The background of the slide is a photograph showing the silhouettes of several bicycles parked on a metal rack. The bicycles are dark against a bright blue sky. The rack consists of several horizontal bars supported by vertical posts. The bicycles are parked in a row, with their frames, wheels, and handlebars visible. The overall scene is a low-angle shot, looking up at the bicycles and the sky.

SETTIMANA EUROPEA DELLA MOBILITA' SOSTENIBILE 2011 22 settembre
CAMBIA MARCIA! Guadagni in salute e risparmi nei trasporti

H.E.A.T. Uno strumento per analizzare la ricaduta economica e di salute delle buone pratiche per la Mobilità Sostenibile

Sonja Kahlmeier | Francesca Racioppi | Nick Cavill

Thanks to: Harry Rutter, Thomas Götschi, Charlie Foster, Paul Kelly, Andy Cope, Angela Wilson, Max

Walking and cycling: an option helping different sectors achieving *their own* goals



University of Zurich



Goals	Sectors
Reduce emissions of: –air pollutants –greenhouse gases –noise	Environment Health
Reduce congestion	Transport
Reduce road traffic injuries	Transport, Health
Reduce investments in infrastructure for more cars	Transport
Improve accessibility and quality of urban life	Transport, Health
Complement technical improvements to vehicles / fuels	Transport
Increase physical activity	Health
Promote tourism	Tourism / leisure industry
Creation of new jobs	Economy, welfare, labour

Understand motivations and vocabularies



University of Zurich



1. Focus on the **audience**:
 - Transport planners, urban developers, economists
2. Identify “selling points” which **they** can use with **their** constituencies
 - \$\$\$ money talks!
3. Provide **tools** which **they** can use to easily integrate health into **their** plans
 - e.g. the “HEAT” approach

Address methodological challenges of integration of health effects into transport assessments



University of Zurich



Which:

- health endpoints?
- attributable fraction?
- dose-effect relation?
- relative risk(s)?
- costs?
- cost assessment approach?
- time lags?

Interdisciplinary advisory group

- 30 members
- Over 10 countries
- Epidemiologists, economists
- Transport, health
- Research, government, practice





HEAT approach



The ***Health Economic Assessment Tools (HEAT)*** for walking and cycling...

- are addressed to **transport planners** and decision makers
- are easy, **practical tools**
- quantify the health benefits of **reduced mortality**
- associated with **regular physical activity**
- due to **cycling** or **walking**

Principles:

- easy to use
- relevant to current practice
- evidence based
- transparent
- conservative
- adaptable



How does it work?

Volume of walking / cycling per person
duration/distance/trips/steps
(entered by user)



Protective benefit (reduction in mortality as a result of walking / cycling) =

$$1 - RR^{\#} \left(\frac{\text{Volume of walking / cycling}}{\text{Reference volume of walking / cycling}^{\#\#}} \right)$$



Population that stands to benefit
(entered by user or calculated from return journeys)



General parameters
Intervention effect, build-up period,
mortality rate, time frame
(changeable default values)



Estimate of economic savings
using Value of Statistical Life
(changeable default value)

[#]RR = relative risk of death in underlying studies (walking: 0.78; cycling: 0.72.)

^{##} Volume of cycling per person based on 3 hours per week for estimated 36 weeks/year at estimated 14km/h in Copenhagen. Volume of walking based on 29 minutes per day at 4.8 km/h.

Effects of cycling and walking on mortality



University of Zurich



Cycling

- **Longitudinal study in Copenhagen** (Andersen et al. *Arch Intern Med.* 2000)
 - 3h bike commuting per week*
 - **RR 0.72 for total mortality**

Walking

- **Meta-analysis of 9 longitudinal studies** (update of Hamer et al. *Br J Sports Med*, 2008)
 - 29 mins. walking per day*
 - **RR 0.78 for total mortality**

* Corrected for co-variables including leisure time physical activity

Applications

- Since May 2011:
 - over 2.500 visits
 - from almost 60 countries
- Part of official transport assessment toolbox:
 - in 2 countries (Sweden, England)
 - under consideration in 1 more (France)
- Applied in project evaluations, status quo and scenario analyses

Contact | Copyright | Help | Login

HEAT • Introduction

HEAT
Health Economic Assessment Tools

Introduction
HEAT for cycling
HEAT for walking
Current Assessment
Previous Assessments
Acknowledgements

HEAT • Introduction

Welcome to the WHO/Europe Health Economic Assessment Tools (HEAT) for walking and for cycling.

This tool is designed to help you conduct an economic assessment of the health benefits of walking or cycling by estimating the value of reduced mortality that results from specified amounts of walking or cycling.

The tool can be used in a number of different situations, for example:

1. When planning a new piece of cycling or walking infrastructure.
2. To value the reduced mortality from current levels of cycling or walking, such as to a specific workplace, across a city or in a country. It can also be used to illustrate economic consequences from a potential future change in levels of cycling or walking.
3. To provide input into more comprehensive economic appraisal exercises, or prospective health impact assessments. For example, to estimate the mortality benefits from achieving targets to increase cycling or walking.

More information is available at <http://www.euro.who.int/HEAT>

Next step

- Start using HEAT for walking
- Start using HEAT for cycling

© World Health Organization, Regional Office for Europe, 2011

What data do I need?
To produce an assessment, you need to provide data on the number of people walking or cycling, and the amount of walking they are doing (or are projected to do).

www.euro.who.int/HEAT



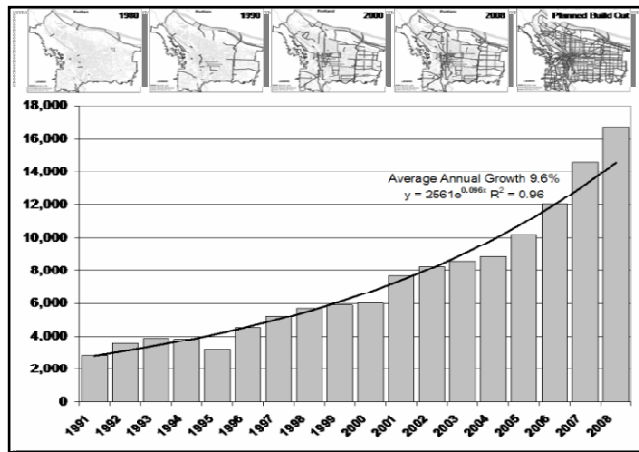
Example 1: science Portland, USA



University of Zurich



- Increase of cycling 1991-2008: 400%
- Infrastructure investments 1991-2008: \$57 Mio.
- New bike trips per day (average): 9000
- Lives saved per year: 6
- **Mean annual benefit / year: \$26 Mio.**



Example 2: policy Austria



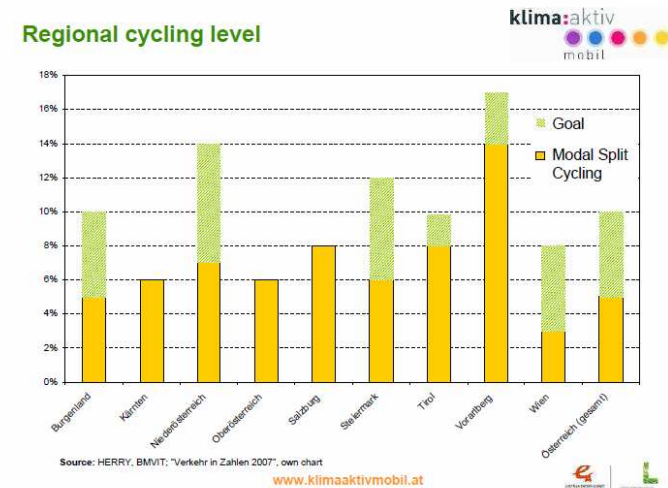
University of Zurich



- **National goal:**
doubling of the cycling modal share
from 5% (2006) to 10% (2015)
- Modal share 2010: 7%
- Average distance: 2 km
- Lives saved: 824
- **Mean annual benefit / yr.:** € 812 Mio.

Investments (2006-2010):

- €20 Mio. of direct project funding
- ca. €95 Mio. total investments



Example 3: practice

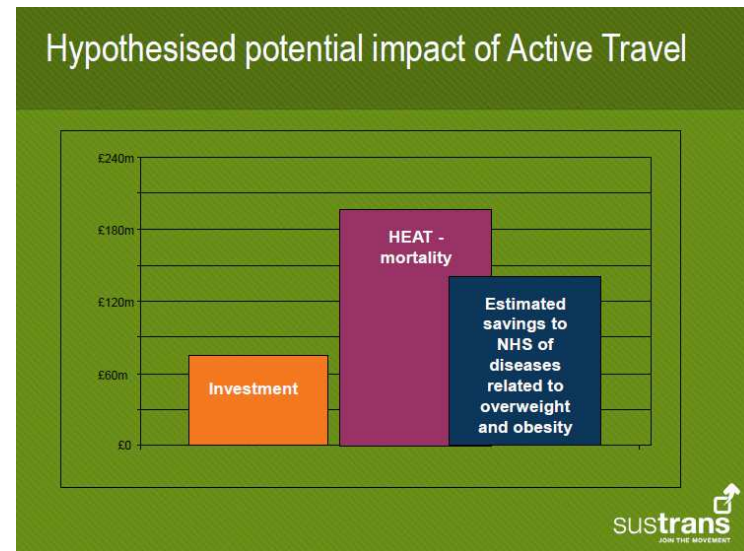
North-East Active Travel Group and Sustrans, United Kingdom



University of Zurich



- **Modelling of potential value of investment in active travel**
 - reducing obesity
 - **increasing physical activity – HEAT**
 - other non-health related savings
- Presented at **seminar with senior health and transport professionals**
- Demonstrating potential **economic benefits** of active travel interventions **catalyzed strong reaction**
- Agreement to fund project on active school travel
- Subsequently, **£5mio. of investment in sustainable transport** from Local Sustainable Transport Fund **secured**





Journal of Physical Activity and Health, 2010, 7(Suppl 1), S120-S125
© 2010 Human Kinetics, Inc.

“Health in All Policies” in Practice: Guidance and Tools to Quantifying the Health Effects of Cycling and Walking

American journal of preventive medicine – in review

Developing a tool for estimating the economic impact of reduced mortality due to increased cycling: the Health Economic Assessment Tool (HEAT) for

opi, Nick Cavill, Ha

th in All Policies” app

Land Use and Transp

Journal of Urban Health – in press

Do health benefits outweigh the costs of mass recreational programs? four Ciclovía programs.

Journal of Physical Activity and Health, 2011, 8(Suppl 1), S49-S58
© 2011 Human Kinetics, Inc.

Costs and Benefits of Bicycling in Portland, Oregon

Thomas Gotse

Background: Promoting bicycling has great potential to increase physical activity, but uncertainty exists with regard to the amount and effectiveness of these interventions. The objective of this study is to assess how costs of Portland’s past bicycling investments, health care costs, and other benefits. **Methods:** Costs of investment plans, health care cost savings and value of statistical life savings, and other benefits. **Results:** Past trends, future mode share goals, and a traffic demand model were used to estimate the costs of \$138 to \$605 million will result in health care cost savings of \$388 to \$594 million, fuel savings of \$143 to \$218 million, and savings in value of statistical lives of \$7 to \$12 billion. The benefit-cost ratios for health care and fuel savings are between 3.8 and 1.2 to 1, and an order of magnitude larger when value of statistical lives is used. **Conclusions:** This first of its kind cost-benefit analysis of investments in bicycling in a US city shows that such efforts are cost-effective, even when only a limited selection of benefits is considered.

Keywords: return on investment, Health Economic Assessment Tool, infrastructure, promotion, physical activity, monetization

BMJ

BMJ 2011;343:d4521 doi:10.1136/bmj.d4521 Page 1 of 8

RESEARCH

The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study

David Rojas-Rueda *predoctoral researcher*¹, Audrey de Nazelle *researcher*², Marko Tainio *researcher*³, Mark J Nieuwenhuijsen *research professor*⁴

¹Center for Research in Environmental Epidemiology, C Doctor Aiguader, 08, 08003 Barcelona, Spain; ²Sydebra Research Institute, Polish Academy of Sciences, Warszawa 8, 01-447 Warsaw, Poland; ³Department of Environmental Health, National Institute for Health and Welfare, Kuopio, Finland

Abstract
Objective To estimate the risks and benefits to health of travel by bicycle, using a bicycle sharing scheme, compared with travel by car in an urban environment.
Design Health impact assessment study.

Paris (2007), Toulouse (2007), Hangzhou (2008), Milan (2008), Brussels (2009), Montreal (2009), Mexico City (2010), London (2010), and Guangzhou (2010). In the United States, such large scale initiatives are being considered for Los Angeles and New York. The general impetus for these policies is more often the



Lessons and challenges (1)

- HEAT is an effective public health approach
 - Focus on levers: benefit-cost ratio is king in transport sector
 - Fosters action outside as well as within the health sector
 - Relevant for working upstream as well as for local action
- HEAT is an effective advocacy tool
 - Brings active mobility into the horizon of transport and urban planners
- **Strengths:**
 - Evidence-based
 - Conservative
 - Transparent
 - Adaptable
 - ‘Do once and share’
 - “Plug in” to comprehensive economic valuations studies of transport investments



Lessons and challenges (2)

- **Challenges**

- Necessary input data more often than expected not available
 - more guidance / new tools for monitoring walking & cycling
- Lack of evidence on effective interventions
- Requires additional tools to produce comprehensive assessments of transport and urban planning initiatives
- Requires further development for:
 - inclusion of other health effects (mortality only)
 - other outcome metrics more appealing to other audiences (e.g. QALYs, DALYs)
 - integration with other exposures (e.g. injuries, air pollution)



Contributors and donors

Core group:

Nick Cavill, Dushy Clarke, Hywell Dinsdale, Ric Fordham, Charlie Foster, Thomas Götschi, Sonja Kahlmeier, Paul Kelly, Francesca Racioppi, Harry Rutter, Pekka Oja

Contributors:

Lars Bo Andersen, Finn Berggren, Marlon Boarnet, Hana Bruhova-Foltynova, Fiona Bull, Andy Cope, Peter Dick, Mark Fenton, Mark Hamer, Max Herry, Maria Hagströmer, Michael Sjöström, Eva Gleissenberger, Robert Thaler, I-Minh Lee, Brian Martin, Irina Mincheva Kovacheva, Hanns Moshammer, Mary Murphy, Mark Nieuwenhuisen, Bhash Naidoo, Gabe Rousseau, Candace Rutt, Kjartan Saelensminde, Elin Sandberg, Daniel Sauter, Peter Schantz, Thomas Schmid, Peter Schnohr, Christoph Schreyer, Heini Sommer, Jan Sørensen, Gregor Starc, Sylvia Titze, Ardine de Wit, Wanda Wendel Vos, Paul Wilkinson, Mulugeta Yilma

In collaboration with:

HEPA Europe: European network for the promotion of health-enhancing physical activity
THE PEP: Pan-European Programme Transport, Health and Environment

With support from:

WHO Regional Office for Europe
Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management
The Swedish Expertise Fund / Karolinska Institute, Sweden
National Institute for Health and Clinical Excellence (NICE)
University of Graz, Austria
Natural England
Swiss Office of Public Health
European Commission / DG Sanco

www.euro.who.int/HEAT



THE PEP

United Nations Economic Commission for Europe (UNECE)
World Health Organization Regional Office for Europe (WHO/Europe)

**Transport, Health and Environment
Pan-European Programme**



lebensministerium.at



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra