University of Zurich[UZH]

Institute of Social and Preventive Medicine

Economic Health Benefits of the Benefits of Walking or Cycling Associated with New or Existing Walking or Cycling Infrastructure: Results from HEAT (Health Economic Assessment Tool) Studies in Europe and the US

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

Symposium: Importing and Exporting Intervention Strategies: Tools and Initiatives for Global PA. ACSM Annual Meeting and World Congress on Exercise is Medicine, San Francisco, 30.05.2012

Comparison of inhabitants' physical activity behaviour in Zermatt (Community 1), Crans-Montana und Verbier

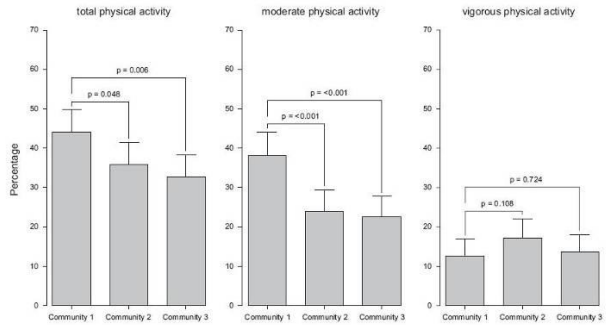


Fig. 1. Age- and sex-adjusted prevalence of sufficient total, moderate and vigorous physical activity by community.

Thommen Dombois O, Braun-Fahrländer Ch, Martin-Diener E. Comparison of adult physical activity levels in three Swiss alpine communities with varying access to motorized transportation. Health & Place, 2007; 13(3): 757-66

GAPA, a council of the International Society for Physical Activity and Health ISPAH

www.globalpa.org.uk

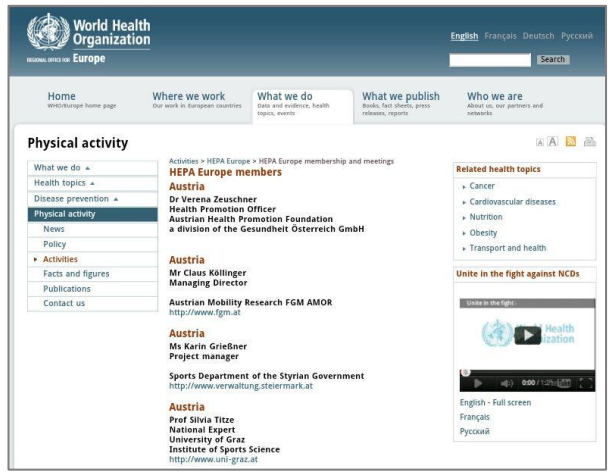
Conference and Network Meeting of HEPA Europe Amsterdam, 10.-13.10.2011

In conjunction with the annual meeting of Agita Mundo, the Global Network for Physical Activity Promotion

Co-sponsored by World Health Organization Europe, City of Amsterdam, ISPAH

HEPA Europe
European network for the promotion of health-enhancing physical activity

Activity reports and work programmes in the reports of the annual meetings
www.euro.who.int/hepa



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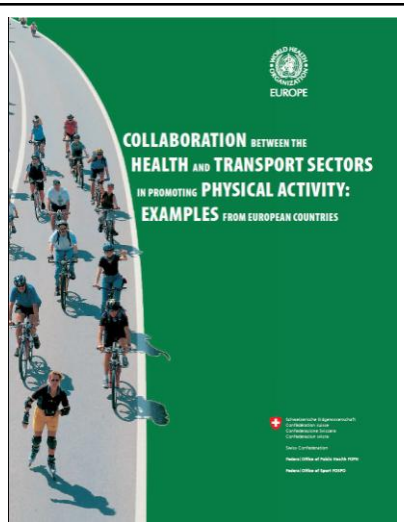

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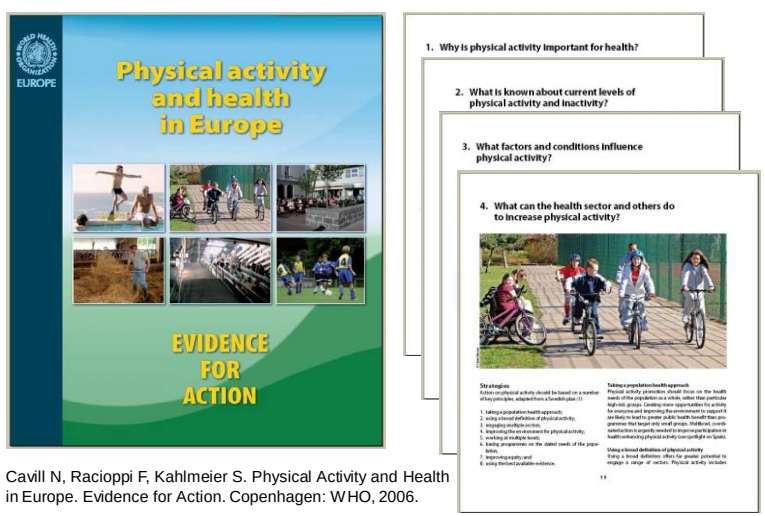


Cavill N, Racioppi F, Kahlmeier S. Physical Activity and Health in Europe. Evidence for Action. Copenhagen: WHO, 2006.

Promotion of walking and cycling for different sectors

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

Role of the health sector

While action on physical activity often lies in the domain of professionals in sectors such as urban planning, transport and sport, the health sector can make a unique and important contribution. In particular, it should provide leadership or stewardship for the subject of physical activity. Because it is such a multidisciplinary issue, the danger is that it will fall between the cracks, with no one sector taking responsibility. The health sector is best placed to forge the right alliances and to take forward effective action.

Cavill N, Racioppi F, Kahlmeier S. Physical Activity and Health in Europe. Evidence for Action. Copenhagen: WHO, 2006. www.euro.who.int/hepa

Role of the health sector

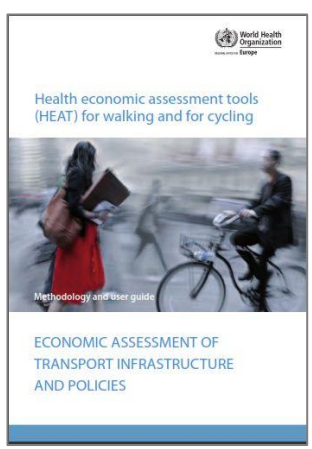
In addition to this broad leadership role, the health sector can take the lead in six areas:

- making physical activity part of primary prevention;
- documenting effective interventions and disseminating research;
- demonstrating the economic benefit of investing in physical activity;
- connecting relevant policies;
- advocacy and exchange of information;
- leading by example.

Cavill N, Racioppi F, Kahlmeier S. Physical Activity and Health in Europe. Evidence for Action. Copenhagen: WHO, 2006. www.euro.who.int/hepa

The approach of HEAT Cycling and Walking

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



Systematic reviews on effects of cycling and walking

•**Cycling**

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

•**Walking**

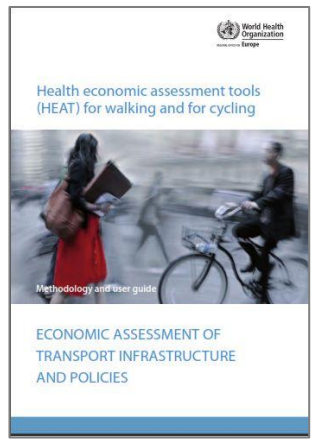
- **Meta-analysis of 9 longitudinal studies** (update of Hamer et al. *Br J Sports Med*,2008)
  - *29 mins. walking per day**
    → RR 0.78 for total mortality

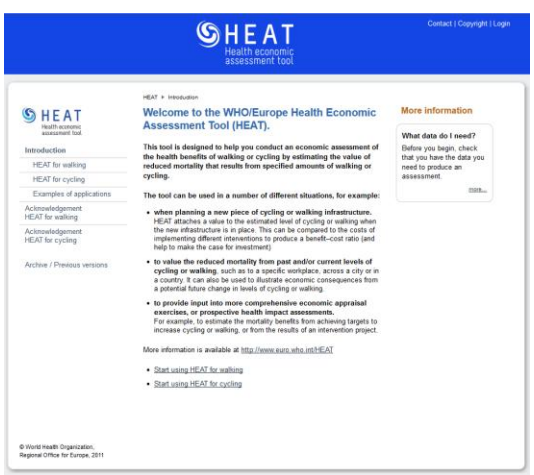
**Corrected for co-variates including leisure time physical activity*

The development of HEAT Cycling and Walking

- Systematic reviews of the literature
- Development of options and guidance for more harmonized methodology
- Development and test of draft tools
- Consensus meetings with international advisory groups

- Development of final tools:
  - guidance document
  - systematic review
  - online tool HEAT walking and cycling
  - publication on applications
  - booklet (->)



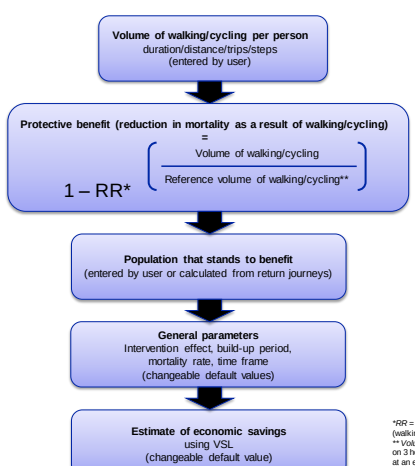


HEAT

Health Economic Assessment Tool for Cycling and for Walking

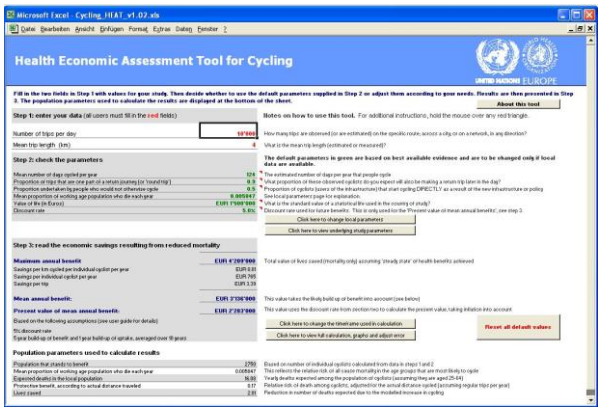
www.euro.who.int/HEAT

Basic functioning of HEAT



**RR = relative risk of death in* underlying studies (walking: 0.78; *cycling: 0.72*.
*** Volume of cycling per person* calculated based on 3 hours/week for an estimated 36 weeks/ year at an estimated speed of 14 km/hour in Copenhagen. Volume of walking based on 29 minutes/day at 4.8 km/hour.

HEAT for Cycling illustrated in its former Excel version



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HEAT for Cycling illustrated in its former Excel version

Step 1: enter your data (all users must fill in the red fields)	
Number of trips per day	10'000
Mean trip length (km)	4

Step 2: check the parameters	
Mean number of days cycled per year	124
Proportion of trips that are one part of a return journey (or 'round trip')	0.9
Proportion undertaken by people who would not otherwise cycle	0.5
Mean proportion of working age population who die each year	0.005847
Value of life (in Euros)	EUR 1'500'000
Discount rate	5.0%

Population parameters used to calculate results	
Population that stands to benefit	2750
Mean proportion of working age population who die each year	0.005847
Expected deaths in the local population	16.08
Protective benefit, according to actual distance traveled	0.17
Lives saved	2.81

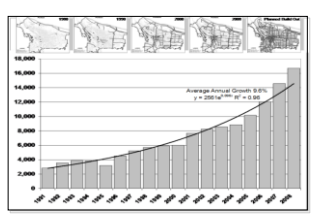
HEAT Applications

www.euro.who.int/HEAT

- 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

Example 1: Portland, Orgegon, US

- Increase of cycling 1991-2008: 400%
- Infrastructure investments1991-2008: $57 Mio.
- New bike trips per day (average): 9000
- Lives saved per year: 6
- **Mean annual benefit / year: $26 Mio.**



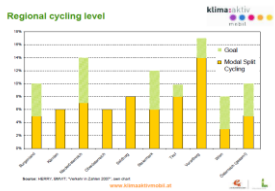
Götschi T. Costs and Benefits of Bicycling in Portland, Oregon. JPAH 2011, vol. 8, supplement Jan: S49 – S58.

Example 2: Austria

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.**



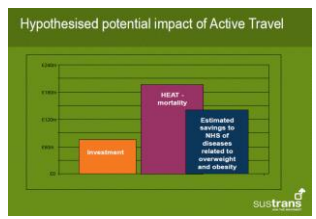
Investments (2006-2010)**:**

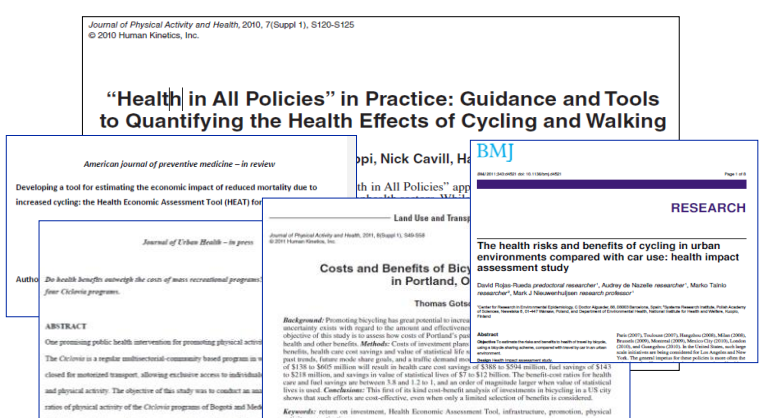
- €20 Mio. of direct project funding
- ca. €95 Mio. total investments

http://www.klimaaktiv.at/article/archive/11995/

Example 3: North-East Active Travel Group and Sustrans, UK

- **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**





HEAT Lessons

- 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

HEAT challenges

- Necessary input data more often than expected not available
  - more guidance / new tools for monitoring walking & cycling
- Requires additional tools to produce comprehensive assessments of transport and urban planning initiatives
- Savings do not occur in transport sector
- 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)

Core group:

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THE PEP: Pan-European Programme Transport, Health and Environment

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Natural England

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www.euro.who.int/HEAT