

Compact urban form and sustainability

RUF research programme

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VUW and NZ Centre for Sustainable Cities

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Why a particular interest in urban form and resilience/sustainability?

Urban form matters for:

- **Social** reasons: meeting preferences / needs (for types of housing, neighbourhoods, travel)
- **Socio-economic** reasons:
 - Keeping housing affordable (including the infrastructure element)
 - allowing cities to function productively, effectively and resiliently
- **Environmental** reasons: meeting environmental goals, especially cutting CO₂ ex transport

Urban form strand: main outputs relevant to Auckland

Demand side issues:

- Preferences for housing & neighbourhoods in Auckland, Hamilton & Wellington

Supply side issues:

- Developer perspectives (Wellington region)
- Streamlining urban housing development: SHAs (Auck)
- Infrastructure costs & density across local authorities

1. Developer perspectives in Wgtn region: qualitative study

- 'Ever increasing demand for city (and) city fringe units'
- 'returns [currently] greatest in apartments'
- most dominant trend is 'market shift toward higher density housing (apartments, townhouses) in the most central areas'
- a key market driver in outer suburban areas now is affordability
- also 'a growing market for medium density townhouses in outer suburban areas around Wgtn'

Perceptions of developers in Wellington region (2)

Pros and cons of relationships with local govt:

- 'Wellington's been extremely successful in creating a cool inner city by not insisting on carparks'
- 'They [neighbours] can get in the ear of the local politician or the local planner, and that is a really big challenge'
- Costs of resource consents, or the unforeseen costs associated with time lags in the consent process are significant constraint on some developers' decisions to develop.

2: Relative infrastructure costs

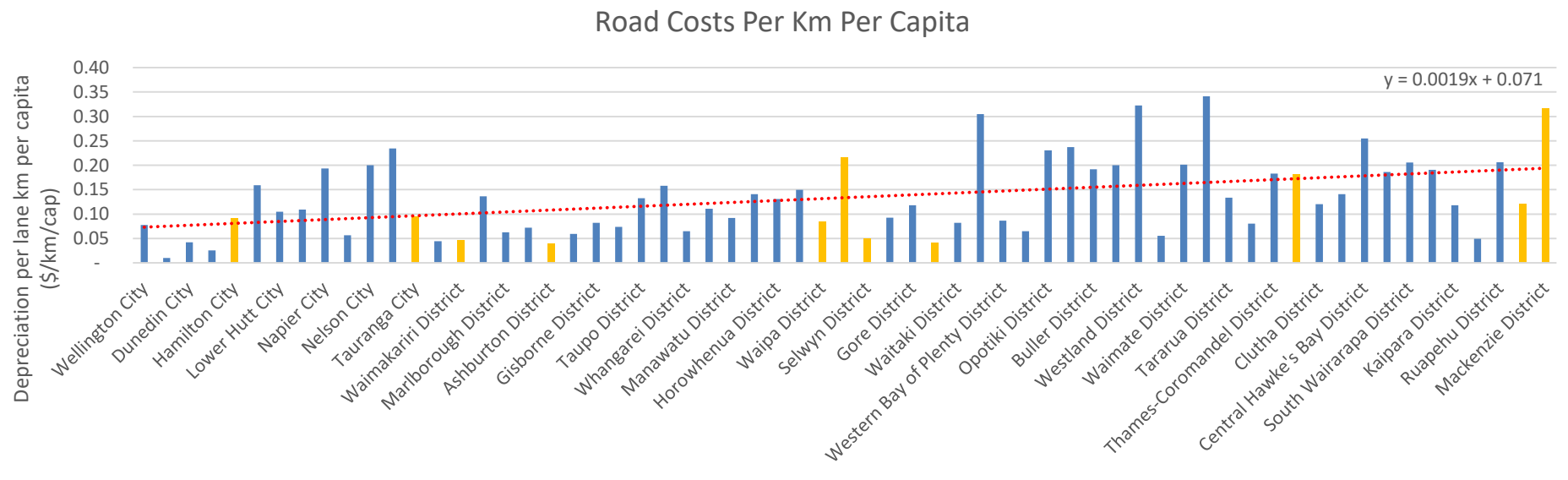
(work with Matt Adams)



Stuff.co.nz

- Question: are infrastructure costs lower for more compact development?
- Method: data ~70 territorial authorities
- Infrastructure capital depreciation: proxy for cost of infrastructure

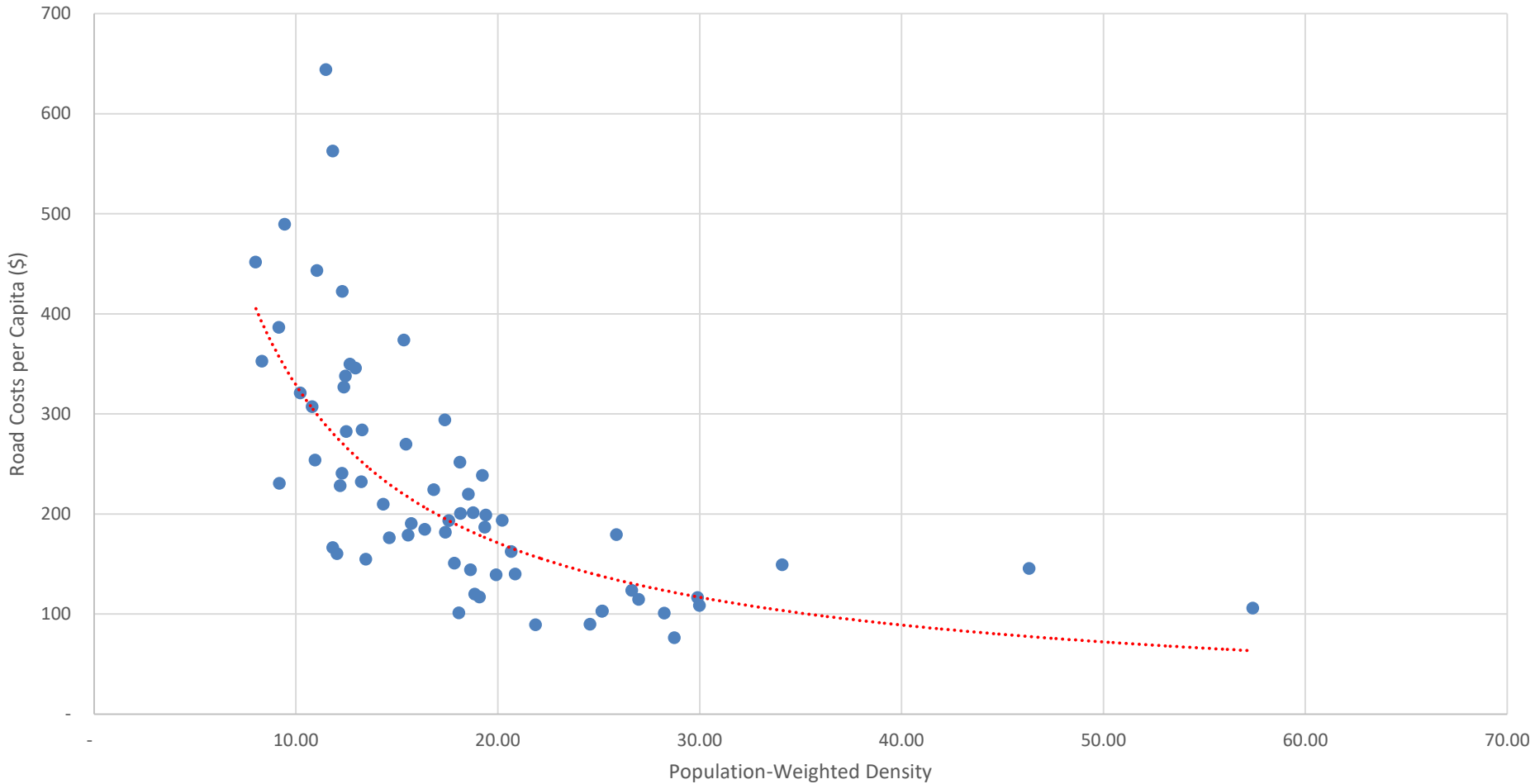
Road costs per capita increase as territorial authority weighted population density falls (to right)



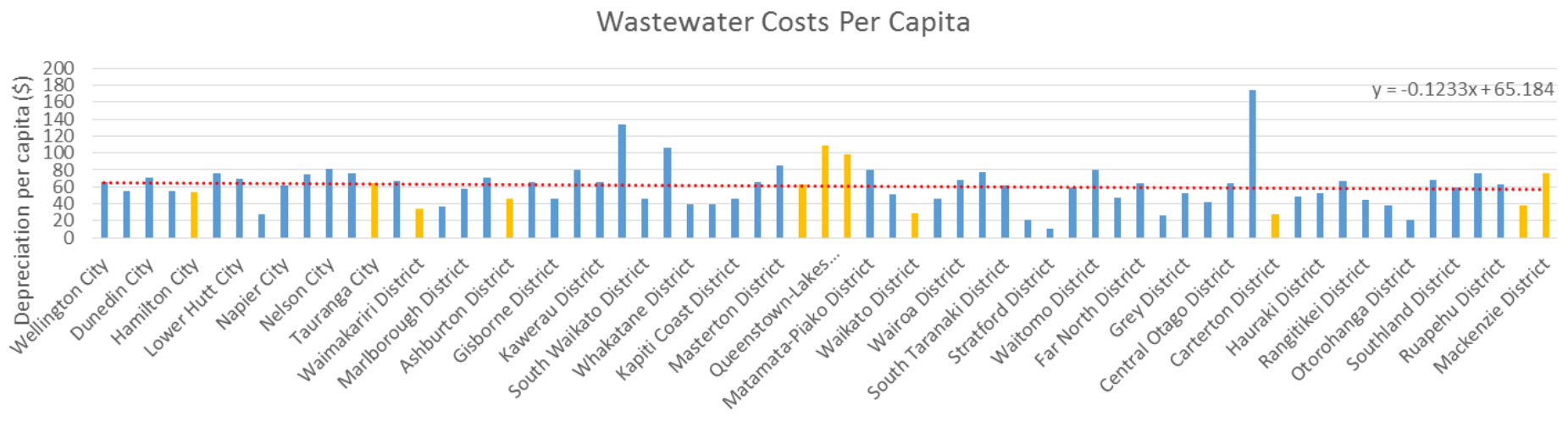
Yellow TAs' populations have grown > 9% since 2006 census: group does not stand out.
Auckland city second to highest density, and v. low road costs.

Roading infra costs fall as pop weighted density increases (to right)

Rd Costs Per Capita to Population-Weighted Density

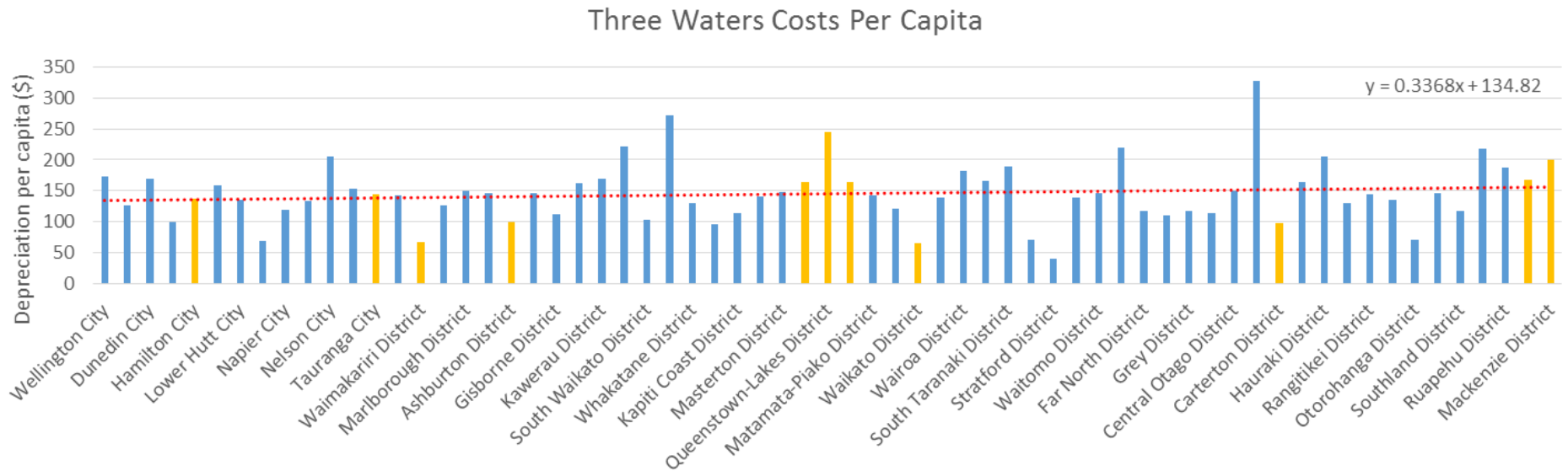


Wastewater costs per capita fall v slightly as density falls (to right)



As in the US, likely explanation is that more dispersed TAs have more septic tank systems which lower costs.

Taking the 3 waters together, overall costs increase marginally as density falls (towards right)



Message:

Taking the big infrastructure assets (roads & the 3 waters), costs are approx stable or increasing as density falls.

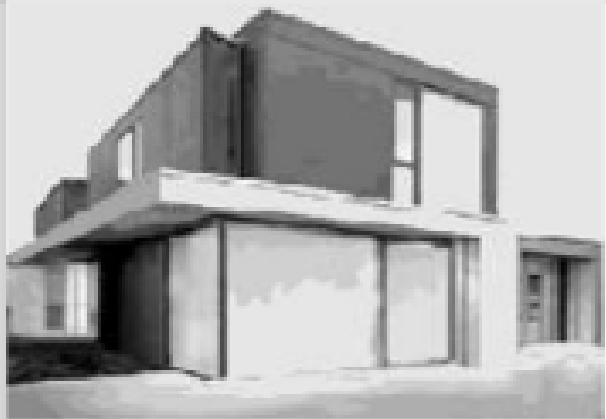
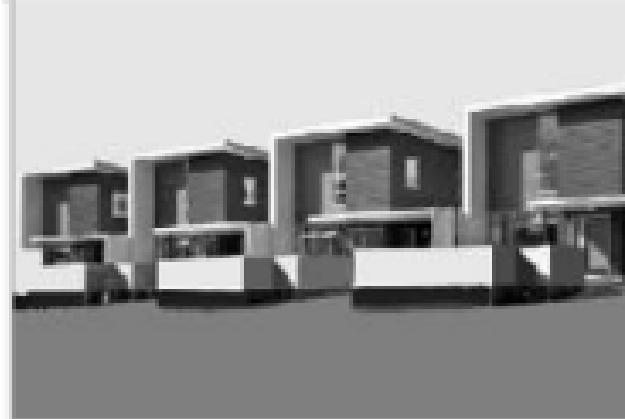









3. Auckland household survey on housing, neighbourhoods, travel

- People's Panel
- Late Nov - early Dec 2015. n=3,285
- Findings on:
 - Important housing and neighbourhood features
 - Stated choices: attribute preferences
 - Travel preferences
 - Barriers to walking, cycling, public transport
 - Current dwelling characteristics
 - Dwelling and neighbourhood problems

Auckland survey (2): taster results

- Most important housing and ngbd features
 - ‘affordability’ (94% extremely imp., v. imp., or imp.)
 - warm and dry (92%)
 - safe neighbourhood (88%)
 - outdoor space (80%)
 - parking space (80%)
 - attractive neighbourhood (75%)
 - a quiet street (73%)
 - having a standalone home (70%).

Stated choice survey trade-offs

Standalone house	Townhouse	Apartment
		
Small section	Large section	Porch / balcony
<p>  30 min walk to local town centre  30 min drive to CBD  60 min bus to CBD </p>	<p>  5 min walk to local town centre  5 min drive to CBD  15 min bus to CBD </p>	<p>  No centres in walking distance  45 min drive to CBD  1 hr 15 min bus to CBD </p>
Mix of apartments / townhouses and standalone houses	Primarily standalone houses	Mix of apartments / townhouses and standalone houses
Off street	On street	On street
\$400	\$400	\$300

Example of choice set (No. 9) and 1-bedroom dwelling options (attributes: outdoor space, distance to CBD/town centre, neighbourhood dwellings, parking, and market rent).

Auckland survey (4)

12 choice sets presented. Preferences for:

- **Standalone houses** for 8 of the 12.
Townhouses chosen in 3 sets. Apartment once.
- **Very close transport access** – 5 min walk to town centre and 5 min drive/15 min bus to CBD; or fairly close
- **Parking** (on street or off street)
- No clear preference regarding neighbourhood type and preferred housing prices/rents.

Some conclusions of 'strand'

- **Advantages of compact** development increasingly recognised by both planners & market
- **Preferences changing** for housing and neighbourhood, often driven by affordability & access
 - Still demand by some for suburban living -- townhouses increasingly cater to this

Some 'strand' conclusions (2)

- Main infrastructure costs lower in TAs with greater density
- Urban transport and development planners gradually adapting their views... but slower than necessary given accelerating climate change
- Hopeful signs that urban form becoming more sustainable and resilient.



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te pokapū rōnaki tāone-nui

Thanks



- Partners include:
 - Auckland Council (Regan Solomon and others)
 - WCC
 - GWRC
 - Porirua Council
 - Hamilton Council....
- and numerous interviewees / respondents among the business sector and the public
- and to our funder, MBIE.

