

EQUITABLE BUS SERVICE CAPACITY FOR SCHOOLS

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Presentation layout

- What is equity in Public Transport
- Identifying the issue
- Investigating the issue
- New method
- Impact of change



Equity in public transportation

Fair distribution of transport impacts and benefits

(Rock, Ahern and Caulfield, 2014)

- Horizontal Equity
(e.g. anyone can access and use public transport)
- Vertical Equity
(e.g. integrated fares to mitigate mode and geographical biases)



School Bus Services

increasing equity in public transport system

Students must get to school **safely** and **on time**

As such, transportation is vitally important to school systems, with implications for **equity**, student success, and well-being.

(Burgoyne-Allen, Boone, Squire, O'Neal Schiess, 2019)



School Bus Services

increasing equity in public transport system

- No-one should be disadvantaged relative to another, simply by being born into a lower social class (Rock, Ahern and Caulfield,2014)



Why school bus service is important

Less

- Independence
- Socialising
- Mobility options
- Access to jobs for parents

More

- Burden on family resources
- Use of private vehicle (more GHG emissions)



What is the issue?



NEW ZEALAND

Students sitting on knees, standing in door ways

overcrowded

"You have to get there early so you can get a seat," one said. "Otherwise you have to stand up with your heavy bag."

"Some people have to stand by the doors," another said.

The students said there were normally three people to a seat.

"It's worse in summer when everyone is hot, sweaty and stinky," one said.

"It's way too packed. Some people get crashed by the doors, and if the bus stops too fast everyone falls over like Ten Pin Bowling," another added.



The council-owned organisation had underestimated the number of students that would be riding the service, she said.



Capacity related complaints

10% of all bus capacity complaints are related to school buses, where school bus only accounts for **3%** of all bus service in Auckland.



Key Question

At what point do we acknowledge that a school bus is “full”?

Auckland students stranded, left to walk to school as bus overcrowding continues

TORIKA TOKALAU · 13:00, Feb 25 2020



SUPPLIED

Auckland Transport says it is aware of the crowding issues on Green Bay High School (file image).



What is the Certificate of Loading (COL)

Four categories of passenger:

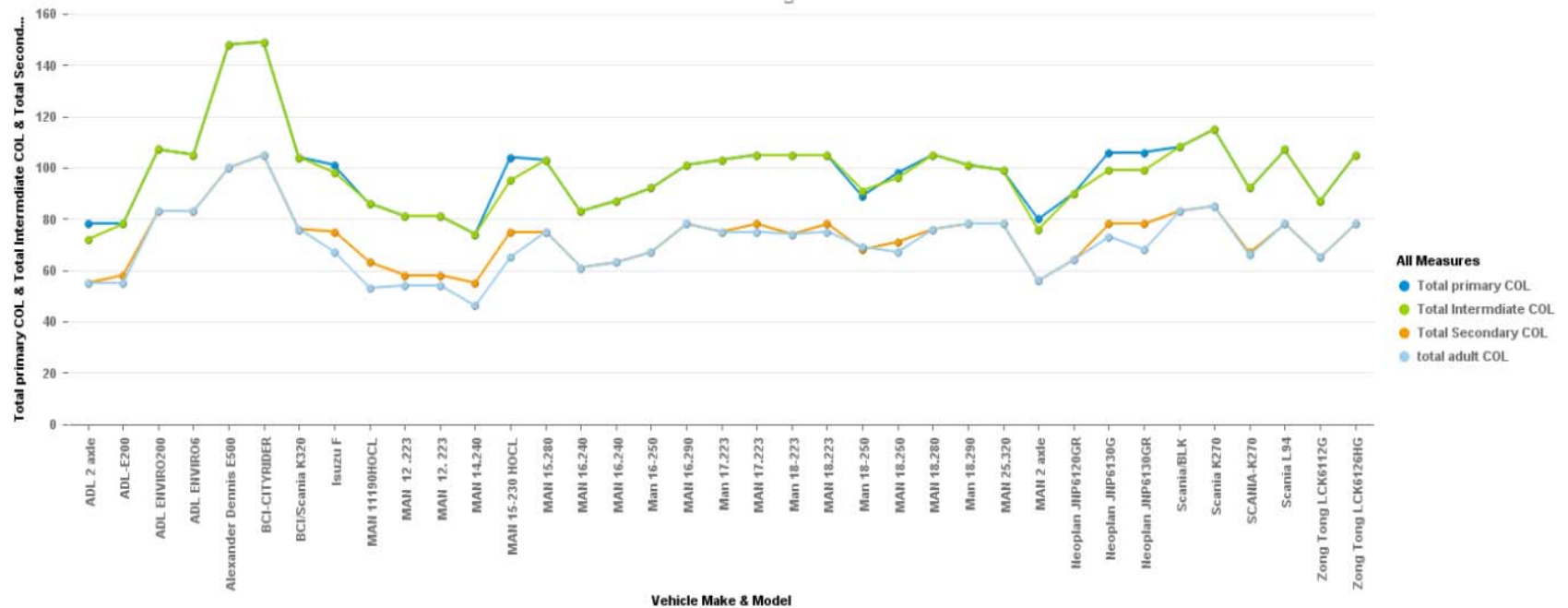
- Adult
- Secondary
- Intermediate
- Primary



Is this measure for School Services reasonable?



Different COL and bus mode



Primary COL and Intermediate COLs are often the same.

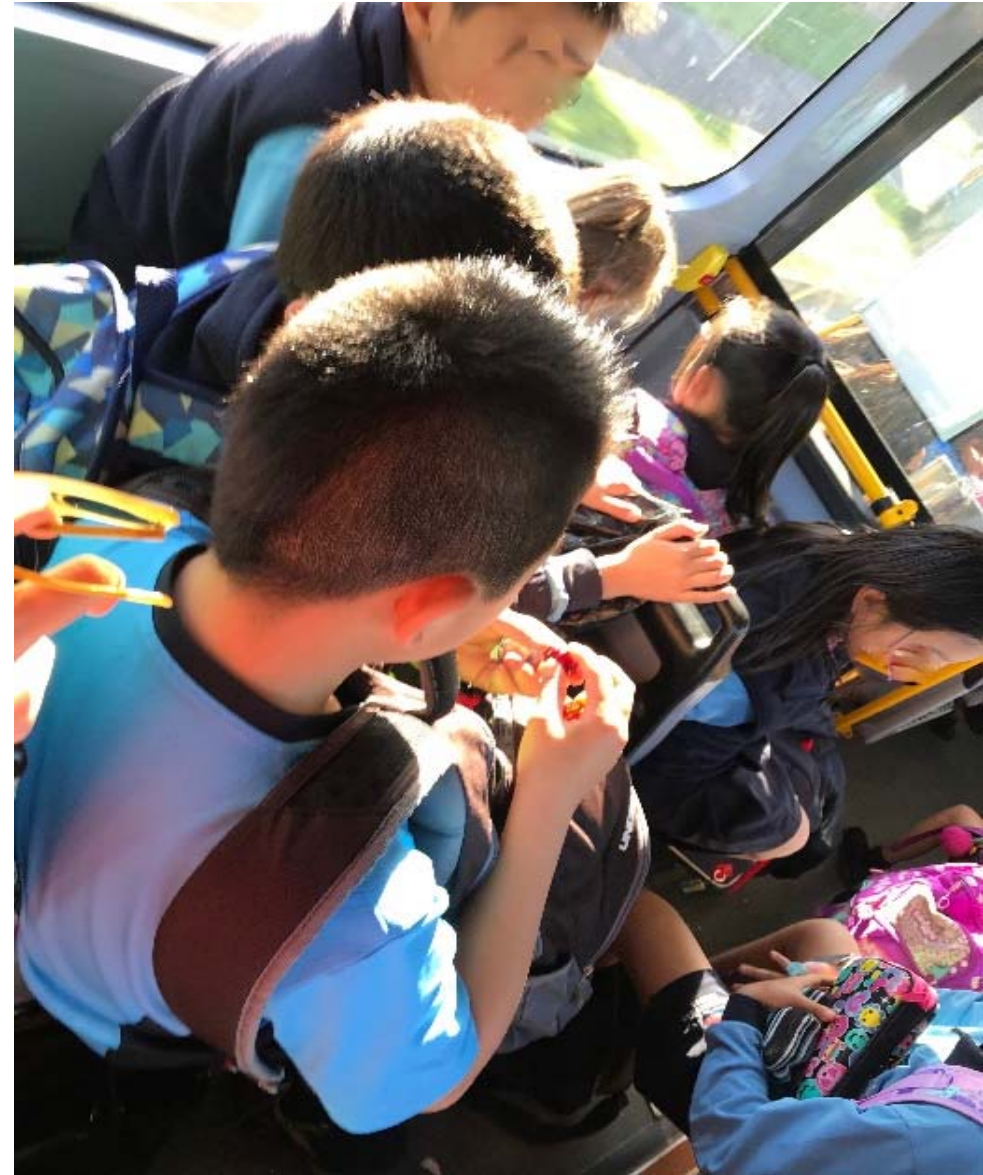
Secondary and Adult COLS are often the same.

The difference between these two COL groupings is 20-25 places for most models.

This equates to approximately **30%** difference across most models.



Does a primary student use **30%** less seating and standing room than a secondary student?



So we went out to look at school bus services over a number of weeks and looked at our data

Geographical area	Number of trips
North	206
Central	83
East	46
West	57
South	68
Waiheke	14



Criteria considered

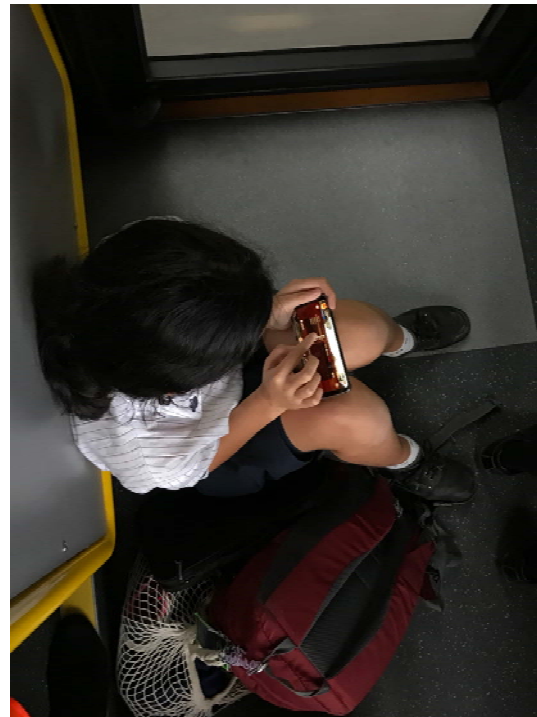
- Common Bus Models and their COLs
- Driver behaviour
- Journey profiles, how far how long?
- At what point did a bus with school children of different types “feel” full?
- Is our ticketing data accurate?

Type of services	School trips	Average travel time	Average distance
Urban services	12,500	33 min	8.8 km
School Services	474	22 min	7.3 km



Safety (problem what problem?)

NZTA reported last year that there were only four minor injuries for school children in New Zealand from 2013 to 2017 (under reporting we feel).



Observations

school kids travel behaviour

- Three students per two seats were usually achieved for primary students only when they were supervised at time of boarding at the first stop.
- Primary students are usually very active in the bus and are more likely to show unsafe behaviours as they are more playful.
- Primary and intermediate students often prefer to do out of seat activities.
- Intermediate students body build was not significantly different from secondary students.
- Primary school kids are smaller, but they will usually carry a bag or similar which requires space.



Undercounting in HOP data

Some of the school trips had higher capacity usage than we measured via the HOP data



Key overall learning

- In practice the NZTA COLs for primary and intermediate do not reflect the children **travel behaviour and size and genuine 'customer experience'**.
 - When a bus has reached the maximum mixed COL the 'customer experience' is very poor, even hazardous for all passenger categories.
 - Primary and Intermediate COL is often much higher than secondary COL. In practice there is little difference between them.
 - Younger children especially do not sit quietly and conform with the spirit of COL and sometimes unsafely.



Capacity methodology review

Real threshold point compared to secondary COL	
Observed threshold point	Equivalent Secondary COL
68	93%
55	92%
65	92%
75	90%
68	87%
64	88%
75	90%
68	87%
65	89%
68	87%
45	87%
Average	89%
range	6%



Recommendations

- Secondary COL should be used for all COLs.
- A school service should be considered for review if the capacity used is greater than 90% of secondary COL more than 20% of the time.
- This is now done and there is a clear alignment between complaints we receive and issues that we now measure.
- Compared to previous method there are about 50 school services with an issue, the old method gave us 5.

Now what?????



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