Land use transport integration in Auckland: rhetoric or reality?

Frederick Smithers

Post-Graduate Student, The University of Auckland, School of Architecture and Planning

M Urb Plan Dissertation, prepared as part of the Ministry of Transport Masters Scholarship Programme

Tuesday 23 March 2021

>> Population growth (densification proxy) in Auckland 2006 – 2018. 1 dot = 1 new resident in 2018 since 2006. Source: Stats NZ 2018 census



KIA ORA! WHO AM I?



- Born & raised in Melbourne, B Envs (Env. Geog.), Uni Melb
- Studied on exchange at Uppsala University, Sweden
- Moved to Auckland in 2018, M Urb Plan (Prof), UoA
- Worked in planning and sustainability across private, academic and public sectors
- 2021 Ngā Kaihoe, Planning & Investment at AT

Urbanist, outdoors enthusiast & transformative sustainability advocate

THIS PRESENTATION

- Some introductory thoughts
- A racing summary of my study
 - Census data analysis
 - More 'sustainable' travel patterns?
 - NPS UD
 - A step-change in transport integration planning?

These are my views, not necessarily my employer's

URBPLAN 741 AND 715

MASTER OF URBAN PLANNING DISSERTATION

A dissertation submitted in partial fulfillment of the requirements for the Master of Urban Planning (Professional) at Te Whare Wananga o Tämaki Makaurau The University of Auckland

RESEARCH DISSERTATION



A study of densification and commute patterns in Auckland since 2006 and their implications for policy

> Supervisor: Prue Taylor Policy Adviser: Greg Mossong Submitted 20th November 2020

KEY QUESTIONS

Is densification linked to lower carbon emissions from commuting in Auckland? Is the NPS UD a stepforward or backward for integrating land use and transport in cities in Aotearoa? Will it catalyse the step-change needed?

What do climate justice and equity have to do with decarbonising transport?

BUT BEFORE WE GET INTO THE STUDY... A BRAIN-TEASER!

How long would you have to pedal on a bike for to produce the same amount of energy as is in one barrel of oil?



- a) 4.5 hours
- b) 4.5 days
- c) 4.5 weeks
- d) 4.5 years



4.5 YEARS HUMAN LABOUR*

* equivalent to an 'averagely fit person' pedaling a generator that lights a 70 watt bulb 8 hours a day. Average human work day uses 0.6 kWhs

ASSUMES 6,118 MEGA JOULES OF ENERGY / BARREL OF OIL = 1,699 KW/HOURS > CONVERTED TO WORK = 700 KW/HOURS | 1 PERSON = 0.6 KW/HOURS | 700/0.6 KW/HOURS = 1,167 DAYS = 4.5 YEARS | LITRE OF OIL AND 252,000 JOULES / HOUR TO POWER THE LIGHT

If you were to pay a person to do the equivalent amount of work at New Zealand's living wage (\$22.10/hour) it would cost \$190,944.00.

Extended globally, we use the equivalent to 135,000,000 years worth of human labour in addition to the existing human labour every day

Source: Auckland Permaculture Workshop

WE ARE LIVING THROUGH AN ENERGY 'RAVE'



Epoch of fossil fuel exploitation in human history during the period from 5,000 years ago to 5,000 years in the future (Hubbert, 1974a, fig. 69)

ZOOMING BACK INTO THIS STUDY!

KEY BACKGROUND TO THE STUDY







STUDY DENSIFICATION & TRANSPORT PATTERNS?



Densificiation (and greenfield expansion) are key pillars of both: << the Auckland Plan 2050 >> the Auckland Unitary Plan



MEASURING DENSITY – SCALE & METHOD MATTER!



IMPORTANT BACKGROUND

WINTON (2020) - 1point5.org / MRCAGNEY (2020) transport2030.org & OECD 2020

Winton (2020)

- Big reductions in transport emissions needed
- Near zero by 2030

MRCagney (2020)

- Demonstrates that mode shift to transit and walking/ biking alone are not near enough to reduce emissions
- Biggest levers = reducing vehicle KM travelled & number of internal combustion engine vehicles
- Have a look <u>transport2030.org</u>

To hit 1.5C we must largely decarbonise road transportation by 2030



IMPORTANT BACKGROUND

FAIRNESS OF TRANSPORT PROVISION



 "Equality of costs across society, the distribution of costs of transport relative to the ability of people to pay, and transport accessibility relative to their needs" (Litman, 2020)

 Recognitional and procedural equity

IMPORTANT BACKGROUND

CLIMATE CHANGE WILL IMPACT THE VULNERABLE FIRST & WORST

- Decarbonising transport raises significant equity issues need to be thought of from a climate justice perspective
- Transport equity matters are fundamentally political and "cannot be settled by normative reasoning or empirical evidence alone" (Martens et al., 2019, p. 33).

METHOD AT A GLANCE

QUANTITATIVE ANALYSIS METHOD



- Study design
 - Assumption testing
 - Log transformation
- Census variables & assumptions
 - Independent variable: Density PWD
 - Dependent variables:
 - Distance to work (based on reported home & workplace locations from census, averaged across suburbs)
 - Mode shares
 - Time
 - GHGs (CO₂e)
 - Controls: educational attainment and median income

POPULATION-WEIGHTED DENSITY IN AUCKLAND (2018 CENSUS)



579 - 765
522 - 578
357 - 521
294 - 356 -
209 - 293
134 - 208
108 - 133
67 - 107
57 - 66
51 - 56
46 - 50
41 - 45
37 - 40
32 - 36
28 - 31
22 - 27
13 - 21
5 - 12
0 - 4 Train line

Population-weighted density growth Auckland Suburbs 2006 - 2018 by SA2

41 -50% 31 - 40% 27 - 30% 24 - 26% -
31 - 40% 27 - 30% 24 - 26% -
27 - 30% 24 - 26% -
24 - 26% -
21 - 23%
18 - 20%
15 - 17%
12 - 14%
10 - 11%
7 - 9%
4 - 6%
0 - 3 %
0
Pop loss



KEY FINDINGS OF REGRESSION ANALYSIS



Density has a correlation with increased active and public transport, and reduced travel times and distances and greenhouse gases



Increasing social deprivation



SOURCE: ANALYSIS OF STATS NZ DATA (2018)

PT USE IS NOT NECESSARILY IN LINE WITH DENSIFICATION

N



Public transport mode share (train, bus or ferry) for commute trips in 2018. Source: Stats NZ



Pop-weighted density in Auckland in 2018 Source: Stats NZ

LIMITATIONS OF THE STUDY?

- Not much data!
- Census data only captures journey to work, not other travel
- Relatively high unexplained variance in some models – uncontrollable variables:
 - congestion,
 - urban form,
 - transport costs etc.



HD005 - Time spent travelling by purpose and mode - 2010/14

Source: New Zealand Household Travel Survey (Ministry of Transport)

HAVING DONE THE STUDY, MY TAKE IS THAT DENSIFICATION PAIRED WITH GOOD TRANSPORT CHOICE & THE RIGHT POLICIES, CITIES CAN BECOME MORE EFFICIENT



WHAT ARE THE "RIGHT POLICIES"?

WHAT DOES "MORE EFFICIENT" MEAN?

The answer depends on your values!

SO, IS THE NPS UD ONE OF THE "RIGHT POLICIES"?

My take: it's a start

WHY ANALYSE THE NPS UD?

- Key mechanism of RMA
- First real effort of Central Govt to integrate land use and transport planning
- Was released during my final year of study opportunity to apply learnings
- Link to quantitative findings of this study
- Policies are based on the principles of land use transport integration

New Zealand Government

National Policy Statement on Urban Development 2020

July 2020

WHAT IS THE NPS UD?

- Key mechanism of RMA
- Supply-side, urban densification-oriented response to poor housing availability and affordability in New Zealand cities
- Part of Urban Growth Agenda
- Aim is to foster:

"Well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future." New Zealand Government

National Policy Statement on Urban Development 2020

July 2020

KEY NPS UD OBJECTIVES & POLICIES



Minimum parking requirements for new development gone (only mobility parking is required)



"Amenity" definition deliberately broadened



Permitted baseline/ min. building heights of 6 storeys in 'walkable catchments' of RTN stops



New Future Development Strategies and Housing Business Capacity Assessments required Land use planning seen as a key lever to reduce transport GHG emissions



Responsiveness, four wellbeing framework, affordability, 'wellfunctioning' urban environments



DENSIFICATION BENEFITS ACCORDING TO THE NPS UD

Enabling intensification [...] will make it easier for people to live within walking and cycling distances of these destinations.

Similarly, intensification in areas well-serviced by public transport will increase the number of people using these services, therefore enabling these services to be improved.

This positive relationship between intensification and active and public transport helps create wellfunctioning urban environments.

MfE (2020a, p. 1)



BUT, ACHIEVING MODE SHIFT MEANS THINGS NEED TO CHANGE

GREATER

AUCKLAN

Auckland Target vs Actual for new cycleway kms Source: Auckland Transport



- Densification alone is not enough, it needs to be integrated with transport!
- NPS UD is contingent on policies outside the RMA to achieve this mode shift

NPS UD – INTEGRATED BY NAME, NOT BY NATURE?

A FUNDAMENTAL PROBLEM

"An NPS can only direct decisions made under the RMA; it cannot direct decisions made under other planning legislation, such as the Local Government Act 2002 (LGA) or Land Transport Management Act 2003 (LTMA)."

MfE (2020a, p. 4)



IMPLEMENTING THE AUCKLAND PLAN 2050?

Focus area 4:

Make walking, cycling and public transport preferred choices for many more Aucklanders

More Aucklanders will walk, cycle and use public transport if it is accessible, efficient, affordable, reliable, safe, and attractive.

Substantial progress has been made in recent years. However, many parts of Auckland, particularly outer suburban and rural areas, still lack good access to these options.

To make public transport a preferred travel choice, we need an integrated system that consists of:

- a rapid transit network that provides fast, frequent and reliable travel between major parts of Auckland
- frequent, connector and local public transport services, often running in dedicated bus or transit lanes, that focus on more local trips and provide access to rapid transit
- walking, cycling and park and ride facilities that make it easy for people to access public transport.
- Further detail on our approach to public transport is outlined in the Regional Public Transport Plan.¹³⁴

While improvements are required across Auckland, a key focus of investment must remain on trips to busy locations like the city centre, metropolitan centres and other major employment areas (e.g. Auckland Airport). Large numbers of people travelling by car to these locations creates widespread congestion and requires a lot of valuable land to be used for parking, instead of more productive uses like homes and businesses.

How this can be done

We will make walking, cycling and public transport attractive travel choices by:

- continuing to implement initiatives such as dedicated bus lanes¹⁰⁵ and cycle ways¹⁰⁶ that enable faster, safer and more reliable travel, particularly where a lot of people live and work and along highly congested routes
- designing and managing streets¹³⁷ in a way that prioritises walking, cycling and quality urban spaces, including speed management and safe crossing opportunities
- making frequent, efficient, affordable and reliable public transport more widely available
- improving access to public transport through walking and cycling upgrades, feeder services, and park and ride facilities¹³⁰
- implementing the universal design approach and embedding accessibility into all parts of the journey, to make it easier for people of any age and ability to move around. For more information visit the Universal Design website.³⁹

How this can be done

We will make walking, cycling and public transport attractive travel choices by:

- continuing to implement initiatives such as dedicated bus lanes¹³⁵ and cycle ways¹³⁶ that enable faster, safer and more reliable travel, particularly where a lot of people live and work and along highly congested routes
- designing and managing streets¹³⁷ in a way that prioritises waiking, cycling and quality urban spaces, including speed management and safe crossing opportunities
- making frequent, efficient, affordable and reliable public transport more widely available
- improving access to public transport through walking and cycling upgrades, feeder services, and park and ride facilities¹³⁸

ARE WE THINKING HOLISTICALLY?



Source: Targomo

LAND USE TRANSPORT INTEGRATION IN NZ

NEW ZEALAND PRODUCTIVITY COMMISSION Te Köniharis Whisi Hule o Actearce



Better urban planning

February 2017

"The current planning system (comprising RMA, LGA and LTMA) is **unwieldy and not well integrated.** There is **little alignment** between **strategies**, **funding, regulation and decision-making** to **integrate land use and infrastructure** development, set spending priorities, and manage growth".

LGNZ, quoted in the Productivity Commission (2016, p. 230) **RMA s30(1)(gb):** Councils must give effect to the Act by ensuring:

 "the strategic integration of infrastructure with land use through objectives, policies, and methods"

THE NPS UD – A STEP FORWARD, BUT ISSUES REMAIN



Walkable catchments



Job accessibility

WHAT COULD GO WRONG?

Cases like Sarah Everard's are not 'incredibly rare' and the police must admit it

Cressida Dick's statement minimised the risk women face from men - and fits with years of police and government failure to treat the issue seriously



A People mourn at the Sarah Everard memorial site on Clapham Common. Photograph: Dylan Martinez/Reuters



"WALKABLE" CATCHMENTS



×

Broa

+

Source: Google Streetview

"WALKABLE" CATCHMENTS

GREENLANE TRAIN STATION

Google

Source: Google Streetview

Image capture: Sep 2017 © 2021 Google New Zeal



Policy 10(b) and (c)

Councils to be responsive to "out-of-sequence developments"

Does this mean releasing land for development that councils themselves have not planned for? E.G.: Out-of-sequence development that triggers responsiveness policies will *"ideally* be transit-oriented with mixed land uses and densities [...] connected by a range of modes [...] *in the future"*.

"[I]f possible, people *should not* need to rely solely on private vehicles" (Ministry for the Environment, 2020b, p. 6)

Is this good enough?

PARKING

The NPS UD states that comprehensive parking management plans are only "strongly encouraged" rather than mandated







IT'S NOT JUST ABOUT THE INFRASTUCTURE



TEAU AITURAU AT HIS BIKE HUB IN MÂNGERE (PHOTO: JUSTIN LATIF)

"The vision is for Māngere to be the bike capital of the Pacific – we can still make it happen. I just need the space."



AN UNDERUSED MANGERE CYCLE WAY (PHOTO: JUSTIN LATIF)

Beyond the hype: Why is no one riding Māngere's award-winning cycleways?



Source: The Spinoff

DENSITY – A STEP BACK

WHAT ARE WE TRYING TO ACHIEVE?



Northern Express Albany Station NX2

BCI

Metro

LOK93

MASSAGE

IS LOCAL GOVERNMENT ADEQUATELY RESOURCED TO MEET THE CHALLENGES OF THE AGE?

Express

REACTIVE DENSIFICATION One of the current reasons/ **INCREASED** justifications for densificiation is that it increases public RIDERSHIP transit viability. While More people taking accurate, focussing primarily on density as an 'enabler' public transport more for transit in this manner often results in reactive rather than proactive transport planning. Consequently, infrastructure development lags 囯 densification, undermining mode shift. **INFRASTRUCTURE BETTER QUALITY** PUBLIC TRANSPORT Need for & justification of Frequency, speed, reliability, ongoing public transport coverage, comfort, value for improvements to match money of PT improves demand LAND USE TRANSPORT INTEGRATION Land use transport integration policies meanwhile ensure that transit provision does not lag densification. This encourages more sustainable transport patterns from the INVESTMENT outset. PROACTIVE Significant government investment in public transport infrastructure

NK

S

Σ

DEMAND

NEED TO BE PROACTIVE RATHER THAN REACTIVE

Supporting MfE documentation for the NPS UD states that "[Intensification] can help improve the economic case for public and active transport investments" by increasing patronage, "and therefore has a role in climate change mitigation" (MfE, 2020d, p. 10).

NEED TO BE PROACTIVE RATHER THAN REACTIVE



Rail boardings have increased from 2.5 million in 2003 to 20.2 million in 2018.

Source: Auckland Transport



Source: Auckland Transport

DOES DENSITY EVEN MATTER?

RD033 - Light vehicle fleet by engine size by region



Source: NZ Transport Agency Motor Vehicle Register

AMBITION? ALIGNMENT?



50% reduction in Auckland's GHGs by 2030

Auckland Transport Alignment Project 2021 – 2031 Investment Programme



6% increase in Auckland's GHGs from transport by 2030



2021 Draft Advice for Consultation

50% reduction in transport emissions in Aotearoa by ~2035

THE NPS UD NEEDS A MORE SUPPORTIVE BROADER LEGISLATIVE FRAMEWORK



ANSWERS TO KEY QUESTIONS

Is densification linked to lower carbon emissions from commuting in Auckland? Is the NPS UD a stepforward or backward for integrating land use and transport in cities in Aotearoa? Will it catalyse the step-change needed?

What do climate justice and equity have to do with decarbonising transport?

Yes, but small magnitude

It's a start, but not the step-change needed

Everything, but it's not reflected in policy

OTHER IDEAS?



Aviation fuel tax, frequent flier levy



Improve enforcement of FBT for polluting vehicles



SUV advertising



Incentivise shift to low carbon freight system



Subsidies for e-bikes and micro-mobility



More funding for PT, street space reallocation

TOWARDS INTEGRATED PLANNING?





At every level the greatest obstacle to transforming the world is that we lack the clarity and imagination to conceive that it could be different

— Roberto Unger —

AZQUOTES

OVER TO YOU!

- Have the NPS UD provisions affected projects in your role? If so, what's been your experience with the NPS UD?
- Do you think it will improve housing, transport and wellbeing outcomes in Aotearoa?
- Do the findings of my study raise any further questions or thoughts for you?