



NZTA research summary

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Vertically integrated public transport measures

The research aimed to develop a comprehensive nationally consistent approach to how public transport performance is measured, capable of being used at a national, regional and local level.

At present in New Zealand, a wide range of approaches are used within the public transport sector to measure the performance of the public transport system. Various agencies – regional public transport authorities (PTAs), government agencies, public transport operators and infrastructure providers – all use different measures to help manage and deliver the public transport system and track its performance against policy objectives.

Implementing a more consistent approach to measurement could contribute to system improvement, provide better value for money, and support sector learning about successful approaches to service delivery and achieving system outcomes.

A major focus for the research was on increasing the 'vertical integration' of measures – that is, enabling measures to be used consistently by different organisations, across different geographic scales and for different measurement purposes. Promoting the consistent use and definition of measures creates opportunities for more efficient data collection, analysis and reporting by the sector, enabling the same measures to be used for purposes ranging from monitoring everyday public transport operations through to assessing the contribution that public transport makes to strategic policy objectives.

Developing a performance measures framework

The research initially identified best-practice approaches to public transport performance measurement, both internationally and locally, and evaluated current New Zealand measurement practice.

A review of the literature identified that public transport customers, operators, funders, policy-makers and the broader community, each have differing perspectives on what constitutes good performance and what is of interest to be measured. To be comprehensive, a measurement framework needs to incorporate a range of measures covering all of these perspectives, although, ideally, measures of performance from the customer perspective should be central.

All of the international measurement framework examples looked at organised a range of measures (typically 20 to 40) into categories to help communicate the breadth of factors that contribute to performance. All frameworks included measures of the quality of service delivered from a customer perspective and most measured passenger demand. Some also measured aspects of service availability or provision, efficiency and broader outcomes, such as environmental and social impacts. Measures of infrastructure quality and availability were less common.

In New Zealand, the research found that several public transport performance measures were already well-established, and being consistently reported on by PTAs and used by NZ Transport Agency Waka Kotahi (NZTA) for system oversight. Other measures were being commonly reported on, but with more variation in their definition and level of detail provided.

However, there are gaps in current measurement practices, with some important performance measures only being reported on by some PTAs, and some areas of measurement where very different approaches were being used to calculate similar factors. Some aspects of service quality and infrastructure factors are only being infrequently measured and reported on, and there are no consistently used measures of cost efficiency. In addition, the NZTA has identified gaps and data availability issues in the measures it collates, and views other measures, such as those it uses to assess public transport infrastructure performance, as inadequate.

Recommended measurement framework

From its review of the literature and practice, the research recommends a comprehensive measurement framework that could be used by the New Zealand public transport sector.

The framework includes two key components: an organising logic for measures and a suite of measures that populate the framework.

The organising logic comprises four key purposes for which measures are used and a set of eight measure categories (with 29 subcategories). The four purposes are:

- A. Monitoring public transport operators – measures for this purpose would be used, for example, in operating contracts.
- B. Planning and managing public transport system delivery – measures for this purpose would be used, for example, in PTAs' monthly reporting to council committees.
- C. Providing regional oversight of the transport system – measures for this purpose would be used, for example, in longer term council planning documents, such as annual plans and regional public transport plans.
- D. Providing national oversight of the transport system – measures for this purpose would be used, for example, in the NZTA's annual statement of intent.

The eight measure categories and 29 subcategories communicate the breadth of elements that contribute to public transport performance, and differentiate between inputs, system delivery outputs and high-level outcomes.

The 79 specific measures that then populate the framework cover the main elements that contribute to public transport performance from a range of perspectives, and were identified through the literature and practice review.

The measures were selected for being understandable and feasible, reflecting important performance elements, and being relevant to the New Zealand context. Although many of the measures build on existing New Zealand practice, several new or modified measures are included that are considered to have value for the sector.

From the 79 measures, 30 measures were identified as 'headline' measures – being the most important measures that collectively provide a snapshot of overall performance. Headline measures were identified for each of the four measurement purposes in the framework, as shown in the following table.

Headline measures

	A. Monitoring public transport operators	B. Planning and managing public transport system delivery	C. Providing regional oversight of the transport system	D. Providing national oversight of the transport system
1. Financial		Comprehensive financial reporting, private share		
2. Networks			Service provision: scheduled capacity kilometres	
3. Fleet and workforce	Workforce: actual as percentage of target			
4. Infrastructure			Kilometres of bus lane, special vehicle lane or railway line in passenger service	
5. Customer experience		Travel time: operating speed		
	Reliability: operated (or cancelled) trips; on-time departure and arrival			
	Reliability: headway regularity			
	Reliability: on-time departure; on-time satisfaction			
	Comfort: vehicle comfort satisfaction			
		Comfort: stops, stations and terminals quality satisfaction		
	Safety and security: safety and security satisfaction			
	Overall experience: overall trip satisfaction			
	Overall experience: number of complaints			
6. Service use		Passenger demand: boardings; passenger kilometres		
			Mode share: public transport mode share	
7. Efficiency		Utilisation: passenger kilometres as percentage of capacity kilometres		
		Cost-efficiency: operating cost per unit of capacity kilometres		
8. Transport system outcomes			Economic prosperity: public transport access to jobs	
			Inclusive access: public transport access to activity centre	

The research also identifies methods by which a new measurement framework could be implemented, along with likely challenges, and makes recommendations for improving performance measurement practices.

Engagement with the sector found there was general enthusiasm among PTAs and operators for a more nationally consistent approach to performance measurement and more clarity on measure definitions, although this was tempered by recognition of the wide diversity of contexts where measures are used and the need for measures to remain locally relevant.



RR 747: Vertically integrated public transport measures.
NZ Transport Agency Waka Kotahi research report.
Available at www.nzta.govt.nz/resources/research/reports/747