



A transport and health assessment tool for planning healthier cities

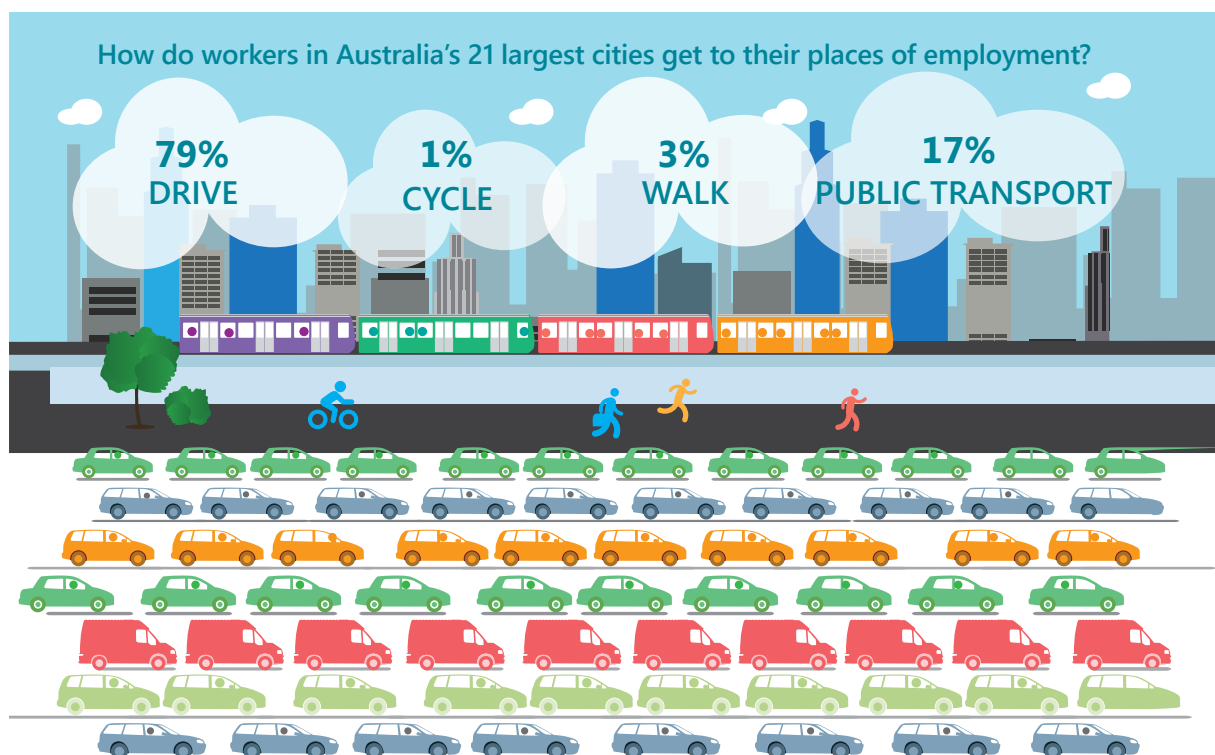
The project: Building tools for measuring the health impacts of active transport: Transport Health Assessment Tool for Brisbane

Project lead: Dr Lucy Gunn and Associate Professor Melanie Davern, RMIT University, with the [project team](#)

Project start: September 2022 **Project end:** November 2023

Key messages

- The **Transport Health Assessment Tool** is an online tool that supports evidence-based planning for healthier cities.
- We created a new version for Brisbane that demonstrates the health benefits and health care cost savings associated with changing short car trips to walking, cycling or a combination of both.
- The tool contains greater detail than the previous tool for Melbourne, including additional chronic diseases, and their impacts for reducing incidence and mortality.



Why is this issue important?

Half of Australian adults do not do enough physical activity to achieve physical and mental health benefits, and more than three quarters commute by car. Many common short trips could be replaced by healthier forms of transport, such as walking and cycling, which have many co-benefits including increased physical activity, decreased traffic and road congestion, and decreased air pollution.

However, use of walking and cycling is low in Australia. Only 3% of workers currently commute by walking, and just 1% by cycling - but our previous research suggests that nearly 30% could cycle to their workplace within 30 minutes. Changing from cars requires infrastructure that makes walking and cycling safer and more efficient than driving.

Where we live and our local environments have a huge impact on our long term health. Accessing information on transport modelling is currently hard to find and understand. Information and evidence is needed to support better decision-making about where to plan future transport infrastructure and support healthy and sustainable cities.

Both A, Gunn L, Higgs C, et al. Achieving 'Active' 30 Minute Cities: How Feasible Is It to Reach Work within 30 Minutes Using Active Transport Modes? ISPRS International Journal of Geo-Information 2022; 11(1).

What did we do?

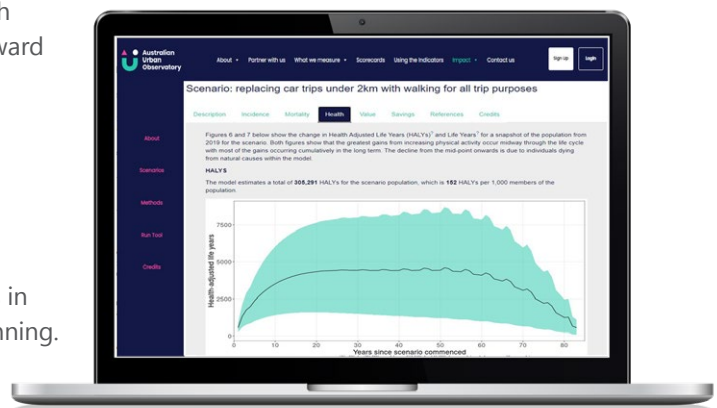
We built the Transport Health Assessment Tool for Brisbane (THAT-Brisbane), an easy-to-use tool using policy-relevant evidence that can measure health benefits that come from replacing driving with walking and cycling.

A simple interface allows users to select criteria for a variety of scenarios which can be tailored to accommodate different trip types as well as ages and sex of the population.

It uses data on walkers' and cyclists' behaviour, to provide metrics on health and economic benefits that promote active transport. This enables people working in infrastructure and planning to see and communicate these benefits easily, to support evidence-based planning for healthier cities.

The tool is based upon THAT-Melbourne, which has received a National Research Excellence Award from the Planning Institute of Australia. Both tools are freely accessible through the [Australian Urban Observatory](#) (AUO).

To make the Brisbane version even more useful and relevant, we listened to the needs of policy makers and practitioners to ensure the new THAT-Brisbane tool met current policy interests in measuring health benefits within transport planning.



What did we find?

	<p>Collaboration and consultation with policy makers and practitioners revealed it would be useful to include a monetary translation of health benefits and evaluation of health cost savings for all simulation scenarios.</p>
	<p>Participants highlighted the importance of providing a more detailed overview of health, by including more chronic diseases in the tool, such as mental disorders and an expanded list of cancers.</p>
	<p>Policy makers should be encouraged to use the tool as evidence to support and advocate for the health benefits of transport planning.</p>

What did we produce?

New features of THAT-Brisbane include a "Value" tab, which calculates the value of improvements to community health by translating the Health-Adjusted Life Years (HALYs) from each scenario into dollar terms using the value of a **statistical life year**, which is the amount a society is willing to trade to reduce the risk of death for one year.

There is also a "Savings" tab, reflecting the **future reduction in spending** for each disease within the healthcare system because of the **increased physical activity** in the chosen scenario. Discount rates of 3%, 5% and 7% are used to translate these future amounts into an equivalent amount in today's terms.

The new tool includes additional cancers and depression, anxiety and dementia, raising the total number of diseases from seven to 11. Cancers are presented as an individual list and as an aggregate, to highlight that **each cancer has an impact** - some more than others.

We also created a capacity-building video to make it easy to understand and use the tool, to encourage uptake and application for advocacy and reporting purposes.

Scenario: replacing car trips under 2km with walking for all trip purposes

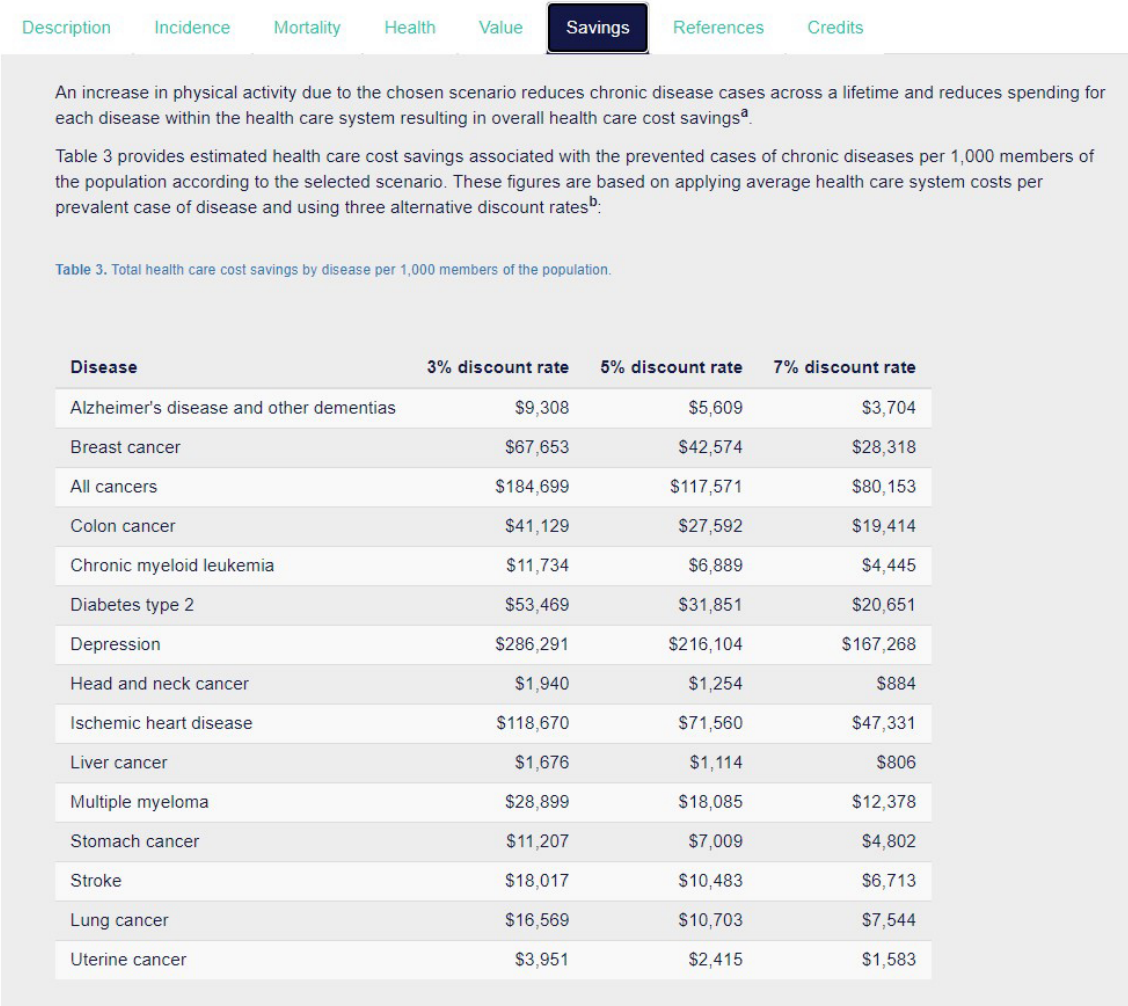


Figure 1: An example of the Savings tab from the tool, showing the estimated health care cost savings per 1,000 people when replacing car trips under 2km with walking.

Why does it matter?

Quantifying health and economic benefits is complex, but this tool makes it much easier for policy makers and practitioners to advocate and promote the benefits of walking and cycling. It will help strengthen prevention systems and intersectoral policymaking across health, transport, and urban planning. The metrics will assist policy and the development of transport infrastructure to reduce and prevent chronic diseases in the future.

Scenario: replacing car trips under 2km with walking for all trip purposes

Description Incidence Mortality Health **Value** Savings References Credits

The value of improvements to community health can be calculated^a by translating the Health Adjusted Life Years (HALYs) from each scenario into dollar terms using the value of a statistical life year^b. The value of a statistical life year is an estimate of the amount a society is willing to trade to reduce the risk of death for one year.

In the simulation model, HALYs are generated across time and are cumulative. Thus, to help us understand the value of HALYs across time in present day terms, it is necessary to use discounting^c to reduce HALYs generated at the future point in time. Discounted HALYs from these future points can be added up to give the aggregate value of HALYs in today's terms as a measure of the value of improvements to community health arising from the chosen scenario.

The size of the discount rate can impact the aggregated value of HALYs and there is considerable debate on what discount rates should be used (with some arguing that health should not be discounted at all).^[2] Hence, it is common to use a variety of discount rates to allow for differing risks, preferences and sensitivity when valuing health. The figures presented below were calculated using discount rates of 3%, 5% and 7% based on recent recommendations [3, 4] and represent the value of HALYs in present day terms resulting from an increase in physical activity from the chosen scenario.

The value of improvements to community health

The model estimates a total of **305,291** Health Adjusted Life Years (HALYs) gained for the scenario population, which is **152** HALYs per 1,000 members of the scenario population. The figures below represent the value of improvements to community health from the chosen scenario. These figures can be used in summary reports and for advocacy purposes^d.

The HALYs gained in this scenario have a statistical value of:

- **\$11,777,115** per 1,000 members of the population, when calculated using a discount rate of 3%,
- **\$7,210,756** per 1,000 members of the population, when calculated using a discount rate of 5%,
- **\$4,898,813** per 1,000 members of the population, when calculated using a discount rate of 7%.

Figure 2: An example of the Value tab from the tool, estimating the value of improvements to community health when replacing car trips under 2km with walking.

What next?

Development of THAT-Brisbane has established a need to create similar tools for other Australian cities, especially those experiencing rapid population growth and urban development. Two further projects building upon our liveability and agent-based modelling research are underway.

- **Joining Impact models of transport with spatial measures of the Built Environment (JIBE)** is developing even more detailed models to better inform urban and transport planning policy and practice in Australia and the UK. It is a project funded by the UK Medical Research Council and the NHMRC, co-led by Dr Belen Zapata-Diomedí at RMIT University and Professor James Woodcock at Cambridge University. More information can be found at jibeproject.com.
- **Developing tools for knowledge translation in transport and health modelling**, led by Dr Belen Zapata-Diomedí, is funded by VicHealth. This project aims to support equitable access to walking and cycling across Greater Melbourne through the use of complex modelling and a visualisation tool.

There is also a need for further training, to enable and enhance the use of these tools and build confidence in their use to positively inform preventive health policy, advocacy and infrastructure.



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The Australian Prevention Partnership Centre is funded by the NHMRC, Australian Government Department of Health, ACT Health, Cancer Council Australia, NSW Ministry of Health, Wellbeing SA, Tasmanian Department of Health, and VicHealth. The Australian Government also contributed through the Medical Research Future Fund. Queensland Health became a financial contributor in 2022. The Prevention Centre is administered by the Sax Institute.