Unlocking the value of cycling and walking

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The Economics of Climate Change
The Stern Review

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HEAT approach

• Effective public health:
  – action outside as well as within the health sector
  – identify levers
  – working upstream
  – efficient use of public resources
• Recognises importance of economic analysis in transport: benefit-cost ratio is king
• Evidence-based
• Conservative
• Transparent
• Adaptable
• ‘Do once and share’
Collaborative project

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Development of HEAT

- Use economic levers to influence transport appraisal
- Find best format for transport planners
- International advisory group including transport; health; economics; practice
- Review the evidence
- Generate a tool based on the evidence
- Test with range of experts and refine
- Disseminate; evaluate; develop further
Key steps

1. Literature reviews (economics; health)
Economic analyses of transport infrastructure and policies including health effects related to cycling and walking: A systematic review

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ABSTRACT
We reviewed published and unpublished studies that presented the findings of an economic valuation of an aspect of transport infrastructure or policy, and included data on walking and/or cycling and health effects in the valuation. We included 16 papers, of which three were classified as 'high', six as 'moderate' and seven as 'low' quality. There is a wide variation in the approaches taken for including the health effects of physical activity in economic analyses of transport projects. This is not helped by a lack of transparency of methods in many studies. A more standardised approach is called for, including a clearer description of the applied methods and assumptions taken.

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Key steps

1. Literature reviews (economics; health)
2. Issues and draft tool
Issues

• Which health benefits: mortality, morbidity or both?

• Physical activity and health relationship: linear or non-linear? Threshold?

• Unique effects of cycling /walking vs. other forms or physical activity? Activity substitution?

• Costs applied

• Time periods
Key steps

1. Literature reviews (economics; health)
2. Issues and draft tool
3. Consensus event – cycling
4. Develop HEAT cycling (Excel)
5. Literature reviews
6. Issues and draft tool
7. Consensus event – walking
8. Develop combined tool (online)
Risk reduction for all-cause mortality for regular cycle commuters

RR: all-cause mortality

- Data from 3 population studies in Copenhagen combined
- 6,171 men and 783 women including 2,291 deaths
- RR 0.72 (95% CI: 0.57-0.91)
- Adjusted for age, sex, education level, blood pressure, weight, leisure time physical activity, cholesterol and smoking
- Results consistent with other cycling studies and literature on physical activity eg Matthews, Paffenbarger

Number of trips per day $\times$ Distance per trip

Days cycled per year $\times$ Average speed

Distance cycled per year in study area

Relative risk of death among cyclists =

$$1 - \left( \frac{\text{Distance cycled in study area}}{\text{Distance cycled in Copenhagen}^{44}} \times (1 - RR^*) \right)$$

Estimate of economic savings based on reduced mortality among cyclists in the study area

Data entered by user for study area

Local parameters (changeable default values)
Applications

Project website visited over 6000 times, products downloaded over 600 times
HEAT walking

Systematic review

- PubMed search for keywords ‘Walking’ and ‘Relative risk’ in studies that
  - specified walking as an independent behavior
  - reported a relative risk for mortality or morbidity
- Meta-analysis of 9 studies (controlled for leisure time physical activity)
- \( RR = 0.78 \ (0.64-0.98) \) for all-cause mortality from walking 29 mins per day on 7 days/week
HEAT walking

Economic studies

- Updated systematic review of economic studies
- 8 studies included; 5 good quality
- Few methodological advances
- Showed HEAT approach remained valid for walking
What’s new?

- Step-by-step online tool
- Assessment of walking data with a brand-new HEAT walking
- More data entry options:
  - (before: cycling trips only)
  - New:
    - Trips
    - Distance
    - Duration
    - Steps (for walking)
- More explanations, tips and hints on every step
- Print and save results
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.

HEAT attaches a value to the estimated level of cycling or walking when the new infrastructure is in place. This can be compared to the costs of implementing different interventions to produce a benefit-cost ratio (and help to make the case for investment), or as an input into a more comprehensive economic appraisal exercise.

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
Conclusions

• Identifies a major public health issue and uses effective lever to promote it
• Works outside traditional health care paradigm to achieve health gain
• Uses language of the target sector, not health
• Highly influential
• Cheap and sustainable
• Effective demonstration of using evidence to drive practice