

MOVING OUT OF CARS AND ONTO BIKES: IMPACT ON HEALTH, AIR POLLUTION AND GREENHOUSE GAS EMISSIONS IN THE NEW ZEALAND URBAN SETTING

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Background and Aims: To estimate the effects on health, air pollution and greenhouse gas emissions if short trips (• 7 km) by adults in the New Zealand (NZ) urban setting were undertaken by bicycle rather than motor car.

Methods: Existing data sources and a number of modelling tools were used to estimate the effects of shifting varying proportions (1-30%) of vehicle kilometres travelled light motor vehicle to bicycles. Modelling tools included the WHO Health Economic Assessment Tool for Cycling to estimate mortality benefits from increased physical activity and Jacobsen's 'Safety in numbers' factor for effects on injury.

Results : A 5% shift of vehicle kilometres to bicycles would return cycling to the levels seen in NZ in the 1980s, reduce vehicle travel by approximately 223 million kilometres each year, save about 22 million litres of fuel and reduce transport-related greenhouse gas emissions by 0.4%. The health effects would include about 116 deaths avoided annually as a result of increased physical activity, six fewer deaths due to local air pollution from vehicle emissions, and potentially an additional five cyclist fatalities from road crashes. In economic terms, including only fatalities and using the NZ Ministry of Transport Value of a Statistical Life, the health effects of a 5% shift represent net savings of about NZ\$200 million per year. In addition, a 5% shift would expend about 19 billion kilojoules of energy over baseline resting metabolic rate.

Conclusions: The health benefits of moving from cars to bikes heavily outweigh the costs of injury. For fatalities, the benefit:cost ratio is 3:1 for 1% substitution and over 40:1 when 30% of vehicle trips are substituted.