

# What happens when petrol goes up or buses go down?



www.viastrada.co.nz



www.arta.co.nz

Andrew Macbeth (ViaStrada Ltd)

John Lieswyn (ViaStrada Ltd)

Brian Horspool (Auckland Regional Transport Authority)

## Objective

This technical note looks at the travel behaviour of drivers and bus passengers when their chosen mode becomes rapidly more expensive or non-existent.

Demand elasticity and mode shift cross elasticities are estimated and compared with other research findings.

## The events

In the first half of 2008, petrol prices rose rapidly and motor vehicle traffic declined across the Auckland Harbour Bridge.

In October 2009, most Auckland scheduled bus services were suspended for a week because of an industrial dispute. Cycle traffic on Tamaki Drive increased.

## Auckland trip to work mode share

| Main Means of Travel to Work, 2006 Census | Auckland Region | Auckland City |
|---|-----------------|---------------|
| Drove car, truck or van                   | 81%             | 73%           |
| Passenger in car, truck or van            | 5.9%            | 5.3%          |
| Public bus                                | 5.8%            | 9.3%          |
| Train                                     | 1.2%            | 1.3%          |
| Motor cycle or power cycle                | 0.6%            | 0.7%          |
| Bicycle                                   | 1.0%            | 1.6%          |
| Walked or jogged                          | 4.9%            | 8.4%          |

## What happens when petrol goes up?

### Background

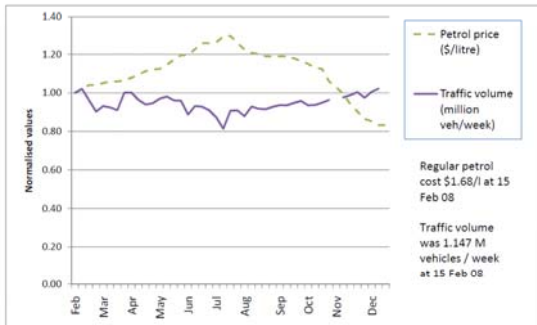
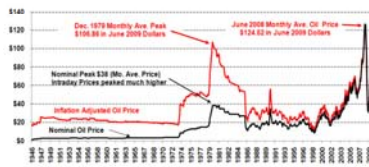
- Research by Kennedy and Wallis (2007) suggested a NZ short-run fuel price elasticity of -0.12

### Analysis

- Fuel prices rose 26% between mid-February and mid-July, to \$2.18 per litre
- Harbour Bridge traffic volumes dropped 7%
- Cross elasticity of demand -0.28

### Discussion

- This elasticity is significantly higher than references and suggests that Aucklanders may be more prepared to leave their cars at home when fuel prices rise than previously thought



## Transport and Energy

- No practical substitute for oil
- Inflation adjusted crude oil prices shown below (June 2009 dollars); oil prices now around US\$80/bbl
- Is our transport system ready to cope with future volatility in energy prices?

## What happens when buses go down?

### Background

- Litman (2008) found that between 4% and 8% of bus passengers would switch to bike if the bus was unavailable
- About 600 cyclists and 4,000 bus passengers use Tamaki Drive daily

### Analysis

- 15% increase in cycle traffic during bus stoppage
- Cross elasticity +0.025 (2.5%)

### Discussion

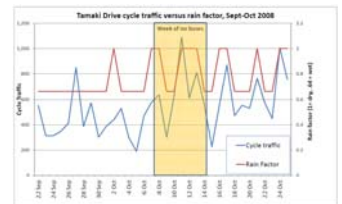
- Low elasticity may be due to relative unattractiveness of cycling in Auckland



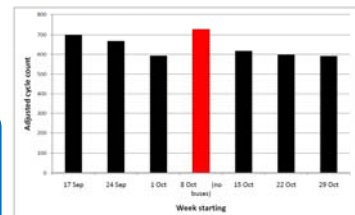
New continuous cycle counter on shared path and outbound lane



Raw cycle count data influenced by weather, school holidays



Data adjusted for weather, holidays



15% rise in cycle traffic

## Did people return to buses?

- For the three weeks post stoppage, the average patronage was 11% lower than the three weeks prior.
- The difference may indicate that some patrons chose to remain with their new travel arrangements.

## Conclusions

- Auckland Harbour Bridge traffic and petrol prices through the first half of 2008 show a relatively high cross elasticity of -0.28
- There may be a "threshold" price of petrol which triggers more rapid change in behaviour

- Only 2.5% of Tamaki Drive bus patrons used bikes to commute during the bus stoppage
- Most affected bus patrons chose not to cycle
- Most Auckland bus patrons do not appear to consider cycling as a viable alternative to the bus

## Contact details for authors

Andrew Macbeth  
027 2929 888; andrew@viastrada.co.nz

John Lieswyn  
027 598 5019; john.lieswyn@viastrada.co.nz

Brian Horspool  
021 298 5085; brian.horspool@arta.co.nz

