Making a cycling city: Learning from the Danish success story

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Background

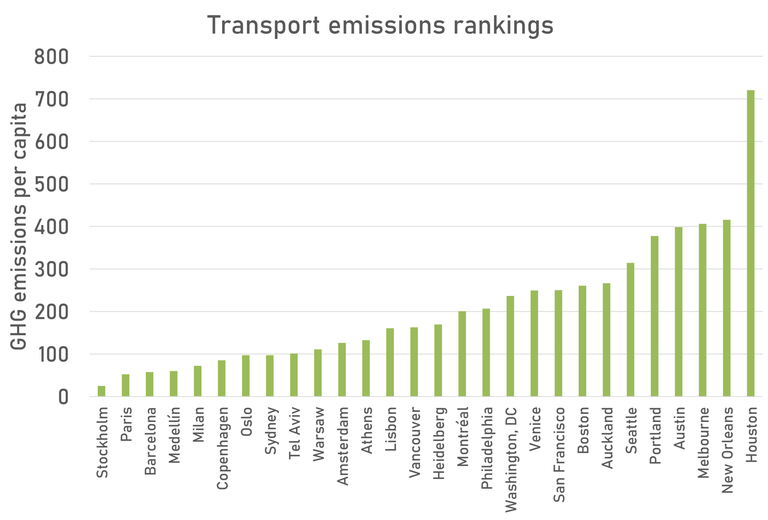
- Anthropogenic climate change is driven by greenhouse gas (GHG) emissions.
- New Zealand has the 5th highest GHG emissions per capita at 16.6 tonnes per capita per year, over double nations such as United Kingdom(1).
- 20% of New Zealand's gross GHG emissions comes from the transport sector(2).
- New Zealand is highly urbanised with 86.1% New Zealanders living in an urban setting(3).
- Car ownership rates are also the highest in the OECD and motor vehicle transport makes up 83% of total trip mode share by travel time(4).

Reducing urban transport emissions can significantly reduce New Zealand's gross GHG emissions. I reviewed the policy settings of cities with high levels of sustainable transport to determine what policies could be implemented in New Zealand urban environment.

Method

I began by obtaining data from C40 which was used as a starting point to identify relevant cities for consideration. We refined the list of cities by only including OECD and OECD-affiliated cities with a population under 2.5 million. This ensures the cities included are broadly similar to those found in New Zealand.

The remaining cities were then ranked according to their per capita transport emissions. The best performers were reviewed for policies that encouraged active or public transport. The final selection for active and public transport case studies was made after discussion with supervisors. For active transport Copenhagen was selected.

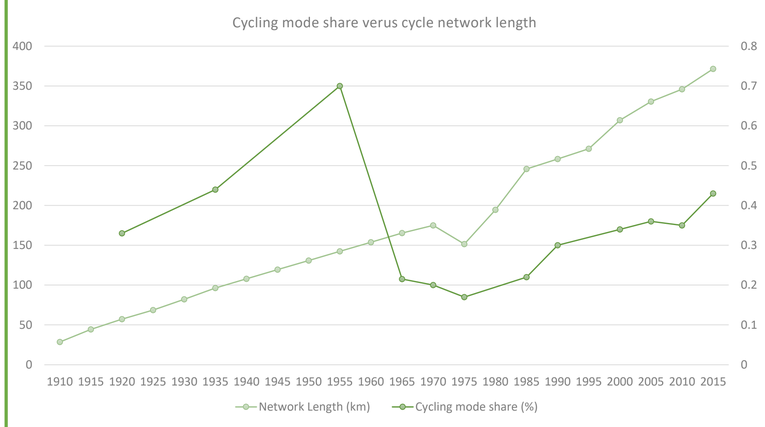


Data from 10

Results

Cycling History

Cycling has been a part of Copenhagen's transport system for over a century, with the first official cycle tracks being introduced in the early 20th century. Mode share of cycling increased to a peak of 70% in 1955 but dropped to just 20% in 1970 due to the advent of cheap automobiles. Following the 1973 oil crisis and political pressure from cycling advocacy and environmental groups Copenhagen made increasing cycling a core element of its transport solution. This commitment has been reaffirmed several times and significant progress has been made particularly since the 1990's.



Data from 5,6,7

Political prioritisation

Copenhagen views cycling "not a goal in itself but a highly prioritised political tool for creating a more liveable city"(8). Goals for cycling are set out in the 2002-2012 Cycle Policy and reaffirmed in the Bicycle Strategy 2011-2012. These goals include measurable targets that are measured in the biannual Bicycle Account, which surveys cyclists and other commuters to gauge their subjective experience of the network as well as objective statistics.

These goals fall into 9 key focus areas but all are oriented to improve the value proposition of cycling compared to other modes; cycling must be the obvious and competitive mode choice for commuters.

Key Focus Areas

- Cycle tracks and reinforced cycle lanes
- Green cycle routes
- Improved cycling conditions in the City Centre
- Combining cycling and public transport
- Bicycle parking
- Improved signal intersections
- Better cycle track maintenance
- Better cycle track cleaning
- Campaigns and information

Guidelines

The principles of Copenhagen's cycling goals are reflected in the guidelines around infrastructure provision. In order to "ensure consistent traffic design" and "ensure bicycle traffic is factored into all Copenhagen road projects"(9) the published guidelines set various standards for different classes of cycle track and detailed information on intersection design.

These strong guidelines ensure that infrastructure is consistent across the network and supports the political goals laid out in the Bicycle Strategy. For example, all infrastructure projects must have the capacity for the goal of a 50% increase in cyclists by 2025(9).

Top left and right: The standard PLUSnet cycle track has 3 lanes and is 3 m wide. It can handle at least 3,500 cyclists an hour. The "sunny side" of Nørrebrogade opposite Assistens Cemetary.

Below left: New wide cycle track (dimensioned to 4.0 m based on a capacity calculation). Can handle at least 5,000 cyclists per hour. Dronning Louises Bridge.

Below right: 2.5 m wide cycle track is standard outside the PLUSnet. This width just allows an ordinary cyclist to overtake a cargo bike – or vice-versa! A two lane cycle track can handle at least 2,000 cyclists an hour.

Images and captions from 9

Commuter's Choice

Copenhagen has fostered an environment where cycling is the default choice for commuters. The viability of cycling is the main driving force for it's high uptake. Even "Copenhageners choose the bicycle because it's the fastest and most convenient way to get around town".

Copenhagen works hard to ensure that cycling is the socially responsible choice for commuters and the most individually beneficial; cycling is made faster, more convenient and cheaper(11) than the equivalent car commute. Since 2012 there has been a 15% reduction in average travel time and a 9% increase in average cyclist speed(6).

Table 3
Average cost per kilometre for cycling/car, summary for 2008 (Euro).
Source: COWI and Københavns Kommune (2009).

	Cycling (16 km/h)			Car (50 km/h)			
	Private	Social	Total	Private	Social	Duties	Total
Time costs (travel time)	0.672	0	0.672	0.215	0	0	0.215
Vehicle operating costs	0.044	0	0.044	0.296	0	−0.159	0.137
Prolonged life	−0.358	0.008	−0.348	0	0	0	0
Health	−0.149	−0.242	−0.391	0	0	0	0
Accidents	0.034	0.073	0.105	0	0.030	0	0.030
Perceived safety	+ (?)	0	+ (?)	?	?	0	?
Discomfort	?	0	+ (?)	?	?	0	?
Branding/tourism	0	−0.003	−0.003	?	?	0	?
Air pollution	0	0	0	0	0.004	0	0.004
Climate change	0	0	0	0	0.005	0	0.005
Noise	0	0	0	0	0.048	0	0.048
Road deterioration	0	0	0	0	0.001	0	0.001
Congestion	0	0	0	0	0.062	0	0.062
Total	0.243	−0.164	0.081	0.511	0.152	−0.159	0.503

Note: Car occupancy is 1.54 persons per car (DTU Transport and COWI, 2010); external values for cars are reported for gasoline cars in the city during off-peak hours. Cycling's health benefits are split into private and social benefits, it is assumed that 50% of the gain is own consumption and thus internalized. The rest is taxes, etc. In cases where unit prices cannot be estimated as yet, the table contains question marks (?). Plusses indicate where these are expected to entail a cost.

Table from 11.

Conclusion

Copenhagen has set specific goals for improving the viability of cycling for commuters and makes policy that reflects these goals. Copenhagen made cycling accessible, safe, and suitable for average commuters and works to improve these characteristics even further. The bicycle is unapologetically the politically preferred mode and car transport as seen as a secondary option; a mode that should be possible but inferior to more sustainable modes of transport.

The approach of systematically prioritising cycling is possible in New Zealand and would require openly prioritising sustainable transport modes and preferentially designing public spaces around them. Car-centric transport solutions are not sustainable and a poor use of urban space, especially when better alternatives exist. Shifting the default transport mode will likely be opposed, as stated by Marie Kåstrup "when you change a city's layout, someone will always feel to miss out on something"(12). Demand for sustainable transport solutions must be created as following existing demand will only entrench the established unsustainable urban transport solution.

If New Zealand wants its cities to follow Copenhagen's footsteps it needs to match Copenhagen's ambition for a more sustainable urban future. This will require forward planning policy makers and a commitment to fundamentally and radically change from the status quo.

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