



The Economic Business Case for Cycling

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Introduction

- I. Overseas Literature and Research
- II. Types of Benefits Identified
- III. The Benefits that Were Quantified
- IV. Property Values Analysis – a first cut
- V. The Benefits Assessment Tool



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I. Overseas Literature & Research

- It is difficult to quantify economic impacts of transport
- The economic evaluation process has underestimated the external costs of motor vehicles, and underestimated the benefits of cycling
- Traffic engineering practices have been biased in way that increases motor vehicle access and mobility at the expense of active modes
- The countries that have invested heavily in cycling have not bothered with economic evaluation or business cases (they take it as a given that it's worth the investment)

II. Types of Benefits Identified

Community Leaders (TA's, Regional and Central Govt)

Type of Benefit		Quantifiable
Infrastructure	Direct	High
Parking	Indirect/Direct	High
Current Account Deficit	Direct	Med/Low
Combining Transport/Recreation	Direct	Low
Livable Cities/Creative Class	Indirect	Low
Active Tourism	Indirect	Med/High
Biking contribution to GDP	Indirect	lack of data

II. Types of Benefits Identified

Households, Individuals, Residents

Type of Benefit		Quantifiable
Household Expenditure Savings	Direct	High
Health Benefits	Indirect/Direct	Med
Property Values	Direct	Med

II. Types of Benefits Identified

Local Business & Employers

Type of Benefit		Quantifiable
Employee Productivity/Health	Direct	Low
Efficient Use of Land (Parking)	Indirect/Direct	High
Property Values	Indirect/Direct	Med
Turnover	Direct	Specific
Attracting / retaining staff	Direct	Low

II. Types of Benefits Identified

- Some clear benefits left out of the report – for now:

Accident reduction benefits

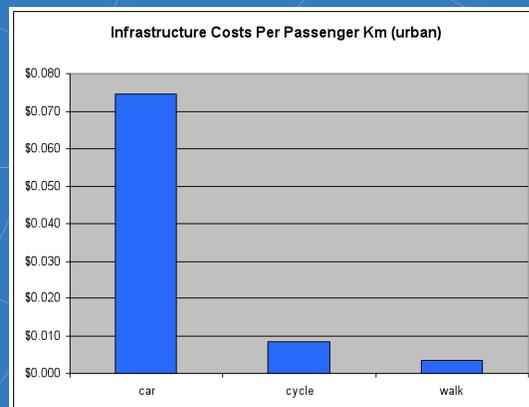
Greenhouse gas emission reductions



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III. The Benefits

Infrastructure: 27% of Local Govt budget spent on transport



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III. The Benefits

Infrastructure: National transport spending per trip shows that active modes are costing 14 times less

Per km is 5 times less

Mode	2001	2006	NLTP 06/07
	Number of trips p.a.		Cost in NZ\$ million
Car	1,090,557	1,274,448	\$1,424
PT	67,281	79,191	\$251
Walking/ cycling	133,209	143,553	\$6.5
	Cost/user	Cost/km	
Motorised modes	\$42,786	\$3,601	
Walking/ cycling	\$3,142	\$785	
Ratio	1:14	1:5	

III. The Benefits

Parking – Terminal Capacity

Over ¼ of land in NZ town centres is reserved for parking

Cost is equivalent to the cost of all car ownership and operation

This cost has been removed from transport sector → real estate

Cycles need 8-10 times less space than a car.

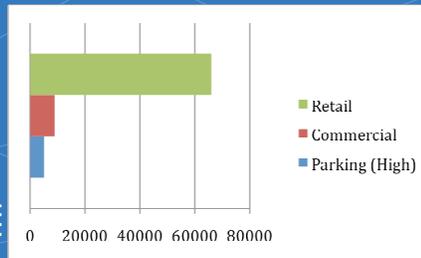


III. The Benefits

We know we have an oversupply of parking:
Lowers land values, fetches lower rental rates

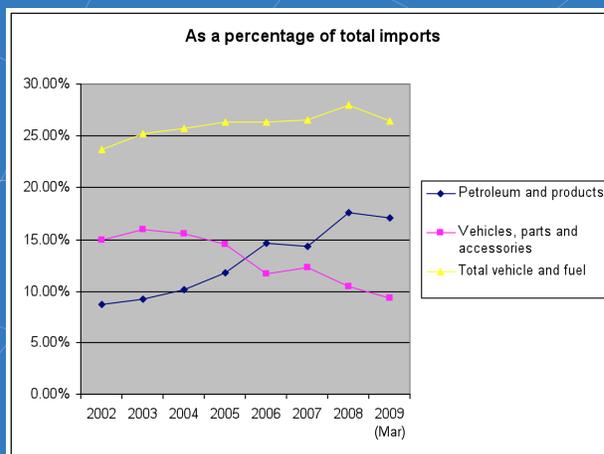
Properties without parking yield 15-60% more in rates for Councils, per sq/m, because their sites are used more intensively

Commercial space generates between 75 – 90% higher rental rates, whilst retail space earns more than 12 times the rent of a CBD car park.



III. The Benefits

Current Account Impacts: harder to quantify due to complexity of macro economic analysis



III. The Benefits

Business and Employers

Employee Productivity

No New Zealand studies, but there are studies that suggest active transport commuters have fewer sick days

Turnover

Highly context specific, most beneficial in town centres where land is valuable (car access more costly), higher densities support walking and cycling

Parking

common for retailers to overestimate benefits of car parks, underestimate spend of cyclist and walkers



III. The Benefits

Individuals and External

Health Benefits: \$3,100 per year (direct and indirect)

External & Internal Environmental Benefits:

CO₂ emissions – easy to quantify given agreed price of carbon

Water pollution and run off

Air pollution

Noise (difficult to quantify: property values analysis)

Crime and community cohesion: no clear robust research that can lead to quantification



III. The Benefits

Individuals and External

Fuel and Vehicle cost savings → \$13 a week

This could be much greater over time as there are closer destinations and more opportunities to forgo car ownership.

Car ownership is nearly **\$20 a day**. If 1% of Kiwi's could give up owning a car, it would be worth \$200m a year.

Property Values: Auckland City specific analysis

Found significant relationship between an active friendly variable and property price. 1% → 0.92%

If walking and cycling mode share were to increase to 10%, would be worth \$10,000 per property.



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IV. Property Values Analysis – A First Cut

1) Net out demographic factors that influence walking and cycling.

86% of the variation in walking and cycling commute rates are explained by the following 7 factors :

Average JTW distance for the AU (ie all mode JTW)

Average number of motor vehicles available per household

Median age of adults in the AU

Proportion of ethnic “Europeans” in the AU resident population

Proportion of current smokers in the AU resident population

Proportion of males in the AU resident population

Proportion of white-collar workers in the AU resident workforce



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IV. Property Values Analysis – A First Cut

We construct an index of walking and cycling (called “Active Friendly”) by subtracting from the actual value of active JTW choice the part that is predicted by the six demand-side taste shifters estimated previously.

For the Active Friendly variable to be a good measure of the supply-side attractiveness of active JTW choices, at least two assumptions need to be reasonably valid:

- (a) the omitted supply-side factors are not correlated with any of the included demand-shifters;
- (b) there are not many significant demand-side variables omitted from the econometric model.

Further research is required to confirm the validity of these assumptions.



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IV. Property Values Analysis – A First Cut

2) Hedonic Regression of property sales data with the “Active-Friendly variable” in addition to standard property attributes (view, size, grammar zone, etc). $R^2 = 0.82$

The “Active Friendly” variable is found to be statistically significant and positive $\rightarrow 0.92$

Requires further research, preferably with on the ground urban design assessments that can verify the active friendly variable.

Suggests that if Auckland City made changes to the built environment that increased active mode share from 9% to 20% (same as Wellington) it would be worth the equivalent of \$50,000 per property.



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V. The Benefits Assessment Tool

Spreadsheet model developed by Tim Hazledine (UofA)

Calculates the additional benefits to commuters and third parties of programs that make cycling and walking to work more attractive.

Uses values from the Economic Evaluation Manual
Plus estimated benefits for parking, marginal external road use costs

Makes the economic case for setting mode share targets, and then spending a certain amount to achieve those targets.

V. The Benefits Assessment Tool

If we achieve the same percentage of people walking to work as Canada (12%)

and the same percentage that bicycled to work in New Zealand in 1996 (4%)

it will generate over NZ\$1 million a day in benefits.

The cost of achieving this change is relatively minor compared to the costs of a single major roading project.