CyCity:

From car-centric to cycle-centric cities.

2012

Development of cycle planning tools and urban transformation for increased cycling

ABOUT CYCITY

CyCity is a Swedish research programme established to improve knowledge about cycle planning processes. The programme also aims to increase our understanding of the needs of cycle users.

Bicycle usage in most Swedish cities is low to moderate, a situation shared with many urban areas around the world. The question is: Can this be changed so that more cities become cycle-centric with a higher cycling modal share? What does research and empirical evidence say about how to achieve such a transformation at low cost?

OBJECTIVES

The overall objective for CyCity is to contribute to an increased modal share for cycling thus leading to more efficient urban transport systems, sustainable urban development, improved public health, reduced energy consumption and a better environment.

The programme aims to:

- develop new methods and computer-aided decision support for cycle planning
- collect empirical evidence of the needs of users
- explore improved functionality of online travel planners for cyclists

Planning for cycling is a multidisciplinary area and CyCity tries to avoid the narrow mono-disciplinary perspective that predominated several projects within the area previously. This is one of the reasons that input into CyCity comes from a wide variety of Swedish specialists whose research fields include transport planning and engineering, modelling, economics, safety, behavioural sciences, health science and urban planning.

GRAPHIC DESIGN: JONATAN SAHLIN

WHY RESEARCH URBAN CYCLING?

Cities attempting to increase cycling often face challenges from many fronts. Negative attitudes towards cycling, sparse knowledge about user needs, a lack of cycle planning experience as well as suitable planning and monitoring tools, barriers in institutional frameworks and limited experience in marketing cycling all conspire to make cycle planning difficult. With its broad approach, CyCity addresses many of these interconnected challenges, by bringing together experts with different backgrounds to better understand how to encourage cycling in cities.

This brochure introduces researchers and practitioners involved in the CyCity programme and presents initial findings. A more comprehensive presentation of Swedish experts in cycle planning can be found on the project website:

www.cycity.se

EXAMPLES OF INITIAL FINDINGS AND ONGOING RESEARCH

Implementation challenges

Several sub-projects within CyCity focus on gathering data on cycle planning processes. It was identified early on that there often exists a significant gap between what is decided in transport plans regarding cycle measures and what is actually implemented.

The research suggests three important remedies for countries and cities experiencing such implementation gaps. The three antidotes are:

- changing the way that transport infrastructure measures are financed at the national/ regional level,
- investing in a better evidence base for cycle planning decisions, i.e. a better local understanding of the needs of cyclists; and
- introducing new and improved tools for cycle planning.

One of the key factors identified for successful cycle planning in a region or municipality is the existence of a dedicated plan or strategy document for cycling. This also correlates with conclusions in previous literature.

CyCity aims to make comparisons between implementation obstacles encountered by planners in different localities. A comparison with Great Britain shows that Swedish civil servants and elected leaders were more likely to perceive the lack of concrete local and national targets within cycling as a significant problem. However, when it came to support for implementation of cycling measures amongst the general public, the opposite was true. Currently CyCity is gathering evidence on cycle planning processes in some of the most successful cycling cities in Sweden, amongst them Malmö, a city that more recently has significantly increased its cycling modal share.

A general conclusion of the work in this field is that there is still much left to be investigated in order to fully understand local obstacles for cycle planning.

The importance of cycle parking

The results of the studies carried out as part of CyCity indicate that cycle parking facilities are of importance to many cyclists. High-quality cycle parking is particularly important in large cities with low to moderate levels of cycling.

CyCity summarizes the way to achieving high-quality cycle parking facilities in the following six points:

- short distance to target/ main building entrances,
- location in relation to direction of arrival,
- theft prevention,
- wheather protection,
- capacity; and
- high level of personal security when dark, e.g. fear of assault.

International studies show that investments in improved cycle parking can increase the number of cycle trips by approximately 8–13 % depending on the extent of the investment. Research also indicates that in cities with low levels of cycling, the availability of secure cycle parking facilities that offer a high enough level of theft prevention is crucial for many users in deciding whether or not to cycle to a particular destination. The work also identifies three areas where further research is needed to enhance the understanding of cost-efficient parking measures that can increase cycling.

Electric-assisted cycles and their implications for cycle planning

Electric-assisted cycles are in many ways similar to conventional cycles with some noticeable differences. They allow for higher speeds and longer distances as well as making it easier to cycle steeper gradients.

Our studies suggest that a large proportion of electric-assisted cycles can have a significant impact on cycle infrastructure planning in a number of areas:

- Dimensioning of cycle networks – electric-assisted cycles make it more attractive to cycle longer distances, motivating longer routes,

- Routing of cycle infrastructure – the avoidance of steep gradients becomes less relevant,
- New user groups, e.g. the elderly, who place new demands on safety and convenience of infrastructure; and
- Parking infrastructure – electric-assisted bicycles are more valuable and heavier making them more challenging to park indoors unless step-free access is available.

Electric-assisted cycles are heavier than conventional cycles and are also more likely to be used by less physically strong individuals. In combination with their higher value, it will be likely to make the secure parking of electric-assisted cycles a challenge in at least some high-density cities with a low cycling modal share.

New evidence on the needs of users

CyCity is working together with the City of Linköping in Sweden and organisations in Ljubljana in Slovenia in order to gather new evidence on the needs of cyclists. The route choices of everyday trips for 200 cyclists have been recorded using specific GPS equipment.

The purpose of the studies is to analyse route choice data in combination with the infrastructure characteristics of the chosen routes, e.g. segregated cycle facilities, on-road cycling, motor vehicle speed and flow. In total, 800 route choices in the two cities have been studied making it one of the largest such studies made in Europe. This extensive information will be complemented with subjective route ratings by cyclists participating in the studies.

The large number of routes recorded allows for an analysis of user preferences and trip purposes. The goal of the study is to build a solid empirical base of user preferences, making use of a revealed preference approach. It is believed this will give planners and policy makers a better understanding of which cycle infrastructure investments give the best results. Findings will be published shortly on the CyCity website.

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Dr Pelle Envall, PhD Transport Studies, has 15 years experience as a consultant within transport-planning and research and development, both in Sweden and in the United Kingdom. Dr Envall's key expertise lies in analysing metropolitan areas with the aim of formulating cost-effective infrastructure improvements for enhancing the modal share of public transport, walking and cycling. Other areas of study include bicycle parking improvements at public transport nodes and urban planning. He is a co-author of a handbook on cycle planning as well as a source book on transport and urban development. Presently he is the coordinator of the Swedish research program CyCity.

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Johannes Berg, BA Politics and MA Urban and Spatial Planning, is a specialist consultant in mobility management and sustainable transportation, at a strategic as well as operational level. He has been involved in a number of Swedish and international research projects. He has also investigated the Swedish planning system from a cyclist's perspective on behalf of the Swedish Government. He is assistant coordinator for CyCity as well as the manager for a synthesis report on processes for successful cycle planning.

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Michael Koucky, MSc Environmental Science, is a senior consultant in sustainable transport at Koucky & Partners AB. He is the author of several handbooks on cycling issues and sustainable transport strategies, has developed benchmarking systems for cycling in municipalities and has extensive experience of public cycle systems and cycle tourism. He sits in CyCity's steering group.

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Dr Anna Niska (née Bergström), PhD Road Technology, with a doctoral dissertation on winter maintenance of cycle paths, is a researcher at VTI. She has 15 years of experience in the field. Her main research area is the impact of road maintenance and operation on cycling including evaluation of maintenance methods. She is a member of CyCity's steering group.

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Dr Kerstin Robertson primarily researches local planning processes with respect to cycling. Focus areas include determining the factors affecting cycle usage, the relationship between the physical design of urban areas and cycling and the relevance of the local planning process for urban development. She sits in CyCity's steering group.

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Martin Emanuel is pursuing a PhD on the changing conditions for cycling and cyclists in Stockholm and Copenhagen during the period 1930–1970. The study focuses on transport planners' interpretations of cycles, cyclists and cycle flows and on how infrastructure and urban structure evolved.

LISA JOHNSSON

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Lisa Johnsson is a behavioural scientist with extensive experience in working with qualitative methods of investigation, management of group processes including workshops as well as project coordination and cooperation.

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Dr Annika Nilsson, PhD Traffic Technology, has a doctoral degree focusing on the safety impacts of cycle lanes. Her 17 years of experience in the field have covered infrastructure planning for cyclists, analysis of the impacts of both infrastructural and softer measures, strategies to increase cycling and methods for monitoring cycling goals. She is the external quality controller for CyCity.

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Erik Stigell, PhD in Sport Sciences, has studied active commuting behaviours from a health perspective in particular methods to measure bicycling. He has more than 10 years of experience working with cycling, especially with cycle campaigns for private companies.

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Dr Leonid Engelson, PhD Mathematics, specialises in modelling transportation for personal travel. He works both as a consultant at WSP and as a researcher at the Royal Institute of Technology (KTH) and has developed transport models for cities and regions where cycle trips are included and analysed.

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Dr Sonja Forward, PhD Psychology, has since 1992 worked within the field of transportation research, both nationally and internationally. Her main areas of research include the mechanisms that control behaviour and how these can be changed. Her many publications include "Behavioural factors affecting modal choice" and "Attitudes to walking and cycling".

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Dr Tomas Svensson, PhD Technology and Social Change, is Research Director at VTI. He has more than 20 years of experience in transport research including cycling. His main areas of expertise are economic analysis, local and regional transport planning and sustainable transport planning.

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Karin Löwing, MSc in Environmental Engineering, transport and urban planning, is a consultant at Koucky & Partners AB. Her background incorporates root cause analysis, project management, as well as quality assurance from the motor vehicle industry sector.

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Dr Johan Faskunger, PhD Exercise and Health Science, studies links between cycling and health, and the built environment and physical activity. He has also been involved in developing the platform for a national action plan for physical activity in Sweden, and investigating the role of the built environment on physical activity.

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Tobias Nordström, Planning Architect, is a partner at Spacescape AB, working with the development of tools to better understand the connection between city form and cycling. Tobias has been engaged in analysing the new cycle plan for the City of Stockholm.

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Nina Waara, civil engineer, has more than 10 years experience working with cycling. Her main field of expertise is infrastructure planning for cyclists, specialising in safety and evaluating the benefits of separation between pedestrians and cyclists on main roads. She has also studied user preferences and behaviour concerning pedestrians and cyclists.

SWEDISH RESEARCH BRINGS TRANSPORT AND HEALTH TOGETHER

More and more cities are paying attention to the way their transport system impacts on health and physical well-being. The question remains, what is the extent of the health impacts from an increase in modal share in favour of more active transport?

A Swedish research project is at the forefront in this field. Dr Patrik Wennberg, from Umeå University in northern Sweden has explored unique time series of health and hospital records for 2,800 people. One key finding is that those who regularly walk or cycle to work, or commute by public transport, have a 40% lower risk of having a heart attack compared with those who commute by car in the same age group. The next step in the project is to explore the association between active commuting and other health issues related to sedentary lifestyles such as other types of cardiovascular diseases and type 2 diabetes.

Further details about the research can be found at: www.cycity.se or contact Dr Wennberg directly at patrik.wennberg@fammed.umu.se.

CyCity's ambition is to create improved knowledge and tools to increase cycling in cities with relatively low bicycle share. It further aims to strengthen Swedish cycle planning know-how and research and to make it more accessible both nationally and internationally.

CyCity is financed by Vinnova, the Swedish Governmental Agency for Innovation Systems, and will run from 2010 to 2013. Its focus, volume and interdisciplinary nature makes it Sweden's most comprehensive research programme on cycle planning.

Main project partners are WSP Sweden AB (coordinator), The Swedish National Road and Transport Research Institute VTI, The Royal Institute of Technology KTH, The Swedish School of Sport and Health Science GIH, TUB, Koucky & Partners AB, Spacescape and Proactivity AB.

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For more information, please visit www.cycity.se