup>th</sup> grade (ages 3-18). Currently, there are 600 students enrolled representing over 50 countries. The majority of the students, however, are from Denmark, the United States, and the United Kingdom.

As a target audience, the CIS students are a very diverse group. Luckily, they have one very important thing in common: language. The primary language at the school is English, so the language of the bicycle guide should not be an issue. Of course, care needs to be taken to avoid slang and cultural references in the guide since the student body is multicultural (Copenhagen International School, 2010).

## CHAPTER 3: METHODOLOGY

The goal of the project is to facilitate communication of Danish bicycle culture to tourists by creating an information resource developed from an outsider's perspective. The team used information gathered via fieldwork and systematic observation to develop the content of the media, which eased the integration of visiting cyclists into the bicycle culture. The outcome of the project included a tangible product, a website that conveys essential knowledge of Danish bicycle culture for use by Velo-City Global 2010, the Dansk Cyklist Forbund, and visitors to Copenhagen.

To accomplish this goal, the following steps need to be taken:

1. Gain knowledge critical to cycling in Copenhagen
2. Investigate other bicycle cultures
3. Determine the aspects of bicycle culture to be communicated to the target audience
4. Determine the best methods of communicating the information to the target audience
5. Create the resources

The following flow chart and timeline illustrate our approach to complete these goals:

■ Project Goal ■ Resources ■ Methods

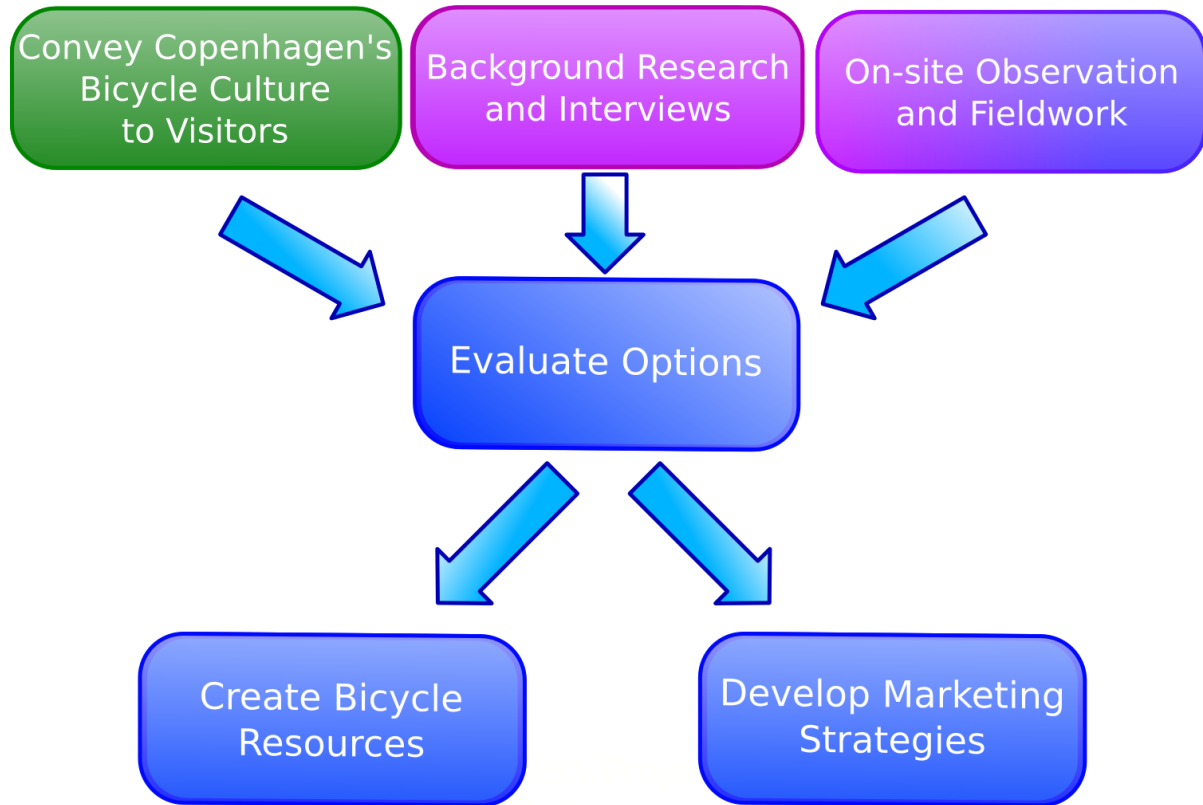


Figure 7: Methodology Flowchart



Table 1: Methodology Timeline

	Week						
	1	2	3	4	5	6	7
T A S K	Learn cycling knowledge that is vital for visitors to Copenhagen						
	Investigate other bicycle cultures						
	Determine the content						
		Determine the methods of communicating the content					
			Create the resources				
					Create assessment & marketing strategies		
						Documentation & presentation	

### 3.1: GAIN EXTENSIVE KNOWLEDGE OF CYCLING IN COPENHAGEN

For this project, it was be vital that the team gained a thorough understanding of cycling in Copenhagen. This was achieved by the following methods: casual observations, systematic observations (both passive and active), interviews and online research.

#### CASUAL OBSERVATIONS

As the team cycled around Copenhagen, a log was kept of observations. This allowed the outsiders perspective to be preserved since without the log the team would have forgotten the initial observations. The team compiled these individual notes into one document and these logs were analyzed to extract cycling behaviors. These logs were not meant to provide statistically significant data on cycling in Copenhagen. Instead, they were meant to record what was surprising, confusing or interesting to first time cyclists in Copenhagen as well as to establish the existence of certain behaviors.

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## PASSIVE OBSERVATION PLAN

The group conducted a series of observations in natural settings, and these observations took place in an urban setting specifically on the streets of Copenhagen. The observations were non-disguised, due to the fact that the observations were in a public setting. The majority of the observations were human observation, although some were made using a camera and so they were mechanical observations.

Observations were made during different times of day and at a variety of locations. After discussions with Michael Hammel, as well as other DCF employees, the group decided which times and places would be most useful to observe. Table 2 details all the times that observations were made as well as a rationale for each. Also, observations were carried out at the following locations:

- Crosswalks
- Busy Intersections
- T-Intersections
- Type 4 Roads (roads without cycle paths)
- Bus Stops
- Green Routes
- On Trains

For various combinations of time and place, unstructured and structured observations were carried out and notes were recorded.

Time of Day	Rationale
Morning rush hour (0700-0900)	This is the time when most people are commuting to work, and is a great opportunity to observe heavy traffic.
Mid-day (1000-1400)	The traffic at this time is much lighter than during rush hour, and so this would be a good time to observe light traffic.
Rush-Hour (1500-1800)	This is the time when people are commuting back from work. This rush hour is not as congested as morning rush hour, but the traffic is more sporadic.
Late night (2100-0500)	At this time, there is almost no traffic, and very few people actually follow the rules. This is a good time to observe illegal behaviors.

Table 2: Observation times with rationale

## ACTIVE OBSERVATIONS

Most of the passive observations were carried out during the first few weeks, in order to give the group a feel for what kinds of behaviors occur when cycling. Michael Hammel urged the group to do more active observations in order to truly experience the cycling culture. These observations were carried out almost every day, since the group members used bicycles to get everywhere. So, many observations were done casually as the group needed to get from place to place in Copenhagen.

Some of the observations were more structured in that the group would decide to ride along a certain route at a certain time. Afterwards, the group members recorded their observations during the route, and for some routes video was recorded using a bike mounted tripod.

In addition to the natural setting observations, a series of observations were conducted in a contrived setting. These observations involved one of the group members doing something to provoke an action, and recording notes or the reactions. The following provocations were carried out:

- Signaling incorrectly
- Ringing the bell unnecessarily
- Cycling on the wrong side of the road
- Cycling on the sidewalk
- Going straight before the light turns green
- Preventing others from passing

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## INTERVIEWS

Another method the group used to get more acquainted with the ways of cycling in Copenhagen was to interview people knowledgeable about cycling in Copenhagen. The group created interview plans for each interview. All of the interview plans along with the interview summaries can be found in appendix B. The following individuals were interviewed to gain knowledge of cycling in Copenhagen: Michael Hammel, John Scaletz (Dept. Chief Superintendent, Copenhagen Police), and Zofia Anna Jagielska (Copenhagen Cycling Municipality).

Also, there is an exhibit on bicycle history in the Museum of Copenhagen currently called “Copenhagen by Bicycle”. This exhibit showcases biking in Copenhagen and also focuses on the representation of bicycles in art, literature, and popular music. Additionally it explores why the bike is so prominent in the everyday life of the Danes. The group members visited the museum exhibit, and took notes. These notes were particularly useful for Danish bicycle culture history.

### 3.2: INVESTIGATE OTHER BICYCLE CULTURES

As the group was gaining knowledge of cycling in Copenhagen, bicycle culture in other places was researched. The group gained statistics on tourism in Copenhagen, and used them to focus the study of the other cultures. The group focused its study of other cultures on: Germany, The Netherlands, Sweden, China, Australia and the US. The team experienced bicycle culture firsthand in Germany and Sweden. The other cultures were researched using traditional methods.

### 3.3: DETERMINE THE CONTENT THAT WILL BE COMMUNICATED

Bicycle culture is a very complex and information rich topic. Not all of the information gathered should have been added to the bicycle resource. This section discusses how the group decided what information to include in the resource.

There were several criteria that the group used to determine which information should be included in the outcome. These criteria are: how important is the information to ensuring safe

cycling, how difficult is the information for the target audience to obtain without a resource, how intuitive is the information, and how easy or difficult is it to include the information in the outcome. All the information gathered was evaluated according to these criteria to decide if it should be included in the outcome. For example, including information on making right hand turns on red is very important to ensuring safe cycling, is somewhat difficult to find out because it is not obvious that it is illegal, is not intuitive because it seems like it should be allowed since it is so safe (John Sckaletz), is very useful because so many people turn right on red, and is very easy to include in the resource.

Since the group consists of first time cyclists, the group members are well qualified to evaluate these criteria. However, getting evaluations of these criteria from other members of the target audience and representatives of the target audiences was important. Actual members of the target audiences that were interviewed were international students (e.g. Copenhagen International School (CIS), Danish Institute for Study abroad (DIS), Copenhagen Business School (CBS)) and our fellow classmates.

Also interviews of people familiar with the target audience allowed the group to get information on the target audience as a whole without interviewing individual people. One of the people interviewed was John Sckaletz, the Deputy Chief Superintendent of the traffic department of Copenhagen. He mainly provided information on rules and regulations; however, he also provided information on what kinds of mistakes visitors often make and what mistakes usually cause traffic accidents. Another one of the people interviewed was Ole Kjær Mansfeldt, the Research and development manager for Wonderful Copenhagen. Wonderful Copenhagen is the official tourism company for Copenhagen, and Ole Mansfeldt was very knowledgeable about tourism in Copenhagen. He gave many good ideas about what form the final product could take, and he also gave statistics on tourists in Copenhagen that were helpful when determining the content. Henrik Mortensen, the co-founder of Baisikeli was also interviewed. He provided some information on the kinds of information that tourists buying bicycles would find useful, this information is detailed in the findings. He was very knowledgeable about tourists that cycle since almost all of his customers are tourists renting bicycles. Also, Ole Jensen, the owner of Københavns Cyklebørs (the oldest bicycle renting company in Copenhagen) was interviewed. He also provided insight into what his customers (mainly tourists) would want in the guide.

### 3.4: DETERMINE THE BEST METHODS OF COMMUNICATING THE CONTENT

One important part of this project was determining how to effectively communicate bicycle culture to those who are unfamiliar with it. Based on the research that had been done before arriving on site, the group identified three possible media types: written media, websites, and videos. These were the ideas the group had prior to arriving on site, but the group kept an open mind for other possible media types.

Also, the initial three ideas were purposely kept vague to give the group more flexibility in the choice of a media. Thus, there could be several ideas within each media type. For example, a wiki-style website, a traditional static website, or a blog are all websites. Ideas were generated on site for each of the media types. Each of these media ideas were then evaluated based on the following criteria: ease of access, ease of use, effectiveness and feasibility. Each of these criteria were analyzed for the various media ideas, and given a ranking.

Ease of access was evaluated based on knowledge of the target audience by estimating how many of the target audience members would be able to access the media and how expensive (time and money) it would be to access. This assessment was made by considering how much effort and money the target audience would need to put forth to access the information; for example, to access a pamphlet one needs to go to where it is distributed, but to access a website one needs access to a computer and internet. The ease of use was ranked by determining how easy it would be to access specific pieces of information within the media. To rank the effectiveness, the group determined how much information could be placed in the media and how likely the target audience would be to actually view the information. To rank the feasibility, the amount of time and money required to create each media was determined. The feasibility criteria determined whether or not it made sense for the group to create the media on-site, or if guidelines for how to create the media should be developed instead.

### 3.5: CREATE THE RESOURCES

After the previous steps were taken to become accustomed to cycling in Copenhagen, to gain knowledge of other bicycle cultures, to determine the content to be communicated, and to determine the best methods of communication, the group created the resource. The resource was a blog containing pictures, videos and written explanations.

The blog was created by purchasing a domain name and then setting up a WordPress blog on that domain. WordPress is an open source blog platform written in php. Setting up WordPress is

a fairly simple procedure and only involves setting up an SQL database for the WordPress platform and configuring WordPress to use the database. Once the blog was setup, the built in page or post editors were used to create the pages. This allows the page to be edited without needing any knowledge of any web languages such as php, html, or css. However, some of the themes were edited by hand and this required basic knowledge of php, html, and css.

Some of the videos that were taken during the structured observations were reused as appropriate. Also, videos were taken of the group members performing certain maneuvers as needed. Additionally pictures were taken as necessary for the blog posts, and whenever the group members saw something noteworthy, pictures of it were taken if possible.

### 3.6: METHODOLOGY CONCLUSION

The main goal of this project is to create a set of bicycle resources for the DCF that will enable visiting cyclists to appreciate Copenhagen's bicycle culture and know how to properly behave on the roads. In addition, these resources will encourage more visitors to cycle and partake in the bicycle culture. The research and methods the group has proposed allowed the group to resolve the needs of the DCF.

## CHAPTER 4: COLLECTING CONTENT FOR THE GUIDE

The findings of the information gathered to determine the content of the guide are divided into three main sections: the bicycle culture in Copenhagen, the bicycle culture in other countries, and existing bicycle guides. These findings are the result of extensive fieldwork, interviews, and scholarly research.

### 4.1: COPENHAGEN'S BICYCLE CULTURE

On-site fieldwork and observations enabled the group to gain a more thorough understanding of Copenhagen's bicycle culture. Having a more in-depth understanding of the culture was an important part of the findings, since extensive knowledge of Copenhagen's bicycle culture was required to create a cycling resource. The findings can be divided into three main sections: cycling infrastructure, rules of the road, and behaviors.

#### CYCLING INFRASTRUCTURE

There are different terms used to describe Copenhagen's cycling infrastructure, mainly in regards to the various types of street layouts. A cycle path or cycle track is a raised path along a street designated for cyclists. Cycle paths usually have a raised curb separating them from the street. Cycle lanes are for cyclists only and are usually painted on already existing streets. The European term pavement, or the American term sidewalk, refers to the portion of streets designated for pedestrians. For the purpose of this report, the group will divide the discussions of the various street layouts into two sections. The streets where cyclists interact with moving auto traffic will be discussed first. The paths designed for only cyclists, with and without pedestrians, will then be discussed.

#### STREET LAYOUTS FOR AUTOMOBILES, BICYCLES, AND PEDESTRIANS

From the group's research and investigation of the cycling infrastructure in Copenhagen, it was determined that there are four main types of streets on which cyclists interact with other traffic in Copenhagen. These types of streets are listed in decreasing order of the general feeling of safety and comfort of cyclists:

1. Cycle path with median between bicycle and moving auto lanes
2. Cycle path separated from moving auto lanes by a raised curb, which may or may not be to the right of parked cars
3. Painted cycle lanes between sidewalk and traffic lanes
4. Streets with no cycle paths or cycle lanes



Figure 8 and Figure 9 depict street type 1: a cycle path with a separated median between bicycle and moving auto lanes. Pictured in both figures is the side of Fredensgade for traffic heading southeast. The street layout is comprised of four main components: the sidewalk for pedestrians, the cycle path for cyclists, a median, and a lane for moving automobiles. The medians are used for different purposes: In Figure 8 the median is used for parking bicycles, whereas in Figure 9 the median is used for standing space for bus passengers. This type of street layout is commonly found around the heavily traveled areas of the city. Street layout types 2 and 3 are also common throughout the city and are pictured in the appendix E.



Figure 8: Street type 1 with median for cycle parking



Figure 9: Street type 1 with median for bus patrons

Figure 10 is a street-view picture of Lipkesgade, facing north. It is an example of street type 4: a street with no cycle paths or painted cycle lanes. It is common in Copenhagen for the side streets that are less traveled to have no cycle paths or painted cycle lanes. On these streets cyclists ride to the rightmost part of the auto lanes, in the same direction that the automobiles travel.



Figure 10: Street type 4

Out of the street types where cyclists interact with moving auto traffic, street type 1 provides the most safety and comfort for cyclists. Street type 1 is a safe layout for cyclists because it separates the cyclists from moving traffic, nearly removing vulnerability entirely. The separated median also provides distance between parked cars and cyclists to protect cyclists from passengers opening doors of parked cars.

For type 2 streets, the cycle paths separated from moving traffic and parked cars by a raised curb, the safety is about the same as street type 1. The raised curb gives the cyclists a sense of assurance that automobiles will not drive on the cycle path. The absence of the median between the cycle path and the parked cars creates the need for cyclists to be more aware of the possibility of pedestrians getting out of the parked cars and entering/exiting busses.

Street type 3, painted cycle lanes, are very common throughout the city since they efficiently and inexpensively designate space for cyclists. They provide comfort and safety since the cyclists know they have area designated lanes. However, the painted cycle lanes are not as safe as street types 1 and 2 since street type 3 makes cyclists more vulnerable to moving automobile traffic.

Streets with no cycle paths or cycle lanes are the least comfortable for cyclists to ride on. If the streets are busy, cyclists often have to be more alert and cautious when there is no cycle path. Figure 11 shows Nørregade, a street with not cycle paths or lanes, which is currently under construction. Notice the cyclists in between the construction and a moving bus. This cyclist has a

narrow cycling space, leaving little room for a mistake. This is why streets with well-paved and separated cycle paths or lanes are most preferred.



Figure 11: Busy Street with construction and no cycle path

There are also many streets in Copenhagen designated strictly for cyclists and pedestrians and some just for cyclists. In terms of safety and usability, the streets for both cyclists and pedestrians are comfortable for cyclists to use. Cyclists do not have to worry about automobiles and can instead focus on avoiding pedestrians and cyclist-cyclist collisions with relative ease. Figure 12 is a bridge for only cyclists and pedestrians. Figure 13 shows a green cycle route strictly for bicycles. These examples of cycling infrastructure highlight Copenhagen's cycle-friendliness.



Figure 12: Cyclist and pedestrian bridge



Figure 13: Green cycle route (source: Siracusa 2010)

There are also some pedestrian-only zones on which cyclists not allowed to ride their bicycles. Mainly around the city center with the old narrow cobblestone streets, one will see many pedestrian-only zone with cyclists, though not all of them, walking their bikes. Pictured in Figure 14

is a Gågade zone (pedestrian zone) sign. It says that driving for the purpose of goods delivery is allowed, but otherwise bicycles or automobiles are forbidden. Also, it says that parking of bicycles outside racks or designated areas is not allowed. Violators of this rule will get a ticket. Figure 15 shows a cyclist walking his bicycle in such a pedestrian-only zone.



Figure 14: Pedestrian zone sign



Figure 15: Cyclist walking bike in pedestrian zone

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## TRAFFIC LIGHTS

There are many traffic lights around Copenhagen that are specifically for cyclists. These lights are often found at heavily trafficked intersections to ensure the safety of cyclists. The bicycle traffic lights are staggered next to the regular traffic lights to increase their visibility. Both the regular traffic lights and the bicycle traffic lights display the red and yellow light at the same time to indicate that it will soon turn green. At busy intersections, the bicycle traffic lights change to green before the regular traffic lights to provide a head start for cyclists and make the cyclists visible to automobile, bus, and truck drivers, thus increasing the safety of cyclists. This method was introduced in response to several fatal accidents between large vehicles and cyclists that would occur when the large vehicles would turn right when the light turned green, without seeing the cyclists going straight. Figure 16 shows an example of the bicycle traffic light turning green before the regular traffic lights.

When riding on roads where there are no bicycle traffic lights, cyclists follow the regular traffic lights.



Figure 16: Bicycle traffic lights in Copenhagen

Though the main reason that there are traffic lights specifically for cyclists is for safety purposes, there are many intersections where cyclists are required to perform differently than motorists. Figure 17 is an overhead view adapted from Google maps of the busy intersection of Nørre Søgade and Gyldenløvesgade. Figure 18 is a street-view picture taken of this intersection, facing southwest. The cycle path is divided into two sections at this point of the intersection. The right half of the cycle path is for cyclists who wish to turn right and it is relatively easy to do. The left half of the cycle path with the curved arrows pointing left is for cyclists who wish to cross Gyldenløvesgade, continuing on Nørre Søgade as it turns into Vester Søgade. To do this, cyclists have to wait for the bicycle traffic light to give a green arrow pointing left, indicating that the automobiles going right have a red light, and it is safe to cross the automobile lane for those motorists desiring to go right. Once the cyclists cross the automobile lane they go to the bicycle lane to the right of the automobiles waiting to cross Gyldenløvesgade and go straight through the intersection. There are several examples of Copenhagen's unique cycling infrastructure similar to this busy intersection throughout the city.



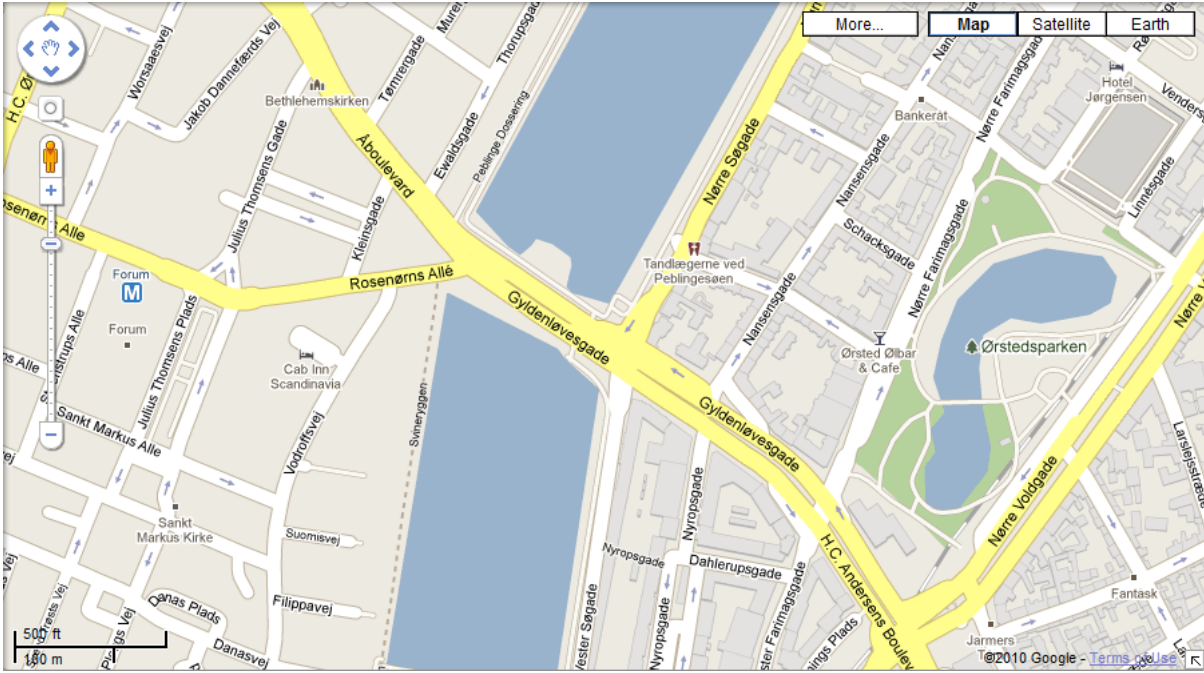


Figure 17: Overhead view of the busy intersection of Nørre Søgade and Gyldenløvesgade (Google Maps)

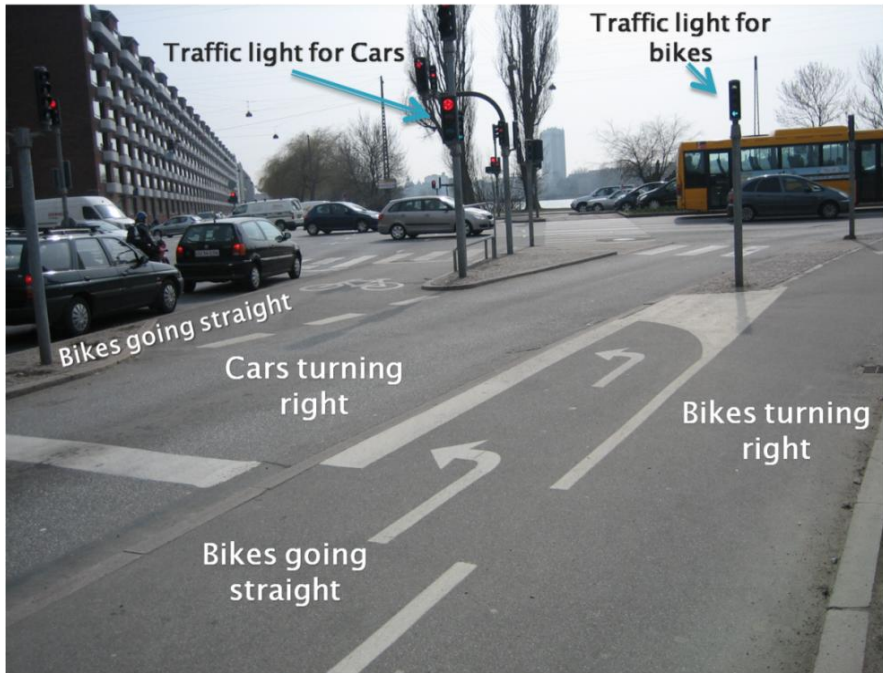






Figure 18: Street-view picture taken facing southwest

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## CYCLING REGULATIONS

The formal rules were the easiest to learn, and many of them were learned through research rather than fieldwork. This research included online research, as well as interviews of DCF workers and the Copenhagen Police Department. A full list of rules can be found in the appendix C, however, the ones that the group found most important or confusing from observations, fieldwork, and interviews are:

-  Keep right
-  No right turns on red
-  No cycling on the sidewalk or crosswalk
-  Yield to bus passengers if no bus sidewalk is present

Although many of these rules might seem obvious, some of them at first were unclear. This is because some of these rules are not followed by all the cyclists, which can be confusing to first time cyclists. This illegal behavior is discussed in more depth in the next section.

One rule that was very confusing at first is the rule regarding left turns. Legally, a cyclist is allowed to make a left turn as shown in the white path of Figure 19. However, the Copenhagen police do not recommend this type of left turn since it is often impossible to perform due to other traffic (Sckaletz, 2010). So, the proper way to make a left turn is to follow the green path, stopping at the midpoint of the green path and waiting for the perpendicular set of lights to turn green before continuing. This maneuver, called a hook turn, was initially very confusing, and often the group members would make left turns by crossing the bottom crosswalk, and then the left crosswalk. This is a very inefficient way to make a left turn because the cyclist has to walk his or her bicycle across two crosswalks.

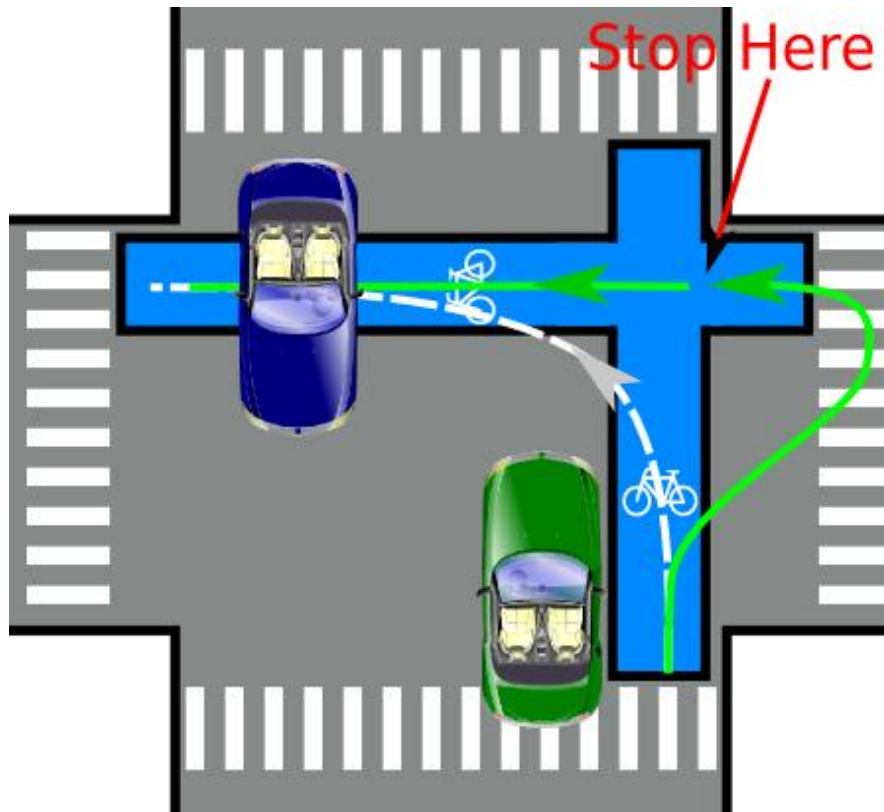


Figure 19: Diagram showing how to properly perform a hook turn

## BEHAVIORS

Primarily first hand observations were used to record and classify cyclist behaviors. The group witnessed a variety of cyclist behaviors and documented all notable observations. The behaviors will be discussed in terms of obeying the rules and cyclist interactions with other traffic.

## SIGNALING

Figure 20 shows the three cycling hand signals used in Denmark: left, stop, and right. The majority of the cyclists in Copenhagen use hand signals, as expected. They mainly use the hand signals to avoid accidents, for example the stop signal is used frequently when cyclists stop at atypical areas. The cyclists behind the stopping cyclist would not be expecting atypical stops so signaling is imperative to prevent collisions. However, on calmer streets, with less car traffic, hand signals for right turns are used less frequently since they can be carried out with relative safety without signaling. Signaling left is used commonly since turning left may cause the turning cyclist to cross in front of other cyclists behind them wishing to continue straight. However, since most left turns are executed using the hook turn maneuver, the signal to stop is used more often than the signal to turn left.



Figure 20: Hand Signals

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## ILLEGAL BEHAVIORS

One very interesting and somewhat hidden aspect of Copenhagen's bicycle culture is the subculture of illegal behavior. Prior research indicated cyclists had a reputation for not following the rules, however, the full extent of the illegal behavior was not apparent until after active observations in Copenhagen. The most visible example is turning right on red. Although it is illegal, right turns on red are often executed by both motorists and cyclists.

Another example that pertains only to bicycles is cycling on the sidewalk and crosswalk. The rule is that a cyclist must walk the bicycle across sidewalks and crosswalks. Even though it is illegal, and never necessary, some cyclists cycle on the sidewalk or crosswalk when doing so will simplify their route and if it can be done safely. For example, if there are not many pedestrians, some cyclists will cycle down the crosswalk to cross the road.

Although some of the illegal behaviors occur during the day, such as turning on red and cycling with no handlebars, most of the illegal behaviors that the group witnessed were committed at night, since there is so little traffic, the traffic lights are not obeyed very strictly. Some cyclists will go through a red light if there are no cars on the road, although not all cyclists will do this. Also, riding side by side blocking traffic is done much more frequently at night. Cyclists will also cycle in the wrong direction on cycle paths more frequently at night if it will get them to their destination faster.

Even though illegal behavior is tolerated to a large extent, there is one thing this is not tolerated: endangering others. If a cyclist is confident that an illegal behavior will not cause any

trouble, and they are quick about doing it, then for the most part, it will be tolerated. However, if a cyclist is unsure and gets in the way, then they risk aggravating the other cyclists and pedestrians.

Extensive research on the illegal behaviors was conducted, and at times to perform this research the group members had to carry out illegal behaviors. However, it is made clear in the project outcome that even though some of the local Copenhageners choose to engage in illegal behaviors doing so as a tourist is not a good idea. An explanation of the illegal behaviors is given so that the visitors know what to expect, not to encourage them to perform illegal behaviors.

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### CYCLIST-CYCLIST INTERACTIONS

It is immediately noticeable that the local cyclists ride at a fast pace. It is expected from others to keep pace, and stay to the right to let others pass. The cyclists check over their left shoulder before they attempt to pass a cyclist. One must check to see if another cyclist is going to pass them before they attempt to pass another cyclist, to prevent collisions. If a cyclist wishes to pass another and is unsure of how that cyclist will behave due to atypical cycling, the passing cyclist will ring the bell to warn the other cyclist of their intentions to pass. It is not considered rude to ring the bell, but simply taken as a necessary precaution. However, incessant ringing of the bell may be considered rude. Also if two cyclists are riding side by side, a cyclist who wishes to pass them but is not left enough room to do so will ring the bell. The two side by side cyclists usually comply and make room for the passing cyclist.

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### CYCLIST-BUS PATRON INTERACTIONS

From the group's interviews and discussions with Michael Hammel and Dep. Chief Superintendent of the Copenhagen police traffic unit, John Sckaletz, we learned the rules regarding cyclist and bus patron interaction. On streets of layout type 1, the type with a median in between the cycle path and automobile lanes, bus patrons have to wait for cyclists to pass before crossing the cycle path onto the sidewalk. Figure 21 shows an example of a bus stop in Copenhagen where this interaction would occur. However, on streets of layout type 2 or type 3, where there are no medians and bus patrons exit and enter the busses directly from the cycle path, cyclists must yield. Figure 22 depicts a cyclist yielding to bus patrons exiting a bus onto the cycle path.



Figure 21: Median for bus-patrons



Figure 22: Bus patron-cyclist interaction

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## CYCLIST-AUTOMOBILE INTERACTION

The automobile drivers appear to be very aware of the cyclists in Copenhagen. Since there are hundreds of thousands of regular cyclists in Copenhagen, the automobile drivers are accustomed to constantly using precaution towards interactions with cyclists. When cyclists ride in the cycle lanes through intersections and automobiles turning left or right need to cross through the cycle lane, the motorists yield to the cyclists. At red lights, cyclists wait in front of, behind, to the right of, and to the left of automobiles. This causes the motorists to need to be aware of the cyclists in all directions, though most cyclists try to position themselves in a visible and safe way. It is recommended that cyclists always place themselves such that any cars that will be crossing through the bicycle lane will see them. So, if an automobile is turning right, then a cyclist going forward should position herself in front and to the right of the automobile. That way the driver will know to yield to the cyclist. This is important because otherwise the driver may turn right thinking that there are no cyclists coming and a collision could occur.

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## CYCLIST-PEDESTRIAN INTERACTION

Cyclists yield to pedestrians at crosswalks, similar to the way motorists yield to pedestrians. Pedestrians are expected to follow the crossing signals, but sometimes do not. Cyclists often have to ride on the cross walk for a small segment to safely execute a hook turn, and pedestrians get annoyed if cyclists carelessly ride in front of them when they are crossing the crosswalk. Also, if pedestrians walk on the cycle lanes or cycle paths, cyclists make sure to ring the bell to alert the pedestrian. Cyclists get annoyed if pedestrians carelessly or unknowingly walk on the cycle lanes or paths.

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## PRACTICAL KNOWLEDGE

In addition to the information about cycling infrastructure, rules of the road, and cyclist behaviors, practical information on cycling in Copenhagen was also gained. This includes information about weather conditions to watch out for, rush hour traffic, where to get a bike, and how to maintain a bike.

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## WEATHER

Cycling in Copenhagen is generally very good since Copenhagen's terrain is flat. The only major obstacle to cycling in Copenhagen is the heavy wind that may occur (Ole Jensen). All the group members experienced the large influence that wind can have on cycling in Copenhagen.

Strong wind gusts can push cyclists slightly off path. In some cases the group members experienced wind that was so strong that they were almost forced to a halt, or had to switch to a lower gear.

Aside from the wind, cycling in the rain can also be difficult. Cyclists should slow their pace to avoid skidding. Most Copenhageners simply wear rain gear when cycling in the rain (Michael Hammel). There are also umbrella mounts for bicycles, and the group members saw one bike with such a mount. The rain can also be a problem even if one does not have to cycle in it because it can cause one's bicycle seat to become wet. This is one of the reasons for using a bicycle seat cover. Bicycle seat covers can be purchased in most of the bicycle stores, but a plastic bag is just as effective at keeping the seat dry and a lot cheaper (DIS students).

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## RUSH HOUR

The group members experienced cycle rush hour first hand, and also got information on bicycle rush hour from Danish commuters. Morning rush hour occurs around 7:30, and evening rush hour occurs around 16:00. The morning rush hour is shorter than the evening rush hour and is also more concentrated (Hammel). Cycling in rush hour is actually relatively easy since one can just follow the flow of the traffic, although the sheer number of cyclists can be intimidating. The main thing to keep in mind when cycling in rush hour is to always be aware of the cyclists around oneself and to always signal properly. It is vital that the other cyclists know what ones planning to do to avoid collisions. If cycling in the rush hour is too difficult, one can always signal to stop and pull onto the sidewalk and walk the bike to a less busy street.

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## OBTAINING A BICYCLE

Another important piece of practical cycling information is where to get a bicycle. This is information that the DIS students said they would find very useful. One option for obtaining a bicycle is the City Bike.

The City Bikes program began in 1995 as a public-private collaboration to provide free bicycles for tourists and residents in the inner city of Copenhagen. It was the first program of its kind, and other places have adopted this program in order to promote cycling in their cities. City Bikes have added to Copenhagen's cycling identity, due to the fact that it promotes the image of Copenhagen as an environmentally conscious and bicycle-friendly city. Initially, there were 700 bikes at 120 cycle racks, and today there are over 2,000 bicycles in use during City Bike season (mid April to November). The use of the city bikes is limited to the designated city bike zone in central Copenhagen. It is relatively easy to get information about City Bikes from their website, [bycyklen.dk](http://bycyklen.dk),



or from the tourist offices. Also, the program was designed to make it easy to get a bike off of the rack and get a sense for how the system works. In order to make space for the bike racks car parking spots were removed. This allowed for the bike racks to be placed in easily accessible locations. The city bikes are funded by private corporations; they buy the City Bikes and cover the bikes with their advertising. The resulting bright bike look is meant as a deterrent for theft. A Danish news paper tracked a City Bike for 12 hrs, and throughout that time interval it only spent 8 minutes at a bike rack. During the first year of the program, bike theft (non- City Bikes) decreased by 18% and in the second year by 26% (Gardner, 1998).

Although the program was meant to provide bikes to all that needed them, the program has its share of pitfalls. A significant downside is the popularity of the City Bikes, which is counterintuitive, because the goal of the program was to make City Bikes popular. Since the program was successful enough to gain a large user base, it is now difficult for one to find and use a City Bike when needed. Originally the program was meant for commuters who took the train to work. The bike was to be deposited on a bike rack near the office location, and then at the train station on the way home. Since availability of the City Bikes is less than expected, the effectiveness for commuters is limited. The bikes are technically not allowed to be used at night, since they do not have lights. The bikes do not have baskets or racks, which makes it difficult to transport large items. Additionally, the bikes are only available in a fixed season (mid April-November), and thus are not available during the winter. The bikes are designed to be heavy and not ergonomically ideal, also to discourage theft (Ole Mansfelt, 2010). The parts are not interchangeable with other bicycles.

Due to all these problems with the City Bike system, on August 27, 2009, the Copenhagen City Council approved the resolution to launch an open design competition for a new bike share program. The competition that has been launched is called "Copenhagen Bike Share Competition", and it will be used to determine how a bike share system v. 3.0 would look and work in the future in Copenhagen. The goal is to see technological solutions that can improve the bicycle's comfort and user friendliness. For example, one of the ideas is to include a GPS in the bicycle's design, or a bicycle tracking chip. The main target groups are the commuter, the tourist, and the Copenhagener (City of Copenhagen, 2009). The focus is to enable all of the target audiences to actively use the City Bikes, not just one specific audience.

A more comfortable and long term option is to obtain a bicycle from one of the many bicycle renting companies. The two largest bicycle renting companies in Copenhagen are Baisikeli and Københavns Cyklebørs (Fogh). Baisikeli rents mostly to tourists and it was classified as an innovative tourism product by Wonderful Copenhagen (Ole Kjaer Mansfeldt, et al., 2008). Københavns

Cyklebørs is the oldest bicycle renting company in Copenhagen and has been around since 1881, making it older than the DCF (Ole Jensen). These are the two most prominent renting companies, but there are many others all over Copenhagen.

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## BICYCLE MAINTENANCE

The group also found some sources on bike maintenance. The DCF has already created a guide to bike maintenance that contains information such as what warning signs to look for, and what warning signs can be safely ignored. This guide contains exactly the information that should be included in the guide, but it is in Danish. However, the document is not very long, so translating it would be a good idea, but not feasible for the group to arrange.

### 4.2: TARGET AUDIENCE ANALYSIS

Identifying the target audiences and their needs was an important step in the creation of the guide. The guide is intended for people unfamiliar with cycling in Copenhagen. This target audience can be divided into two main groups: short term visitors, and extended stay visitors.

The short term visitors consist mainly of tourists. Demographic data on the tourists was also gathered on site, and is summarized by Figure 23. This information was used to focus the study of other cultures. The research on other cultures allowed recommendations for sections of the guide containing specific comparisons between Copenhagen's and other cities' bicycle cultures to be made. This will make the guide easier to use for visitors from those cities.

Aside from collecting information on other cultures, information was also collected on what common mistakes tourists make. This was done through interviews of people knowledgeable about cycling tourists in Copenhagen. From these interview, it was determined that the main thing that is most confusing for tourists are the unwritten rules and the most important thing for the tourists to keep in mind is to stay to the right and pay attention to how the locals cycle. Another thing that is important for ensuring tourists safety is to make sure that they are visible when going straight because trucks turning right may not see them, and this is how the majority of cycle deaths occur. However, it is important to remember that this happens very rarely and that Copenhagen is the safest city in terms of traffic accidents in all of Denmark. Also, it is important for tourists to remember that others will not necessarily follow the rules (Henrik Mortensen and John Skaletz).

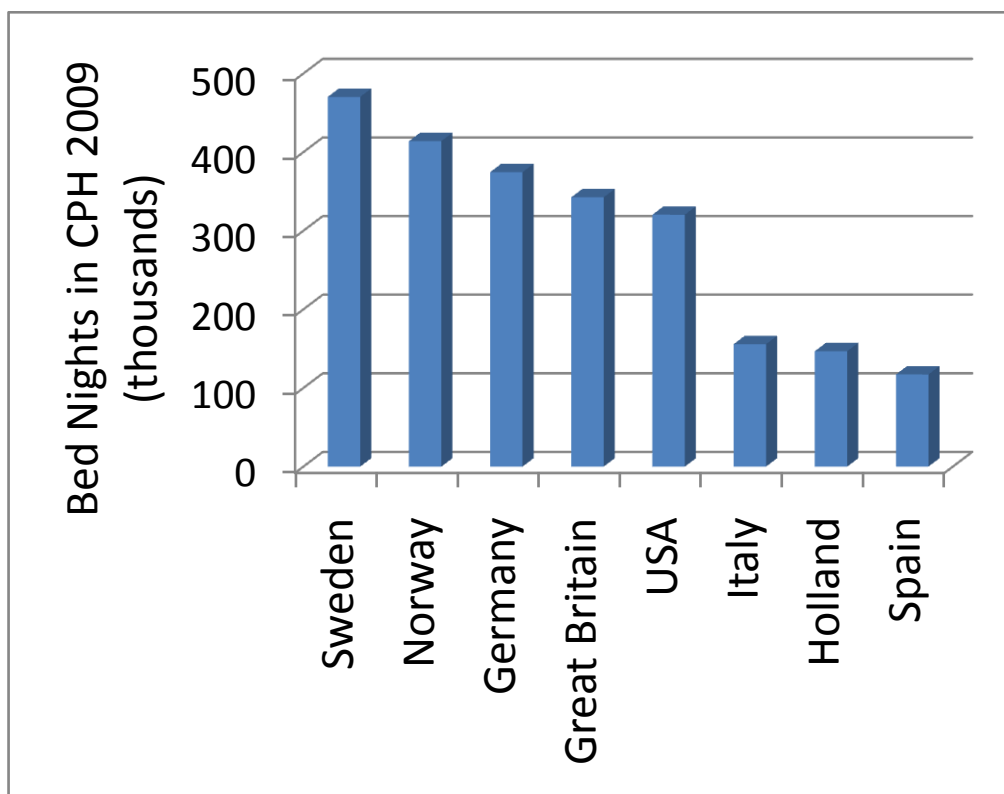


Figure 23: Histogram showing regional distribution of overnight visitors to Copenhagen Source: Tour MIS

The long term visitors consist of people staying in Copenhagen for an extended period of time. This includes international students like the Danish Institute for Study abroad (DIS) students. The DIS students all come from American universities, and there are 600-700 that come for half a year and 50 that come for a full year. They have shown an interest in cycling, and would likely be interested in a cycling guide (Uhrskov, 2010). Since they are students from American universities, their needs will be very similar to the needs of the group members and the other WPI students. Interviews of the DIS and WPI students were conducted to assess what content they would want and what form of media they would prefer to use. Three DIS students and five WPI students were interviewed. The interview summaries can be found in appendix B. Two of the WPI students that were interviewed said that they think a pamphlet would be good enough, but that it would be nice if there was a link to a website on the pamphlet. They also said that they would prefer a pamphlet that could be picked up at a bicycle renting company over web based media just because it would be convenient. Two of the WPI students and two of the DIS students said that they would prefer a web-based media over a pamphlet. One of the DIS students even said that they would not find a pamphlet useful. One of the WPI students was strongly in favor of blogs saying that it would be the easiest form of media to use. One of the DIS students said that YouTube videos would be a good idea and would be something they would want. So, overall the preferred media was a blog with the pamphlet being a close second.

Seven of the eight students interviewed had already cycled and they revealed that they thought cycling was pretty fun and safe. The students also shared some of the difficulties they faced cycling for the first few times in Copenhagen. Based upon the fact that the group's first impressions shared many similarities with those of all of the interviewees, the most difficult aspects of cycling in Copenhagen were determined to be: the hand movements, crossing before turning left, getting passed and passing people, knowing which streets to cycle down, and which rules can be broken safely. Aside from advice on proper cycling regulations, behaviors, and etiquette the kind of information that the students wanted in the resource was information on where to get a bicycle, suggested routes and places to visit, and an explanation of the City Bikes.

### 4.3: OTHER BICYCLE CULTURES

Copenhagen is of course not the only country with an established cycle culture. Gaining knowledge of the other cycle cultures allowed the team to make recommendations for sections of the guide tailored to foreigners coming to Copenhagen from specific countries. Thus, the top countries discussed in the previous section were the focus of the group's study of other bicycle culture since most of the tourists come from those countries.

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#### CHINA

Similarities like high cycling ridership within different countries does not necessarily suggest that the other components of bicycle culture, such as attitudes of cyclists and motivations for cycling, will be similar as well. Many Asian countries have high cycling ridership and regular utility cycling. While these components of bicycle culture in Asia relate to those of Denmark, other components may differ between the two regions. Focusing on China for example, one can discover the variation of these elements of different bicycle cultures.

Since before the 1900s, when the bicycle was introduced to China, the rate of bicycle use in the country gradually rose over the decades. With about half a billion cyclists in China, the country earned the nickname of the "Bicycle Kingdom" (Esfehani, 2004). Many cities have high rates of bicycle usage; the capital Beijing for example had 54.1% of trips by bicycle in 1992, while several other cities even exceeded this percentage (Mao, Xiao, Xu, 1999).

The motivation for cycling in China is a distinguishing characteristic between the country's bicycle culture and that of Denmark. Esfehani (2004) suggests that communism may be the main motivating factor for such a vast number of cyclists in China. When the People's Republic of China was established in 1949, the Chinese government became strong advocates of cycling. Esfehani

mentions that the reason for this may be that the bicycle fits the needs of a “‘socialist’ society”. Economic reasons may also be a motivating factor for cycling in China. With such a large population, the low-cost bicycle relative to the automobile was the logical choice for the Chinese during the developing stages of the second half of the 20<sup>th</sup> century.

The green aspect of cycling does not appear to be part of the motivation for Chinese cyclists. Several countries around the world are looking to convert automobile drivers into cyclists in an effort to lower harmful emissions and reduce environmental pollution. China on the other hand, is experiencing an economic boost, and automobile use is increasing, while the opposite is occurring for bicycle use. This would go against the rationale of cycling to help the environment, suggesting that the primary motivations of Chinese cyclists may not include the green movement (ECF, 2010).

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## NORWAY

Norway is a country that has been influenced by cycling in a unique way. The Norwegian bicycle culture consists of two main factors, cycle racing and utilitarian cycling. The active racing federation in Norway is called the Norwegian Cycling Federation (NCF), and it is the national governing body of cycle racing in Norway. The NCF is also a member of the Union Cycliste Internationale (UCI) and the European Cycling Union. The Union Cycliste Internationale (UCI) is a cycling association that oversees competitive cycling events internationally (Vegvesen, 2008).

Trondheim, Norway is an interesting example of bicycle culture specifically because of its topology. Trondheim, Norway’s third largest city is a hilly city, and has the highest share of cycling compared to all the other Norwegian cities. This unusual characteristic can be contributed to three main factors:

- Trondheim is a university city containing 30,000 students. Ninety percent of these students use the bicycle as their main mode of transportation.
- Over the past 20 years, NOK 20M have been invested in improving the bicycle road networks and bicycle transport infrastructure in Trondheim.
- The most important infrastructure element that encourages cycling in Trondheim is the bicycle lift, Trampe. The lift has pushed more than 220,000 cyclists since its opening in 1993. The lift runs along the steep hill BBrubakken in the historical part of the city center.

The aim of the bicycle lift was not to discourage exercise, but to get more people to use a bicycle daily. The Trampe has significantly inspired people living in Trondheim to opt for the bicycle. In a recent user survey, 41% of the cyclists claim that they used a bicycle more due to the installation of

Trampe (Design Management AS (DM), 2000). Still, the hilly terrain of Norway’s cities causes the country to have a lower number of regular cyclists.

## GERMANY

Germany contains several cities that have an established and popular bicycling culture.

Figure 24 shows the modal split of traffic in Germany.

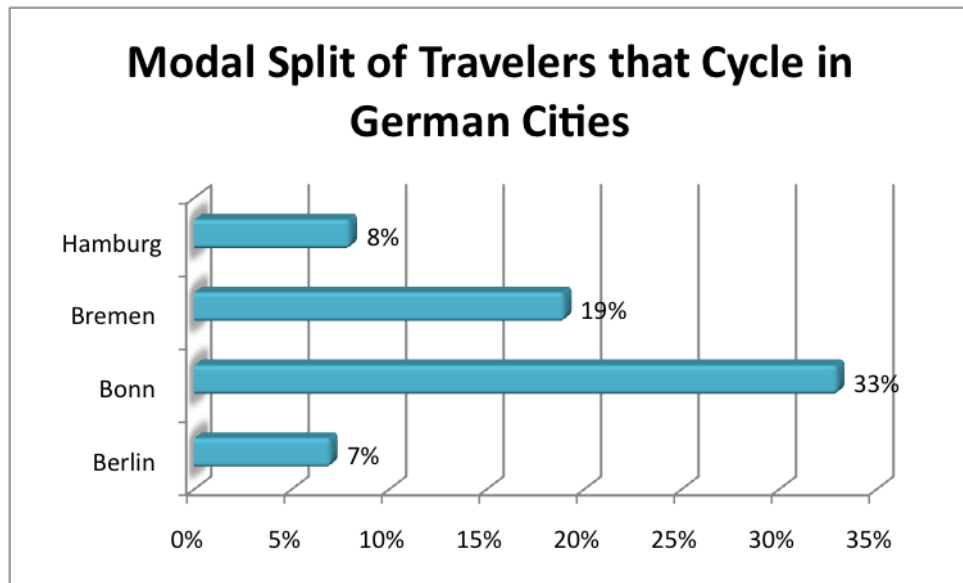


Figure 24: Modal split of travelers that cycle in German cities. Source: Urban Audit 2009

The bike share of trips in age groups is 7% among 18-24 year olds to 12% for those 65 and older. Women are just as likely to cycle as men; they make 49% of all bike trips in Germany. In other countries such as the UK and the USA, men make 72% and 76% of all bike trips, respectively (German Federal Ministry of Transport, 2007).

Specifically in Berlin, less than half of the residents own a car and it has become very common to ride a bicycle every day. The city has 80 kilometers of bike lanes in the streets, and 50 kilometers of lanes on the sidewalks. Cycling has doubled in the past decade, and around 400,000 people cycle in Berlin daily, which accounts for 12% of the total street traffic (McGill University, 2007).

Germany has been among one of the most successful countries at promoting cycling for daily travel. Since the country is quite affluent, their high levels of cycling are not due to an inability to purchase more expensive modes of transportation, such as automobiles. In fact, levels of car ownership in Germany are among the highest in the world. This is interesting because although there is a higher level of car ownership in Germany than in the UK, the bike share of trips in Germany

is almost ten times higher in Germany than in the UK. In other words, even though more people own cars in Germany than in the UK, more people use their bikes in Germany (German Federal Ministry of Transport, 2007).

An interesting aspect of German bicycle culture is the interaction between cyclists (Radler) and pedestrians (Fußgänger). Unlike in Copenhagen, in most German cities the cycling lanes are built on existing sidewalks, as shown in Figure 25, instead of having separate cycling lanes between the sidewalk and the street. Even though the sidewalk is divided into a pedestrian and a bike lane by a white stripe and/or different colored pavement, the risk of collision between bicycles and pedestrians is still present. Unsuspecting visitors or tourists who are not aware of the bike lane (due to it often being poorly marked or unrecognizable) quickly learn the hazards of setting foot into one.



Figure 25: Bike lane in Berlin that is built into the sidewalk,

Another characteristic of German bicycle culture is the subculture of illegal behavior. For example, even though it is against the law, many cyclists choose to be aggressive (Pedalritter, “knights on bikes”) and often speed along the streets of Berlin, ignoring red lights and weaving through pedestrians. In 2006 there were 221 reported collisions between cyclists and pedestrians in Berlin. The final result was one person killed and 42 seriously injured (German Federal Ministry of Transport, 2007).

Despite these injuries, not many Germans wear a helmet, although it is somewhat more prevalent in Germany than in other countries. There is no legal requirement for cyclists to wear a

helmet. The ADFC (Allgemeiner Deutscher Fahrrad-Club), the leading cyclist organization in Germany, is opposed to a mandatory law for wearing a helmet (City of Berlin, 2003). The list of the German cycling rules and regulations can be found in appendix F.

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## LONDON, UK

A cycling culture is beginning to emerge in London. According to the statistics obtained by TfL's Travel Report (2007) it seems that cyclists will overtake cars on the road by 2025. In fact, cycling traffic increased by 20% from 2004 to 2005 (TfL's Travel Report, 2007).

Unlike in Copenhagen, in London, it is recommended that cyclists take a prominent position in the road and not cycle close to the curb. This is so that cars will not try to overtake the cyclist and force him off the road or into parked cars. Turning is also performed differently in London. When turning right (remember they drive on the left side of the road) the cyclist should check for traffic behind him, and if there is none turn, otherwise the cyclist should stop in the middle of the road and wait for the traffic to pass. Whenever turning right or left, the cyclists must always keep an eye out for pedestrians since the pedestrians have the right of way.

Since London's cycle lanes are still developing, the rules regarding cycle lanes are a little different. In fact, "Some cycle lanes have been designed in such a way that they encourage cyclists to ride near the kerb or close to parked cars where the risk of collision is higher. You do not have to use such lanes. In some cases you may find parked vehicles obstructing cycle lanes." (London Cycling Campaign, 2010). Also, bicycles are allowed to use the bus lanes only if there is a signpost indicating shared use. Aside from the lanes, there is one more notable part of London's cycle infrastructure: the advanced stop lines, or bike box. These allow cyclists to stop in front of automobile traffic at stop lights. A bike box is pictured in Figure 26. The same infrastructure is also used in Portland, Oregon.





Figure 26: An advanced stop line, also called a bike box

(source: [Wikimedia.org/green\\_bike\\_box](https://www.wikimedia.org/green_bike_box), 2010)

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## SWEDEN

Denmark's Scandinavian neighbor, Sweden, has some elements of established bicycle culture in urban areas. There are safe cycle paths and cycle lanes similar to those in Denmark (Hammel, 2010). The average bicycle ridership of Sweden's cities is 10%, reaching about 20% in Lund and Malmö and 33% in the small city of Västerås. Still, the bicycle is only used for 7% of all trips made within the country as a whole (Dutch Ministry of Transport, 2009).

The ECF associate member organization in Sweden is Svensk Cykling (Swedish Cycling, 2010). Svensk Cykling is a trade association for Sweden's bike dealers, manufacturers and importers. The goal of the association is to get more Swedes to cycle more often. Part of Svensk Cykling's approach to make Sweden a cycling nation is to suggest several cycling policies to be enacted by politicians before the election in September 2010. In Svensk Cykling's "Bicycle Manifesto," some suggested cycling policy requirements are:

- The money for investment in bicycle infrastructure earmarks and reported feedback by the government, regions, and municipalities.
- The tax rules to be amended to encourage cycling.
- Bicycle parking will be built at homes, workplaces, and shopping and travel centers.
- That public transport (both buses and rail transport) allows bicycles.

- The accessibility and safety for cyclists improved. (Swedish Cycling, 2010)

Svensk Cykling also has a guide targeted at commuters who are contemplating converting to cycling. The guide called *Cykel smart* contains information ranging from support regarding the decision to become a cyclist, such as health and environmental benefits, to a list of cycling rules to be followed. The rules for cycling in Sweden coincide with those of Denmark, suggesting that the behaviors of Swedish cyclists and Danish cyclists are relatively similar. *Cykelsmart* will be elaborated on further in the existing bicycle resources section of the report.

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## NEW YORK CITY, AMERICA

Unlike the other countries discussed, where the bicycle is mainly used as a means of transportation, in America the use of the bicycle is mainly for recreational purposes or sport. This means that the bicycle is not used by most people; in fact, the percentage of total trips made by bicycle was only 0.7% in 2000 (ECMT, p 20). Utility cycling is not common, meaning that the bicycle is overall not regularly used for commuting to work, grocery shopping, or bringing children to school. The automobile and public transportation remain to be the dominating forms of transportation for these tasks. Some cities, however, have an emerging bicycle culture.

Mayor Bloomberg of New York City recently received an award from the Cycling Embassy of Denmark, commending his recent efforts towards cycling advocacy. In the past two years, the city of New York added 350km of cycle paths, increasing overall cycling by 26% in the past year (ECF, 2010).

As far as the law is concerned, bicycles must follow the same rules as cars: stop at red lights, observe speed limits, signal turns, and ride with traffic. However, bicycles are prohibited from using interstate highways and expressways. New York's Cycle policy is similar to London's in that bicycles are not required to use the bicycle path if it is unsafe, and are permitted to use the road (New York State Department of Transportation, 2010).

### 4.4: EXISTING CYCLING GUIDES

In order to determine the best form of the bicycle resource, other existing bicycle resources were analyzed. This section will give an analysis of the structure and content of existing bicycle guides that were researched before arriving on site. The project team used these bicycle resources as reference to know what information to incorporate into the guide created.

This guide *Cycling in the Netherlands*, is 70 pages long and divided into four chapters. The first chapter is an introduction to cycling in the Netherlands in general. This chapter gives statistical information about the Netherlands such as the number of people that cycle, the number of thefts, the average age of bicycle users, etc. Also, this chapter explores the reasons to bicycle and why so many people bicycle in the Netherlands. Throughout the chapter, the information presented is usually given in the context of cycling in Europe, and the Netherlands is often compared to other countries in Europe. This chapter does not, however, give any practical information on how to bicycle in the Netherlands.

The second chapter is titled “The Dutch Approach in Brief” and it talks about cycle policy in the Netherlands. Instead of giving the specific cycle policy, this chapter gives the objectives of the policy, and the details of how cycle policy is enforced and created. This chapter emphasizes that bicycle policy in the Netherlands is decentralized, so that there is no one list of “rules of the road”. Instead, there are national cycle plans that lay the framework for the rules. Then, decentralized authorities create the specific policies according to these plans.

The third chapter is entitled “Facilities for all target groups”, and it gives specific use examples for bicycles in the Netherlands. For example, it talks about one company that gives employees company bicycles to use, and how this increased the number of cyclists. Another example used is that there is a plan to install a bicycle parking lot in a school. Already half of the children commute to school by bicycle, and this plan for enhanced parking should increase that figure even more. Later in the chapter, the guide talks about recreational cycling, and cycling tourism. The example used here is the city of Zeeland. In Zeeland, recreational cycling is being promoted by ensuring that good bicycle infrastructure, readable signs, and facilities and accommodation is available. Also, this chapter points out that cycle policy and infrastructure is very important to both recreational and utilitarian cycling, since many recreational cyclists use the marked cycle paths and facilities.

The last chapter is called “Practical Measures”. This chapter outlines practical plans to make cycling easier and more accessible. This chapter starts by talking about “Spatial Policy” i.e. making sure that all the important destinations in the city are close enough to be reached by bicycle. The guide refers to the CROW recommendations, which are a set of guidelines for building bicycle friendly cities. The five main points of the CROW recommendations are: safety, direct routes, comfortable lanes, attractive environment, and logical routes. Like all the other chapters, this chapter contains many examples. One such example that was quite interesting is the Snelbinder (which is Dutch for bicycle luggage straps) bridge shown in Figure 27. The track shown in the figure

is the cycle track; this was added on to the main rail bridge which is shown on the left. This bridge adds a bicycle lane to an already existing rail bridge, and cuts down travel time for cyclists wanting to get to the other side by ten minutes.



Figure 27: Snelbinder Bridge Source: Edwin van den Bergh

One thing that the Netherlands bicycle guide did very well was to provide examples. There were literally examples to demonstrate every concept introduced in text. This made it significantly easier to understand the bicycle ideas and policy introduced in the text. Unfortunately, in terms of providing concrete information for people wanting to cycle in the Netherlands, this guide was somewhat lacking. Although valuable information for first-time cyclists was contained in the guide, it was not in a central location, and a reader would have to read through most of the guide to find this information. It would have been easier if this information was all contained or referred to in a dedicated biking tips/strategy section.

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#### GUIDED BICYCLE TOURS (PAST IQP SPONSORED BY THE DCF)

In 2002, an IQP team from WPI created a prototype self-guided bicycle audio tours for the DCF (Moore, et al. 2002). This is very interesting because one part of our bicycle resources could be

some suggested bicycle routes, and this past IQP team did research into points of interest for visitors in Copenhagen, as well as research into how to create a tour.

One interesting suggestion that the IQP team had for creating a tour route was “Choosing a theme that directly reflects the purpose and target audience. If families are the target audience then the sites chosen should keep both parents and children interested” (Moore, et al. 2002 p. 47). The IQP group created a scripted audio tour, so there is also useful research in the final IQP report about how to plan a script for the audio portion. This information could be useful if we decide to include an audio tour in the bicycle resources. A map of the prototype tour route is shown in Figure 28. Once in Copenhagen, it would be a good idea to actually try following this self-guided tour, even if the scripted audio portion cannot be retrieved.

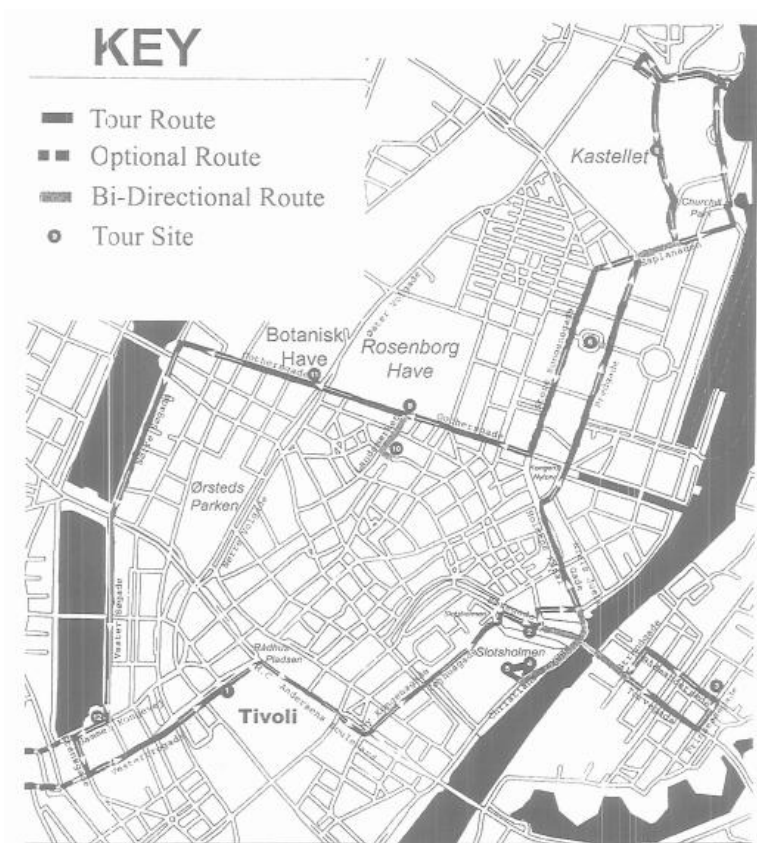


Figure 28: Prototype Map Source: Guided Bicycle Tours, Moore et. al., 2002 p. 119

Another very useful collection of information in the final IQP report is a list of points of interest in Copenhagen. For each place, the name in English, the name in Danish, a brief description of the location and a picture are included. Although this IQP was performed in 2002, so some of this information may be outdated, much of the information will still be useful.

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## NEW YORK CYCLING GUIDE – DEPARTMENT OF TRANSPORTATION

There is an online guide to cycling in New York hosted by the State Department of Transportation. The guide contains general information about cycling such as reasons to bike, and the cycling infrastructure available in New York. A large portion of the guide is suggested bicycle routes including scenic routes through New York State, and more urban routes in the city. Another interesting part of the guide is the list of bicycle events such as the dates of bike tours. This is information that tourists can use when planning their trips, and is a useful part of the guide.

Of course, there is an extensive section on safety and policy. One interesting aspect of this section is that there is a list of guidelines for safe cycling, and whenever something is required by law, it has an asterisk next to it. There is also a section that just contains legislation. However, this section was somewhat difficult to read and not as useful as the other sections. There is also a FAQ section inside the safety and policy section, where commonly asked questions are answered (New York State Department of Transportation, year).

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## LONDON CYCLING GUIDE – LONDON CYCLING CAMPAIGN

The group has found useful examples of cycling guides from the UK available online. There is a book entitled “complete guide to safe and enjoyable cycling” hardcopy available to purchase in the UK, but the easy access of the electronic sources such as the cycling advice given on ukstudentlife.com and the London Cycling Campaign website make them valuable resources. The website of the London Cycling Campaign, a volunteer-led community organization dedicated improving London’s cycling conditions, provides useful links to pdf documents under the cycling advice section such as tips for new cyclists, and cycle maintenance. Getting started includes useful tips for beginner cyclists such as making sure the bicycle is suitable to ride, planning out a cycling route, road safety, etc. This website is informative and is easy to use. It serves as a valuable reference for potential styles of the groups’ project outcome (Rosanna, 2006).

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## SWEDISH CYCLING GUIDE – SVENSK CYKLING

The guide, *Cykelsmart*, created by Svensk Cykling was mainly created to convince Swedes to become commuting cyclists. It contains sections about why one should become a commuting cyclist, how to choose a proper bicycle, how to dress right, the health benefits of cycling, and, most importantly, how to cycle safely. Chapter four labeled “traffic sense and etiquette” gives useful tips that one should use when cycling in any urban setting.

- **Make yourself visible** to motorists.

- **Think of speed** Consider traffic. Know your limits; be aware of your surroundings. Don't take a chance with high speed traffic if it's dangerous. Never position yourself just behind a car or other cyclist – stay back.
- **Beware of car doors** Avoid unnecessary accidents by keeping a safe distance from the cars, about a "car door distance". Adjust speed and watch.
- **Give signals** in advance before turns. Help your fellow road-users to read your intentions. Keep in a single file; cycle straight. Make eye contact with motorists and pedestrians.
- **Stay to the right** Driving on the right also applies to cyclists and the bike lanes.
- **Watch for black ice** as well as oil slicks, rain, and wet leaves since they can be slippery. In general, ride calmer and be more cautious than dry road conditions. For better grip on winter roads, you can invest in studded tires. Remember that narrow tires cut through snow better.
- **Wear a helmet** for your own safety, we recommend bicycle helmet use - there is nothing more fragile than your head. The helmet should sit squarely on your head (Swedish Cycling, 2009).

This section also contains facts about crossing pedestrian crosswalks, cycling at night, and rights of way, which will be a useful reference for the group when we decide what safety tips, should be included in our resource.

## CHAPTER 5: SELECTING THE CONTENT

After becoming familiar with cycling in Copenhagen, the group determined the most important content to include in the cycling guide website. The group created a prioritized list of content that using the following criteria: how important is the information to ensuring safe cycling, how difficult is the information for the target audience to obtain without a resource, how intuitive is the information, how useful is the information to the target audience, and how easy or difficult is it to include the information in the outcome. The group members assessed these criteria using their insight gained through fieldwork, interviews of cycling experts, interviews of target audience members, interviews of representatives of the target audience, and research. The list of exactly what content ended up in the guide can be found in the discussion of the final product in chapter 8. However, here is the general list of topics or categories of information that were considered to put in the guide:

1. Top Ten Tips for Urban Cycling
2. List of the Formal Rules
3. Common Maneuvers
4. Cycling Infrastructure
5. Obtaining a Bicycle
6. Cycling Etiquette
7. Information on Bicycle Maintenance
8. Suggested Routes and Places to Visit
9. Information on Other Bicycle Cultures

This section will discuss the reasoning for including or not including this information in the guide categories.

### 5.1: TOP TEN TIPS FOR URBAN CYCLING

The first category, Top Ten Tips for Urban Cycling, is a list of the advice that the group members deemed most important for visiting cyclists. This section will give the rationale for the first five of these as well as elaborate as needed. In the actual guide, each of the things on the list is accompanied by a paragraph explaining it with pictures if necessary. The most important tips are:

1. Observe
2. Stay to the right
3. Signal
4. Anticipate
5. Make yourself visible
6. Do not assume



7. Obey the traffic lights
8. Check over your left shoulder
9. Make eye contact
10. Lock your bicycle

The first tip, observe, means to observe others cycling before trying it for the first time. This is very important to ensuring safety because it will give the first time cyclist a basic idea of what to expect when he or she cycles for the first time. There are many things about cycling in Copenhagen that can be confusing at first, and videos, pictures, and written explanations can only communicate so much. Observation is also an important part of becoming accustomed with cycling in Copenhagen.

The second tip, staying to the right is surprisingly simple; however it is also extremely important. The group found that as long as this rule is obeyed, then many mistakes (such as forgetting to signal) will not interfere with other cyclists. Also, the group observed numerous cases where cyclists would not keep to the right, and would interfere with other cyclists. All of these encounters ended with the cyclist that did not keep right stopping and apologizing in English. Some of the DIS students said they noticed this as well. This suggests that not staying to the right is a mistake that some visiting cyclists make. The group members also made this mistake when first cycling around Copenhagen. Additionally, virtually all the group's interviewees when asked "what is the most important thing for a visiting cyclist to keep in mind?" answered "stay to the right". This includes Skaletz (Dep. Chief Superintendent of the Traffic Unit of the Copenhagen Police), Tommerup (DCF Project Manager), Mortensen (cofounder of Baisikeli), Hammel (DCF webmaster) as well as the DIS students. So, clearly staying to the right is a very important biking tip that many visiting cyclists forget about when cycling in Copenhagen, and thus it will be included in the guide.

The third tip, signal properly, is also very important. During the group's field research, cyclists' reactions to improper or non-existent signal use were observed. In some cases, forgetting to signal led to collisions or angry looks. So, signaling properly is important to ensuring cyclist safety. Additionally, knowing how to signal properly can be difficult to learn through observation because many of the local Danes signal subtlety (Hammel). However, the signals are very intuitive since you just extend your right hand to signal a right turn, extend your left hand to signal a left turn, and raise your left hand upward to signal a stop as shown in Figure 20. Also, the signals used in Copenhagen are different from the signals used by motorists in the United States, and so may be confusing to people familiar with driving in the United States, such as the DIS students.

The fourth tip, anticipate, means to be attentive and anticipate what those around you will do. This is important to ensuring safety because several times the group members observed others doing unexpected things. For example, in one instance a child ran across the crosswalk unexpectedly trying to beat the red light and ran right through the path of one of the group members. Luckily, no one was hurt, but this shows that it is important to anticipate what others might do when cycling.

The fifth tip, make yourself visible, means to make sure that other traffic, especially cars, can see you if you will be crossing paths. According to Skaletz, this is very important to ensuring safety. The deadliest cycling accidents are those involving cyclist-automobile collisions. The most severe of these is trucks turning right colliding with bicycles going straight. Skaletz emphasized that a cyclist can avoid such an accident by making sure that he or she is visible to the surrounding automobiles and trucks and making eye contact (tip #9) with the driver if possible.

## 5.2: LIST OF FORMAL RULES

Another section of the guide is the most important formal rules along with information on which rules are broken often. The rules of the road are very difficult to find in English, and it is difficult to completely determine what the rules are from observations because some rules are broken often. It is important to know what the rules are because as Police Deputy Chief Superintendent of the Copenhagen Police traffic unit, John Skaletz said “Obey the rules or leave the country”. The rules are of course important to ensuring safety, but knowing which rules are often broken is also important so that one knows what to expect when cycling in Copenhagen. Also, it is fairly easy to include a list of the most important rules along with an explanation of each.

## 5.3: COMMON MANEUVERS

Another category that was considered is common maneuvers such as turning left, turning right, passing other cyclists, and signaling. Showing how to do these maneuvers is important to ensuring safety because the other cyclists will expect that these maneuvers be executed properly and an accident may occur if they are not. During the first few times that the group members cycled, these maneuvers were done improperly and this led to a lot of bell ringing and angry looks. Some of the maneuvers, especially left turns, are not that intuitive since they are performed much differently than in a car. This section required a significant amount of work, since video footage and audio narration needed to be recorded for each maneuver.

#### 5.4: CYCLING INFRASTRUCTURE

Cycling infrastructure was another item that was considered. This information is very important for ensuring cyclist safety because without this information cyclists might be unsure of where they are and are not allowed to cycle which could be dangerous. Certain parts of the infrastructure can be unintuitive. For example, initially it was difficult to distinguish the difference between the cycle paths and the sidewalks. This is because many of the cycle paths are on the right side of sections of the road designated for parked automobiles. The group was unfamiliar with any form of moving traffic to the right side of parked cars other than pedestrians.

So, it is clear that information on cycling infrastructure would be useful to the target audience, however, it was somewhat difficult to include in the guide since it is such a vast topic. So, the group focused its explanation of cycling infrastructure to cycle roads. Intersections were not explained in depth for two reasons. First, at an intersection one can always simply walk the bike along the crosswalk. Second, an in depth study of the intersections in Copenhagen has already been done, and will be linked to in the guide (Nelson, 2006).

There are varying types of street layouts in Copenhagen, ranging from streets with safe, thoughtfully designed cycle paths to streets without any cycle paths. Based upon the group's own experience of confusion by the varying street layouts, as well as several interviewees stating their confusion, the group determined that explanations describing the various types of street layouts should be included in the guide. These explanations would include annotated pictures of streets and intersections, along with written descriptions. This would allow first-time cyclists in Copenhagen to cycle safer and more comfortably since they would know what to expect.

Annotated pictures with written descriptions of different traffic lights will be included in the resource as well. The group members were initially confused about following the regular traffic lights where there are no bicycle traffic lights. This confusion came from the behaviors of the locals, since some local cyclists do not always abide by the traffic lights.

#### 5.5: OBTAINING A BICYCLE

Another item that was considered was information on where to actually obtain a bicycle. This will include information on how to use the free City Bikes, and information on some of the bicycle renting companies in Copenhagen. During the DIS student interviews, two of the students said that information on where to get bikes would be very useful. Also, one of the DIS students

didn't know how to use the City Bikes, so this information will be included in the guide as well. Of course, the various renting companies that the group has contacted wanted this part of the guide.

## 5.6: CYCLING ETIQUETTE

Another category of information that was considered is cycling etiquette. Cycling etiquette includes things like when to use the bell and when to yield to bus passenger and pedestrians. This information is important to ensuring safety, but not as important as section like the rules or common maneuvers because not having proper etiquette will annoy people but will not likely result in an accident. This section will inform the user how to cycle without annoying the local cyclists or drawing attention to oneself, and thus how to "cycle like a Dane".

## 5.7: BICYCLE MAINTENANCE

Information on bicycle maintenance would be important to ensuring safety because it would allow the user to know what to watch for when biking and could prevent accidents. This section would be very difficult to create from scratch since it would involve learning about the mechanics of the bicycle. Due to time constraints, this was not feasible. However, the group discovered that the Dansk Cyklist Forbund (DCF) had already created a small pamphlet on bicycle maintenance that had exactly the kind of information that the group wanted to include on the website. Unfortunately, this pamphlet was only in Danish, so the group recommended that this document be translated to English, and then linked to on the website.

## 5.8: SUGGESTED ROUTES AND PLACES TO VISIT

The suggested routes and places to visit was one entry that was linked to instead of created from scratch. The group members during their research on site discovered several suggested routes and places to visit that had been made by other organizations such as the cycling department of the Københavns Kommune (City of Copenhagen, 2010). Also, the group learned that Baisikeli, a prominent bicycle renting company in Copenhagen, was working on a guide of hot spots to bike to. These resources were linked to on the website.

## 5.9: OTHER CULTURES

One item that could not be finished due to time constraints was the inclusion of information on other cultures. After the group collected information about the bicycle culture in other countries through research, experience, and interviews, the feasibility and usefulness of including specific comparisons between each country's bicycle culture with that of Copenhagen was assessed.

Copenhagen's cycling infrastructure is quite safe and intuitive. Also, the cycling infrastructure and rules in Copenhagen are similar with those of the countries that most visitors to Copenhagen come from (Sweden, Norway, and Germany) which led the group to not add specific sections in the resource catering to visitors from those countries. Additionally, specific sections of the resource dedicated to comparisons between one country's bicycle culture and Danish bicycle culture, would overload users of the resource from other countries. If the resource were to contain too much information, it would decrease its ease of use. Since there still are some differences between Danish bicycle culture and those of Sweden, Norway, and Germany, and many differences between Danish bicycle culture and the bicycle cultures in the United Kingdom and the U.S.A. (the countries whose inhabitants visit Copenhagen the fourth and fifth most respectively) the group decided to focus on explaining Danish bicycle culture instead. Describing the cycling infrastructure, cycling rules, and behaviors of cyclists in Copenhagen in depth, as if every user of the resource is from a country whose bicycle culture is vastly different from that of Copenhagen, would eliminate the need to specify the differences from each country. However, the group already collected a lot of information on other bicycle cultures, and this information could be included in the guide. So, a discussion of adding the already collected information on other cultures to the guide can be found in the recommendations section of the report.

## CHAPTER 6: METHODS OF COMMUNICATING THE CONTENT

In addition to collecting the information and determining which information will go in the guide, the possible methods of relaying the information were studied. These included web-based media such as static website, wikis, and blogs as well as videos, leaflets and pamphlets. These possible media were researched and then the best one was chosen based on the selection criteria.

### 6.1: FORMS OF MEDIA FOR COMMUNICATING CONTENT

In order to determine what type of media should be used to communicate Danish bicycle culture, an investigation into what types of media were available needed to be conducted.

#### WEB-MEDIA

Specifically, the group investigated what types of web media are available for easy and informative communication. When making a website, one must understand that there are two distinct types of websites: static and dynamic. Since dynamic websites are much more complex than static websites, there are various kinds of dynamic websites; two that were researched were wiki websites and blogs.

#### STATIC WEBSITES

A static website is a published website that will not change until a newer edition is created. The website only changes when someone familiar with HTML (web markup languages) edits the content. The biggest disadvantage to these sites is that they are not easily editable by people who do not have programming skills (Cailliau, 2007).

#### DYNAMIC WEBSITES

Dynamic websites enable their owners to upload information on their own, usually through password protected administration. The owner does not need knowledge about HTML or website design to update or maintain such a site because the editing is done through a separate editor. However basic knowledge of HTML and CSS is required to make more complex structures on the website, such as embedded videos or randomly generated header pictures (Cailliau, 2007).

#### BLOGS

A type of dynamic website that offers many advantages over static websites is a blog. Before discussing why a blog is a valuable communication tool, one must understand the definition

of a blog, and a few terms associated with blog use. The word “blog” came from the contraction of the term “web log”, and it is used to describe a type of website. A blog usually contains content such as commentary on a specific subject, descriptions of events, graphics, or videos. Entries are most commonly displayed in reverse-chronological order, but one can set the categorization of entries to any style. Blogs usually combine text, images, links to other web pages, and other media related to the specific topic on the blog (Blood, 2000).

Blogs can be sorted into many different categories to fit a user’s specific needs. Examples of some blog types are personal blogs, corporate and organizational blogs, certain genre blogs, specific media type blogs, and device blogs (ex. used on a mobile device) (Blood, 2000).

Research has been done to explain blog dynamics and why blogs have become popular. There are two main factors that enable a blog’s popularity: popularity through citations, and popularity through affiliation (i.e. through a blog roll, which is a list of blog links on a blog). The consensus from the research is that while it takes a long time for blogs to become popular through blog rolls alone, permalinks can boost popularity quicker. A permalink is a URL that points to a specific blog post after it has been archived. If the blog post has been permalinked, it will always be accessible even if it is taken off of the front page. The fact that permalinks are used shows that people care about the content on blogs because it means that people want to be able to access the content even when it is taken off the FrontPage (Measure, 2009).

This leads one to question, why use a blog as a communication tool? There are many reasons why a blog can be an effective communication tool. One important feature is that a blog is not static like many websites. It is often updated with new content and usually allows its readers to add comments to a post (a “post” is a term used for new content added)(Measure, 2009). This enables both the user and the blog creator to have a more humanistic approach to using a website since the blogging tools facilitate communications that are authentic and responsive.

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#### WIKIPEDIA WEBSITES (WIKI WEBSITES)

A Wiki is a website that allows several people to easily modify it simultaneously. Wiki websites consist of a series of pages that are connected to each other. Typically, a new web page is created by putting a link to it on an already existing page. For example, if a link to a page called Useful Information was put on the home page, then a page called Useful Information would be created if it did not previously exist.

The exact user permission rules can be modified for a Wiki, but the most common practice is to allow anyone to propose changes to page, but only allow registered users with sufficient permissions to publish changes to a page. This way anyone could suggest a change, but it would have to be approved by an authorized user before it went on the Wiki.

The actual editing of the Wiki is fairly straightforward since it is all done through a WYSIWYG<sup>1</sup> interface and no programming knowledge is required to edit pages. However editing the exact layout and style of the page is difficult and does require some programming knowledge. Some Wiki software comes with predefined themes (styles), but there are not that many themes available (Leuf, 2001).

Also, choosing what Wiki software to use is difficult because there are over a hundred different Wiki software solutions available. Tools such as wikimatrix can be useful to narrow down the choice based on specific criteria, but even with these tools finding the right Wiki software is time consuming.

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## LEAFLETS AND PAMPHLETS

A different type of media that can be utilized is a pamphlet or a leaflet. A pamphlet can be classified as an unbound booklet (no cover or binding). It can consist of a single sheet of paper that is printed on both sides and folded in half, or in thirds. A leaflet is a pamphlet that is folded in fourths. A pamphlet may also consist of a few pages that are folded in half and stapled at the crease to make a book. One disadvantage of leaflets and pamphlets is the cost of printing and distributing the pamphlet. An advantage of the pamphlet is that it is a tangible object, and very convenient to use (UNESCO, 2007).

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## VIDEOS

Videos provide a comprehensive approach to communicating particular content. Content that is difficult to explain via photos or text can be easily communicated through video. For example, filming behavior at a busy intersection would be preferable simply because all of the actions and behaviors in that moment would be captured, and could easily be analyzed after the fact. The biggest disadvantage of videos is that it takes a lot of time and work to do them well, especially, if video editing such as adding narration is done.

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<sup>1</sup> What you see is what you get interface; this is an interface such as Microsoft Word where the document being edited shows how the document actually looks. This is different from editing html code because the html code does not show what the document actually looks like



## 6.2: SELECTION OF COMMUNICATION MEDIUM

After the various communication media were researched, they were evaluated according to the criteria in the methodology: ease of access, ease of use, effectiveness and feasibility. The group decided that a blog would be the best communication media.

Blogs provide a powerful platform for one to publish content and easily make it accessible to the world. They are interactive and allow one to run and manage a website that can be updated with new content easily without prior website design knowledge. For the purpose of this project, the blog will be used as a communication tool, an educational medium, and a marketing tool. The blog will be used in the modern style of blog use, rather than traditional journal style blog. The typical modern blog combines text, images, videos, links to other pages, and other media related to the blog topic.

After several interviews that the group conducted, using a blog became the general consensus. Specifically, Ole Kjær Mansfeldt (Research and development manager for Wonderful Copenhagen), informed the group that the use of a blog was advantageous due to the following reasons:

- It moves ones site up in search engines if it is updated regularly
- It provides an easy way to communicate
- One would not have to create a web-site from scratch. The blog platform is already established.
- Using a blog would enable other sites to easy link to the blog site and vice versa

After learning about the value and user-friendliness of blogs, the group decided to use a specific blog publishing application called WordPress. WordPress was chosen based on a discussion with the group's sponsor, Michael Hammel. He recommended used of WordPress due to the following reasons:

- Using WordPress automatically links the blog to Google and Technorati (blog search engine)
- It's free
- There are a lot of users in the community
- Easy to use
- It supports other services such as Google Video and YouTube
- It is fully hosted which means that it requires no installation or managing
- Lots of design themes to choose from that are customizable

A blog was chosen over the other web media that were discussed in the findings simply because a blog can incorporate all of the different web-media types. A blog can contain a static

website, have a link to a Wiki web site, and can act as a dynamic web site. Picking only one type of web media would limit the capabilities for communicating bicycle culture.

## CHAPTER 7: MARKETING

It is vital that efforts are made to increase awareness of the final product, because without users, the product will not be effective. Several organizations have agreed to place a link to the group's website on their organization's website: the Danish Institute for Study Abroad (DIS), Baisikeli, Wonderful Copenhagen, the American Embassy, and of course the Dansk Cyklist Forbund (DCF). Also, some bicycle rental and sales businesses have agreed to showcase a pamphlet promoting the guide as well as put a link on their website: Baisikeli, Larry vs. Harry, and Københavns Cyklebørs. Although a pamphlet was not created, recommendations for a pamphlet were provided to DCF. Also, social media were utilized to increase awareness of the product.

### 7.1: SOCIAL MEDIA

Wonderful Copenhagen provided a compelling research paper titled "Experience design in city tourism", which defines the term social media. One of the main authors of this paper is the group's contact at Wonderful Copenhagen, Ole Kjær Mansfeldt. The concept of Experience Design that is used throughout the research was investigated in another paper titled "A Dynamic Framework of Tourist Experiences: Space-Time and Performances in the Experience Economy", which was published in the Scandinavian Journal of Hospitality and Tourism. Basically the paper argues that new and perhaps superior tourism management guidelines can be developed by considering the location and time of the tourist experience. The paper especially stresses that the tourist should be seen as an active producer of the tourist experience.

These ideas of Experience Design were used as the basis for the research summarized in "Experience design in city tourism". In this study 14 city tourism organizations from cities throughout the Nordic region (including Copenhagen) collaborated to collect data on what tourists enjoy and remember. This was done via over 5,000 interviews, as well as traditional desk research. The main result of this research is that

"Tourist organizations have a rather small say in persuading the tourists in their traveling decisions. When it comes to choosing where to go, tourists are much more inspired by personal recommendations and general information than on the official tourism websites, tourism brochures, ads and the like." (Mansfelt ET. Al., p. VII)

So, this suggests that although a traditional brochure, ad, or website will be useful, a more interactive product, such as a form of social media, could be more effective at communicating to tourists. The Wonderful Copenhagen study defines social media as "an overall definition of the

digital space created when photo, video and audio is published by users of social platforms like Facebook, Flickr and other blog universes." (Mansfelt ET. Al., p. 123)

So, aside from putting links on other websites, social media were utilized. A Facebook group called Visitor's Guide to Cycling in Copenhagen was created to promote the website. Also, a YouTube account that was used to upload all the videos was created. Other social media suggested to be utilized, which are further discussed in the recommendations chapter of this report, are: virtual tourist, TripAdvisor, Wikitravel, and Wikipedia. These will all increase awareness of the guide.

The most apparent rationale for using these social media websites is the increased page ranking on Google. One of the ways that Google determines how far toward the top of a search a website appears is by analyzing what other websites link to that website. The more credible and numerous the links are, the better the page ranking (Google, 2010). All of the social media websites that have been proposed are considered credible sites, and having links to the group's blog on these sites will greatly increase the page ranking of the blog. An increased page ranking will increase the chances that someone searching for information on cycling in Copenhagen will find the group's site, and so using the social media sites will increase awareness of the guide. The extent of the increase can be determined by using Google analytics to track the website traffic, and looking at the change in traffic as the social media links are added.

With a YouTube account specifically, the videos that were created will be on the blog site, but since they are available on YouTube and they will use the Creative Commons Attribution license, anyone could embed the videos on their site either as is or modified (YouTube). This basically lets others market the blog for the group, if the videos are high quality enough for others to want to use them. The same thing can be done with pictures on Flickr (Terdiman, 2004).

## CHAPTER 8: FINAL PRODUCT

This chapter is used to describe the final product, Cycle Guide. Cycle Guide is a web-based blog that showcases cycling content that is useful for any type of user interested in cycling, specifically in Copenhagen, Denmark. Although the content is focused on Copenhagen, the main principles can be applied to other Danish cities, due to the fact that the rules and behaviors are very similar.

The Cycle Guide consists of the following components:

- **A homepage:** A static page that has links to the most popular and important information. The main titles are: where to get a bike, basic maneuvers, and Copenhagen's infrastructure. The purpose of having a static homepage is to show the user immediately what the Cycle Guide is all about. The homepage has links to all of the information on the site in the following categories: where to get a bike, first timers look here, safety, cycling advice, Copenhagen cycling, cycling culture, and cycling etiquette.

The main homepage is as shown in Figure 29.

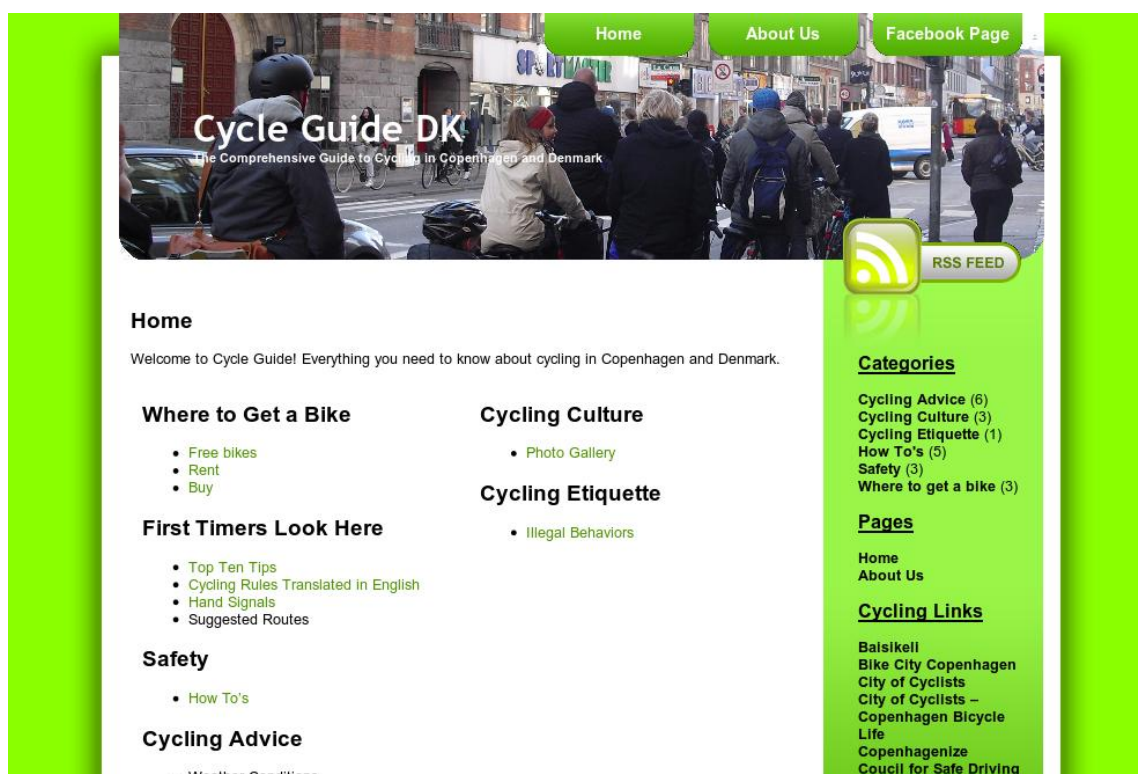


Figure 29: Screenshot of the blog homepage in its initial state

- **About Us page:** This page contains information on the group, Worcester Polytechnic Institute, the Interactive Qualifying Project, and a note of thanks to the group's hosts.

- **Blog Posts:** The blog posts are where the majority of the content on the website is stored. These posts are arranged into different categories, making individual posts easily searchable. These categories are: cycling advice, cycling culture, cycling etiquette, how to's, safety, and where to get a bike.
- **Photos and Videos:** Posts that contain photos and videos will be “tagged”. A tag is a non-hierarchical keyword assigned to a certain piece of information. The tag helps describe an item and allows it to be found again by browsing or searching. Additionally, tagging an item enables a link to appear underneath the post to easily access all photos and videos.
- **Side bar:** The side bar serves as a quick and easy way to access the categories, pages (i.e. home page, about page, and posts pages), and cycling links. A list of cycling links is included in the sidebar for quick access to useful cycling background information.
- **Facebook Page:** The Facebook page is a page located at the top of the website, along with the home page and about us page. The purpose of the Facebook page is to link to a social media website that contains a photo gallery of bicycle culture photos, and enables communication between those who have joined the Facebook. Utilizing Facebook is valuable because it is a strong social networking tool, and will increase awareness and usability of the Cycle Guide.

The content can be divided into two main focuses: practical matters, and unique Copenhagen bicycle culture elements. The practical content concentrates on what a cyclist coming to Copenhagen or Denmark should know before embarking on their first cycling journey, and how to ensure safe cycling. Additionally, the content in the Cycle Guide can be used by any level of cyclist (i.e. first time cyclist, or experienced cyclist). The unique bicycle culture elements focus is used to show how one “knows” that they are cycling in Copenhagen, meaning what specific elements of the cycling culture can be recognized. The main focus of this section is on showing cycling culture elements such as cargo bikes, parents cycling with children, and cycling rush hour.

Specifically, the content that is featured in the Cycle guide is as follows:

1. Top ten tips for urban cycling
  - A list of the most important things to know about cycling with explanations for each.
2. List of the formal rules
  - A list of the most important formal rules.
3. Left turn
  - Video and diagram as well as a written explanation detailing how to properly perform left turns.
4. Right turn
  - Video documenting how to properly perform a right turn.

5. Stopping
  - A video documenting how to properly execute a cycling stop.
6. Passing
  - A video and written explanation on how to properly pass and be passed. Additionally an explanation of bell use is included.
7. Road Types
  - Explanations of the various road types with annotated pictures and tips for what to watch out for on each road.
8. Intersection Types (linked)
  - Explanations of the various intersection types with pictures and diagrams
9. Green wave (linked)
  - An explanation of the green wave with a linked video showing cyclists riding the green wave.
10. Locking your bike
  - Quick explanation of how to lock a rear-wheel bike lock with a short video.
11. Hand signals
  - Explanation of the hand signals with pictures depicting the left, right, and stop signals.
12. Traffic lights
  - An explanation of the bike traffic lights with pictures.
13. Bus pedestrian interaction
  - Explanation of yielding rule for bike and buses interaction, pictures of cyclist-bus interactions are included.
14. Road etiquette
  - Explanation of what the expected behaviors are. This is a really broad topic; so many parts will be explained in their own individual blog posts (also blocking sidewalks, keeping to the right, stopping without notice, not riding two by two, making sure to let others pass, etc.).
15. Common illegal behaviors to watch out for
  - An explanation of the common illegal behaviors that some cyclists do along with an explanation of when they will be tolerated. Some of the behaviors are documented in videos and pictures.
16. Where to get a bike

- A list of recommended places to rent or buy a bike.
17. City Bikes
    - An explanation on what the City Bikes are, and how to use them.
  18. The group's cycling logs
    - The cycling logs that the group kept during their stay will be posted. The main idea for showcasing these in the Cycle Guide is to show an outsiders perspective in trying to immerse in the Danish bicycle culture.
  19. Suggested first time routes (linked)
    - A link to the City of Cyclists site and a list of the top 20 routes for Cycle self seeing. This provides an easy way to find a range of routes that are good for first time cycling in Copenhagen, and for sightseeing in general via bicycle.
  20. Certain small infrastructure items (hand and foot rails, pavement ramps for paths, speed bumps etc.)
    - Pictures and explanations of small biking nuisances that were hidden at first, but were shown to be very useful in everyday cycling.
  21. Links to other cycling related websites
    - These sites include: Bike City Copenhagen, City of Cyclists, Copenhagenize, Cycle Chic, Cycling Embassy of Denmark, The Danish Cyclists Federation, Velo-City Global 2010, and Visit Denmark. The purpose of linking to these websites is to prove a solid background to cycling culture outside of the blog.
  22. Unique Copenhagen Bicycle Culture Elements
    - This includes several posts containing pictures, videos, and the group's impressions of the cycling culture aspects unique to Copenhagen. The photos depict Danes doing everyday things on a bicycle that would seem out of the ordinary to an outside observer. Examples of this are: cycling with children or pets in a bike cart, carrying groceries, carrying large objects (e.g. a cello), riding in heels, children riding alone, riding in business suits, and smoking while cycling.
  23. Weather Advice
    - Tips on what to do and watch out for in different weather conditions (specifically, strong wind).
  24. Bike maintenance -- link
    - Information on simple bike maintenance, warning sign and what to do if you get a flat tire.
  25. Guide to Parking your bike --link
    - Guide on where and how to properly park your bike.



26. Explanation of confusing street signs

- Pictures and written explanation of the most confusing street signs that can be seen on a fairly regular basis.

27. Rush hour video

- Video showing cycling rush hour.

28. Rotary or roundabout

- Explanation of bike and car rotaries with diagram, pictures, and video.

The main objective behind the content items posted in the Cycle Guide is to enable the user to have access to key information needed in order to have a successful cycling experience. The Cycle Guide also enables users to comment on any post, thus facilitating communication between the users themselves and between the users and webmasters.

## CHAPTER 9: CONCLUSIONS AND RECOMMENDATIONS

The goal of this project was to facilitate communication of Danish bicycle culture to tourists by creating an informative cycling guide developed from an outsider's perspective. The group's "fresh eyes" on the subject of bicycle culture allowed many nuances of Danish bicycle culture to be discovered. The group's primary observations and experiences of cycling in Copenhagen were recorded and explained. These observations and experiences correlated with those of the students studying abroad in Copenhagen whom we interviewed. Cycling experts and target audience representatives who were interviewed suggested the same recurring ideas for content for the guide as we thought were important to include from firsthand observations and from interviews of other students. The cycling experts interviewed also gave the group specific suggestions for content in the guide not easily found through online research. From this gathering of content ideas for the guide, the group narrowed down the most important content to be the traffic rules for cyclists, cycling infrastructure information, practical advice for cyclists (maneuvers, cycling in certain weather conditions, etc.), road etiquette, and unique aspects of Danish bicycle culture.

After extensive research into the needs of the target audience, the group decided that a blog would be the best way to communicate the content. The blog had several advantages over the other possible media including ease of use, ease of setup, and ease of marketing. Also, since the blog is a social medium, it allows for communication between the content consumers and the content creators automatically. Specifically the WordPress platform was chosen because it is already a well established blog platform with many built in features and themes, so it was relatively easy to create a professional looking site in a short amount of time. Most importantly, our liaison Michael Hammel, who supports the use of a WordPress blog, is the webmaster for the Dansk Cyklist Forbund, so continuous development of the blog can be achieved.

The blog the group created is called Cycle Guide ([cycleguide.dk](http://cycleguide.dk)). Cycle Guide gives cycling advice and safety tips for visiting cyclists to Copenhagen. It also highlights unique aspects of Danish bicycle culture, emphasizing the range of the many elements that bicycle culture encompasses. The following paragraphs describe suggestions for future additions to Cycle Guide.

One of the recommendations is to create a leaflet containing some cycling advice taken from the blog entries, as well as a link to the blog. This pamphlet could be either a traditional leaflet, or it could be a door hanger leaflet that could be attached to a bicycle. The attachable leaflet would be attached to bicycles before they are rented out, and this way the person renting the bicycle would be forced to interact with the leaflet before using the bicycle. The recommendations for what

content to put on the leaflet are: cycling regulations, practical advice, suggested cycle routes, and a link to Cycle Guide.

The recommendations for marketing the guide consist of contacting organizations that could link to the guide, distribution of the pamphlet, and social media websites that could be utilized. The group contacted several organizations that would be able to market the guide by placing a link on their main site. These organizations were: Wonderful Copenhagen, the Danish Institute for Study abroad, Københavns Cyklebørs, Baisikeli, Larry vs. Harry, the cycling department of the Københavns Kommune and the American Embassy. The group contacted all of these organizations, and explained to them the project and the guide. All these organizations showed an interest and asked to be informed when the guide is completed. Once the website is ready these organizations should be contacted with a link to the website. Additionally, several bicycle renting companies were contacted, and agreed to prototype the pamphlet discussed in the previous paragraph. These organizations were: Københavns Cyklebørs, Baisikeli, Larry vs. Harry, and Luca's Cykler. Also, the Copenhagen Business School (CBS) and Copenhagen International School (CIS) should be contacted.

Additionally, the group utilized some social media websites to increase awareness of the guide, but there were more that could be exploited. One social media that can be used is Wikitravel, where an entry about the cycle guide website should be added in the Copenhagen section. Another social media is virtual tourist, where a tip explaining the guide with a link to it could be added under the transportation section on the Copenhagen page, or a link to the guide could be posted as a comment to one of the bike tips already on the Copenhagen page, such as the tip about city bikes. Another social media site that could be utilized is Flickr. The many pictures that the group took could be uploaded to Flickr in order to increase awareness of the cycle guide. This is very similar to what was done with the videos on YouTube. In addition to social media, it is vital that the website be optimized for search engines. This will greatly increase the awareness of the guide.

Finally, there were a few blog entries that the group members did not have time to create on site. The blog entries that should be added are: information on other cultures and bicycle maintenance. A lot of information on other bicycle cultures was collected and is discussed in the background and findings. This information should be added to the guide as blog entries with an entry for each country. This would allow the website to expand its scope, and it would make the guide easier to use for people coming from the countries researched. During the group's research, the group learned that the DCF has created a guide to basic bicycle maintenance that contains information such as what warning signs to look for, which problems require immediate attention and which can be ignored, and how to fix simple problems. Unfortunately this document is in

Danish, but it contains all the information that should be on the website. So, one of the group's recommendations is to translate this information into English and add it to the website. Another recommendation is to include discussions of information about cycling policy and debate.

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### A. MISSION AND ORGANIZATION OF THE SPONSORING AGENCY

The Danish Cyclists Federation (DCF) sponsored this project in collaboration with WPI. The DCF is a non-governmental organization devoted to promoting bicycle use for both transportation and recreation. The DCF is based mainly on voluntary work, with a small group of paid staff in the Copenhagen headquarters. Founded in 1905, the DCF now have approximately 40 local branches and 20,000 members in the DCF. The DCF is a member organization of the European Cyclists' Federation. The organization's main concerns are cycling conditions and awareness. Every year, the DCF runs three campaigns: All Children's Bicycles, We Cycle to Work, and Green Cycling day. The main goals of these campaigns are to encourage all Danes to participate, promote cycling awareness, and promote bicycle use (DCF, 2010). Some of the campaigns are run along with the Cycling Embassy of Denmark, the Road Safety Council, the Road Directorate and the municipalities, attaining the highest nation-wide level of exposure possible (Cycling Embassy of Denmark, 2010). Alongside these activities, the DCF is successfully lobbying for better safety and infrastructure for cyclists on both local and national levels.

## B. INTERVIEW SUMMARIES

### MICHAEL HAMMEL INTERVIEW

#### **Interview Summary:**

**Interviewers:** Adam Tragellis, Katarina Lopez, Andrei Ilyashenko

**Interviewee:** Michael Hammel

**Date and location of interview:** 1/29/2010 Skype interview from WPI, Worcester, Massachusetts, U.S.A. and DCF office in Copenhagen, Denmark.

- 🚲 **Q:** What is your role in the Dansk Cycklist Forbund?
- **A:** Webmaster – editing web page
- 🚲 **Q:** Why is cycling important to you, and how is it important to the city of Copenhagen?
- **A:** Cycling is important to Copenhagen – Many people do not own cars (outrageous parking/other fees) People use bikes and public transportation. 20%-30% inhabitants do this.
- 🚲 **Q:** Have you cycled in other countries before? If so, what makes Danish bicycle culture unique? How does it compare with other countries?
- **A:** Biking other places → Similarities/Differences:
  - -Australia – more of recreational biking, not as practical. They use really fancy mountain bikes. Similar to the U.S.
  - Danes – Compared more to Dutch/German. Danes drive faster and conceive themselves as more rule-based compared to the Dutch.
  - Netherlands (Amsterdam etc.) More chaotic, more flow riding.
  - Danish bike culture is unique → Speed is high, way faster than other countries.
- 🚲 **Q:** Do you think the fast paced aspect makes cycling in Copenhagen dangerous?
- **A:** Not too dangerous
  - Netherlands – 11 km/hr
  - Copenhagen – 15 km/hr
- 🚲 **Q:** What methods would you suggest for us to gain a thorough understanding of the rules of cycling in Copenhagen?
- **A:** Two sets of rules:
    1. Law of the traffic rules
    2. Who is going faster, who lets you go, “how to be experienced”
  - Informal aspects of cycling
  - Basic rule – one must observe cyclists in Copenhagen. One needs to be told how the culture works.
  - How others look at you to assess your efficiency on certain paths
  - Other people’s behavior towards you
  - Passing each other, specific aspects
- 🚲 **Q:** What problems do you think foreigners would encounter while first attempting to ride a bike in Copenhagen? Any suggestions to help a first time cyclist in Copenhagen?

- **A:**First time bikers may not be used to the lanes, etc. Could be considered hazardous. The culture is almost forgiving to first time explorers “How do you behave in bike traffic?”
  - example at rush hour, tourists ride slow.
  - commuters ride fast, may seem rude to tourists.
  - Riding too slow may be dangerous, Danes may curse at you after they pass you
  - Bike lane ~1.2 m wide
  - Stay in your confined space, straight line
  - Want foreigners to be welcome into the culture instead of intruding
  - Denmark differs from the Netherlands
  - “Almost” a race
  - Helmet not mandatory in Denmark

🚲 **Q:** What is the DCF expecting as an outcome of this project?

- **A:** We should go there and observe the cyclists on foot, make notes, take videos
  - First views will be most foreign to us, important to convey
  - Expected to create a guide for tourists who want to ride in Copenhagen/Denmark, introducing/expanding culture.
  - One goal ->Velo-City 2010 delegates will be handed guide
  - No defined media yet
  - something that can be clipped on a bike?
  - ideas should be open, find BEST option (ex. Leaflet/flyer for tourists renting a bike)
  - Bike companies ask for things that they can give to people (ex. Students need bikes, easier than public transit)
  - Need to teach “Do’s and Don’ts” of biking
  - No riding on the sidewalk
  - Always lock bike
  - Will be fined by police if these laws not obeyed

🚲 **Q:** Have there been previous attempts to make such a guide for foreigners?

- **A:** I Bike Copenhagen (kk.dk). Copenhagenize – popularizing the way of cycling. Different approach, wants to promote a slow cycling movement. Not to be discovered as a foreigner on a bike. Make entrance less steep for better entrance on bikes.

🚲 **Q:** Are there any other sources within or outside the DCF that you feel would help us out?

- **A:** Cycling embassy (still in progress). Your product will be featured there when it is done. Work as expert committee trying to promote cycling to other countries. He will e-mail us information about Lisa from the DCF who could potentially be a valuable source and a Pdf presentation of bicycle promoting companies.

**Interview Summary:**

**Interviewee:** Anthony Siracusa

**Interviewers:** Adam Tragellis, Katarina Lopez, Andrei Ilyashenko

**Date of interview:** 2/19/2010 via Skype

🚲 **Q:** Tell us about yourself and what does your research entail?

○ **A:** People who study bikes:

1. Engineer types – concerned with making bike lanes efficient, lane size
2. People who decide public policy – concerned with health/social implications
3. Bike freaks – They are really into bikes

He said that he was not any of these types.

His main interest is how the bicycle acts as a catalyst in communities. Interested in how it brings people together and breaks barriers. Also interested in how a mainstream bicycle culture and exist and how multiple sub-cultures emerge.

Within the bike culture there are many different sub- bike cultures.

1. Road racing
2. 24 hour mountain bike racing
3. Fixed gears vs. shifters (shifting gears)
4. Bike polo

Anthony's main thesis: The bicycle acts as a catalyst to bring people together.

🚲 **Q:** Did you encounter any major obstacles as a first time cyclist in Copenhagen, and what were your first impressions about cycling in Copenhagen?

- **A:** Free-bike rental stand, all the bikes were rented out. Went to find another station, put a coin in and rented a "free-bike" for the day.
- Paid attention the cyclists' dynamics, don't need to be a well trained cyclist to ride in Copenhagen. Main way to learn was to observe how cyclists acted.
- "They follow the rules, they signal, put their fist in the air signaling slow down, ring the bell when passing.
- "Intuitive cycle paths. Don't have to be well-trained cyclist to use bike-tracks."
- "Making turns, making a left turn isn't quite figured out yet". Currently you have to cross the crosswalk in order to make a left.
- Much easier than biking in America, need more experience to bike.
- Bike parking pamphlet – bike parking is a "perpetual crisis" in CPH. CPH is outdoor-orientated, so biking culture has a social dimension to it. Bikes are slightly rickety yet fashionable. Women coordinate helmets with boots, handlebars, and grips.

🚲 **Q:** Michael Hammel said tourists sort of get in the way, did you notice anything like that?

- **A:** A much bigger problem in Amsterdam than in Copenhagen due to the higher amount of tourists. The reason that the DCF is motivated to make a guide is because they want to focus on the tourists they have and make sure they are safe.
- Amsterdam – tourists in the way. Didn't notice as much in Copenhagen. Bit "provincial"
- **Q:**What are some specific aspects of Copenhagen's bicycle culture?
  - **A:** Anthony's definition of bicycle culture: Is groups of people and or places that can be defined by their bicycle use. Bicycle is really just the sum of a number of smaller sub cultures. Bicycle cultures will only grow if you nurture the sub-cultures "Bike culture is the ocean, Danes are the fish, you wouldn't ask a fish, "so how's living under water?" Biking has always been a main mode of transportation in Denmark, it is rooted in its culture. They always had a main stream class of cyclists. Other countries (ex England, Australia) have main stream cycling growing from the recreational cyclists. History of the bike infrastructure is why Copenhagen's culture is how it is."
- 🚲 **Q:** Where else have you cycled. Tell us about their bicycle cultures, how do they compare?
  - **A:**Copenhagen - Average class riding the bike all the time starting during OPEC crisis London. Work done over 30 years and has been a municipal effort. People saying we don't want more cars want more bikes: Recreational class will not consider commuting by bicycle. Good symbol of where London is going but its growing from the recreational cyclists and going to the people.
  - Netherlands (Amsterdam):
  - Berlin
  - Australia (where he is currently located) - learning about Victorian bicycling strategy. Australia is trying to make bikes mainstream, at the moment biking is more recreational.
  - He is planning on going to China (Shanghai and Beijing), Guatemala and Mexico. Mexico has over 150km of bike lanes. Interested to see what kind of impact the bicycle can have there.
  - London - It is an emerging bicycle culture. London is starting to make bicycle lanes and get more people on the roads, the spark is different.
- 🚲 **Q:** What would you say one needs to know to become accustomed to cycling in Copenhagen?
  - **A:** Make sure to pay attention the cyclists' dynamics, don't need to be a well trained cyclist to ride in Copenhagen. Main way to learn was to observe how cyclists acted.
  - It is "easy" to figure out how to cycle because the Dane's follow the rules.
  - The bicycle paths are intuitive, one does not need to be a well trained cyclist to ride them.
  - "They follow the rules, they signal, put their fist in the air signaling slow down, ring the bell when passing.
  - "Intuitive cycle paths, don't have to be well-trained cyclist to use bike-tracks."

- “Making turns, making a left turn isn’t quite figured out yet”. Currently you have to cross the crosswalk in order to make a left.

**People suggested to talk to in Copenhagen:**

- Kristian Tommerup Simonsen– works at DCF, was brought in to get a better connection with the younger generation.
- Jens Loft Rasmussen – Is an important person at the DCF.
- Mikael Colville-Anderson - “Ambassador” of Danish bicycle culture. Anthony said his ideals are somewhat idiosyncratic. He believes that everyplace can be made like Copenhagen.
- Larry and Harry (Lars and Hans) – bicycle shop that makes cargo bicycles, which are marketed at bicycle messengers
- Baisikeli: bicycle renting company that gets its bikes at a discount from insurance companies.
- Marie Kåstrup (Copenhagen Commune): Wrote her master’s thesis on bicycle culture as relates to Copenhagen. Her thesis argues that the bicycle is popular because the Danes are very modest, and the bike is a modest mode of transportation, so it fits well with their culture.

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## OLE KJÆR MANSFELDT INTERVIEW

**Interviewers:** Andrei Ilyashenko, Katarina Lopez, and Adam Tragellis

**Interviewee:** Ole Kjær Mansfeldt – *Research and development manager for Wonderful Copenhagen*

**Date and location:** April 09, 2010 at 9:30 Gammel Kongevej 1, 1610 København, Denmark

Ole Kjær Mansfeldt is the research and development manager for Wonderful Copenhagen, the official tourism company of Copenhagen. In collaboration with others, he recently authored a report of a research project entitled *Experience design in city tourism*. This project's main objective was to gain knowledge on how tourists shape their own experiences in fourteen Nordic and Baltic cities. The main result of the research was "tourist organizations have a rather small say in persuading the tourists in their traveling decisions." Ole's expertise on disseminating information to tourists as well as how tourists get information on their own about their travel destinations closely relates to the group's goal of conveying Copenhagen's bicycle culture to tourists. At the beginning of the interview, Ole provided the group with a hard copy of his report.

Ole first asked the group to elaborate more on the details of the project. The group also told him about WPI and how our project is part of WPI's bachelor degree requirements. The group mentioned that part of the project outcome would most likely include some type of web media. Ole said that based on his research, creating a website from scratch may not be the best approach. He suggested using other previously established social media platforms to efficiently get information out. He suggested platforms such as youtube, facebook, flickr, blogs (cycle chic, copenhagenize), tripadvisor, virtual tourist.

The city-bikes in Copenhagen are another aspect of tourism that Ole is familiar with. According to Ole, the current city-bikes in Copenhagen have become outdated. This is due to the poor quality of the bikes, and the fact that the locals do not use the bikes. The city bikes are primarily used by tourists. Some tourists shy away from using the city bikes to avoid standing out as a tourist. A new bike plan is going to be set up where the city-bikes would look more like local bikes in an effort to get locals to utilize them. Ole said that Baisikeli is a good organization for tourists to rent a bike similar to the locals.

Ole mentioned a previous project called *Real Time Copenhagen* conducted by MIT students and the Municipality of Copenhagen. The project involved tracking chips in the city bikes that would use GPS to monitor how many people were at certain places in the city at certain times of day.

The group mentioned to Ole that the Embassy had a "greening program" where a police officer was supposed to teach the embassy workers how to safely cycle in Copenhagen, and that the police realized that they had no materials on the rules of the road in English. So, the group asked if Ole thought that the police would be interested in the project. Ole said that they most likely would not be interested because the "greening program" was a onetime thing, and the police would not have a need for the group's project on a regular basis.

The group also asked Ole if there are any other prominent tourist organizations in Copenhagen. Ole responded that Wonderful Copenhagen was the official tourist organization, but that there is another tourist organization for Denmark as a whole that is doing some research into cycling in all of Denmark, including Copenhagen. One aspect of their research is why people cycle in Copenhagen as

well as in the countryside. Ole emailed contact information for this organization. In this email, Ole also provided contact information for several other organizations and websites.

Ole also suggested that the outcome of the project should focus on cycling in general, and to not focus on Copenhagen in order to get a larger audience. Finally, Ole suggested that the group investigate a blog search engine called Technorati, and the tourist information center near central station.



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## KØBENHAVN POLITI INTERVIEW

**Interviewers:** Katarina Lopez and Andrei Ilyashenko

**Interviewee:** John Sckaletz – *Dep. Chief Superintendent of the Copenhagen Police, Traffic Unit*

**Date and location:** April 14, 2010 at 11:00, Gl. Køge Landevej 1, DK 2500 Valby, Denmark

John Sckaletz is the Dep. Chief Superintendent for the Copenhagen Police, in the Traffic Unit. Upon arrival, John gave the group a printed presentation (in power point form), that was presented to the American Embassy in Copenhagen a few weeks prior. The presentation was in English and was about cycling safety in Copenhagen. It contained specific information on the most important rules, basic do's and don'ts, how to stay safe on the road, and bicycle use basics.

John said that the statistics were from 2007, and the accident numbers since then have gone significantly down. The fatalities went from 20 to 6 individuals in the past year. Many bikers have been killed by right turning trucks, but last year there was only 1 truck related fatality. John was uncertain as to why the numbers went down, but he hopes that it would continue. Apparently there are several reasons as to why the number of fatalities went down. It could be attributed to the Police's efforts, but also it could be because road users have become more considerate with road space and their cycling behaviors.

One important thing to note is that one should not trust that others will obey the rules. This is very important, because one must be aware of their surroundings at all times. Especially don't believe that trucks will always look out for cyclists, since they might not be paying attention or a cyclist might just be in a blind spot. One interesting fact is that women were more likely to be killed by trucks, this could be to the fact that women could have more trust in people than men have.

The group then asked about what kind of teaching programs are in place for Danish children. According to John, there are programs put in place, but it is a different department that runs the classes and tests for the children. The department is the Special Unit for Crime Prevention, and the goal of the classes and tests is to make sure that children learn how to bike properly, and are knowledgeable of how to interact with all types of traffic.

John thought that the proper protocol for teaching children should be teaching the parents. He believes that if the parents practice safe driving, then the children will follow. In general, most bikers are considered to be nice people and obey the rules. There is a small percentage that disobey, but that is the group that most people focus on. The focus on this group causes everyone else to believe that there are many law breaking cyclists on the streets. It is not dangerous to cycle in Copenhagen, it is one of the safest places to drive.

One important initiative that has been established is to make a car line a few meters back from the bike line. That way, the bikers are in front of cars, which greatly increases their visibility. This is a very safe and very good idea. Also special lights for bikes have been put in place. These lights are staggered in time so cyclists can get a head start when going through an intersection. Occasionally, cyclists will mingle in traffic. To aid this problem, cycle paths have been painted on the roads. These paths have been pretty controversial because now cyclists are passing on the left side of the right turning cars. In other traffic situations it is illegal to do this if you only have a right turning lane, when positioning yourself as a cyclist on the left side, you can be fined for it.

The group then initiated discussion on what are the rules that cyclists break most. There is a small number of rule breaking cyclists, and those who break the rules tend to turn right on red. Turning on red is legal in the United States, but not in Denmark. In Denmark one is never allowed to turn right on red. John believes that turning right on red should be allowed for bikers. He thinks that allowing people to turn right on red would make it safer since cars would know that a cyclist was turning right.

The group then asked if there were any traffic and bicycle related documents in English. John said that all of the documents are in Danish, but the road traffic act is in English, along with the presentation that he gave the group at the beginning of the meeting. John then went on to say that one should not have trust in the traffic. It is hard to teach the consideration of traffic. One may find paths that are divided between cyclists, divided between cyclists and pedestrians, or just strictly pedestrians. The pedestrian-cyclist paths can be somewhat dangerous for pedestrians due to the fast moving bikes. Pedestrians should be very attentive when using a shared path. Some parks do not allow cyclists to ride on the paths. Bikers are considered to be the black sheep in traffic; they are easy to blame traffic problems on.

The group then explained that they are making a guide for foreigners in order to try and get them acquainted with the traffic in a way that doesn't hurt them. The group then asked what sort of behaviors should a first time cyclist look out for. The main behavior that John mentioned was riding the wrong way on a cycle path. He said that this was especially dangerous.

The next question that the group posed was that from a police point of view, what is the most important piece of knowledge that a first time Copenhagen cyclist should know before embarking on their first cycling journey. John said that there is a saying in Denmark, "Obey the rules or leave the country". This is what should be practiced abroad; do as the natives do so to speak. Never ride towards red, always be attentive and foresighted. John also mentioned that the traffic lights change quickly here, they last for about 30 seconds.

The group then asked if roundabouts (rotaries) were safer than light crossings. John said that they are safer for cars, but not bikers. Most bicycle-car roundabouts are outside of the city, simply because there is not enough space in the city to implement them. John then mentioned that the most common rule breaking behaviors are: riding on the sidewalk, riding on the pedestrian or shopping streets, and improperly using the one-way streets. One piece of advice was to pay attention to the traffic signs, and do not be afraid to cycle in general traffic. People can always depend to be helped by signs.

The group then initiated discussion on the most common type of cyclist collision that occurs. John said that most collisions are caused by cyclists themselves. When you have 100 accidents (cyclists), 70 or 80 of them are caused by themselves or another cyclist crashing together. Also, many accidents are caused by a shopping bag getting caught in the front wheels. Most crashes are self-caused, or "solo" accidents.

In terms of driving intoxicated, it is safer to ride a bike than drive a car. The rules on drunk-bicycle riding are very weak. The main consensus is that if you are not a hazard to other traffic, you are still "safe".

Earlier in the meeting it was mentioned that this year the Copenhagen police announced that they would enforce better behaviors among cyclists. The group then asked what sorts of initiatives were put in place to help this issue. John said that the police run many campaigns that help fight bad cycling behavior. One of them involves handing out fines to cyclists. The problem with campaigns is that it takes a long time to change the mindsets of people, and therefore change their behavior. Although the fine campaign is put in place, John believes that the fines do not help that much. He said that it is hard to differentiate between those who will always break the rules and those who only occasionally break the rules. Therefore fines are not that helpful in changing the behavior in cyclists. Thus, making a behavioral campaign that works is still in production.

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## ANDERS UHRSKOV INTERVIEW

**Interviewer:** Andrei Ilyashenko

**Interviewee:** Anders Uhrskov – *Director of Danish Institute for Study Abroad*

**Date and location:** *April 15, 2010 at 15:00 Vestergade 5-7, 1456 Copenhagen K, Denmark*

🚲 **Q:** Where are the students at DIS from?

- **A:** “All the DIS students are from American Universities, and are studying abroad at the DIS. Typically we get 600-800 students in the semester long program, and about 50 in the year long program.”

🚲 **Q:** Have the students shown interest in biking?

- **A:** “Yes, the students seem to be interested in biking. I'm sure that some of them would be interested in a guide.”

🚲 **Q:** We have talked to Mogens Larsen, a language professor at DIS, about interviewing some of the students, do you think a survey or a focus group would be useful?

- **A:** “You can just walk in to the DIS, go up to students, and ask them a few questions. If you have any problems, you can just show people my card and say that you have my permission to do this.”

🚲 **Q:** Do you think a website, and pamphlet/leaflet would be useful and accessible, and could you put a link to it on the DIS website?

- **A:** “Yes, those sound like good ideas. If you send me an email with whatever you have created, and if it is professional, I will pass it on to the webmaster and he will put a link to it on our website.”

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## HENRIK MORTENSEN INTERVIEW

**Interviewer:** Adam Tragellis

**Interviewee:** Henrik Mortensen – *Co-founder of Baisikeli (Copenhagen bike-rental company)*

**Date and location:** April 16, 2010 at 10:00 Turesensgade 10.kld. - 1368 Copenhagen K.

- 🚲 **Q:** How exactly does Baisikeli work to help less fortunate countries in Africa?
- **A:** “Baisikeli is a social-enterprise. Our customers are our target group. We desire to create better transportation for the poorer countries in Africa that we ship bikes to. Baisikeli wishes to build a better bike industry in these countries.”
- 🚲 **Q:** What would you say is most important for an inexperienced cycling tourist to know about cycling in Copenhagen?
- **A:** “One should feel safe because Copenhagen is the safest cycling city in the world. Also, Copenhagen has a strong bicycle culture meaning there are a lot of unwritten rules. Busy cyclists get annoyed with tourists.”
  - **A:** “Main thing to know is to keep right. If you are inexperienced, take it easy at first. Pay attention to how the locals cycle.”
    - **A:** Other Baisikeli employee, Niels said: “When at an intersection and the light turns green, make sure you are visible especially to trucks and buses turning right. This is how the most cycling deaths occur; when cyclists are in a blind spot of the truck/bus driver.”
  - **A:** “Try to make eye contact with the drivers of cars and trucks to ensure your safety by letting them know your intentions.”
  - **A:** “Cycling in Copenhagen is safe, but do not rely on the others to follow the rules. Only rely on yourself.”
- 🚲 **Q:** What kind of people usually rent bikes from Baisikeli?
- **A:** “About 99% are tourists. About 50% from continental Europe, 10-15% from North America, about 10-20% from the U.K., and the remaining 15% from Asia, Australia, South America, etc.”
- 🚲 **Q:** We remember that Baisikeli is also making a cycling guide for tourists in Copenhagen. What are the main aspects that will be included in the guide?
- **A:** “We are making a guide book for tourists. It will be a very personal guide recommending a lot of good places to go to in Copenhagen. The bicycle is the main theme, but mainly just suggested as a means of transport to the many different locations recommended. There will be about 100 different recommended places to visit in Copenhagen, broken down into different categories for example, restaurants, bars, night-clubs, parks, venues, etc. Baisikeli is making the guide in collaboration with Mikael Colville-Andersen (cyclechic / Copenhagenize blogger). The guide will start off with some information on Copenhagen’s bicycle culture and tips on biking. Part of Baisikeli’s goal is to facilitate good bicycle experiences.”
- 🚲 **Q:** We are also in the process of making a resource for tourists looking to cycle in Copenhagen. If we had a quality product informing tourists how to cycle in Copenhagen, would you be interested in it?
- **A:** “Yes, of course.”

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## WPI STUDENT INTERVIEWS

**Interviewers:** Adam Tragellis, Katarina Lopez

**Interviewees:** Sahil Baghat, Karl Gibson, Ian Williams, Elle Fontaine – *WPI students*

**Date and location:** April 19, 2010 at 19:00 Classensgade 42, 2100 Copenhagen, Denmark

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### SAHIL BAGHAT

- 🚲 **Q:** Have you cycled in Copenhagen, if so how often? What do you primarily use cycling for? (work, school, shopping, errands other)
- **A:** “sight-seeing, groceries, and work.”
- 🚲 **Q:** Were you intimidated to cycle in Copenhagen, and if so what was it that caused the intimidation?
- **A:** “yes very intimidated” “rush hour caused it” “ didn’t want to piss off natives”
- 🚲 **Q:** What did you find most confusing when you first cycled in Copenhagen?
- **A:** “Riding the bike in general. The fact that the bikes have pedal brakes. That you cannot ride on the same side in both directions. Some bikers don’t get off bike for cross walks. When the road splits into two, which lane becomes the bike lane. Whether or not you always assume there is a bike lane. When to ring the bell. If riding side by side was allowed. The no entry signs.”
- 🚲 **Q:** Did cycling get easier with more attempts? If so, what made cycling easier?
- **A:** “Yes it is easier. Witnessing more locals made it easier”
- 🚲 **Q:** What type of media would you find most useful/what would you use the most? (youtube videos, Facebook, pamphlet, blog, etc)
- **A:** “Small handbook, with the website listed on it in case.”
- 🚲 **Q:** What advice would you give to a first time cyclist in Copenhagen?
- **A:** Mostly look at what others do, not signs
- 🚲 **Q:** Would the ability to post photos/feedback be of use to your cycling experience (forum)?
- **A:** No.

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### KARL GIBSON

- 🚲 **Q:** Have you cycled in Copenhagen, if so how often? What do you primarily use cycling for? (work, school, shopping, errands other)
- **A:** “sight-seeing, groceries, and quick transportation”
- 🚲 **Q:** Were you intimidated to cycle in Copenhagen, and if so what was it that caused the intimidation?
- **A:** “Yes I was afraid that I would hit people and make a mistake. I was afraid I would not follow the road right, know where the bike lanes were, and know how to take left turns. I felt intimidated during rush hour; I did not want to upset the natives.”
- 🚲 **Q:** What did you find most confusing when you first cycled in Copenhagen?
- **A:** “The intersections, taking lefts, when/where to stop. Afraid to do what locals do, in terms of going right on red and going through lights early.”
- 🚲 **Q:** Did cycling get easier with more attempts? If so, what made cycling easier?
- **A:** “It was way easier than I thought it would be to begin with so it is not too much easier now. I still do not know the rules though.”

- 🚲 **Q:** What type of media would you find most useful/what would you use the most? (Youtube videos, Facebook, pamphlet, blog, etc)
- **A:** “A brochure at a bike-shop would be quick and efficient. A Youtube video might be nice, but a brochure is good enough”
- 🚲 **Q:** Would the ability to post photos/feedback be of use to your cycling experience (forum)?
- **A:** No.

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## IAN WILLIAMS

- 🚲 **Q:** Have you cycled in Copenhagen, if so how often? What do you primarily use cycling for? (work, school, shopping, errands other)
- **A:** “I cycle to work every day.”
- 🚲 **Q:** Were you intimidated to cycle in Copenhagen, and if so what was it that caused the intimidation?
- **A:** “I was nervous about colliding with other cyclists for cycling improperly. I did not want to stand out.”
- 🚲 **Q:** What did you find most confusing when you first cycled in Copenhagen?
- **A:** “The big intersections and taking lefts.”
- 🚲 **Q:** Did cycling get easier with more attempts? If so, what made cycling easier?
- **A:** “Absolutely. I felt comfortable after about 5 rides to work. I witnessed more and paid attention to signals and such.”
- 🚲 **Q:** What type of media would you find most useful/what would you use the most? (youtube videos, Facebook, pamphlet, blog, etc)
- A Wiki-page
- 🚲 **Q:** Would the ability to post photos/feedback be of use to your cycling experience (forum)?
- **A:** “I would look at the forum but not post things.”

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## ELLE FONTAINE

- 🚲 **Q:** Have you cycled in Copenhagen, if so how often? What do you primarily use cycling for? (work, school, shopping, errands other)
- **A:** “work, sight-seeing, shopping”
- 🚲 **Q:** Were you intimidated to cycle in Copenhagen, and if so what was it that caused the intimidation?
- **A:** “Yes, I was intimidated because I did not know the basic rules. I was also scared of getting hit by a bus.”
- 🚲 **Q:** What did you find most confusing when you first cycled in Copenhagen?
- **A:** “Where to go when people passed you. At first I would just hang left, but then I found out that was the passing lane.”
- 🚲 **Q:** Did cycling get easier with more attempts? If so, what made cycling easier?
- **A:** “It was decently difficult, but it was not too bad after a few times. Just knowing the rules helped a lot, especially the rules at intersections.”
- 🚲 **Q:** What type of media would you find most useful/what would you use the most? (YouTube videos, Facebook, pamphlet, blog, etc)

- **A:** “Definitely a blog, since it is easily accessible and you can communicate with others. It would be nice to see other people’s opinions on first time cycling in Copenhagen.”
- 🚲 **Q:** What content would you want on a website to inform one how to cycle?
  - **A:** “The cycling rules that I should know.”
- 🚲 **Q:** Would the ability to post photos/feedback be of use to your cycling experience (forum) ?
  - **A:** “Possibly, I might use a forum to talk to other cyclists”

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**BRIAN SHAW**

**E-mail received 18/4/2010 at 22:09**

First time out on a CPH city bike was a bit interesting, in both good and bad ways. The good stuff is why the bikes are there--being able to roam around and get exercise, so let's focus on the bad stuff you guys might want to look into.

Locating a bike stand is HARD. All they are is nondescript metal racks with grey locks and other city bikes. Unless you can find the white rims of the other bikes, you're out of luck finding the racks. Even with 20/20 vision, being tired and having the sun low in the sky makes it difficult to spot a rack since they blend in with other bike stands and any metal guardrails. I would strongly recommend adding a signpost to each rack with a picture of a bike on it, and detailed instructions on how to use the things properly, for idiots like me who need to locate a bike stand and want something to read.

Later edit: I've noticed that bike stands are actually fairly common, yet ALWAYS vandalized. It's horrible. I don't think bikes last a week before they get trashed, stolen, or the lock broken. Still, they hide in hard-to-find places and are very tough to spot.

First thing you notice when you're on the bike is just how heavy it is. Easily more than double the weight of my mountain bike back home. Even a gentle but decent-length hill like the ramp near Fisketorvet can be a struggle, though maybe I just need to get in shape. The 20 kroner coin worked the lock without any significant difficulties and I had no problem getting the coin back upon returning it.

The on-bike map is next to impossible to read. You can get a sense of the city's shape, but any and all text is far too small. It was extremely difficult to determine that Classensgade is that road on the border of the map. Furthermore, not all the signs warning cyclists to stay in the zone are clear. While I seem to remember having no issue finding one on the Norrebrogade bridge from the bus, the signs near Classensgade look like construction signs or are tiny, don't show a picture of a bike doing anything, and the text is exclusively Danish which the target audience (tourists) doesn't speak.

To resolve these issues I think there needs to be a symbol for the CPH city bikes. Perhaps take the standard bike symbol, fill the wheels in with a white color, possibly with the letters CPH on the wheel as well. To say "here's a bike stand" show the CPH City bike on a plain blue background. To show where the borders are, put a circle and a line through it as well. If a symbol like this already exists I would like to see it in more places, having gotten from Tivoli to Classensgade without finding one.



Speaking of which I find it difficult when there are no bike lanes or the bike lane is obstructed by construction. Driving with traffic makes me nervous, and I've found it's better to walk the bike across bad intersections than actually ride it.

All in all riding a CPH bike is a demotivating experience, it takes 20 minutes to get somewhere then 1:30 to find a place to dump the bike? That is assuming you know enough about Copenhagen to not get lost or hit by something. There's also the fear of getting whopped with a 1000-kroner fine, which is perfectly reasonable if you abandon the bike in Køge (because it's not cheap to get some guy out there to fetch it) but extremely unreasonable if you're simply riding it two blocks too far north on Østerbrogade. I would hate to be a tourist staying here for only 5 days, the intersections here are daunting to say the least even before you consider that vandalism is as common as graffiti in train stations (and you know how common that is).

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## DIS STUDENT INTERVIEWS

**Interviewers:** Adam Tragellis, Katarina Lopez, Andrei Ilyashenko

**Interviewees:** DIS (Danish Institute for Study Abroad) Students

**Date and location:** April 22, 2010 at 14:00, Vestergade 5-7, 1456 Copenhagen, Denmark

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### DIS STUDENT 1: JESSICA

- 🚲 **Q:** Have you cycled in Copenhagen, if so how often? What do you primarily use cycling for? (work, school, shopping, errands other)
- **A:** “Yes, I ride to school every day, my bike ride is only about 15 minutes. I was given a bike by one of my friends here.”
- 🚲 **Q:** Were you intimidated to cycle in Copenhagen, and if so what was it that caused the intimidation?
- **A:** “Yes. It was pretty intimidating because I am horrible at directions, so I would get lost a lot. I also wore my hat under my helmet, which caused trouble because I couldn’t see that well. Also the bell ringing was intimidating because I didn’t know what it meant at first.”
- 🚲 **Q:** What did you find most confusing when you first cycled in Copenhagen?
- **A:** “The hand movements, crossing before you turn left, I had no idea how to do either of those. I also didn’t know which streets you were not allowed to ride down.”
- 🚲 **Q:** Did cycling get easier with more attempts? If so, what made cycling easier?
- **A:** “I have definitely got accustomed to riding now, I also ditched my helmet.”
- 🚲 **Q:** What type of media would you find most useful/what would you use the most? (youtube videos, Facebook, pamphlet, blog, etc)
- **A:** “Something online”
- 🚲 **Q:** What content would you want on a website to inform one how to cycle?
- **A:** “Maybe videos, interviews, why its useful to have a bike in the city, safety tips on drinking and biking.”
- 🚲 **Q:** What do you think should go on the front page of the website?
- **A:** “I link on where to get bikes, a map with places to go for easy cycling, and something on city bikes. I didn’t know how they worked and where to find them at first, since they didn’t come out until mid-April.”
- 🚲 **Q:** Would the ability to post photos/feedback be of use to your cycling experience (forum) ?
- **A:** “Not really.”

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### DIS STUDENT 2: FRANCESCA

- 🚲 **Q:** Have you cycled in Copenhagen, if so how often? What do you primarily use cycling for? (work, school, shopping, errands other)
- **A:** “I ride my bike to school every day. I got my bike from a police auction, buying one from a store is way to expensive”
- 🚲 **Q:** Were you intimidated to cycle in Copenhagen, and if so what was it that caused the intimidation?

- **A:** “Yes, because I came here in January when there was still snow. It was at first scary because of the ice, but I mostly just watched other people cycle. Also biking around little kids felt unpredictable.”
- 🚲 **Q:** What did you find most confusing when you first cycled in Copenhagen?
  - **A:** “I guess signaling and bell-ringing, I didn’t really know what to do at first.”
- 🚲 **Q:** Did cycling get easier with more attempts? If so, what made cycling easier?
  - **A:** “Yeah, It got easier. It used to take me 20 min to get to DIS, but now it only takes me 10-15 minutes. Although the wind can be a problem, it slows me down sometimes. A windy day as opposed to a non-windy day it can take twice as long to get somewhere. It took me really only a few days to get comfortable riding.”
- 🚲 **Q:** What type of media would you find most useful/what would you use the most? (youtube videos, Facebook, pamphlet, blog, etc)
  - **A:** “Youtube videos would be really cool, maybe some short ones telling you how to make a left turn, showing specific maneuvers. The blog called “Cycle Chic” is really cool, maybe something similar to that. As far as a pamphlet goes, in general I don’t think it would be that useful, maybe for renting companies.”
- 🚲 **Q:** What content would you want on a website to inform one how to cycle?
  - **A:** “The most valuable rules, which rules you can get away with breaking, which you should always obey. Also talk about when a light turns yellow that really means you should stop, yellow means get out of the intersection. Also maybe some advice on winter riding, like always bring a parka and seat covers.”
- 🚲 **Q:** What do you think should go on the front page of the website?
  - **A:** “Different streets that would be nice to bicycle down if you had some free time, seeing the city by biking is really cool.”

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### DIS STUDENT 3: SIMON

- 🚲 **Q:** Have you cycled in Copenhagen, if so how often? What do you primarily use cycling for? (work, school, shopping, errands other)
  - **A:** “I’ve ridden into the city a few times. I don’t ride to school because I live too far away and need to take the train.”
- 🚲 **Q:** Were you intimidated to cycle in Copenhagen, and if so what was it that caused the intimidation?
  - **A:** “Kind of, but then you realize the privilege that bikers have. They definitely have superiority over the pedestrians. Biking is the fastest way to get around.”
- 🚲 **Q:** What did you find most confusing when you first cycled in Copenhagen?
  - **A:** “The cobble stones were tricky to ride on, streets that you are not allowed to ride on. Getting passed, and passing people was a little confusing.”
- 🚲 **Q:** Did cycling get easier with more attempts? If so, what made cycling easier?
  - **A:** “It got easier, and people can sometimes recognize that you are not Danish, so when you are wandering in traffic they will pass you.”

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## OLE JENSEN INTERVIEW

**Interviewer:** Andrei Ilyashenko

**Interviewee:** Ole Jensen – Manager of Københavns Cyklebørs (Copenhagen bike-rental company)

**Date and location:** April 29 2010 at 15:00 Charlottenlund Fort campsite 44

🚲 **Q:** What would you say is most important for an inexperienced cycling tourist to know about cycling in Copenhagen?

- **A:** That depends on what country the cyclist is coming from. People coming from different countries will find different things confusing. However, they should know that Denmark is the perfect place for biking because it is very flat and everything is close together. Most things are within 8km, and I would say that 8km is the maximum distance for commuting. Although Copenhagen is one of the best cities for biking, one thing that should be improved is the integration of the bicycle and train system. The current system is not good enough, there needs to be larger and more cabins for bikes. Then, it will be possible to get anywhere with a bike even long distances.

🚲 **Q:** What kind of people usually rent bikes from Københavns Cyklebørs?

- **A:** All kinds of people, Danish, German, Swedish, etc. Københavns Cyklebørs has been around since 1881, making it older than even the DCF. I have been in charge of it for the last 56 years, and the number of cyclists has been increasing recently. In Copenhagen every household owns at least one bike.

🚲 **Q:** We are also in the process of making a resource for tourists looking to cycle in Copenhagen. If we had a quality product informing tourists how to cycle in Copenhagen, would you be interested in it?

- **A:** Yes, I would be very interested in such a product. Let me know when it is ready, and then I can comment further.

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## ZOFIA ANNA JAGIELSKA INTERVIEW

**Interviewers:** Andrei Ilyashenko, Katarina Lopez, and Adam Tragellis

**Interviewee:** Zofia Anna Jagielska – *KøbenhavnKommune – Cycling Department*

**Date and location:** *April 30, 2010 at 14:00 Larsbjørnsstræde 17, 1454 København K, Denmark*

Zofia Anna Jagielska studied as an Architectural Engineer and she is currently getting a masters degree in landscape architecture. She works in the cycle program for the municipality with about 9-10 others. They mainly organize and give other departments suggestions for what should be done. She has worked on and is still working on different projects to enhance conditions for cyclists, since the municipality wants 50% of commuters to use the bicycle by 2015. One of her projects involves creating more accessible trash bins for cyclists to use while cycling. Another project of hers is to evaluate the usefulness of the handrails for cyclists at traffic lights in order to determine if they should continue to invest in it. A past project of hers was to calculate the percentage of how many new cycling commuters come from km added to the green cycle routes. She also gave us some resources such as a list of hot spots to cycle, bicycle accounts, and cycling maps of Copenhagen.

### Zofia's suggestions for the blog:

- Don't focus so much on safety, that might bore or scare away new cyclists.
- Don't make the rules too serious, make it more friendly and entertaining
- Show cultural things like the diversity of the bikes (cargo-bikes, colorful bikes...etc.). Also the people that "match" the bikes.
- Emphasize the social aspect, how many different types of people cycle in Denmark, not just poor people.
- Don't make the blog too statistically dry, have some color, show the social status, the "soft" stuff, and the culture.

### Chapter 7: Special rules applying to cycles

§ 49. (1) A cycle is not allowed to be ridden abreast of another vehicle. Where there is sufficient space for it, however, cyclists are allowed to ride two abreast if not thereby causing danger or impediment. If a signal for overtaking is given, cyclists are not allowed to ride abreast unless traffic conditions permit or require them to do so. However, a cycle with three or more wheels is never allowed to be ridden abreast of another cycle.

(2) Cyclists shall always keep to the right in the outermost right-hand lane in the direction of traffic. If necessary, the next lane may be used for overtaking, however, if overtaking cannot be done on the right.

(3) Irrespective of the provisions of subsections (1) and (3) of section 16 of this Act, a cyclist intending to proceed straight ahead or turn left shall continue to keep to the right on the road when approaching an intersection. However, if one or more lanes are marked as reserved for vehicular traffic intending to turn right, a cyclist may instead keep to the right in the nearest lane which is not reserved for traffic turning right. A cyclist intending to turn left shall proceed through the intersection to the opposite side and is not allowed to turn until such maneuver can be performed without impeding other traffic. This shall apply irrespective of traffic signs unless such signs indicate that they shall not be followed by cyclists. Periods on to four hereof shall also apply to cyclists riding across or leaving the carriageway where there is no intersection.

(4) While riding, a cyclist shall have both feet on the pedals and at least one hand on the handlebars.

(5) Cycles are not allowed to be ridden on pavements (sidewalks) or footpaths unless otherwise provided in the regulations laid down by the Minister of Justice under subsection (4) of section 14 of this Act. A cycle shall be wheeled across a pavement (sidewalk) or a footpath.

(6) While riding, a cyclist is not allowed to hold on to another vehicle or to the driver or passenger of another vehicle.

(7) A cycle parked shall be locked, unless parked for a very short time.

§ 50. (1) A child of less than 6 years of age is not allowed to ride a cycle without being accompanied and controlled by a person who is at least 15 years of age.

(2) Only the number of persons for which the cycle has been designed may be transported on a cycle. However, 2 children of less than 6 years of age are allowed to be transported on the cycle, provided that there are special seats with protection against the spokes, and that the cyclist is at least 15 years of age.

(3) Objects which are more than 3 meters long or 1 meter wide are not allowed to be carried on a cycle. Objects are not allowed to be carried on a cycle if preventing the cyclist from having full control of the cycle or in giving appropriate signals. Neither are cyclists allowed to carry objects otherwise impeding other road-users. The Minister for Justice may lay down provisions for the permissible maximum length, width, and height and weight of objects which are transported on cycles specially designed for transport of goods, and on attached vehicles and sidecars for cycles.

The Danish Road Traffic Act (1983) Ministry of Justice, Copenhagen, Denmark.

## D. FINES FOR CYCLISTS

**Table 3: List of fines for cyclists**

Tariffs will not apply if there have been accidents or created a hazard or disadvantage situation

<b>Violated</b>	<b>Violation</b>	<b>Price(DKK)</b>
FL § 4, paragraph. 1	Traffic signs or arrows not respected	500
FL § 4, paragraph. 1	Exceeded the restricted line	0
FL § 4, paragraph. 1	Light signal is not respected	500
FL § 4, paragraph. 1	Illegal driving in emergency lanes	0
FL § 4, paragraph. 1	Cyclists in Pedestrian	500
FL § 6, paragraph. 1	Jump or hang on to vehicles, etc. / stay at stepping-stone	0
FL § 6, paragraph. 2	Sled, skis, skates, roller skates units and similar after vehicle	500
FL § 14 paragraph. 1	Failed to take the bicycle path	500
FL § 14 paragraph. 2	Used bicycle path on the left side	500
FL § 14 paragraph. 5	Failed to take the slow lane / trail used incorrectly	500
FL § 15 paragraph. 1	Failed to hold as far right as possible	500
FL § 15 paragraph. 5	Failed to run right on rock plants, etc..	500
FL § 26 paragraph. 2	Full stop (full stop)	500
FL § 32 paragraph. 1	Missing / unnecessary signs	500
FL § 32 paragraph. 2	Failure signals	500
FL § 33 paragraph. 1	Bicycle without lighted lamp	500
FL § 44-48	Illegal traffic / parking and stopping on the motorway and expressway	500
FL § 49 paragraph. 1	More than 2 side by side - side by another vehicle	500

FL § 49 paragraph. 2	Failed to keep right of the lane	500
FL § 49 paragraph. 3	Wrong location before / during vibration, etc.	500
FL § 49 paragraph. 4	Failed to have both feet on the pedals / at least one hand on the handlebars	500
FL § 49 paragraph. 5	Driving on sidewalk / walkway	500
FL § 49 paragraph. 6	Stick in another vehicle, etc.	500
FL § 49 paragraph. 7	Recommended unlocked	500
FL § 50 paragraph. 1	Children under 6 years without accompanying	500
FL § 50 paragraph. 2	Two people in single seater bicycle	500
FL § 50 paragraph. 3	Run with the heavy, long or wide objects	500
FL § 67 paragraph. 2	Insufficient brake	500 *)
FL § 67 paragraph. 7	Dummy / non reflective glass	500 *)
FL § 49 paragraph. 7	Dummy bell	Warning *)
	*) The fines for violations of § 67: In general, only a fine to the driver. Although several violations, should be fine in principle not be more than 500 kr	

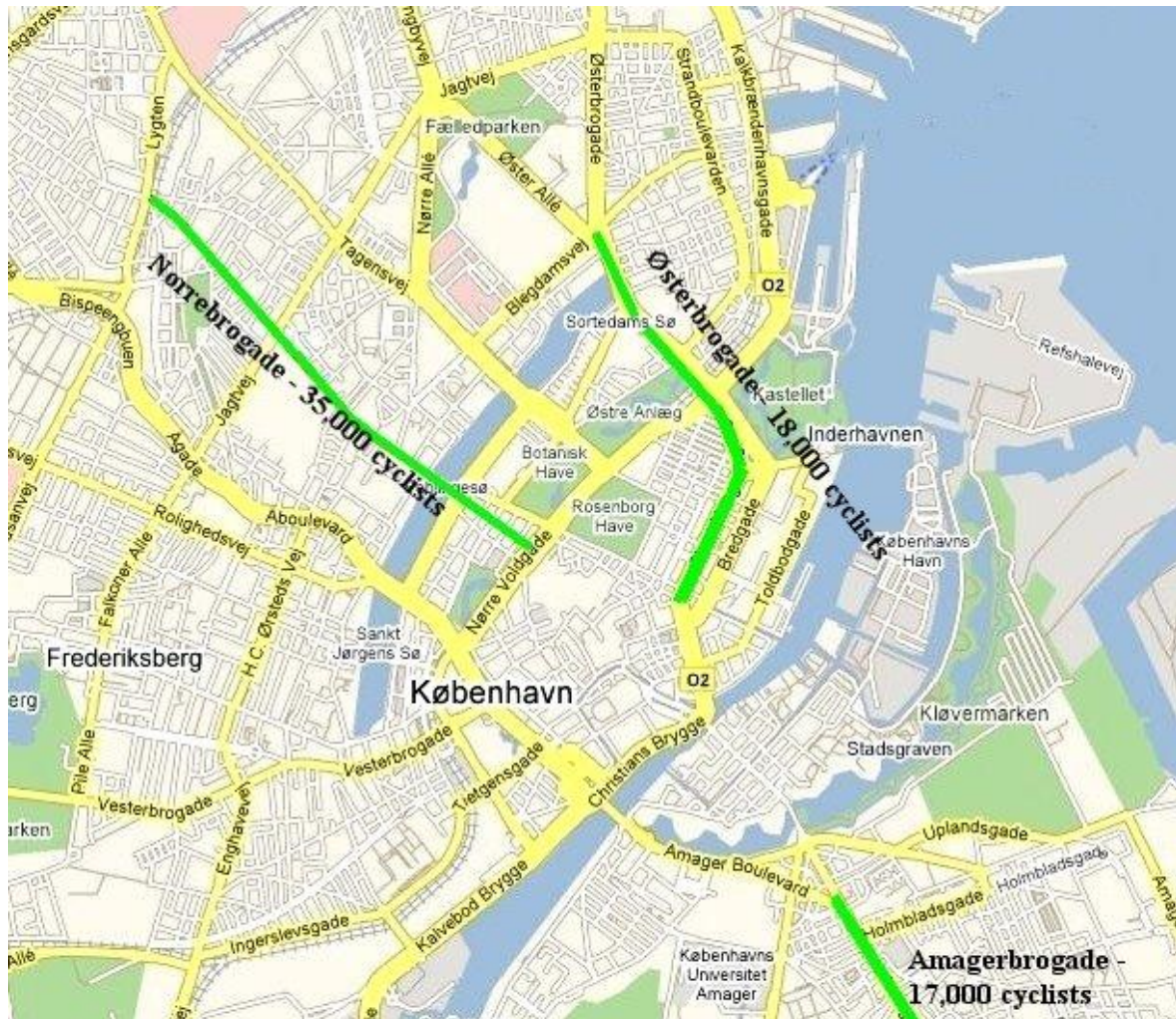
Retrieved from Dansk Cyklist Forbund main website (dcf.dk)

<http://translate.google.com/translate?hl=en&sl=da&tl=en&u=http://dcf.dk/composite-848.htm> on 2-27-2010



## E. CYCLING INFRASTRUCTURE

### GREEN WAVE MAP



(Copenhagenize.com, 2008)

## STREET LAYOUTS

Figure 30 depicts street type 2: a cycle track separated from moving auto lanes by a raised curb which may or may not be to the right of parked cars. Pictured below is the side of Nørrebrogade for traffic heading northwest, which is comprised of three main components: the sidewalk for pedestrians, the cycle path for cyclists, and a lane for moving automobiles.



Figure 30: Street type 2

Figure 31 and Figure 32 depict street type 3: painted cycle lanes between sidewalks and traffic lanes. Figure 31 is the side of Nørre Farimagsgade for traffic heading southwest, which is comprised of four main components: the sidewalk for pedestrians, the painted cycle lane for cyclists, a section for parked cars, and a lane for moving automobiles. Figure 32 shows the intersection of Øster Søgade and Fredensbro, facing southwest down Øster Søgade. Since this is a main intersection, there are painted cycle lanes passing through the intersection to guide cyclists through the intersection to the cycle track on the other side.



Figure 31: Street type 3 with parked cars

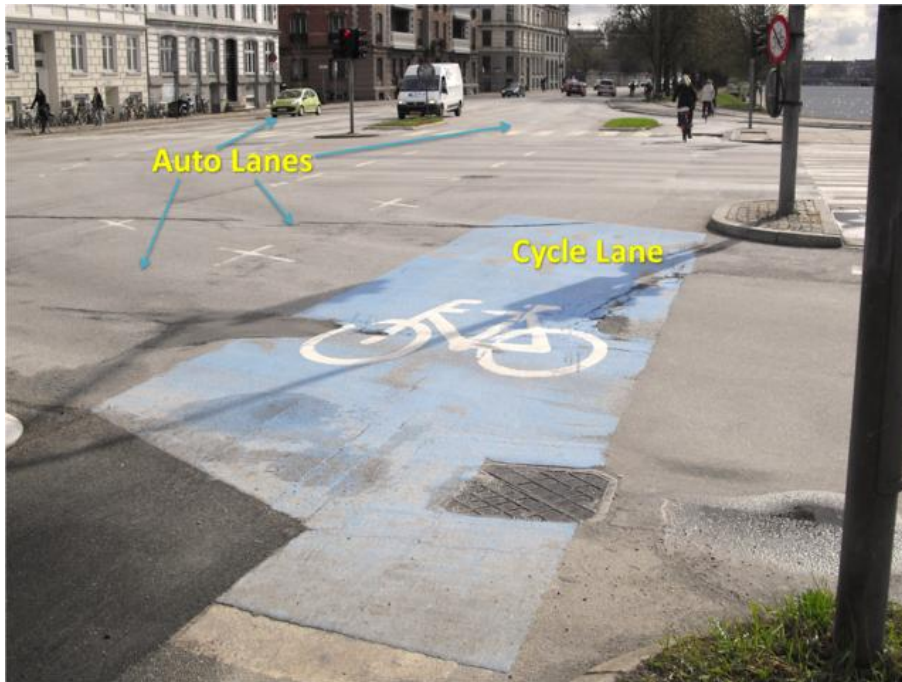


Figure 32: Street type 3 at an intersection



Figure 33: Cyclist-pedestrian path

## TRAFFIC SIGNS

Traffic signs are another important part of Copenhagen's cycling infrastructure. These may be confusing for a first time visitor to Copenhagen, especially the ones with Danish writing. The full collection of the street signs can be found at [www.tvskilte.dk](http://www.tvskilte.dk) ; however, the most confusing signs will be discussed now. Figure 34 shows more signs that were somewhat confusing. The one on the right, C61, means stopping is forbidden, and the one on the right, C62, means that parking is forbidden. These signs apply only to cars, but if a bike parks next to one of these signs, then the bike will likely only get moved instead of the cyclists receiving a fine. Sign C21 pictured in Figure 34 means that no traffic is allowed, and sign C22.1 means no motorized vehicles allowed. There are ten other signs that each prohibit a certain kind of traffic. These are self explanatory and can be found at [www.tvskilte.dk](http://www.tvskilte.dk). Signs E18 and E18.1 pictured in Figure 34 both mean dead end, but E18.1 means that there is a cycle path at the dead end.

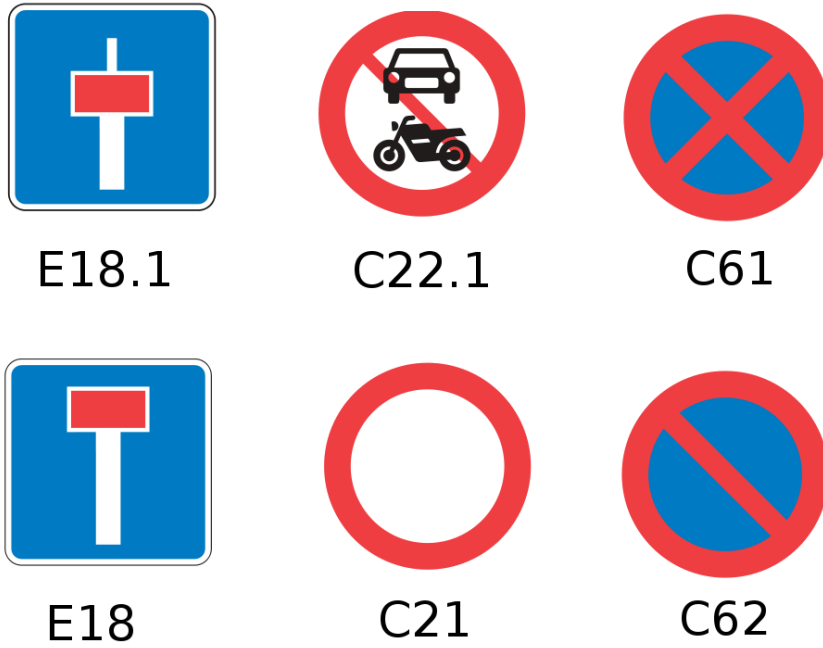


Figure 34: Several Copenhagen street signs

Pictured in Figure 35 is one of these one-way signs that do not apply to cyclists (translations added).



Figure 35: One way sign that does not apply to bicycles



Figure 36: Bicycle/pedestrian sign and bicycle sign

The sign on the left indicates that the sidewalk is divided into two lanes, one for pedestrians and one for cyclists. The one on the right indicates that the path is for bikes only, with no pedestrians allowed. Source: City of Copenhagen, 2003

## F. GERMAN CYCLING RULES AND REGULATIONS

1. If there is a blue “Radweg” sign (see Figure 1 and 2) indicating a bike lane or path, cyclists are required to use it, not the street or sidewalk (as of Sept. 1, 2009).
2. Cyclists over the age of 10 are not allowed to ride on sidewalks or in pedestrian zones (Fußgängerzonen). They must use a bike path or bike lane, or the street if no bike lane is available.
3. Children age 8 or under MUST use the sidewalk rather than a bike lane and must walk their bikes across intersections. Cyclists age 9 or 10 may use a bike lane if they choose to.
4. On the street, bicycle riders must keep to the right and travel in the same direction as auto traffic (unless there is a sign indicating otherwise, most often on one-way streets).
5. In Fußgängerzonen or on sidewalks where bicycles are specifically permitted (“frei”), cyclists must exercise caution and adjust their speed for the pedestrians.
6. By law, bicycles must have a warning bell mounted on the handlebars.
7. Note for motorists: When making a right turn, bikes traveling in the same direction on the right (on the street or in a bike lane) have the right-of-way. One must check ones right side-mirror before making a turn, in addition to checking for pedestrians.
8. Helmets are recommended for cyclists but not required. (See more about helmets below.)
9. Differing local state and municipal cycling laws/regulations may apply. Inquire locally.
10. Bicycles, mopeds, and pedestrians are specifically prohibited from using the Autobahn, as are any other vehicles with a maximum speed rating of less than 60 km/h (36 mph).
11. If you are riding after dark, you must have a light at the front and back of your bike.
12. Do not turn right on red at streetlights
13. No riding on the sidewalks except for heavy traffic streets. The only exception is when a bicycle lane is built into the sidewalk.
14. When you are about to turn a blind corner, ring your bell to warn other possible riders or pedestrians coming toward you around the corner that you are there.
15. Riding a bicycle while intoxicated is prohibited. If caught, one will be fined or their driver’s license will be revoked (German Federal Ministry of Transport, 2007).