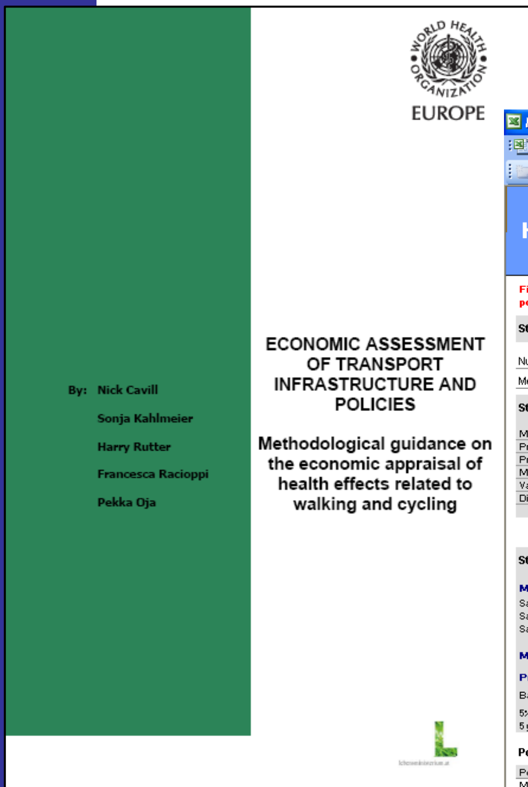
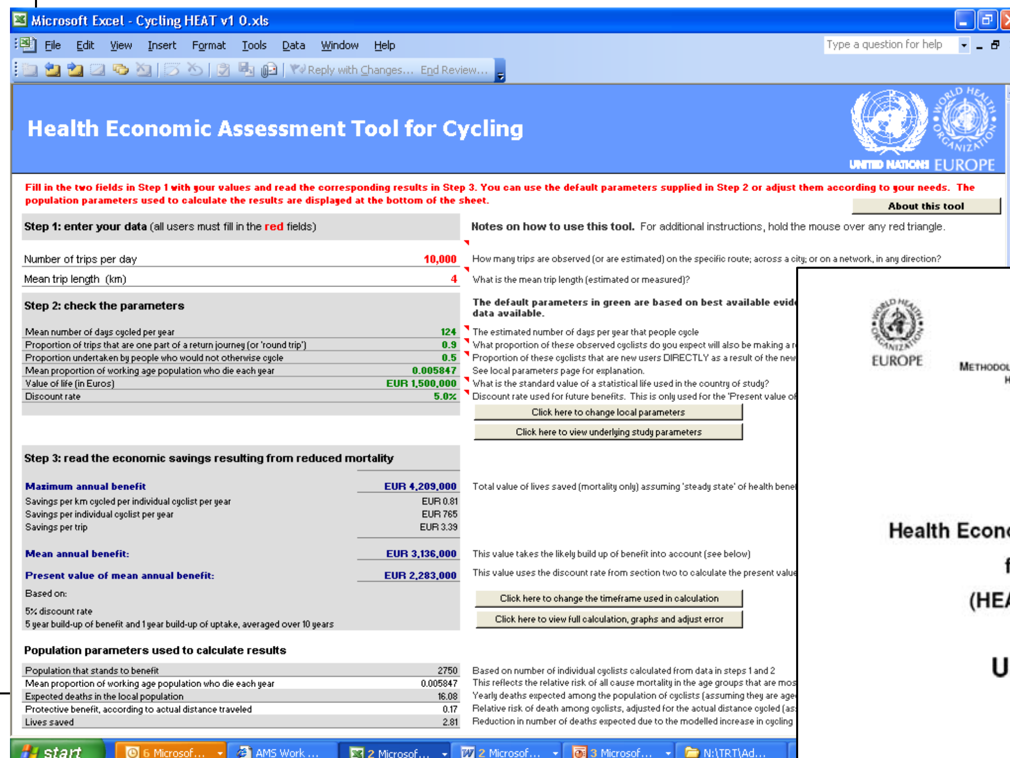
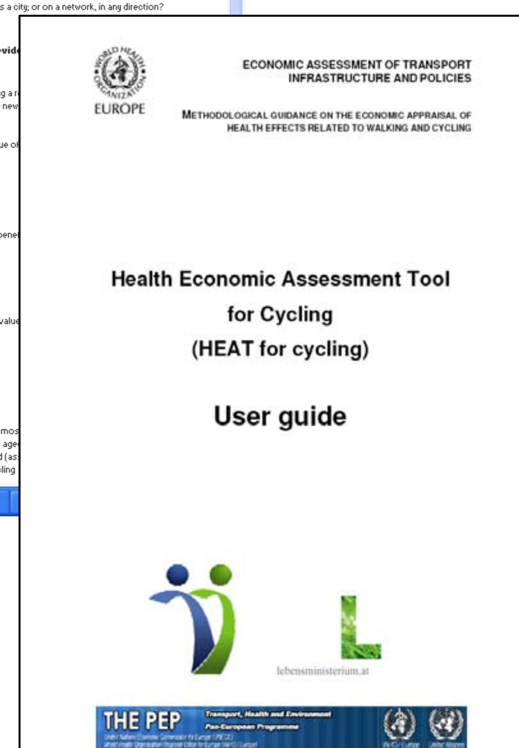
WHO guidance and tool for economic assessment of cycling and walking

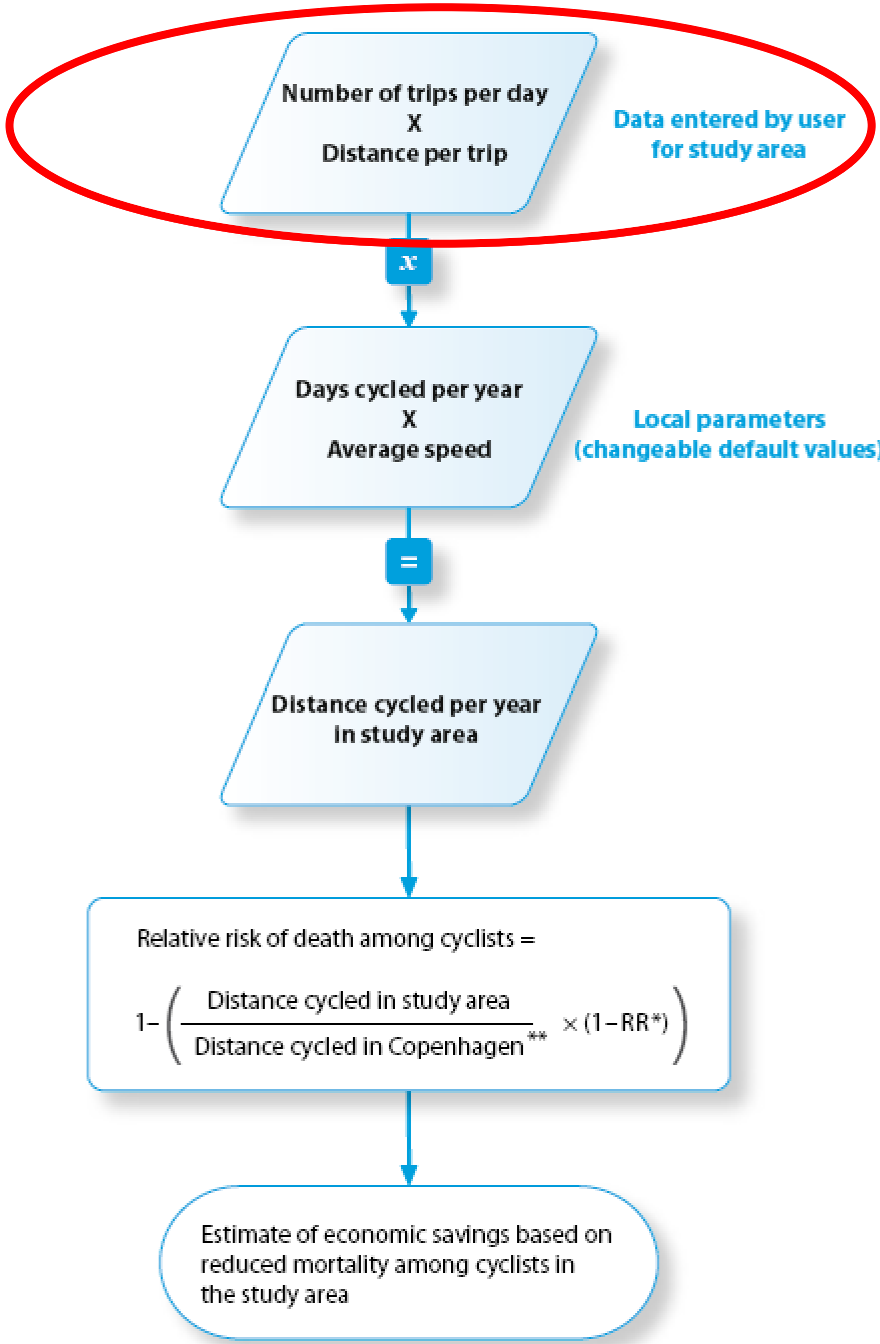






Download the guidance document, HEAT for cycling and user guide from www.euro.who.int/transport/policy/20070503_1

EUROPE


Number of trips per day
X
Distance per trip
Data entered by user for study area
x
Days cycled per year
X
Average speed
Local parameters (changeable default values)
=
Distance cycled per year in study area
Relative risk of death among cyclists =
1– (Distance cycled in study area / Distance cycled in Copenhagen** × (1 – RR*))
Estimate of economic savings based on reduced mortality among cyclists in the study area

Examples of applications of Health Economic Assessment Tool (HEAT) for cycling

WORLD HEALTH ORGANIZATION
EUROPE

England March 2009…

Department for Transport - Transport Analysis Guidance - WebTAG - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.dft.gov.uk/webtag/webdocuments/3_Expert/14_Walking_Cycling/3.14.1.htm#0110

TRANSPORT ANALYSIS GUIDANCE

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TAG Unit 3.14.1: Guidance on the Appraisal of Walking and Cycling Schemes

1.10. Estimating the health benefits of new cycling and walking facilities

1.10.1. This is the value of improvements in health as a result of increased physical activity due to a walking or cycling scheme. Specifically, this is the economic benefit arising through reduced rates of mortality through increased activity. There is an increasing amount of evidence (for example see Andersen et al., 2000) which suggests that this could be a potentially significant impact of an intervention which causes more people to become more physically active. Indeed, when this evidence is applied in an appraisal context, it has been observed that reduced mortality benefits do form a significant proportion of the benefits of a walking or cycling scheme and hence warrants thorough consideration.

1.10.2. The method for calculating this benefit is taken from the World Health Organisation project *Quantifying the health effects of cycling and walking* (2007) and it accompanying model, the Health Economic Assessment Tool for cycling (HEAT). It is likely to underestimate the health benefits of increased physical activity as it only evaluates the benefit as a result of decreased mortality and ignores benefits due to reduced morbidity or sickness. The latter is however covered in part by the benefits of reduced absenteeism (see below).

Impact since March 2009…

"…around five or six Community Infrastructure Fund schemes that were submitted have made use of the guidance and presented monetised benefits accrued through forecast increases in physical activity."

Robin Cambery

Economics of Regional and Local Transport

Department for Transport. 17 June 2009

Impact in other countries

- **Austria:** used HEAT for cycling to calculate current savings from cycling in Austria
  - **USD 570million** per year
- **Czech Republic** used HEAT for cycling used to calculate potential benefits from cycling in the city of Pilsen
  - **USD 1.2million** if 2% of population took up regular cycling
- **Swedish Government** adopted HEAT for cycling as part of official toolbox for the economic assessment of cycling infrastructure
- **UK/Scotland**: HEAT used to estimate benefit from reaching cycling targets
  - **USD 1.5-3 billion** per year if modal share goal of 13% reached
  - Recommended that Scottish Transport Appraisal Guidance should include health benefits from cycling and walking
- **New Zealand:** University of Auckland used HEAT to value adding cycling and pedestrian facilities to the Auckland Harbour Bridge

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Sources: http://www.euro.who.int/transport/policy/20090119_2

Health Economic Assessment Tool for Cycling

UNITED NATIONS EUROPE

Welcome to the WHO/Europe Health Economic Assessment Tool for Cycling (HEAT for Cycling)
This tool allows you to conduct an economic assessment of the health benefits of cycling by estimating the value of reduced mortality that results from cycling.

The tool can be used in a number of situations:

1 When planning a piece of new cycle infrastructure, it allows the user to model the impact of different levels of cycling and attach a value to the estimated level of cycling when the new infrastructure is in place. This can be compared to the costs of implementing interventions to produce a benefit:cost ratio (and help make the case for investment), or as an input into a more comprehensive cost-benefit analysis.

2 To value the reduced mortality from current levels of cycling, such as to a specific workplace, across a city or in a country. It can also be used to illustrate costs consequences from a potential future decline of the current levels of cycling.

3 To provide input into more comprehensive cost benefit analyses, or prospective health impact assessments. For example, to estimate the mortality benefits from achieving targets to increase cycling.

A full user guide for this tool is available from: http://www.euro.who.int/transport/policy/20070503_1

Click here to go to the calculation screen

Click here to go to acknowledgements

Click here to maximise screen size to your monitor

Hide/unhide toolbars to maximise screen space

Underlying study parameters

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The parameters used in this tool come from the Copenhagen Center for Prospective Population studies[1], a prospective study on different types of physical activity, including cycling to work and for leisure time, on mortality risk. The study included about 30,000 men and women who were followed up for 14.5 years.

These parameters should **NOT** be changed unless the model is to be re-based on a new study with different findings

Copenhagen study parameters		Notes
Hours cycled per week	3	Copenhagen study assumed this was the average time cycled per week in the study
Relative risk of all cause mortality for regular cyclists	0.72	Key finding from Copenhagen study - difference in risk of death between regular cyclists and none cyclists
Lower confidence limit	0.91	Smallest difference in risk of death based on findings of Copenhagen study
Upper confidence limit	0.57	Biggest difference in difference in risk of death based on findings of Copenhagen study
Size of confidence limits	0.95	Size of confidence limits presented in the Copenhagen study

These variables were not reported in the Copenhagen study, but are required for this model.
The default values are assumptions based on likely values for the Copenhagen study. They may be changed, but this is likely to weaken the outputs from the model.

Study assumptions		Notes
Average speed in Stockholm (kmph)	14	This model assumes cyclists in the study population cycle at the same average speed as those in Copenhagen
Weeks of the year commuted	36	Commuters are unlikely to cycle all years round.This assumes that most workers will have six weeks holiday per year and will not cycle for an additional ten weeks.

Click here to go back to the main screen

1. Andersen, L. B., Schnohr, P., Schroll, M., Ole Hein, H. 'All-Cause Mortality Associated With Physical Activity During Leisure Time, Work, Sports and Cycling to Work'. Archives of Internal Medicine, 160(11) 2000, pp. 1621-1628.

Local area parameters

These parameters have been set based on the best information currently available, and should represent the most likely values in real life situations.
Only change these parameters if reliable local data are available. Changes to these parameters can have a significant impact on the final values.

Cycling parameters		Notes
Mean number of days cycled per year	124	What is the estimated number of days per year that people cycle?
Proportion of these trips that are one part of a return journey (or 'round trip')	0.9	What proportion of these observed cyclists do you expect will also be making a return trip later in the day?
Proportion undertaken by people who would not otherwise cycle	0.5	For evaluations of new infrastructure or policy, what proportion of these cyclists do you think are new users DIRECTLY as a result of the new infrastructure or policy? For evaluations of existing levels of cycling, this can be changed to 1.0
Mortality parameters		
Mean proportion of working age population who die each year	0.005847	This can be derived from published mortality data for people of working age for the study country (i.e. number of deaths of people aged 25-64 per year/number of people aged 25-64). This allows the tool to focus on the ages that are most likely to cycle, and reflects the relative risk of all cause mortality in this age group. The default value is the 2005 WHO European Region average from the Mortality Database (http://data.euro.who.int/hfamdb/ , WHO 2007)
Lower confidence limit	0.005847	Upper confidence limit around the above mortality rate - if known. If not known enter the mortality rate again.
Upper confidence limit	0.005847	Lower confidence limit around the above mortality rate - if known. If not known enter the mortality rate again.
Size of confidence limits	0%	Size (in %) of known confidence limits around the above mortality rate. If not known enter zero.
Financial parameters		
Value of life (in Euros)	EUR 1,500,000	What is the standard value of a life used in the country of study?
Discount rate	5.0%	Savings which occur in future years will be discounted by this percentage per year.

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