# System thinking in our towns and cities

How integrated land use, transport planning and urban design can create great places to live, work and play

NZ TRANSPORT AGENCY
WAKA KOTAHI

New Zealand Government

# What will we cover?

- How transport enables wellbeing and liveability
- How land use and transport interact
- Why we're not fully realising the benefits yet
- Areas of opportunity
- Measuring success
- So what do we do next?

# How transport enables wellbeing and liveability

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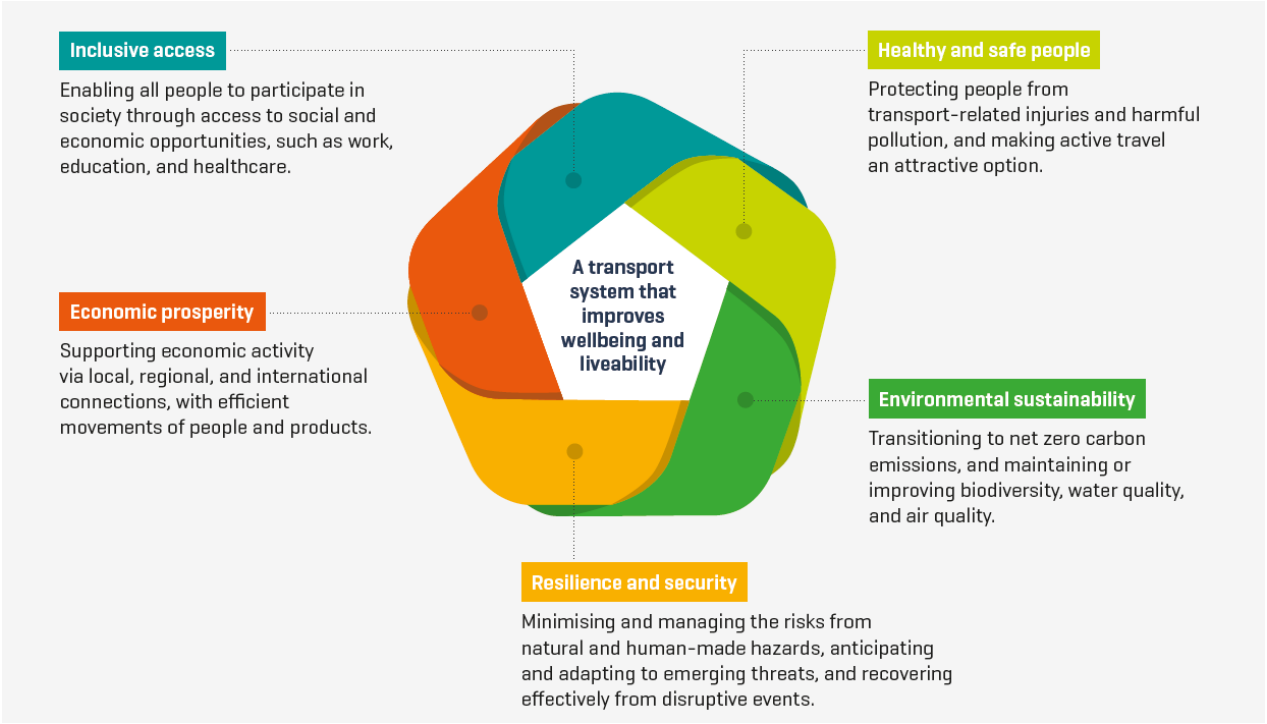
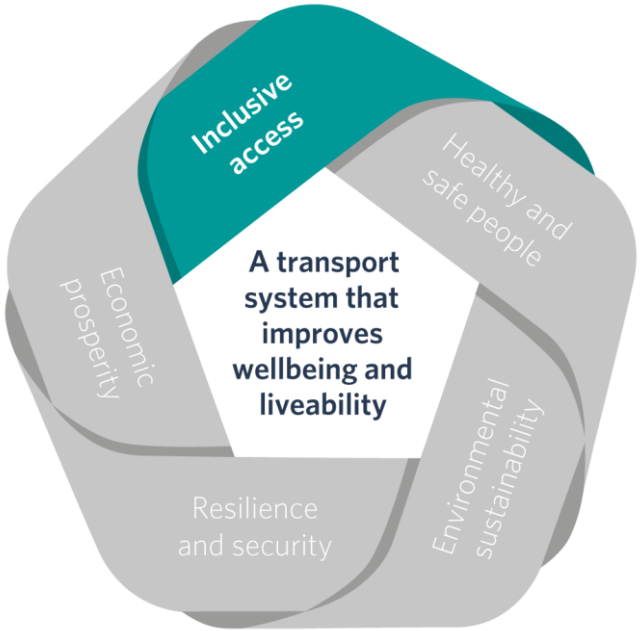
# The transport system delivers on these outcomes



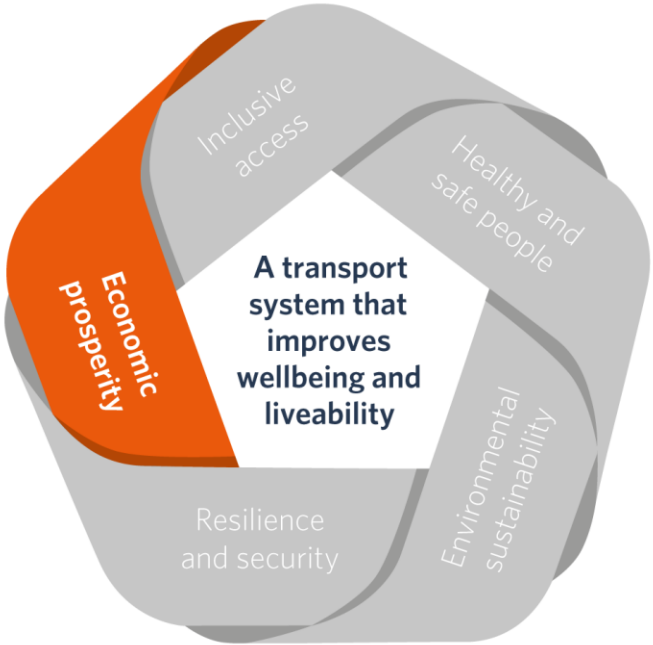
# *Enabling all people to participate in society through access to social and economic opportunities, such as work, education and healthcare.*




A well integrated land use and transport system can support towns and cities by:

- Land-use patterns that reduce the need to travel and improve transport choice
- Road network layouts that improve connectivity within communities, and provide transport mode choice
- Inclusive design that provides for people with few choices
- Quality public realm, including roads and footpaths, that influences the uptake of walking, cycling and public transport

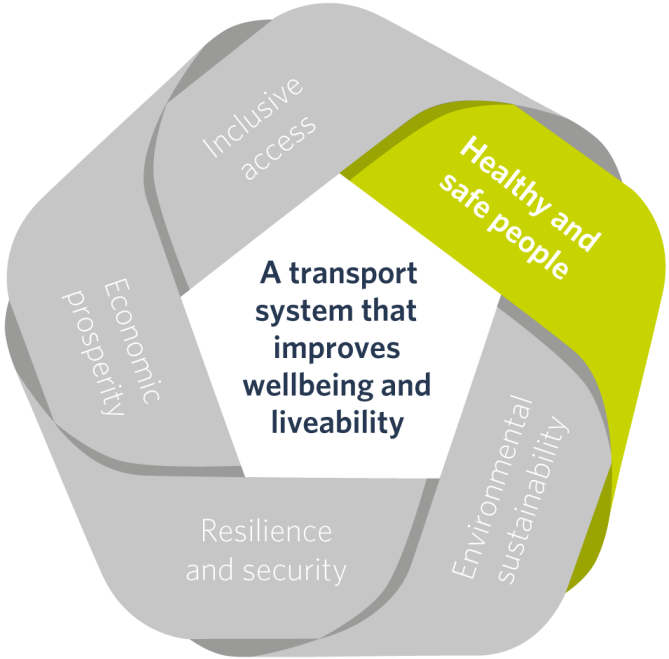
# *Supporting economic activity via local, regional and international connections, with efficient movements of people and products*




A well integrated land use and transport system can support towns and cities by:

- Connecting employers with workers, customers, suppliers and other businesses
- Improving access to key centres to support agglomeration benefits
- Supporting urban regeneration and redevelopment to improve street life and local economic activity
- Making New Zealand a world-class tourist destination

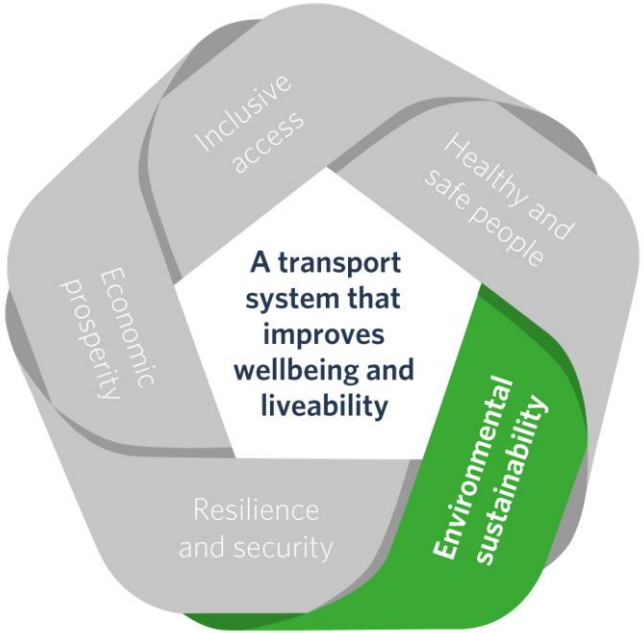
# *Protecting people from transport-related injuries and harmful pollution, and making active travel an attractive option*




A well integrated land use and transport system can support towns and cities by:

- Slowing speeds (<50 kph) to minimize risk
- Separating travel modes where slow speeds are not possible
- Prioritising walking, cycling and public transport to reduce traffic volumes
- Creating public spaces that are safe, comfortable and interesting
- Improving air and noise quality

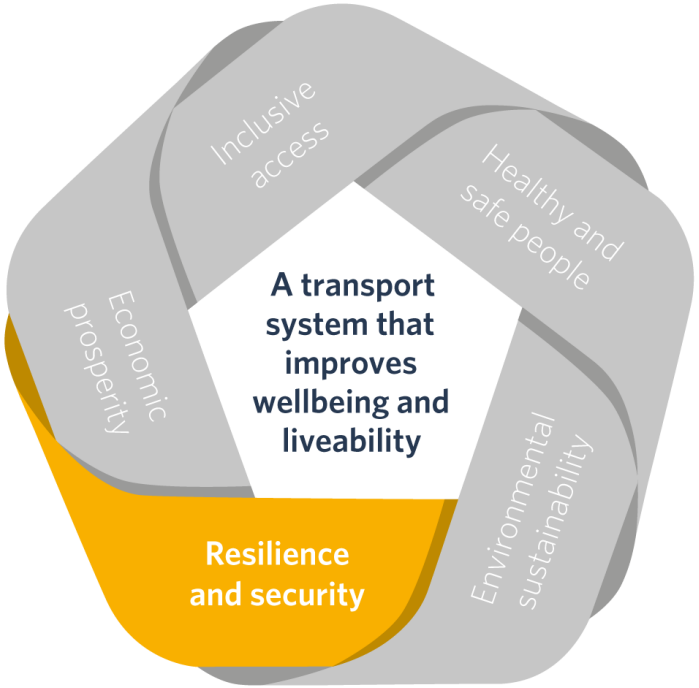
# *Transitioning to net zero carbon emissions, and maintaining or improving biodiversity, water quality and air quality*




A well integrated land use and transport system can support towns and cities by:

- Land use patterns that reduce the dependency on private vehicle travel and reduce emissions
- Pricing emissions to shape travel behaviour, encouraging more use of public transport and active modes, and the uptake of electric vehicles
- Enhancing or mitigating impacts on natural environment and biodiversity through green infrastructure

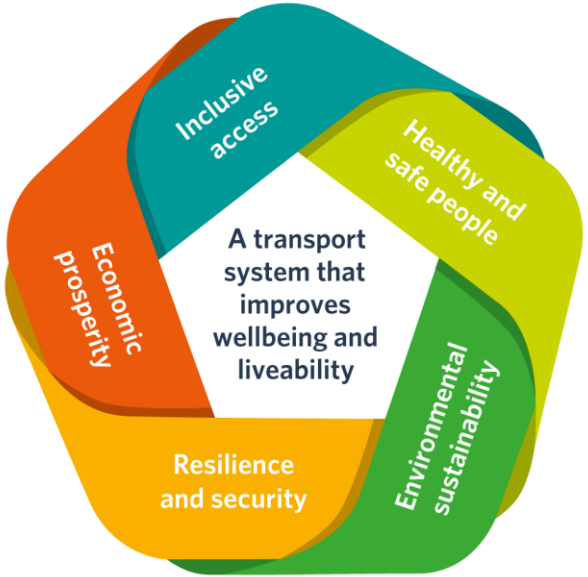
# *Minimizing and managing the risks from natural and human-made hazards, anticipating and adapting to emerging threats, and recovering effectively from disruptive events:*




A well integrated land use and transport system can support towns and cities by:

- Providing alternative routes or transport choices for communities in the event of disruption, and enabling faster recovery
- Reducing dependency on one mode of transport
- Shorter average work to home distances
- Community connectedness vs social isolation
- Supporting adaptation to climate change

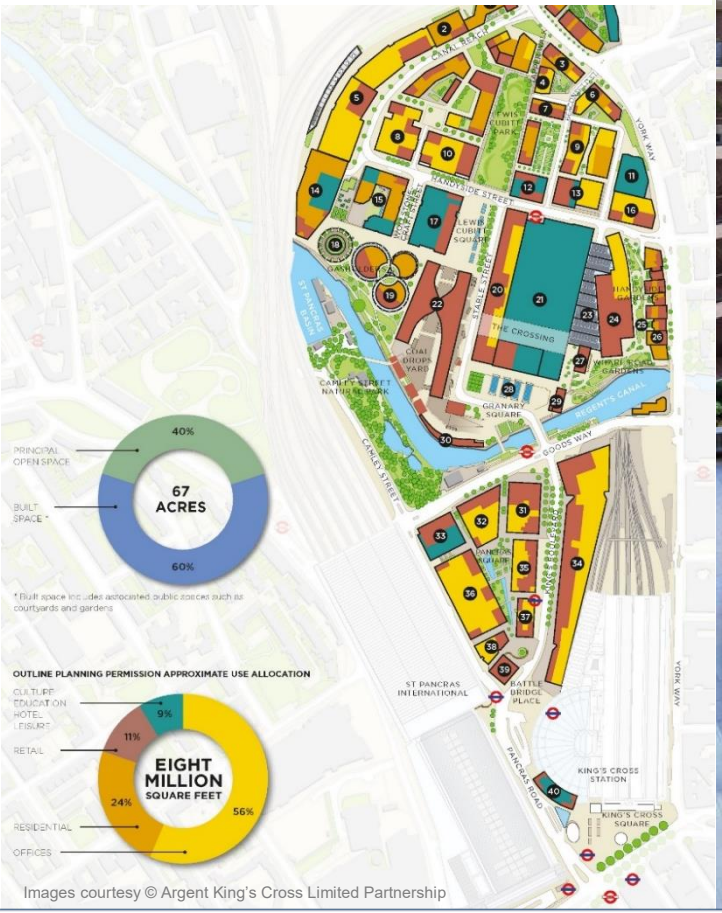
# Systems thinking requires partnerships

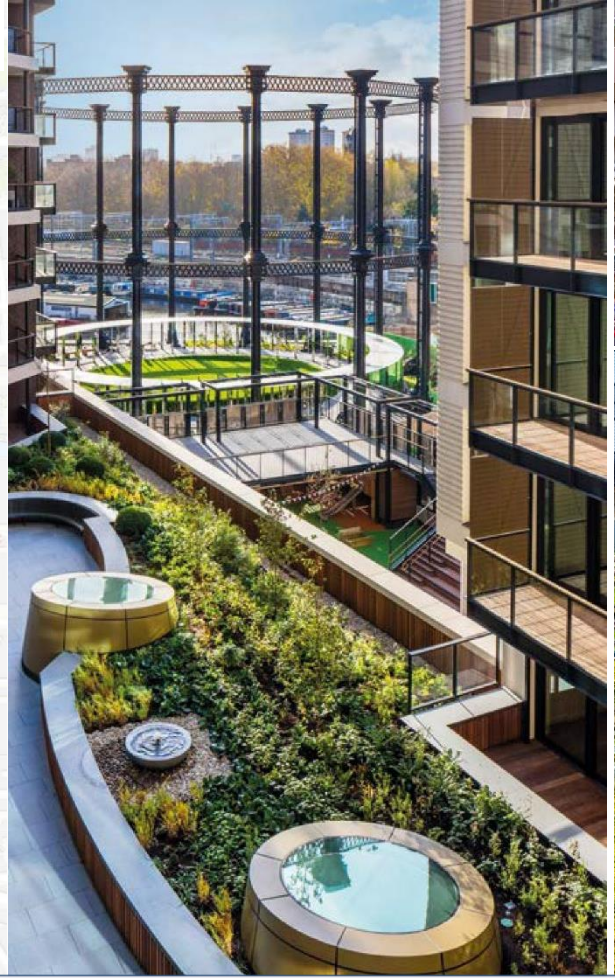


# Hobsonville Point, Auckland


Images courtesy © hobsonvillepoint.co.nz/media-resources

# Kings Cross, London



Images courtesy © Argent King's Cross Limited Partnership

# New Plymouth, Taranaki

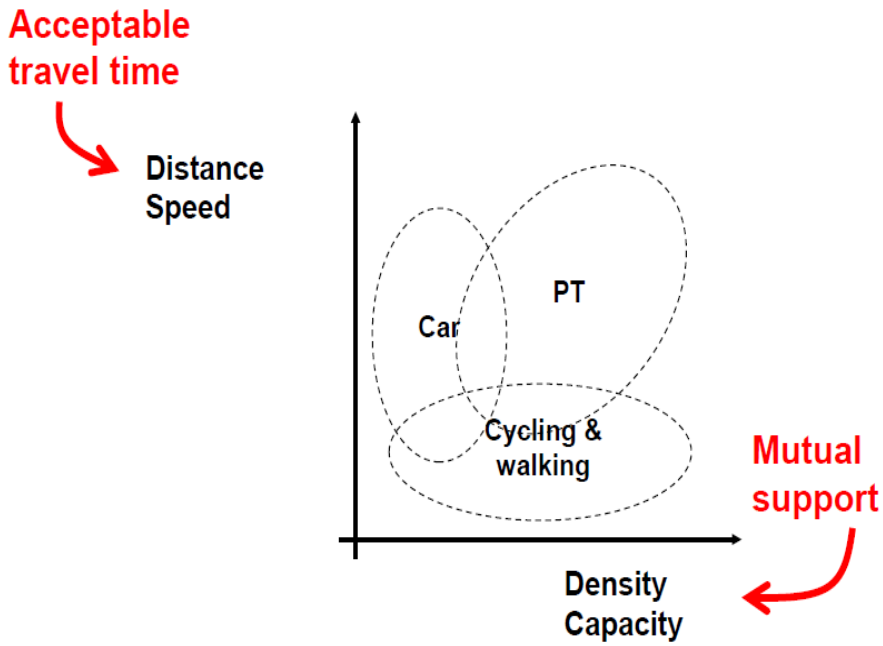

Images courtesy © hobsonvillepoint.co.nz/media-resources

| From | To |
| --- | --- |
| Urban sprawl | Compact urban form |
| Car dependency | Less reliance on private vehicles |
| Road safety | Healthy built environments |
| Transport reacting to land use demand | Integrated land use and transport planning |
| Inconvenient and unattractive walking, cycling and public transport | Convenient and comfortable choices |
| 50kph in zones with lots of people | 30kph in zones with lots of people |
| Stressful, noisy, dangerous city roads | Complete streets, more relaxed spaces for people |
| High connectivity for vehicles | High connectivity for public and active modes |

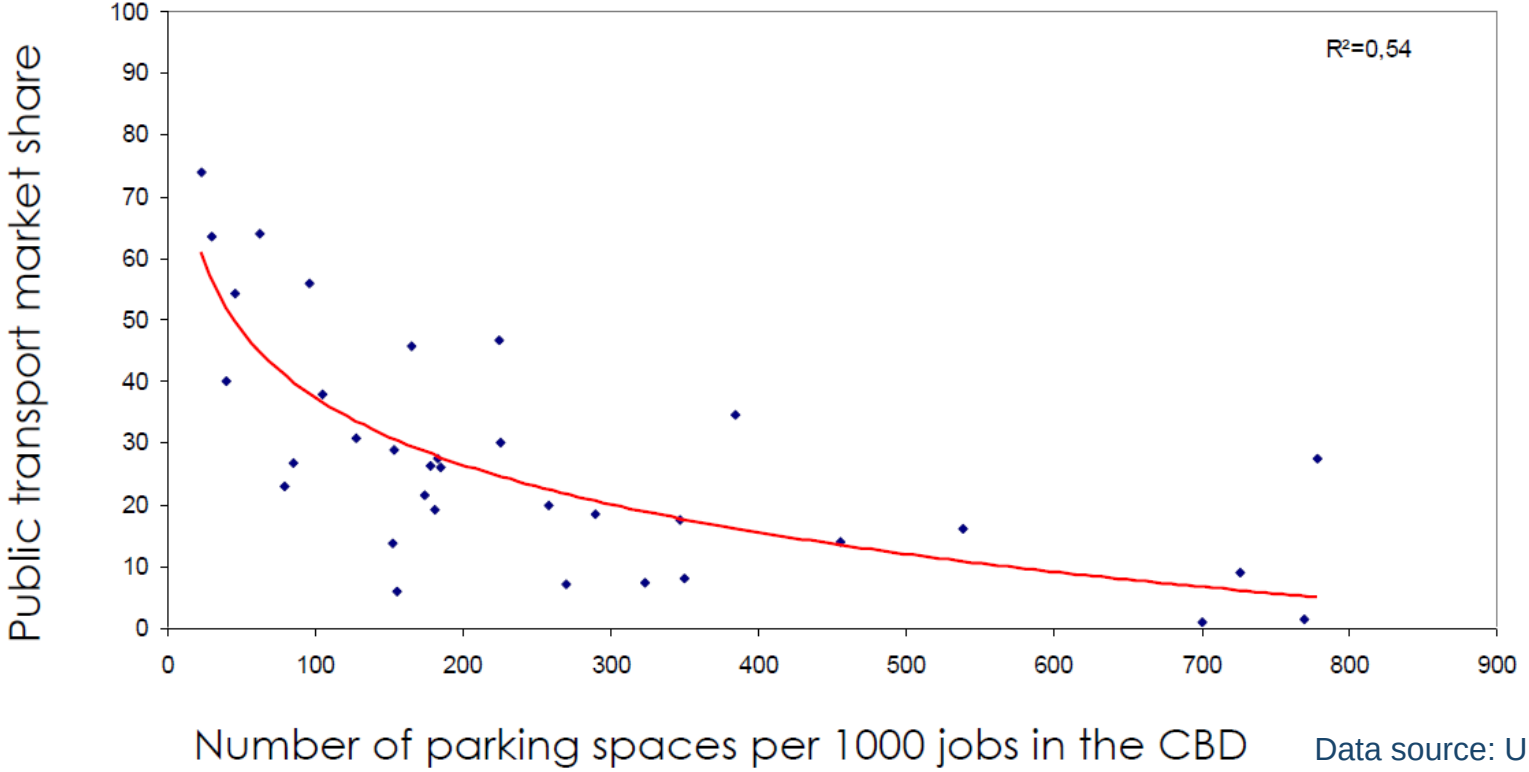
# How do land use and transport interact?

# Land use planning can….

- Reduce the need to travel through greater density and mixed use development
- Shape urban form, streets and public realm
- Support the viability of public transport
- Target growth to where network capacity exists
- Manage car parking to influence mode choice
- Build walking and cycling connectivity into development
- Set requirements (regulatory and non-regulatory)



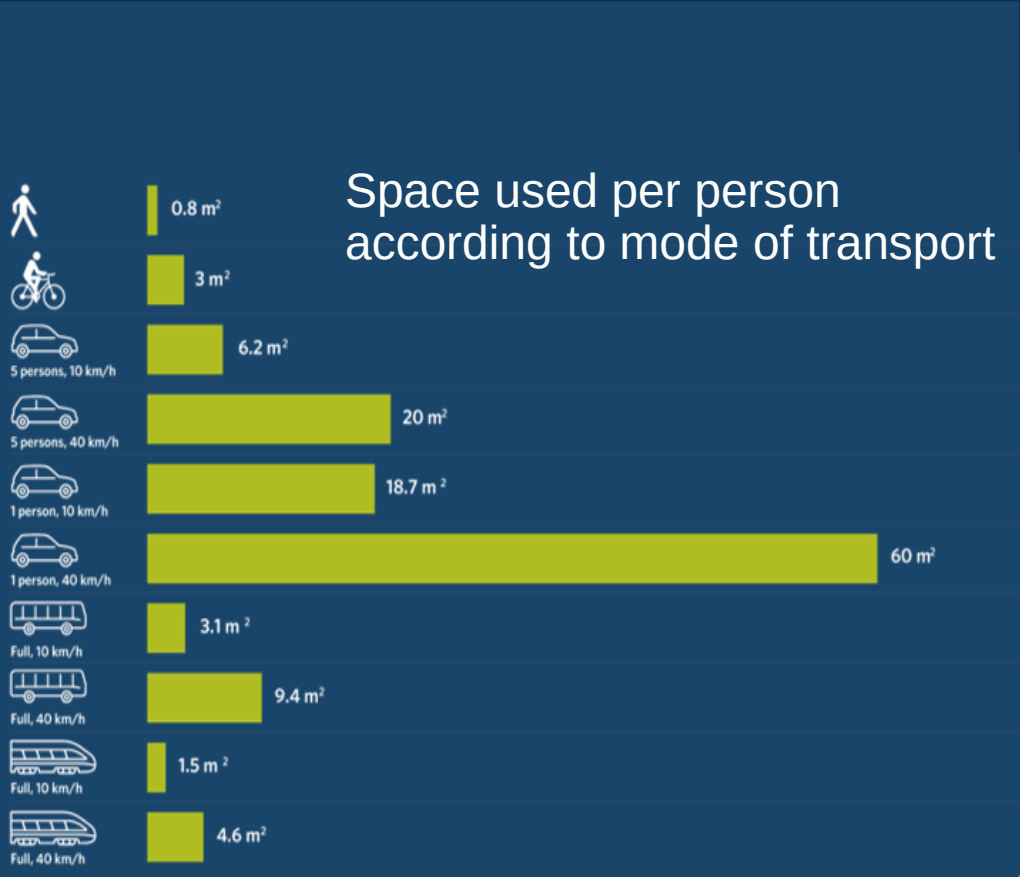

(Bertolini & le Clercq, 2003)



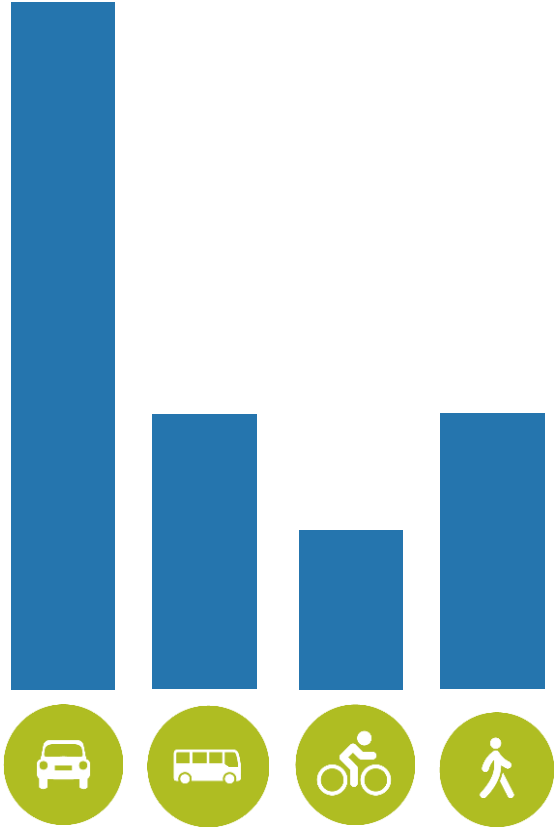

Data source: UITP, 2015

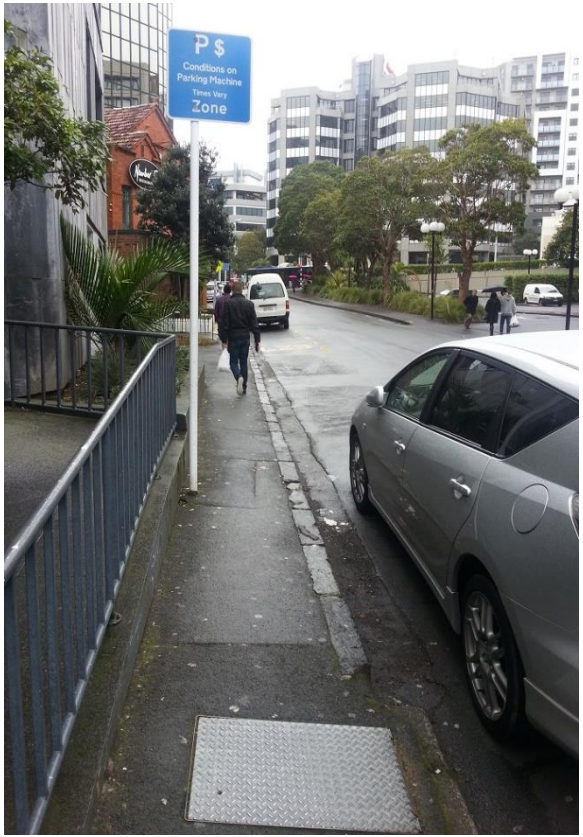
# Network planning can….

- Shape cities, urban form and development
- Prioritise the most efficient transport modes to optimise land use
- Reduce car dependency by providing attractive transport options
- Improve accessibility for all
- Balance customer levels of service
- Create safe and healthy communities




From : Step 2025, Urban Mobility Plan Vienna




P $
Conditions on
Parking Machine
Times Vary
Zone


NORTHERN EXPRESS
Northern Express
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# Safer cities by design


**Probability of pedestrian death from impact at:**

# Urban design can….

- Help frame the system and outcomes
- Give priority to people over vehicles
- Make walking and cycling more attractive
- Help build community buy-in to street changes
- Deliver place-making benefits that encourage people to stay, spend and participate
- Create a sense of safety, security and place
- Make the street healthier for people


# *Wellington City – land-use planning, place making and transport settings aligned to support vibrancy and liveability*



- 30 year transition from grey 9-5pm employment centre to vibrant 24 hour city
- 1990s – removed activity based zones and minimum parking requirements
- Public transport system that supported growth
- Targeted investment in urban design and placemaking
- Transport supported shifts with improved walkability and minimized community severance
- Accommodation of growth in centre supported car-free living and deferred need for more infrastructure
- Still work to do to improve safety of walking and cycling

# Why is it not being realised?

# Planning and regulatory environments disconnected

| Planning | Regulatory framework |
|---|---|
| Land Use | Resource Management Act |
| Transport | Land Transport Management Act |
| Urban development | Local Government Act |
| Urban design | National Policy Statement on Urban Development Capacity |
| Local Government Financial planning | Local Government Act |

# Current policy and data environment not yet mode neutral

- Unbalanced Evidence Base
  - Most data skewed towards vehicle throughput and travel times
  - Transport models don't easily account for active modes, or relationship between transport and land use
  - Little consideration of more qualitative evidence base
- Lack of strong and ambitious targets
- Road safety previously vehicle focussed
- Monitoring assets not outcomes
- Customer levels of service are unbalanced between modes
- Adding capacity and increasing convenience for private vehicles induces demand and increases sprawl

# Cultural bias towards vehicle-centric approach to transport

- NZ cities largely developed during rise of automobile industry
- Much of the growth in the past 50 years (densities, road layouts and limited mixed use) has embedded a reliance on private vehicles
- Conflicts of road space reallocation
- Media creates hostile environment for change
- Sector resistance to experimentation
- Siloed thinking and working
- Public fear of density

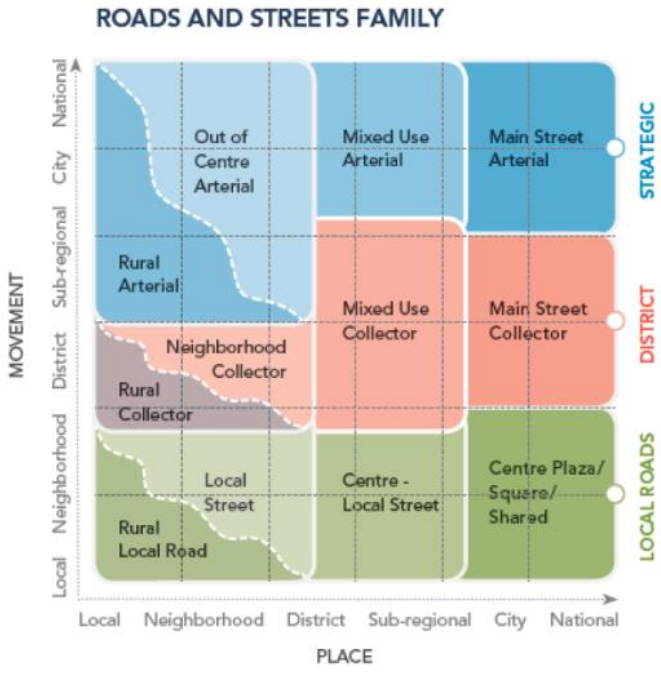
Photo credit: Porirua City Council

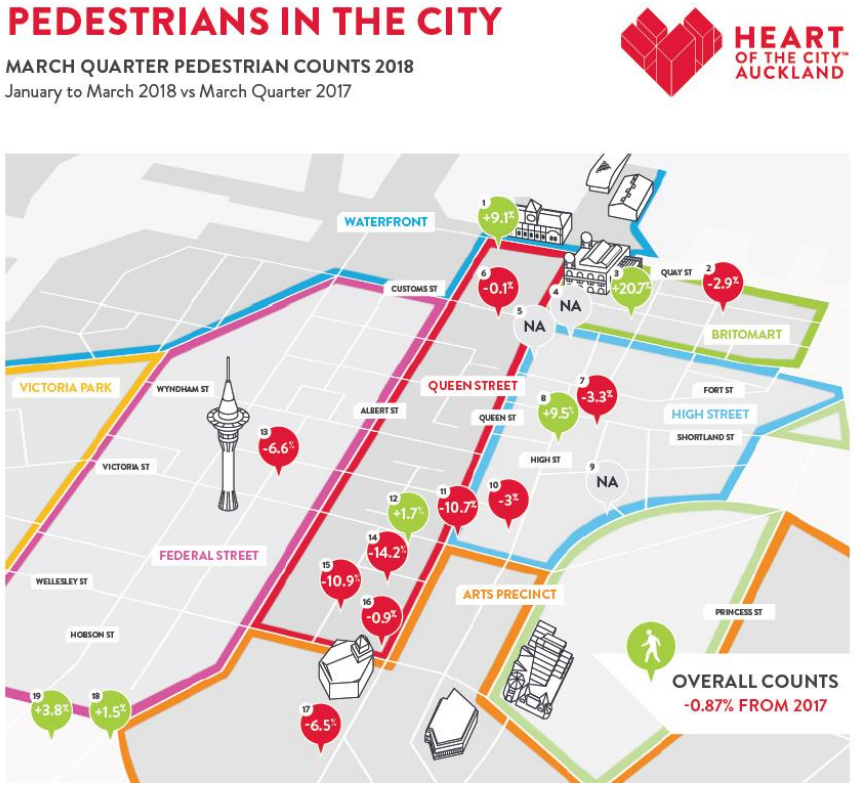
# Urban mobility is a adaptive challenge

| Technical Problems | Adaptive Challenges |
|---|---|
| Easy to identify and define problems | Difficult to identify or define |
| Can often be solved by an expert | Can require changes in values, belief, roles, relationships & approached to work |
| Technical Solutions | Community solutions, consultation, multi-disciplinary |
| Implementation often quick and easy - clear | Change in numerous places required – across organisational boundaries |
| Require change in one or a few isolated places | Solutions often experimental, discoveries, can take a long time to implement |

# Areas of opportunity

# Movement and place approach to evidence



# Rebalance levels of service across modes

*AMETI Eastern Busway*

*Christchurch City Council Major Cycleway Route*

# Democratise speed


# Street retrofitting – present day

# Street retrofitting – digital backbone

# Street retrofitting – compact parking

# Street retrofitting – mobility options

# Street retrofitting – greenery

# Street retrofitting – shared surface

# Street retrofitting – flexibility

# Transit Oriented Development


# Travel Demand Management

## Short term

- Travel information
- Employing two-way digital channels such as apps, social media
- Incentives for new services
- Promotion and advertising
- Travel planning

## Medium term

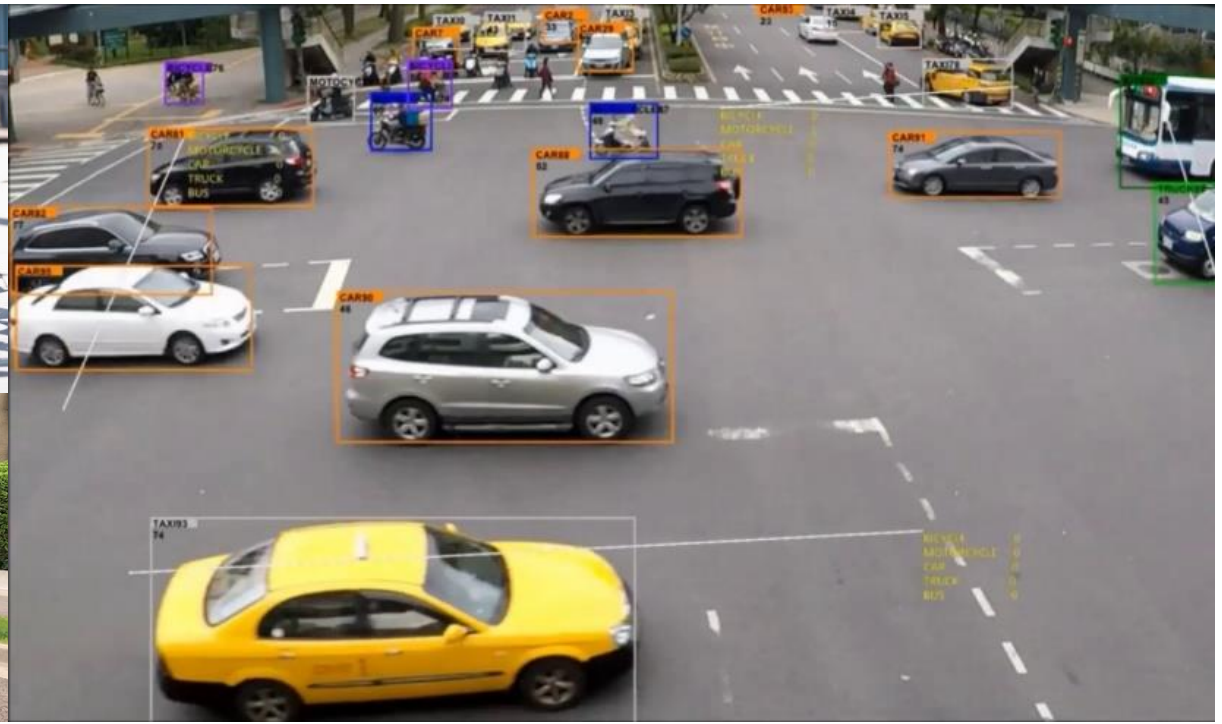
- Prioritising between modes on the transport system
- End of journey facilities
- Working with organisations
- Tolling, parking management
- Education
- Payments

## Long term

- Shape of the transport system (providing new options)
- Changing land use
- Congestion pricing
- Social, cultural and political change
- Vehicle technologies

# Shared mobility and future technology





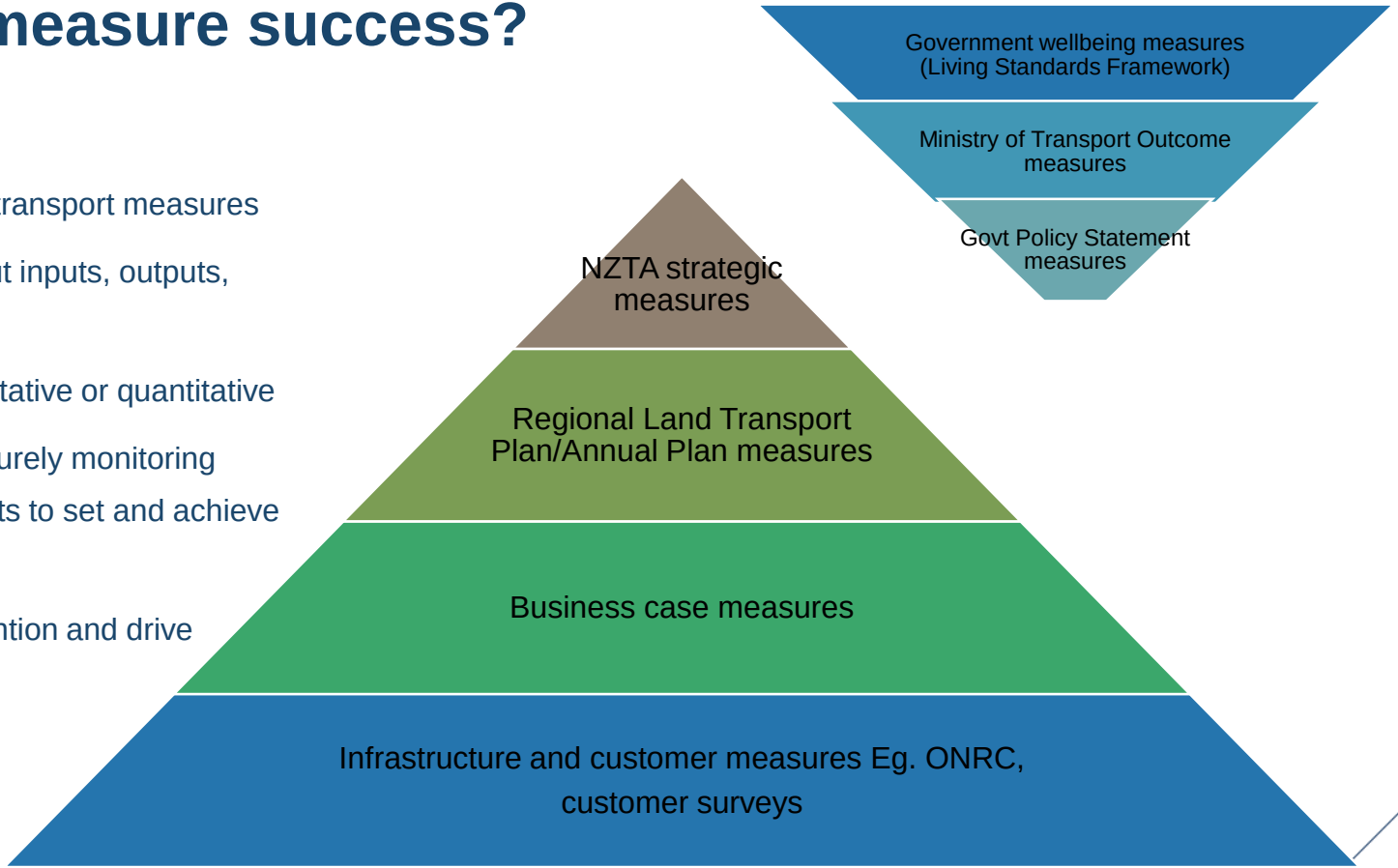
# Mobilising change

- Interim measures and tactical urbanism are good for testing ideas, showing progress and re-envisioning space
- Iconic one off events can help create momentum for change
- Proactive media and communications are important for public buy-in
- Resourcing for building social license for change more intensive than BAU activities

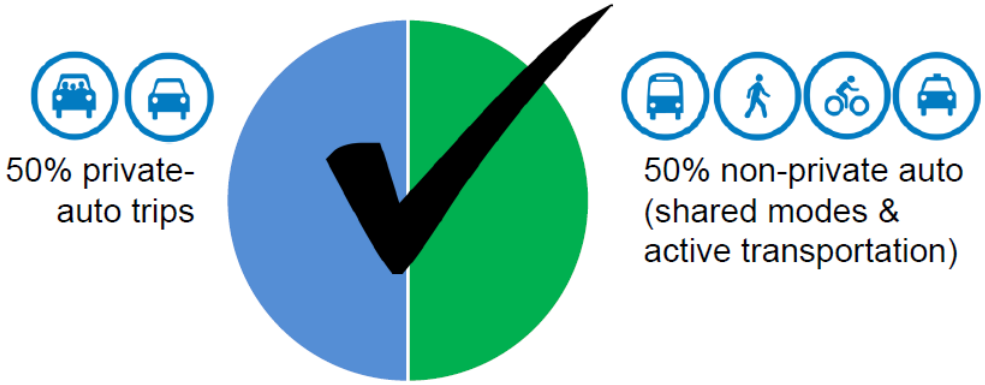
# How do we measure success?

# How do we measure success?

- There is a cascade of transport measures
- Measures can be about inputs, outputs, impacts and outcomes
- Measures can be qualitative or quantitative
- Measures can be for purely monitoring (KPIs) or include targets to set and achieve goals
- Targets can focus attention and drive success



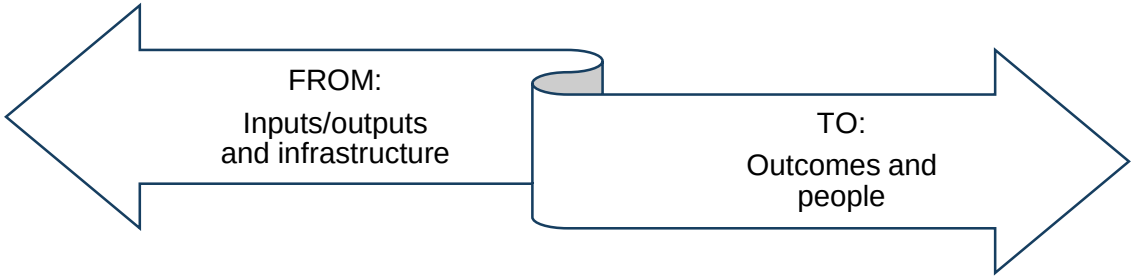
# San Francisco is at the target mode share level




FY 2018 Target

Data Source: San Francisco Transportation Trends presentation, SFMTA, 2015

# Changing the nature of what we measure




| | | |
|---|---|---|
| $$ invested | → | Impact of investment on the wellbeing of customers |
| Throughput of vehicles | → | Throughput of people |
| Travel times savings | → | Access to opportunities |

# Current targets in NZ and how we're tracking

| | Private Vehicle | Public Transport | Cycling | Walking | MM Targets |
|---|---|---|---|---|---|
| Tauranga City | 90% | 2% | 3% | 4% | 20% |
| Auckland | 84% | 8% | 1% | 5% | 45%* |
| Hamilton City | 86% | 3% | 4% | 7% | 29%** |
| Wellington City | 53% | 21% | 4% | 21% | 59%*** |
| Christchurch City | 84% | 4% | 7% | 5% | 32% |
| Dunedin City | 82% | 3% | 3% | 12% | 40% |

* Trips in the morning peak from 23% baseline **Proposed ***cordon count not JTW

# So what do we do next?

# How is NZTA adapting to this challenge

- Evolving the Investment Decision Making Framework – with greater weight on access and transport choice
- Evolving the ONRC to be multi-modal
- Developing best practice design guidance and standards
- Changing rules and regulations with the Ministry of Transport
- Investing more in walking, cycling, public transport, travel demand management, optimisation and technology
- Developing new measures and guidance for the sector to use
- Capability building programmes
- Focus on technology and geo-spatial analysis tools
- Changing our structure, resourcing model and diversifying our expertise
- Using the research programme to advance our knowledge and understanding

Do you have strong targets for modal shift?

Do you have a strong vision? How are you selling it to your community?

What evidence are you collecting to inform your decisions?

Are your district plans aligned to meet your targets?

Are you making your town or city easier to drive in or more people-friendly?

What levels of service are you providing for different modes of transport?

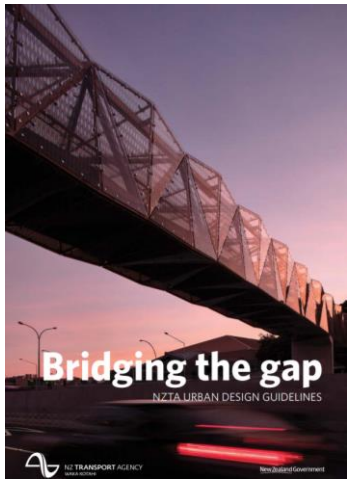
What are you regularly monitoring?

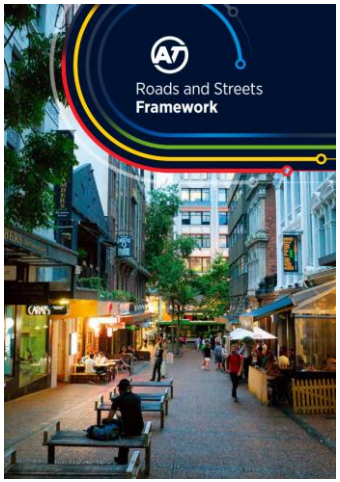
Are you slowing speeds in areas of high activity?

Are you using parking rules and supply to manage demand?

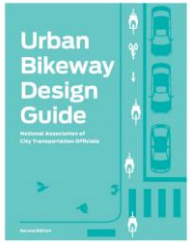
Are you growing around key destinations or high quality public transport?

# Existing sources of information

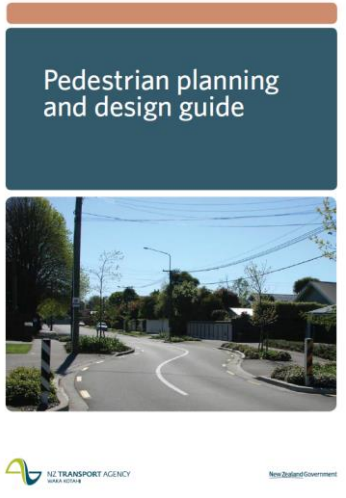







NZTA Contact
Claire Pascoe
Lead Advisor – Urban Mobility
Claire.Pascoe@nzta.govt.nz