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UNDERSTANDING RIDERSHIP BENEFITS OF THE TRACKLESS TRAM

RACE CRC Monash Trackless Tram Research Proposal

Date: 09/08/2023 | Presenter: Professor Graham Currie FTSE

PTRG PUBLIC TRANSPORT RESEARCH GROUP

RACE for 2030
RELIABLE AFFORDABLE CLEAN ENERGY

The proposed research supports a rapid transit proposal using trackless trams for Monash Net Zero Precinct; a key project of RACE 2030 CRC

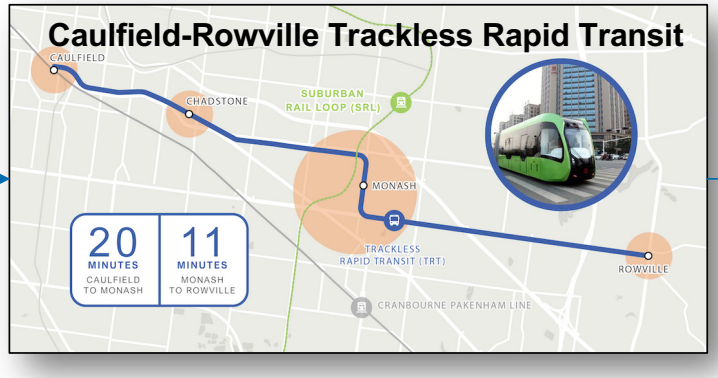
RACE for 2030
RELIABLE AFFORDABLE CLEAN ENERGY

Theme E2 – Foresighting and Planning

Monash Net Zero Precinct

Monash's Net Zero Precincts Project will provide an exemplary demonstration project for transitioning our cities – one that can be replicated in other places and contexts around the world.

RESEARCH PROPOSAL UNDERSTANDING RIDERSHIP BENEFITS OF THE TRACKLESS TRAM



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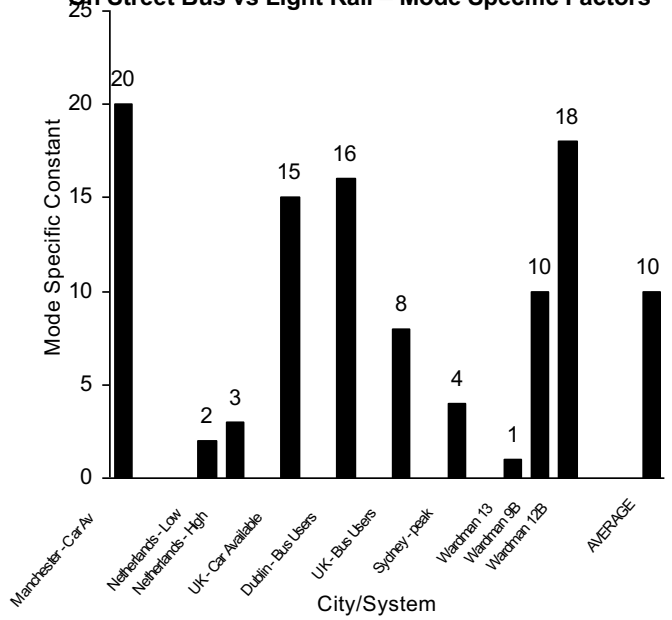
Light rail is known to have significant ridership benefits over bus (the rail passenger bonus) but is much more costly to build

Measuring the Rail Passenger Bonus

On Street Bus vs Light Rail – Mode Specific Factors



Construction Costs – LRT vs Bus

Table 10: Examples of out-turn capital costs (2002 prices)[40]

	Light rail	Bus lanes	Busways	Conventional guided bus
Infrastructure cost (£m/km, 2-way)	5-25[41]	0.006-0.3	2.7-15	2.7-4.3
Vehicle cost (£'000)	850-2,150	120-200	120-200	120-200[42]
Expected lifetime (yrs)	25-50	8-14	8-14	8-14

Light Rail

Bus

Source: Currie G (2005) 'The Demand Performance of Bus Rapid Transit' Journal of Public Transportation Vol 8 No 1

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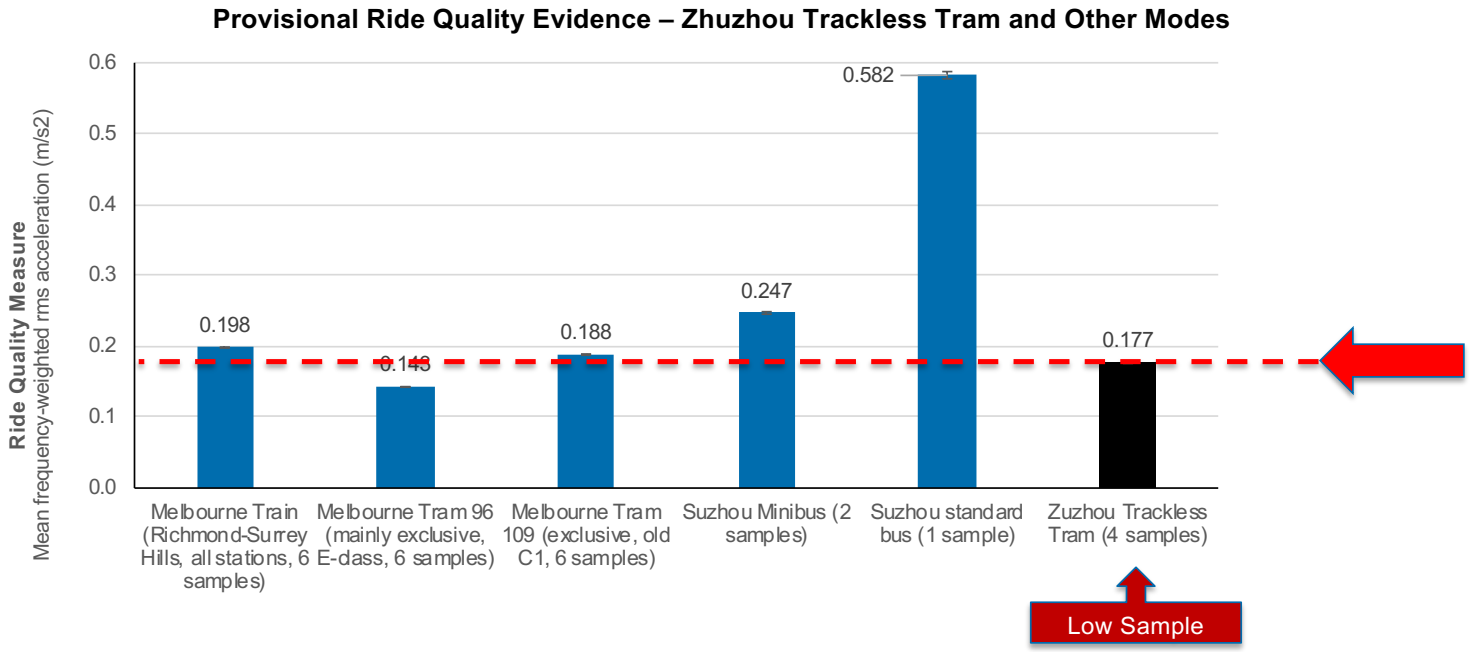
The Trackless Trams is a potentially revolutionary NEW TECHNOLOGY from China ; a tram with no tracks

The Trackless Tram

- CRRC ART Autonomous Rail Rapid Transit Vehicle
- Significantly cheaper than Light Rail
  - Cheaper vehicles
  - No tracks/overhead needed
  - Quicker and cheaper to build
- Commenced in Zhuzhou, China 2017
- Actual Operations:
  - Zhuzhou Line A1
  - Zhuzhou Line A2
  - Yibin Line T1
  - Yancheng SRT Line 1
- Significant ride quality benefits
  - Rail bogeys not wheels
  - High speed rail style stability systems

PTRG independent tests suggest ride quality is equal to or better than Melbourne rail – but no research measuring its mode specific value has been undertaken to date



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The proposal is a world first quantification of trackless tram mode preferences vs light rail and bus

Research Aims & Objectives

- The aim of the research is
  - **to quantify passenger perceived mode preferences for trackless trams compared to light rail and conventional bus systems.**
- The objectives of the research are to:
  - Measure mode preferences in Melbourne, Australia where the Caulfield-Rowville Trackless Rapid Transit is proposed
  - Measure mode preference in cities in China that currently operate trackless trams

Methodology

- Melbourne Stated Preference Survey
  - Online survey; current light rail and bus use vs notional trackless tram
- China Revealed Preference Survey (3 cities)
  - Online survey; current trackless tram and bus vs notional light rail
- Discrete choice modelling
  - Output is mode specific factors for light rail, trackless tram and buses

Research Plan

Stage 1 – Measuring Mode Preferences in Melbourne

- Design Stated Preference Questionnaire
- Online Survey Platform
- Survey Implementation
- Discrete Choice Modelling

Stage 2 – Measuring Mode Preferences in China (Trackless Tram Corridors)

- Modify Questionnaire Design for China
- Online Survey Platform
- Survey Implementation
- Discrete Choice Modelling

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