

HEALTH IMPACT MODELLING OF ALTERNATIVE ACTIVE TRAVEL VISIONS FOR ENGLAND AND WALES USING A TRANSPORT AND HEALTH INTEGRATED MODELLING TOOL (THIM)

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Background and Aims: Achieving health benefits while reducing greenhouse gas emissions from transport offers a potential policy win-win, however, the magnitude of potential benefits is likely to vary by setting. This study presents a new Transport and Health Integrated Modelling tool (THIM) to evaluate the health and environmental impacts of high walking and cycling transport scenarios for English and Welsh urban areas outside London.

Methods: A series of integrated travel time, distance, and trip based scenarios were generated using THIM as part of the Visions 2030 Walking and Cycling project. Environmental modelling was used to estimate changes to CO₂ emissions. Health impact assessment modelling was used to estimate changes in Disability Adjusted Life Years (DALYs) resulting from changes in exposure to PM 2.5, road traffic injury risk, and physical activity.

For each transport scenario THIM generates age and sex specific weekly active travel time distributions, assuming log-normality. THIM uses these log normal distributions to estimate physical activity exposure under each scenario, and from these it calculates the expected changes to DALYs and age/sex specific population body mass index distributions. THIM allows parameter estimates either to be entered for each scenario, or for default values to be used based on existing data.

Results: This paper will present the findings of the new modelling study and discuss them in the light of previous research. The sensitivity of the findings will be considered with reference to parameter uncertainty including, 'safety in numbers', variation in active travel times by age, and the dose-response relationship between physical activity and risk of health outcomes.

Conclusions: Methods to estimate the health impacts from transport related physical activity and injury risk are in their infancy, but this study has demonstrated an innovative integration of transport and health impact modelling approaches. The findings have implication for transport and health policy, and for future empirical and modelling research.