HEAT
Health economic assessment tool

Health Economic Assessment Tool (HEAT) for walking and cycling: an introduction

Sonja Kahlmeier, **Swiss Distance University of Applied Science FFHS, Zurich, Switzerland**
Francesca Racioppi, WHO Regional Office for Europe
Goetschi T, Cavill N, Castro-Fernandez A, Brand C, Rojas Rueda D, Woodcock J, Kelly P, Lieb C, Rutter H

FFHS
Fernfachhochschule Schweiz
Mitglied der SUPSI

World Health Organization
REGIONAL OFFICE FOR Europe

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What is the HEAT?

- Online tool www.heatwalkingcycling.org
- Designed for transport planners
- Economic assessment of health benefits of walking or cycling
- Effects on mortality ‘only’

Methods and user guide online

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HEAT “core principles”

- Scientific robustness
- Usability
  - Minimal data input requirements
  - Availability of default values
  - Clarity of prompts/questions
  - Design and flow of the tool
- Transparency
  - Approach and assumptions
- Conservative
- Adaptable
- Modular

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What can you use it for?

- **Assessing current (or past) levels of cycling/walking**
  - What is walking/cycling worth now in my city, region, country?
- **Assessing changes over time**
  - E.g. before – after, scenario A vs. scenario B
- **Evaluating new or existing projects**
  - Value of health benefits of investments and benefit–cost ratios

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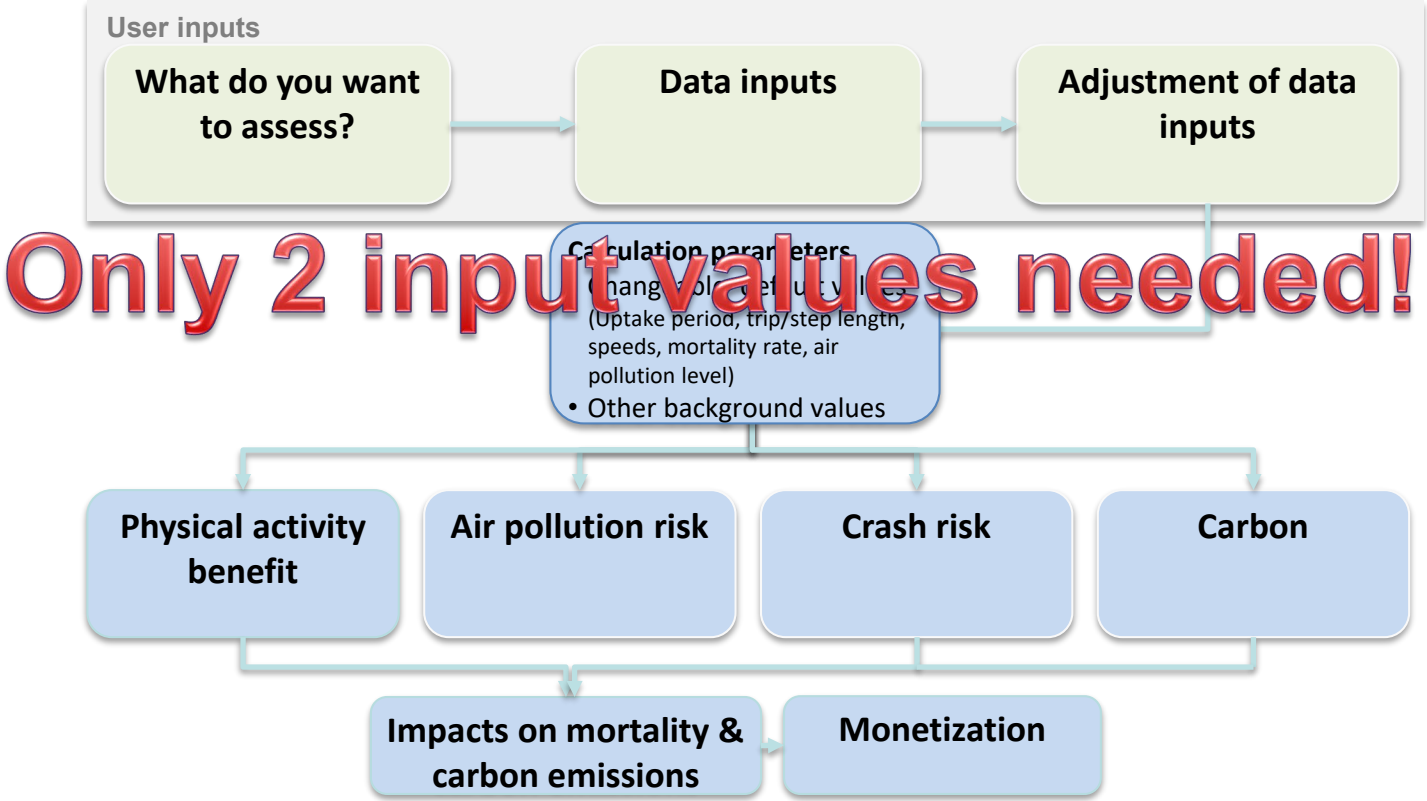
The question

If *x* people walk/cycle an amount of *y* on most days, what is the economic value of the health benefits that occur as a result of the reduction in mortality due to their additional physical activity?

Additional HEAT options

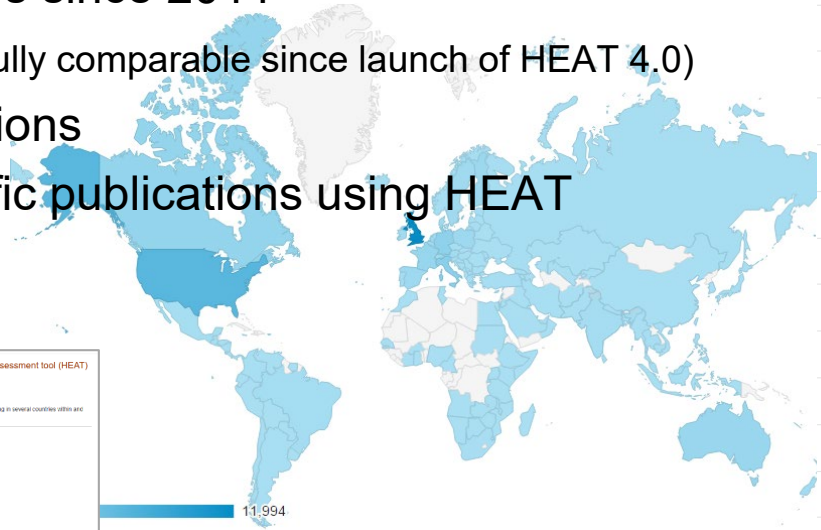
- How much do air pollution or crashes affect these results?
- What are the carbon effects?

HEAT workflow (simplified)



Worldwide use

- Project website visited >1’000’000 times by over 60,000 visitors since 2011
- (but: webstats not fully comparable since launch of HEAT 4.0)
- Variety of applications
- At least 30 scientific publications using HEAT



Ca. last 24 months

1.	United Kingdom	1.	United Kingdom
2.	United States	2.	United States
3.	Italy	3.	China
4.	Germany	4.	Germany
5.	Canada	5.	Finland
6.	France	6.	Italy
7.	Australia	7.	Spain
8.	Spain	8.	France
9.	Finland	9.	Sweden
10.	Belgium	10.	Brazil
11.	Switzerland	11.	Netherlands
12.	Sweden	12.	Canada
13.	Netherlands	13.	Australia
14.	Brazil	14.	Austria
15.	Austria	15.	Switzerland

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A collaborative project

World Health Organization

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

DH Department of Health

NATURAL ENGLAND

MINISTERIUM FÜR EIN LEBENSWERTES ÖSTERREICH

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

RÉPUBLIQUE FRANÇAISE

PASTA

Physical Activity and Nutrition Networks Wales
Rhwydweithiau Gweithgaredd Corfforol a Maeth Cymru

GIG CYMRU NHS WALES | Iechyd Cyhoeddus Cymru Public Health Wales

THE PEP Transport, Health and Environment Pan-European Programme
UNITED NATIONS
World Health Organization Europe

Norwegian Ministry of Foreign Affairs

Project coordinating team: Thiago Herick de Sa, WHO Headquarters, Francesca Racioppi, WHO Regional Office for Europe, Sonja Kahlmeier, Swiss Distance University of Applied Science (FFHS), Switzerland, Thomas Götschi, University of Oregon, USA

Project advisory and expert group: Karim Abu-Omar, Heba Adel Moh'd Safi, Yousaf Ali, Lars Bo Andersen, Hugh Ross Anderson, Nelzair Araujo Vianna, Olivier Bode, Tegan Boehmer, Nils-Axel Braathen, Christian Brand, Hana Bruhova-Foltynova, Fiona Bull, Daniel Buss, Juan Castillo, Nick Cavill, Dushy Clarke, Andy Cope, Baas de Geus, Audrey de Nazelle, Ardine de Wit, Hywell Dinsdale, Damien Dussaux, Rune Elvik, Santiago Enriquez, Mark Fenton, Jonas Finger, Francesco Forastiere, Richard Fordham, Charlie Foster, Virginia Fuse, Eszter Füzeki, Rogerio Gama, Frank George, George Georgiadis, Regine Gerike, Eva Gleissenberger, Rahul Goel, Shifalika Goenka, Anna Goodman, Thomas Götschi, Maria Hagströmer, Mark Hamer, Yahaya Hassan Said, Holger Haubold, Eva Heinen, Thiago Herick de Sa, Marie-Eve Heroux, Max Herry, Gerard Hoek, Stefanie Holzwarth, Luc Int Panis, Nicole Iroz-Elardo, Luis Jorge Hernandez, Sonja Kahlmeier, Paul Kelly, Meleckidhesi Khayesi, Caryl Koinange, Michal Krzyzanowski, I-Min Lee, Christoph Lieb, Jose Lobo, Mazen Malkawi, Brian Martin, Marco Martuzzi, Markus Maybach, Adriannah Mbandi, Guy Mbayo, Gabriel Michel, Irina Mincheva Kovacheva, Hanns Mooshammer, Pierpaolo Mudu, Carlos Muñoz Piña, Marie Murphy, Nanette Mutrie, Bhash Naidoo, Keiko Nakamura, Daisy Narayanan, Maria Neira, Amanda Ngabirano, Mark Nieuwenhuijsen, Åse Nossum, Pekka Oja, Edith Patouillard, Uttam Paudel, Genandrialine Peralta, Laura Perez, Julie Powel, Francesca Racioppi, Hussain Rasheed, Lisa Robinson, David Rojas Rueda, Gabe Rousseau, Candace Rutt, Harry Rutter, Randy Rzewnicki, Kjartan Saelensminde, Elin Sandberg, Alexander Santacreu, Andreia Santos, Parth Sarathi Mahapatra, Lucinda Saunders, Daniel Sauter, Shari Schaftlein, Peter Schantz, Tom Schmid, Peter Schnohr, Christoph Schreyer, Christian Schweizer, Nino Sharashidze, Heini Sommer, Jan Sørensen, Joe Spadaro, Gregor Starc, Dave Stone, Marko Tainio, Robert Thaler, Vo Thi Hue Man, Meelan Thondoo, Miles Tight, Sylvia Titze, Lan Wang, Miriam Weber, Wanda Wendel Vos, Paul Wilkinson, James Woodcock, Tian Xiangyang, Hou Xiaohui, Mulugeta Yilma, Masud Yunesian.

Development team: Tomasz Szreniawski, Thomas Götschi, Alberto Castro Fernandez, Vicki Copley, Ali Abbas, Duy Dao, Hywell Dinsdale

Expertises involved

- Transport Economics
- Transport Planning
- Policy Making
- Practice / Advocacy
- Epidemiology /Public Health
- Environmen-tal Science
- Air Pollution
- Health Economics

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What if the adult population Prague cycled 10mins more / day?

- Online tool www.heatwalkingcycling.org

Methods and user guide online

What if the adult population Prague cycled 10mins more / day?

- **Summary of impacts for mortality**
  As a result, **16.0 premature deaths** are prevented per year.
  Over the full assessment period of **10 years, 161 premature deaths** are prevented
- Mortality is monetized using **Value of a Statistical Life (VSL)** of 1 730 000 EUR
- **Total Societal economic value: + EUR 216 000 000 / year**
  (discounted)

Benefits (physical activity):	+ EUR 255 000 000
Dis-benefits	
– air pollution	- EUR 19 500 000
– crashes	- EUR 20 000 000

Glasgow, UK

Valuing current levels of cycling

- Centre for Population Health
- Valued existing levels of cycling in Glasgow
- Assessed 600 cyclists
- Strong data-led approach
  - Travel to work from 2001 census
  - Annual cordon counts
- Status quo assessment (i.e. current levels)
- **Mean annual benefit €3.5-€4.6m pa**
- Extensive media coverage and political interest

*"…this analysis contributes to the evidence base on the public health benefits of cycling and adds further weight to the **arguments that promoting cycling represents extremely good value for money** for both individual and public health."*

Boston, USA

Negative impacts from reduced walking to public transport

- Boston Metropolitan Area Planning Council faced proposals to increase fares and cut services on public transport
- They used HEAT to support a Health Impact Assessment of estimated decreases in regular walking due to the proposals
- Estimated 30’000-50’000 public transport users shifting to driving
- Would lead to **reduction in walking of 8 min per person per day**
- **9-14 additional deaths per year; €57m-€89m per year**

- Important addition to policy analysis

“Simplicity is a complexity resolved”

(Constantin Brancusi)

http://www.heatwalkingcycling.org

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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

More information

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).

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TO PARAMETER REVIEW

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Calculation parameters

The table below provides an overview of the default values used for your assessment. If you would like to use other values, you can edit column "Editable value".

	Parameter description	Default value	Editable value	Unit	Parameter name
1	Discount rate	5	5	%	discrate
2	Average cycling speed	14	14	km/h	speed_bike
3	Value of statistical life in euro by country (value for Czech Republic in 2015)	1729432.2161	1729432.2161	euro/death	vsl
4	PM2.5 concentration (value for Prague)	17	17	ug/m3	pollution_concentration_bycity
5	All cause mortality rate for reference case (value for Czech Republic and age group 20-64)	341.94	341.94	deaths/inhab	mortality_rates_bike_ref
6	Fatality rate by country for bike (value for Czech Republic)	2.2216	2.2216	fatalities/100mio.km	fatalityrates_national_crash_bike

The table below shows the background values that the tool uses for your assessment. These cannot be modified.

	Parameter description	Background value	Unit	Parameter name
1	Time needed to obtain full health impacts in single case assessment	0.00	years	builduptime_onecase
2	Time needed to obtain full health impacts in crash module	0.00	years	builduptime_crash

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