

MRQ

Monitoring Research Quarterly



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Monitoring Research Quarterly

(MRQ) is produced by Auckland Council's Research, Investigations and Monitoring Unit, RIMU. Each edition of the newsletter contains reports of RIMU's current work including information about recent publications, research, facts and trends about Auckland. RIMU publications are available on the Auckland Council and Knowledge Auckland websites.

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Transport perceptions survey 2012

RIMU's Land Use, Built Environment and Infrastructure Research Team recently received the results of the 2012 Auckland transport perceptions survey, *Community perceptions of personal transport choices*.

The survey asked Auckland residents how they felt about travelling around the region for work, study, leisure and shopping using private vehicles, public transport and motor cycles or by cycling and walking.

The survey has run using a similar format every two years since 2000 with an extra survey in 2011.

The 2012 survey results found that:

- 43 per cent of respondents felt that getting around the greater Auckland region was good (39 per cent in 2011)
- 52 per cent of respondents felt that their options for getting around had improved over the previous two years (49 per cent in 2011)
- 11 percent of respondents considered public transport a good option for all their work or study trips
- 35 per cent of respondents felt people could get around the region well by cycling (31 per cent in 2011)

The full report is available on the Knowledge Auckland website or from Lindsay Wilson, lindsay.wilson@aucklandcouncil.govt.nz

Valuing our environment

Ross Wilson, from RIMU's Social and Economic Research Team recently attended the New Zealand Agricultural and Resource Economics Society (NZARES) conference in Nelson. This year's conference theme was 'Green Growth – Logical Possibility or Oxymoron' and included sessions on environmental policy topics such as ecosystem services, market mechanisms and producer behaviour.

Ross presented his paper about New Zealand councils' use of cost benefit analysis.

The Resource Management Act 1991 requires councils to evaluate any proposed plan to manage the trade-offs between costs and benefits. The paper reviews and categorises existing case studies in New Zealand, and finds that few evaluations are fully monetised. Most are either purely qualitative (descriptive or matrices) or a mix of qualitative and quantitative (numerical or scoring).

The paper, *Cost benefit approaches to valuing nature: case studies in New Zealand*, is available on Knowledge Auckland or from ross.wilson@aucklandcouncil.govt.nz



Remote sensing of vehicle emissions 2003 to 2011

In 2006, vehicles contributed 40 to 86 per cent of the total air pollutant emissions in the Auckland region. The resulting cost of these emissions, such as increased mortality and hospital stays, is approximately \$465.7 million each year.

In theory, as new vehicles replace older ones and as fuel gets progressively cleaner, the amount of pollutants discharged per vehicle should reduce. However, changes in the fleet profile and increases in distance travelled can offset these reductions. This means motor vehicles remain a significant source of Auckland's air pollution.

To understand how motor vehicle emissions affect Auckland's air quality, NIWA conducted remote sensing of vehicle emissions from the light duty vehicle fleet in 2003, 2005, 2009 and 2011.

A recent report summarising these monitoring campaigns found that:

- the monitored vehicle fleet has aged progressively in each monitoring campaign since 2003, with the petrol fleet ageing more rapidly than the diesel fleet
- the average age of the Japanese used vehicles is now nearly twice the average age of the New Zealand new vehicles in the monitored vehicle fleet
- petrol vehicles demonstrated increased emissions with odometer readings. There was little evidence of emissions increasing with odometer readings in diesel vehicles
- the difference between the mean and median light vehicle fleet emissions for most pollutants has increased, suggesting the effect of gross emitting vehicles is increasing

- introducing improved emissions standards has significantly reduced mean emissions of carbon monoxide (CO), hydrocarbons, nitric oxide (NO) and uvSmoke (an indicator of particulate matter) for petrol vehicles. The trends are less conclusive for diesel vehicles but show a slight reduction in CO and uvSmoke as emissions standards improve
- the 2009 campaign suggested that average NO emissions were plateauing after 2005. The 2011 campaign confirmed that NO emissions per vehicle have plateaued.

Overall, mean emissions, after improving from 2003 to 2009 have now plateaued. This is likely due to older vehicles remaining in the fleet, not being replaced quickly enough and suggests that accelerated vehicle scrapping programmes may be worth revisiting. In addition, the impact of gross emitters has increased significantly, suggesting the need for more comprehensive emissions testing at warrant of fitness inspections.

Despite increasingly tighter vehicle emissions requirements, current standards are not delivering the expected improvements in actual emissions. Understanding how the overall fleet emissions are changing over time is critical in determining if policies and practices will provide the desired air quality outcomes for the region.

The emissions study report by NIWA for Auckland Council is published as an Auckland Council technical report, TR2012/032: Kuschel, G., Bluett, J and Unwin, M. *Trends in light duty vehicle emissions 2003 to 2011*.

Geographic relationships between households and retail or service centres in Auckland

A study is currently being undertaken by RIMU to investigate the geographic location of retail stores in Auckland and their effect on households' travel and time efficiency.

The retail sector is a major driver of urban form (the spatial layout and structure of different land uses within the region) and how the region expands geographically.

Urban form changes because of complex spatial interrelationships that occur between household demand and retail supply across the urban economy. Therefore it is important that smart growth and centres-focused planning considers the wider urban spatial economy and the role of local areas within it.

The first stage of research from RIMU's spatial efficiency in land use planning project investigates these spatial relationships in Auckland's urban structure. The project aims to develop evidence on the impacts of different urban structures and forms. Spatial efficiency – that is, the ease and efficiency of interaction to meet household and business needs across the city – is the focus of the project.

Understanding the role of the household sector across different centres and areas is relevant to determining the impact of different urban forms on households' spatial efficiency, and the effective management of retail is important to achieving the Auckland Plan land use strategies.

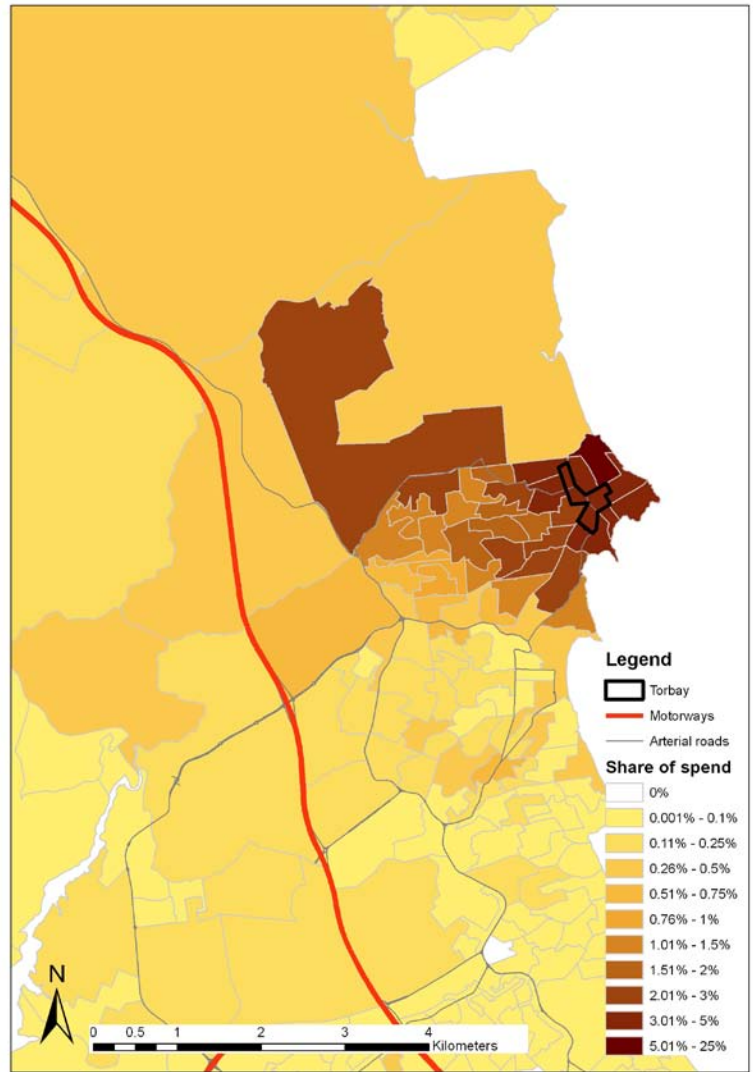
The research identifies a detailed picture of how households meet their needs within the current urban structure, where needs are met across a range of different centres and centre types. Data about the spending transactions of people in 2700 residential neighbourhoods, shopping at 100 Auckland retail or service centres was analysed. Also, the spatial role and extent of centres was quantified, an important input to calculating travel and time efficiency for households.

The research found that:

- Auckland has an intricate urban structure driven by complex spatial patterns of household demand and retail supply
- patterns of demand and supply differ geographically due to household characteristics, retail specialisation and the relationships of local areas to the wider Auckland spatial economy
- minor urban centres had the smallest geographical catchments, with 80 per cent of their spend occurring within eight kilometres
- distance effects were largest for rural/satellite centres, with 80 per cent of spend from households within 26 kilometres
- variations occur within centre types and between different spend categories
- food and liquor spend was most highly localised
- medical services had the greatest distance effect.

The full report, *Understanding the geographic relationships between households and retail/service centres across Auckland's urban structure*, and an executive summary are available on Knowledge Auckland or from Susan Fairgray, susan.fairgray@aucklandcouncil.govt.nz

Geographical origin of Auckland household spend in Torbay, 2011



Road network distance (km) containing cumulative shares of Auckland household spend, 2011

Centre/area type	50%	60%	80%	90%
City centre	9	11	16	23
City centre fringe	6	8	14	21
Major urban	4	5	11	20
Minor urban	3	4	8	17
Non-centre	7	8	13	22
Rural/satellite	10	14	26	56
Sub-regional	6	8	13	21
Survey total	5	7	13	22

Date source: Marketview Ltd and Auckland road network marix

Walking to train stations

A 2010 transport survey checked if an 800 metre radius (or 10 minute walk) from Papatoetoe train station is representative of an acceptable walking distance for rail passengers. The Papatoetoe survey results showed that the median walking distance to the train station was actually 1200 metres rather than the assumed 800 metres.

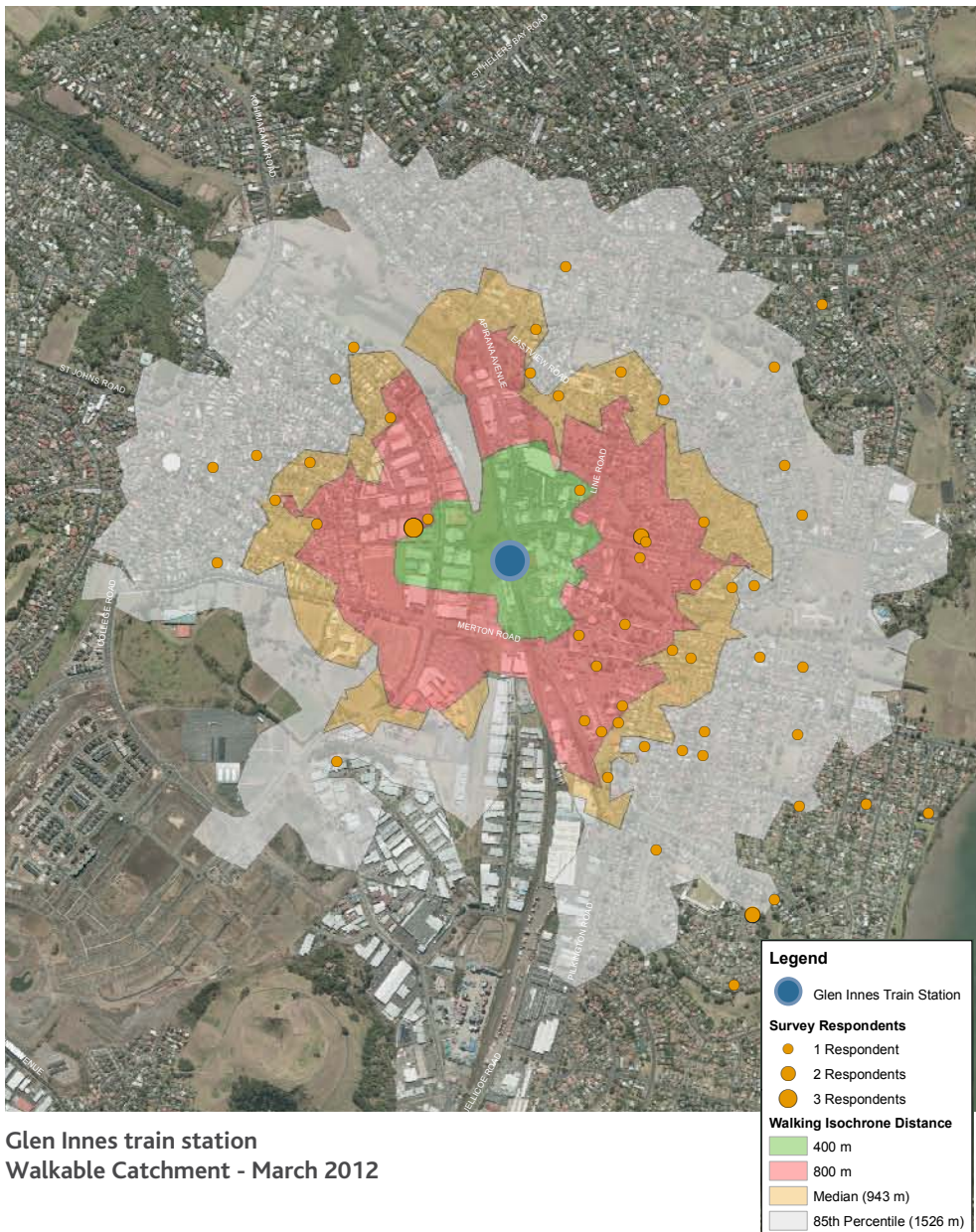
RIMU researchers conducted a follow-up survey in March 2012 to collect more evidence on what is an acceptable walking distance for passengers at other Auckland train stations. Passengers arriving at New Lynn, Glen Innes and Mt Albert train stations were surveyed, using a similar method to the 2010 Papatoetoe survey.

The results of the three new train station surveys show that:

- more than 50 per cent of people who answered the survey walked further than 800 metres to get to a train station;
- more than 15 per cent of people who answered the survey walked further than 1500 metres to get to a train station; and
- walking is the most significant mode of travel for trips less than 2000 metres.

The results show that an 800 metre radius underestimates passengers' actual walking distance for the New Lynn, Glen Innes and Mt Albert train stations and is not representative of the stations' walkable catchment areas. Additional surveys are planned for 2013 to further test if an 800 metre radius is representative of the walkable catchment for train stations in Auckland.

The Auckland Council technical report, *Walkable catchments analysis at Auckland train stations* is available on the Auckland Council website.



Glen Innes train station
Walkable Catchment - March 2012

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