Health impacts of transport policies: a case study of the Future Streets project in Māngere, Auckland

NZAIA conference
26 November 2014

Jamie Hosking
The University of Auckland
This presentation

• Health impacts of transport
• Examples of assessing the health impacts of transport
• Case study: Te Ara Mua – Future Streets project, Māngere
Transport has large health impacts

People who cycle to work are *about 25% less likely to die* (of any cause) compared with people who do not cycle to work.

*References: Andersen et al 2000, Matthews et al 2007*


*Slide source: World Health Organization (Europe) training module*
Goals of healthy transport

• To give people *access* to things they need for wellbeing
  • e.g. employment, education, health and other services
  • For all people, not just those owning a car
• ... in a way that maximizes the *benefits* of transport
  • Physical activity and social interaction
• ... and minimizes the *risks* arising from transport
  • Emissions of air pollutants, greenhouse gases and noise
  • Road danger and social severance
  • Sprawling, car-focused urban development patterns
Simple quantitative HIA

- HEAT tool a good example: www.heatwalkingcycling.org
- Based on studies on risk of death for people who walk/cycle regularly, compared with those who do not
- Calculates changes in mortality from changes in walking or cycling
- Also calculates economic value of mortality changes

Evidence from studies of effect of walking or cycling on mortality

Slide source: World Health Organization (Europe) training module
HEAT tool – New Zealand

• NZ has low levels of cycling: ~ 1% of trips
• 70% of urban car trips under 7 km length
• What if some of these short trips were cycled?
• Used HEAT tool: effects of cycling on health
• Used other methods to estimate impacts on emissions and injuries
• Range of mode shift scenarios:
  • 1%, 5%, 10%, 30%

Source: Lindsay et al, 2011

Slide source: World Health Organization (Europe) training module
HEAT tool – New Zealand (2)

• Findings for 5% shift from ‘cars to bikes’:
  • 116 deaths avoided per annum in NZ
  • Monetized benefit NZ$200 million per year
  • Reduced emissions by 53 000 tCO$_{2}$eq per year: 0.4% of transport emissions
  • Benefits greater in disadvantaged social groups
  • Benefits many times greater than injury risks
• Benefits greater for higher levels of mode shift

Image source: http://archive.can.org.nz/awards/awards07.htm

Study reference: Lindsay et al, 2011

Slide source: World Health Organization (Europe) training module
More in-depth approaches

Simple assessment (e.g. HEAT tool)

Evidence from studies of effect of walking or cycling on mortality

$\Delta$ travel (e.g. walking or cycling) $ightarrow$ $\Delta$ health (e.g. deaths)

Integrated assessment (e.g. Woodcock et al, 2009)

$\Delta$ in disease rates (morbidity/mortality)

$\Rightarrow$ combine into single integrated measure, e.g. DALYs

$\Rightarrow$ overall $\Delta$ health

$\Delta$ travel

$\Delta$ physical activity

$\Delta$ air pollution

$\Delta$ road traffic injuries

Evidence from studies of effect of walking or cycling on mortality

$\Delta$ travel (e.g. walking or cycling) $ightarrow$ $\Delta$ health (e.g. deaths)

$\Rightarrow$ simple assessment (e.g. HEAT tool)

$\Rightarrow$ integrated assessment (e.g. Woodcock et al, 2009)

$\Rightarrow$ overall $\Delta$ health

Evidence from studies of effect of walking or cycling on mortality

$\Rightarrow$ simple assessment (e.g. HEAT tool)

$\Rightarrow$ integrated assessment (e.g. Woodcock et al, 2009)

$\Rightarrow$ overall $\Delta$ health

Slide source: World Health Organization (Europe) training module
Some uses of neighbourhood streets

• Play/recreation
• Socialising
• Growing flowers, veges, fruit
• Walking
• Cycling
• ... and car use
Self-explaining roads, Pt England

Local roads

Before

After

Collector roads

Before

After
Self-explaining roads, Pt England

Before

Post-treatment

Pre-treatment
Local road
Collector road

Percent of vehicles

Speed (km/h)

Percent of vehicles

Speed (km/h)
Goal:

- To make streets in Māngere Central safer and easier for people to travel around, especially by walking or cycling, while reflecting local identity
Future Streets – partners

Mackie research & consulting

The people of Māngere
Intervention area: Māngere Central
Community engagement
Design principles

1. Street/route hierarchy giving greater priority to pedestrians and cyclists
2. People feel safe on routes
3. Reduce traffic speed and make it more consistent
4. Improve people’s ability to cross the road safely
5. Schools and the Mall are priority destinations for the walking and cycling network
6. An arterial separated bike network is important
7. Improvements reflect the identity of Māngere people
Proposed street hierarchy
Initial concepts – Mascot Ave (collector)
Proposed Gateways into local streets

Pedestrian right-of-way

Initial concepts – local roads
Initial concepts - walk/cycle routes

Cater for all users (walkers, cyclists, mobility scooters) with a wider shared path, increased lighting & seating

Points of interest such as community art, exercise equipment, fruit trees
Quantitative
• Door-to-door survey of 2000 residents: physical activity, travel, social networks, perceptions
• Road user observations
• Crashes and injuries: routinely-collected data

Qualitative
• Adult ‘go along’ interviews
• Child focus groups
• Stakeholder focus groups

Modelling
• Effects on air quality and greenhouse gas emissions
• Wider implementation: costs, benefits, impacts on health and equity
Future Streets – next steps

- Complete detailed designs and baseline surveys (2014)
- Construction (early 2015)
- Follow-up measures, modelling and economic analysis (2016)
- Dissemination

- Funding applications: long-term follow-up, disability research
Future Streets

Acknowledgements

• Research team
• Research advisors
• Auckland Transport
• Steering group
• MBIE
• NZTA, ACC
• Community members and stakeholders

www.futurestreets.org.nz
• Andersen LB et al. All-cause mortality associated with physical activity during leisure time, work, sports and cycling to work. *Archives of Internal Medicine*, 2000, 160(11):1621-1628.

