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Developing a national variable pricing formula for community transport: An evidence-based approach

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1 Introduction

Community Transport (CT) provides essential mobility for individuals who are unable to access mainstream transport options due to factors like age, disability, or geographic isolation. In Australia, many of these services are funded through the Commonwealth Home Support Programme (CHSP), which has historically relied on a uniform, flat-rate subsidy per trip. This funding model is economically inefficient as it fails to account for the significant heterogeneity in the actual cost of service delivery (Ravensbergen and Schwanen, 2024), threatening the financial sustainability of providers. Key cost drivers that a flat rate ignores include trip distance, geography (e.g., metropolitan vs. regional/remote), and specific client needs (e.g., physical or psychosocial support). The inadequacy of the current model has been a subject of ongoing research, with studies highlighting the need for more comprehensive and sustainable funding approaches (Kobel et al., 2022; Mulley et al., 2020).

In response to these challenges, the National Community Transport Pricing Model (NCTPM) Pilot was initiated to develop a more equitable and sustainable pricing model. This paper presents the quantitative methodology and findings from the pilot, which involved 31 diverse Australian CT operators. The primary aim was to develop and test a National Variable Pricing Formula (NVPF) that links subsidy levels to verifiable cost drivers, thereby promoting financial sustainability without compromising service quality.

2 Methodology

The NVPF was developed using a two-stage econometric modelling approach based on comprehensive data collected from 31 CHSP-funded CT operators. The data included detailed operator-level financial and operational surveys for FY2022-23 and granular trip-level data from approximately 175,000 valid CHSP-funded trips. The two-stage framework was as follows:

- **Stage 1: Trip-level travel time modelling**. A linear regression model was developed to predict the actual travel time for a trip based on its key characteristics. The primary predictors were trip distance, geography (a dummy variable for regional/remote trips), and client needs (a composite flag for clients requiring physical, psychosocial, or non-English speaking support).
- **Stage 2: Operator-level cost modelling**. A second linear regression model was estimated to predict the total annual allocated CHSP cost for each operator. The main predictors were the total predicted travel time (aggregated from the Stage 1 model predictions), the total number of regional/remote trips and the total number of trips serving high-needs clients.

The NVPF was derived by algebraically combining the coefficients from these two models to create a single per-trip cost formula. This initial formula underwent further refinement based on disaggregated modelling of capital costs and sensitivity analysis to identify a final parameter set that optimised cost recovery across the pilot participants.

3 Main findings

Descriptive analysis revealed that the trip-weighted average cost to deliver a single CHSP-funded trip was approximately $67.53, substantially higher than the prevalent flat-rate subsidies. Labour costs were the largest component, accounting for around 57% of the total cost, followed by vehicle costs (25%) and overheads. This significant gap between cost and subsidy underscores the financial unsustainability of the current system.

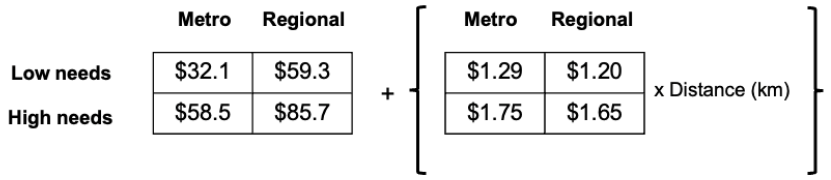
The two-stage modelling provided critical insights into cost drivers:

- **Stage 1** (Adjusted $R^2 \approx 0.728$) showed that travel speed, and thus time per kilometre, varies predictably. Trips in regional/remote areas were faster on average (reflecting less congestion), while trips for high-needs clients were slower (reflecting more careful driving or longer stops).
- **Stage 2** (Adjusted $R^2 \approx 0.920$) demonstrated that total operator costs were powerfully predicted by the total volume of work, measured by aggregate predicted travel time and the number of high-needs trips served. Each additional minute of travel time was associated with approximately $1.36 in total cost, and each high-needs trip added an extra fixed cost of approximately $36.44.

A key refinement to the model was the addition of a fixed cost supplement for regional/remote trips. Disaggregated cost modelling showed that while regional operators had lower labour costs, they faced significantly higher capital costs per trip (+$27.18 on average). This higher capital cost was incorporated into the final NVPF to reflect the true cost of operating in these areas.

The final recommended NVPF is structured with a fixed component (varying by client need and regionality) and a distance-based variable component, as shown in Figure 1.

Figure 1 - Final recommended National Variable Pricing Formula (NVPF)



Application of this final NVPF demonstrated a transformative impact on provider sustainability. As summarised in Table 1, the sector-wide Cost Recovery Rate (CRR) would increase from 52% under the current flat rate to 100%. Critically, the number of providers achieving a sustainable CRR of at least 80% would rise from just 5 to 25, and all 31 participating operators would have a higher CRR under the NVPF.

Table 1- Comparison of cost recovery rates under current vs. final NVPF models

Item	Current CHSP settings ($35 flat rate)	Final NVPF model
Per trip subsidy	$35	$67.92
Sector CRR	52%	100%
Average provider CRR	57%	119%
No. of providers CRR ≥ 80%	5	25
No. of providers CRR ≥ 100%	3	17

4 Discussion

The developed NVPF provides an evidence-based, transparent, and equitable mechanism to fund essential community transport services, resolving critical funding and sustainability challenges (Institute for Public Policy and Governance, 2022; Kobel et al., 2022). By directly linking subsidies to the primary cost drivers of distance, client need, and geography, it addresses the fundamental flaws of the existing flat-rate system and significantly improves the financial sustainability of providers. This allows operators to focus on service delivery and reinvestment, ensuring the continuity of services for vulnerable clients. The use of quoted distance as the variable component, rather than travel time, was a pragmatic choice to enhance the model's transparency, verifiability, and administrative simplicity for implementation.

The study has some limitations. The NVPF is calibrated on data from 31 operators and may not perfectly capture the cost structures of all providers, particularly those with outlier costs or operating in highly specialised niches. Furthermore, the model is based on observed historical expenditure, which may understate true capital replacement needs due to chronic underfunding. To maintain its relevance and fairness, the NVPF should be periodically recalibrated with updated data and coupled with a transparent indexation mechanism to account for inflation.

In conclusion, the NVPF represents a crucial and data-driven innovation for the community transport sector. Its implementation would create a more resilient and responsive funding environment, better balancing service viability and affordability to secure the future of transport access and social inclusion for Australians.

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