



FREEZE THE FARES

**A report on Public Transport Pricing
Options at home and abroad**

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Executive Summary

This report was called for to provide empirical evidence to the idea that alternative options for public transport pricing should be considered by Auckland Council and Auckland Transport in the wake of the **fare increases** announced in January 2019. Several of Auckland's contemporaries have proposed or adopted a number of alternative methods of fare collection that have boosted **fare revenues** while increasing patronage. Regulatory frameworks used by public transport systems have been successfully adapted to allow for these alternative methods to be put in practice, which we have yet to undertake in Auckland's context. This report aims to support the public transport system in Auckland by recommending changes to the fare collection framework currently in place.

The following measures is recommended (reliant on the removal of the Farebox Recovery Policy)

- Daily Fare Caps
- Tertiary Student Discounts
- Increasing the free transfer time period to 1 hour
- Free travel for children under 12 and everyday \$0.99 child fares for those who are 12 to 15 years old
- Free weekends for families travelling together
- Weekend and Six-Hour unlimited pass add-ons for HOP Cards
- Introducing a Disposable paper-based HOP Card for Visitors
- Providing \$6 credit on all new HOP Cards

Introduction

The Farebox Recovery Ratio (FRR) is not designed for growth. If a council wants to grow patronage and their public transport network, this increases costs, 50% of which must be covered by fares. This is counterproductive as **increased fares** make Public Transport less accessible despite any improvements to the network. It also hits our most economically vulnerable communities the hardest, according to Auckland Council. Auckland Transport's own estimates were that were the fare to increase on the 10th of February 2019, this would lead to a reduction in patronage to the tune of 830,000 trips per year¹.

How this Report Will Contribute to the Conversation

This report will look at the limitations of the Farebox Recovery Ratio by providing key opportunities sourced from public transport decision-making in several contemporary cities across the world and draw parallels to Auckland's unique public transport context. It will be structured into a series of overviews of case studies from overseas and summarise the opportunities in a bullet-point format. It will conclude by tracing the path from where Auckland is at present with its public transport status quo to the adoption of some of this report's recommendations.

¹ Auckland Transport. "PT Opex / Funding Update (Fares Review)." Auckland Transport Board Meeting, 11-12-18, Auckland Transport, 2018, Page 289, Auckland Transport Public Archives, <https://at.govt.nz/media/1979279/item-87-closed-session-dec-18-pt-opex-funding-update.pdf>

An Overview of North American Case Studies

Vancouver, British Columbia

A publicly-funded study commissioned by Vancouver City Council, at the School of Regional and Community Planning within the University of British Columbia recommended a variety of measures to make fare collection more efficient and cost-effective while addressing distinct income levels among the end users of the public transport system in Vancouver in the summer of 2016.² These measures included a minimum of two zones for which a fare is paid, the introduction of differential pricing for peak and off-peak hours, the introduction of an extra dollar surcharge on every individual fare collected for the busiest zone in the city during peak hours, and the introduction of a super pass tier to guarantee unlimited ridership across all zones on evenings and weekends (as well as unlimited bike-sharing privileges).

Additionally, the study recommended the adoption of decreasing cost per kilometre and a **maximum fare cap** of about \$5 per day for regular (non-pass) fare users, as well as a rebate system to return a dollar or two to passholders who travelled outside of peak hours, the standardisation of cost to the passenger's wallet across all concession monthly passes. Alternatively, the study proposed **free travel** for certain times of day for regular fares and passholders, and a 'select your perk' programme for superpass tier holders where additional family members and group members could be added onto one's pass for no extra fee during evenings and weekends. The conclusion emphasised that messaging was most important to clarify to the public why the adoption of frequent public transport

² Peter Lipscombe. 'Transit Fare Policy - An International Best Practices Review for Metro Vancouver' UBC Press, 2016.

use would contribute to progressive mobility outcomes³, including minimisation of the city's carbon footprint.

Key opportunities:

- Minimum zone fares
- Peak and off-peak pricing
- Surcharge pricing for busiest zones during peak
- Introduction of a super-pass tier for unlimited travel
- Decrease cost per kilometre
- Maximum fare cap per day
- Off peak rebates
- Free travel periods
- 'Select your perk' programme for super-pass tier holders
- Rolling out messaging to win over the hearts and minds of the public

Toronto, Ontario

Chin, Lai and Chow published the first case study on fare pricing policy specific to Toronto in the Transportation Research Record, funded by the Canada Research Chairs⁴. The study confirms that a simple distance-based formula will be inadequate to provide for all subsections of Toronto's population. The authors recommend further study of congestion-dependent pricing and schedule-based dynamic pricing when calculating fares. The authors contend that **fixing fares** across zones to

³ Legacy, Crystal & Stone, John, 2019. "Consensus planning in transport: The case of Vancouver's transportation plebiscite," Transportation Research Part A: Policy and Practice, Elsevier, vol. 120(C), pages 295-305.

⁴ Chin, Anchor, Andy Lai, and Joseph YJ Chow. "Nonadditive Public Transit Fare Pricing Under Congestion with Policy Lessons from a Case Study in Toronto, Ontario, Canada." Transportation Research Record: Journal of the Transportation Research Board 2544 (2016): 28-37.

around \$2 and considering some population sections for a distance-based add-on of about 6 cents per kilometre as a reasonable marker for future consideration by the Toronto Transit Commission and Metrolinx, the provincial agency which operates the city's automated fare payment system, Presto.

Key opportunities

- Looking beyond a distance-based formula
- Exploring congestion-dependent pricing and schedule-based dynamic pricing
- Fixed fare pricing with some distance-based add-ons

The New York-New Jersey Metropolitan Area, United States of America

Bueno, Gomez, Peters and Vassalo confirm in their study of employers providing transit benefits to employees in the New York-New Jersey area that mode choice is influenced by both individual and household characteristics where commuting is observed. These transit benefits include free parking for employees, reimbursement of toll fees and mileage reimbursements for private motor vehicle fuel. Where employers were found to provide reimbursements for public transport monthly passes, commuters were 9 times **more likely to prefer** public transport use and 3 times **more likely to adopt** walking and cycling as last-mile connectivity solutions⁵.

Prominently, the study also finds that those with a driving licence are less likely to choose public transport or cycling or walking. It was statistically significant to the authors to mention that Caucasian employees were more likely to use private motor vehicles to commute, indicating a degree of cultural habit behind motivations among households faced with choices of how to get to

⁵ Bueno, Paola Carolina, et al. "Understanding the effects of transit benefits on employees' travel behaviour: Evidence from the New York-New Jersey region." *Transportation Research Part A: Policy and Practice* 99 (2017): 1-13.

work. Additionally, owning more than one private motor vehicle decreased probability of commuting using public transport by 96%, walking by 95% and cycling by 97%.

The authors found that living near more than one public transport option increased the probability of commuting by public transport by 127% in the New York-New Jersey metropolitan area.

Individuals in Manhattan were therefore found to use public transport to commute most frequently when compared to the Hudson or Essex counties. The authors recommend that employers proactively choosing to provide public-transport-based incentives to employees rather than private-transport-based incentives to change travel-related choices where commuting is concerned. They also found no statistical significance in the linkages between household income level and their commuting choices in their analysis, published in Transportation Research in 2017.

Key opportunities:

- Switch vehicle incentives, such as free parking for employees and mileage reimbursement, to public transport reimbursements, such as transport passes.

An Overview of European Case Studies

Madrid, Spain

Burguillo, Romero-Jordan and Sanz-Sanz investigated the impact of increases in public transport pricing for end users using the lens of welfare in 2016, and found that the bulk of middle-income earners were worse off in real terms. They also found that placing a stronger emphasis on keeping automotive fuel pricing constant as a policy decision had a detrimental impact on the sustainability of urban mobility solutions in Madrid. The authors summarised their findings by stating that there must be a clear promotion of sustainable solutions for urban mobility, given that their results clearly demonstrated that the poorest and most vulnerable were not better off following the 10% increase in fares for Madrid's residents in 2009 and 2012⁶.

Key opportunities:

- Clear promotion of sustainable urban mobility, particularly for more vulnerable sectors of the community.

Stockholm, Sweden

The Stockholm School of Economics analysed peak-load pricing in public transport, bringing the impact of pricing choices on demand in their city in focus. The authors of this 2012 study found that encouraging passengers to travel during **off-peak** hours would aid the public transport authority to overcome congestion issues during peak hours could be facilitated by price discrimination. They

⁶ Mercedes Burguilloa, Desiderio Romero-Jordán & José Félix Sanz-Sanz. *The new public transport pricing in Madrid Metropolitan Area: A welfare analysis*. Research in Transportation Economics, Vol. 62.

suggested that doing this would add to the economic efficiency of the service provided, by increasing revenue and uptake of the service in overall terms. They also noted that an automatic fare collection method in the form of a personal digital wallet would enable more constructive data to be collected about the travel behaviour of passengers, while also facilitating rebates for off-peak travel⁷.

Key opportunities:

- Encourage off-peak travel **through rebates**
- Utilise a personal digital wallet in order to collect further behavioural data and to facilitate the off-peak travel rebate

Tallinn, Estonia

Cats, Reimal and Susilo provided empirical evidence from a **fare-free** scheme in Tallinn, Estonia. In an effort to improve accessibility and mobility for its residents, Tallinn introduced a fare-free public transport (FFPT) service. After public transport fares were identified as a primary mobility hindrance in Tallinn, a popular referendum saw an FFPT policy after it was supported by 75% of the voters. A before-and-after comparison of the total number of boarding passengers reveals an increase of 3% in passenger demand. The corresponding increase in total passenger kilometres was 2.6%. The highest increase of more than 10% occurred in the north-eastern district of Lasnamae, the most populous and dense district; it is characterised by higher unemployment rates. Districts with high shares of elderly and unemployed people and low motorisation rates were also associated with higher demand levels.

⁷ Rantzien, Vilhelm Horn af, and Anna Rude. "Peak-load pricing in public transport: a case study of Stockholm." *Journal of Transport Literature* 8.1 (2014): 52-94.

The authors also note additional benefits, including the saving of related costs and improved operational efficiency. The public transport agency **saves** fare collection and control costs, and it can capitalise on public transport economies of scale when extending system supply. In the case of an onboard payment validation, FFPT is expected to result in shorter dwell times at stops, these shorter dwell times may result in higher commercial speeds and even fleet operations savings.

Other European cities have introduced FFPT policies since the late 1990s - Hasselt, Belgium; Templin, Germany; and Aubagne and nearby municipalities in France, in 1996, 1997, and 2009, respectively. All these programs were introduced together with substantial additions to the network supply and were followed by a dramatic increase in ridership. Similarly, all students in Holland have been eligible for FFPT in the entire country since 1991. While the impact of FFPT on passenger demand in the case of Tallinn is lower than that of previous FFPT programs, it is of worth noting that Tallinn had already taken many steps towards improved accessibility and public transport uptake. For instance, Tallinn's public transport fare was relatively low prior to the free fares, 36% of all passengers had an exemption before the introduction of full-scale FFPT and 24% are entitled to special discounts; and their public transport share was relatively high (40%) compared to other cities that have implemented fare-free public transport.

Key opportunities:

- Fare-free public transport across all passengers
- Fare-free public transport for students
- Exemptions and discounts for larger proportions of passengers (upward of 30%)

An Overview of Australia and New Zealand Case Studies

Melbourne, Victoria, Australia

The City of Melbourne utilises daily **fare caps** based on the two zones in the metropolitan area.

Public Transport Victoria also provides a 50% discount for concession holders, this includes students.

myki Money Daily fare

Daily	Zone 1 + 2	Zone 2
Full fare	\$8.80	\$6.00
Concession	\$4.40	\$3.00

myki Daily fare caps

Other ticket / caps	Full fare	Concession	Seniors
Weekend daily cap	\$6.40	\$3.20	-
Public holiday cap	\$6.40	\$3.20	\$3.20*

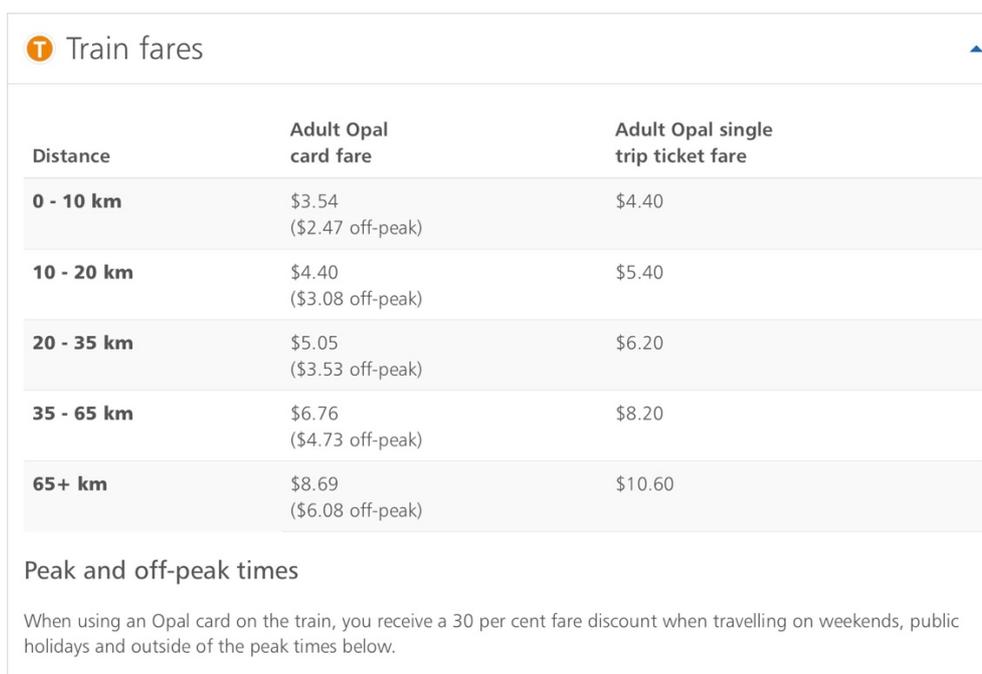
Figure 1 Melbourne Fare Caps

Key opportunities:

- Daily fare caps
- 50% discounted fares for concession holders

New South Wales, Australia

Fare caps are used in many cities to encourage the use of public transport for more than just the commute to and from work, but all travel in between. For instance, the Sydney Adult Opal card allows passengers to travel across the Opal network - which includes trains, ferries, buses and light rail - for no more than \$15.80 a day, \$63.20 per week or \$2.70 on Sunday⁸. In addition train users also receive a 30% discount when travelling **off peak**. As with the Fare Cap system, this incentivises public transport use beyond the peak work commute hours. This is of particular benefit to tertiary students and shift workers.



Distance	Adult Opal card fare	Adult Opal single trip ticket fare
0 - 10 km	\$3.54 (\$2.47 off-peak)	\$4.40
10 - 20 km	\$4.40 (\$3.08 off-peak)	\$5.40
20 - 35 km	\$5.05 (\$3.53 off-peak)	\$6.20
35 - 65 km	\$6.76 (\$4.73 off-peak)	\$8.20
65+ km	\$8.69 (\$6.08 off-peak)	\$10.60

Peak and off-peak times

When using an Opal card on the train, you receive a 30 per cent fare discount when travelling on weekends, public holidays and outside of the peak times below.

Figure 2 Sydney Train Fares

Key opportunities:

- Daily and weekly fare caps
- Off peak discounts

⁸ Transport NSW. "Adult Fares". New South Wales Government, Source: <https://transportnsw.info/tickets-opal/opal/fares-payments/adult-fares>

Queensland, Australia

In Queensland, **off peak fares** are discounted by 20%. Off peak travel times, in this case, are 8.30am-3.30pm and 7pm-6am during weekdays and all day during weekends and public holidays.

Adult

Zones travelled	go card	go card <u>off-peak</u>	Single paper ticket
1	\$3.31	\$2.65	\$4.80
2	\$4.03	\$3.22	\$5.80
3	\$6.16	\$4.93	\$8.90
4	\$8.11	\$6.49	\$11.80
5	\$10.66	\$8.53	\$15.50
6	\$13.53	\$10.82	\$19.60
7	\$16.82	\$13.46	\$24.40
8	\$19.96	\$15.97	\$28.90

Concession

Zones travelled	go card	go card <u>off-peak</u>	Single paper ticket
1	\$1.66	\$1.32	\$2.40
2	\$2.02	\$1.61	\$2.90
3	\$3.08	\$2.46	\$4.50
4	\$4.06	\$3.24	\$5.90
5	\$5.33	\$4.26	\$7.70
6	\$6.77	\$5.41	\$9.80
7	\$8.41	\$6.73	\$12.20
8	\$9.98	\$7.98	\$14.50

Figure 3 Queensland Public Transport Fares

Key opportunities:

- Off-peak fare discounts including weekends and public holidays

Perth, Western Australia, Australia

A study of *Effective Ways To Grow Urban Bus Markets*, found that in the short term decreasing fares by 10% will increase demand by 4% while increasing service frequency by 10% will increase demand by 3.5%. While this is a marginal difference, the Farebox Recovery Ratio (FRR) limits Auckland Transport to doing one action or the other to increase patronage. The removal of the FRR would enable multiple actions to increase patronage to take place once. This would be a more effective and efficient way of increasing patronage.

Queenstown, New Zealand

November 2016 saw the Queenstown Bus Network move to a **flat fares** system, whereby every trip is \$2 with a GoCard, regardless of distance travelled. The use of \$2 as the figure for flat fares creates a more legible user experience, as well as the branding of 'gold coin fares.' Within the first 6 months, bus patronage was up 250% than the same period last year. The number of trips travelled increased 154% from 240 076 to 607 609 between January and June 2017. As a result of the fare price decrease, fare revenue has increased by 4%.⁹ The Otago Regional Council also introduced 7 day visitor passes which they also credit for part of the patronage growth.

Key opportunities:

- Flat fare pricing

⁹ Tracy Roxburgh. "Bus use soars in Queenstown." "Otago Daily Times," Source www.odt.co.nz/regions/queenstown/bus-use-soars-queenstown

A Summary of Auckland's Status Quo at Present

Auckland's Public Transport system is hamstrung by the Farebox Recovery Ratio (FRR), which requires fares to increase to match the 50% funding of services as costs increase. This means that for the network to improve with adding more frequency and routes, the fares must go up. Fares increasing makes it harder to use, cancelling out some of the increased patronage which comes with the improved services.

Currently there are concessions for children, students and Gold Card holders as well as free 30 minute transfers. While they help improve patronage by making it cheaper for those target age groups, the costs are met by those who do not fit in those age brackets. The removal or reduction of the FRR would allow more actions to be taken to increase patronage such as fare caps, larger discounts for students or family discounts.

Recommendations for the Auckland Context

Daily Fare Caps

This report recommends the introduction of Daily Fare Caps based on the number of zones travelled through. The use of round numbers for the proposed Fare Caps is for a more legible user experience, similar to that of the **flat fares** model.

Fare Zones in Current Structure (2019)	AT HOP Fare (NZD)	Proposed Daily Fare Cap (NZD)
1 Zone	1.95	5.00
2 Zones	3.45	7.50
3 Zones	4.90	9.00
4 Zones	6.30	12.00
5 Zones	7.60	14.00
6+ Zones	8.90-12.20	16.00

Figure 4 Proposed Daily Fare Caps

A Daily Fare Cap for 6+ zones will give the heaviest subsidy to those who travel the furthest. This reflects that those who travel the furthest are typically forced to do so due to rents being cheaper further from the City Centre. These commuters typically suffer from less stable income streams as well as relative transport poverty. We are also not proposing a daily cap for City Link users.

This policy could later be expanded to include weekly and monthly caps to mirror Sydney.

Tertiary Student Discount

The current Tertiary Discount promises a minimum 20% discount for those with a student concession.

Zone	HOP Adult Fare	HOP Tertiary Fare
City Link	0.50	0.40
1 zone	1.95	1.50
2 zones	3.45	2.60
3 zones	4.90	3.75
4 zones	6.30	4.90
5 zones	7.60	5.85
6 zones	8.90	6.85
7 zones	10.00	7.70
8 zones	11.10	8.40
9 zones	12.20	8.80

Figure 5 Current Tertiary HOP Fares

Despite the discount it can still be cheaper for two students to carpool and pay for parking than use public transport for two zones. A change to standardise the student discount at 50% of AT HOP fares and proposed daily fare cap would mirror Melbourne and reduce the number of students who drive, not just to their tertiary institution but for all trips.

Increasing the free transfer time period to 1 hour

The New Network has been designed around connections between buses and trains to allow a more efficient use of resources. To support this a 30 minute free transfer was introduced, allowing users to pay a single fare for their journey instead of a separate fare for each service travelled on. While this works for most journeys, there remains some bus routes, including the new 995 route between Warkworth and the Hibiscus Coast Bus Station, with only hourly services off-peak. This means someone transferring from an NX1 who misses the hourly service would be forced to pay an extra \$2.40 as well as wait an hour. Although having all services running at 30 minute frequencies all day would be the ideal solution. A change to 1 transfer would offer more security for those using our less frequent routes. This would also encourage more 'multipurpose trips' where the user may stop to run errands, shop or have meetings before continuing their journey at no extra cost. This would align with the vision for an 'All Day Network.'

Weekend and Six-Hour Unlimited Pass Add-Ons for Hop Cards

At present, Auckland Transport only provide a daily and monthly pass to Hop cardholders, available as top ups at automatic ticketing machines at train stations and major bus stops. Introducing additional add-ons would increase the options available to passengers, which would exponentially increase revenue from those who travel frequently. The Dutch experience with OV-chipkaart demonstrates that the addition of more travel choices for passengers increases revenues for transport operators to a significant extent, which bolsters the argument in favour of these add-ons being rolled out across all ticketing platforms.

Free travel for children under 12 and everyday 99 cent child fares for those who are 12 to 15 years old.

It is currently expensive for families to use Public Transport with separate fares each. The current fare structure to address this allow children under 5 years travel for free with a paying adult, discounts for those with child concessions loaded on their HOP Card and \$0.99 weekend fares.

CHILD HOP FARES

City Link	\$0.30
1 zone	\$1.05
2 zones	\$2.05
3 zones	\$2.90
4 zones	\$3.70
5 zones	\$4.50
6 zones	\$5.15
7 zones	\$5.60
8 zones	\$6.00
9 zones	\$6.30

Figure 6 Current Child HOP Fares

The age for free travel should be raised to 12 with those age 5-12 not needing to be with a paying adult. The \$0.99 should be extended to every day to help create a public transport culture in future generations and reduce the number of car journeys taking children to schools.

Free Weekends

Councillor Chris Darby recently proposed that under 15's should travel for free on public transport on weekends as a measure to incentivise families to use Public Transport. The current fares system means it is usually cheaper to drive than pay for multiple tickets on public transport. This is the most likely time of the week for families to be travelling together and could be easily implemented with bus drivers discretion for recognising families travelling together. At Train stations which are gated it would be at the discretion of the gate manager and on the trains it would be at the discretion of the ticket inspectors.

Generation Zero supports this measure, but sees it as a stepping stone to free weekends for everyone. This would incentivise Public Transport when traffic conditions make driving more favourable and help drive patronage growth until major infrastructure projects like the City Rail Link, Light Rail and the Busway works are complete.

Either option would boost weekend patronage and make Public Transport a genuine travel option for families and groups travelling together, while reducing weekend traffic and emissions.

Introducing a Disposable Paper-based Hop Card for Tourists

Cash Fares on the Auckland's Public Transport network are significantly more than the HOP cards fares. Introducing a disposable thick-paper-based RFID-embedded Hop card is designed to encourage HOP card usage which speeds up the boarding process. However, this policy has a negative impact on visitors ability to access public transport. This paper HOP card would have an expiry date of 7 days after purchase, for the price of \$2, to which the user can add credit at ticketing machines. The number of these machines would need to increase at visitor entry points to the region like the Cruise Ship Terminal and Auckland International Airport.

Providing a \$6 credit on all new Hop Cards

Currently a HOP Card is \$10 to purchase and the user must load credit at extra cost. HOP cards coming pre-loaded with credit would increase public transport accessibility for those from lower socio-economic backgrounds who often struggle with the upfront cost of the HOP Card system and revert to cash fares which ultimately cost more in the long run. By providing the \$6 credit the HOP Card is effectively only \$4 which is much more affordable for those struggling to make ends meet.

Funding

Removal of the Farebox Recovery Ratio would require an increase of funding from either Auckland Council through Auckland Transport or from the National Land Transport Fund and the NZTA or a combination of both. This report recognises that different regions have different priorities. The removal of the Farebox Recovery Ratio would allow each region to choose if they spend extra funding trying to grow public transport or keep the status quo. In Auckland's case it would then have the independence to fund the recommendations given in this report.

Conclusions

The Farebox Recovery Ratio and resultant fare increases block Auckland from meeting its public transport potential. Australian cities have reduced public transport fares by introducing fare caps, and Tallinn has adopted a fares-free public transport model. Other cities in Europe and North America have incentivised public transport through peak and off-peak pricing, as well as mode-switching incentives. In New Zealand, Queenstown has achieved this by adopting a flat fares model, creating a more legible fare system and boosting ridership by over 150% while also increasing revenue.

Further fare increases will minimise the potential impact of major infrastructure projects, such as the City Rail Link and Light Rail, and ultimately result in the failure of Auckland's public transport as a public service. The fares must work in favour of the people who use public transport; this can involve discounts for students and families, as well as fare caps and extended free transfer windows. Passengers who will benefit from these initiatives the most may struggle with inner city rent prices and consequently have long-distance commutes.

Auckland's public transport is currently at a tipping point. We can continue to treat our 'public' service like a commodity and rely on fares to pay for operational costs, dampening any chance of the system advancing from an accessory transport alternative for the few who can afford it. Or we can mobilise Aucklanders by reducing our reliance on fares--this will maximise the potential of large infrastructure projects and transform the way all Aucklanders, of every socio-economic background, think about transport.