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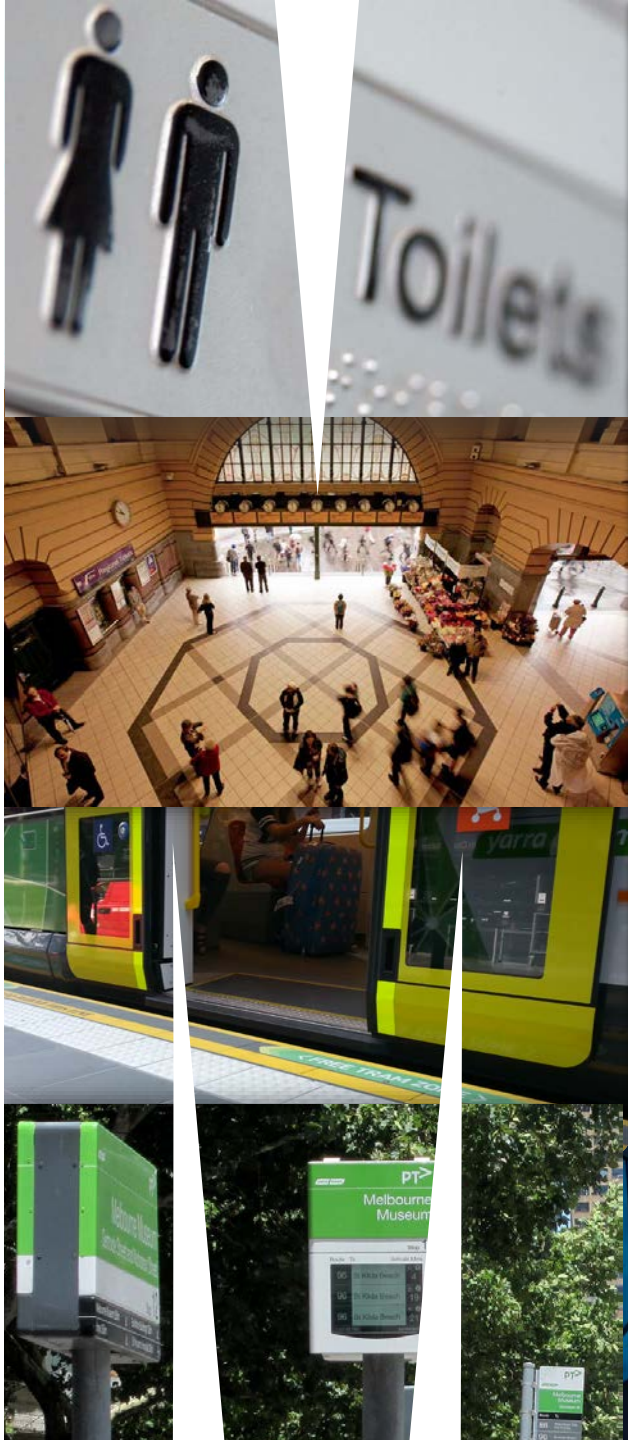
Valuing public transport customer experience infrastructure: A World Review of Methods & Application

Prof Graham Currie FTSE
Dr Nicholas Fournier

Public Transport Research Group
Monash Institute of Transport Studies
Monash University, Australia



Key aims

- Victorian Department of Transport has engaged PTRG to undertake review of best practice approaches to public transport customer amenity valuation

Key aims of the research program:

- Review evidence on **existing measured values**
- Understand **current practices** in Australia and internationally
- Understand what **can and cannot be measured**
- Explore **methods** used and what is considered **good practice**

VICTORIA State Government | Department of Transport

PUBLIC TRANSPORT VICTORIA

There are three key components to the research program

1. Research Literature Review

- Review of published evidence on values and methodologies
- Types of amenities valued, range of approaches used, locations applied

2. World Transit Industry Practice Review

- Survey of public transport agencies in Australia and major world cities
- Current practices towards valuation and application of existing values

3. International Practitioner Delphi Survey

- Survey of 20-30 experts worldwide (consultants, academics, government)
- Methods and best practices towards valuation of customer amenities

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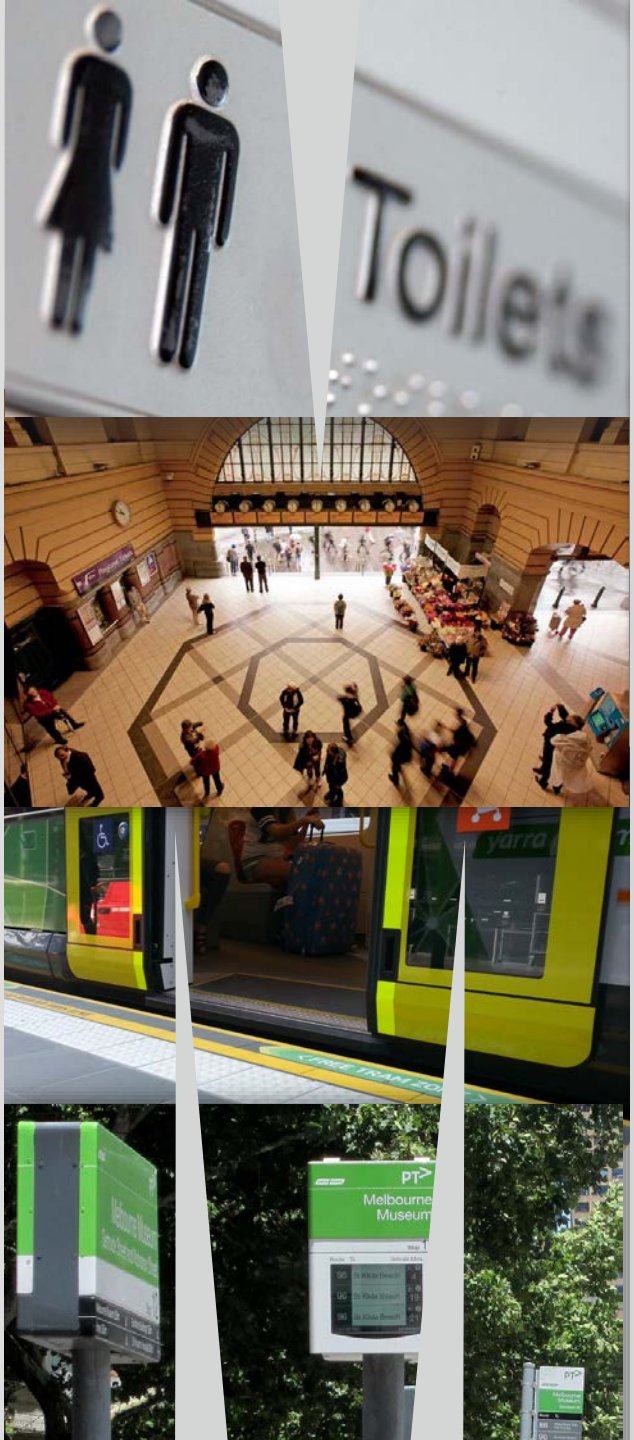
1. Research/Literature Review
2. Practice Review
3. Delphi Survey of Experts



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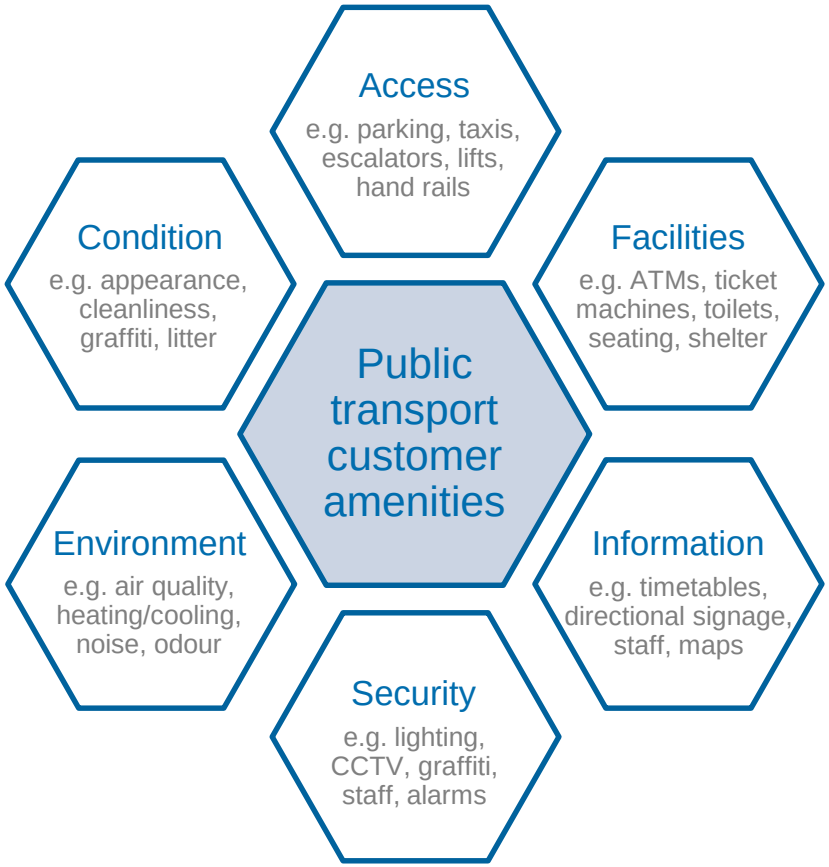
Phase 1: 532 individual amenity values were assembled from the literature

- Only values reported in monetary units or in-vehicle time were used
- 532 cleaned/validated values from six countries between 1992 to 2013
- All values were converted to equivalent units of in-vehicle time (minutes)

Amenities classification: six types and five journey stages



Key journey stages

- Access/egress

- Waiting

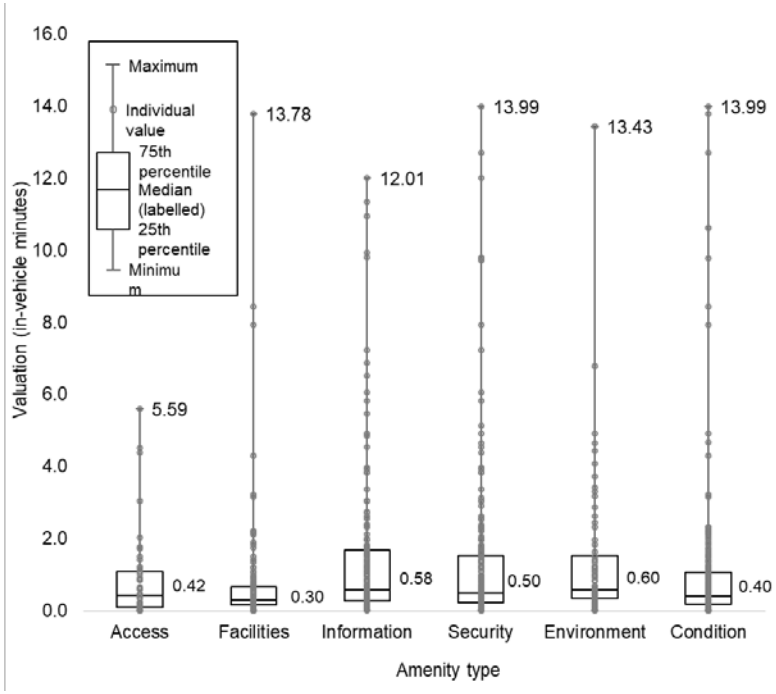
- Boarding/alighting

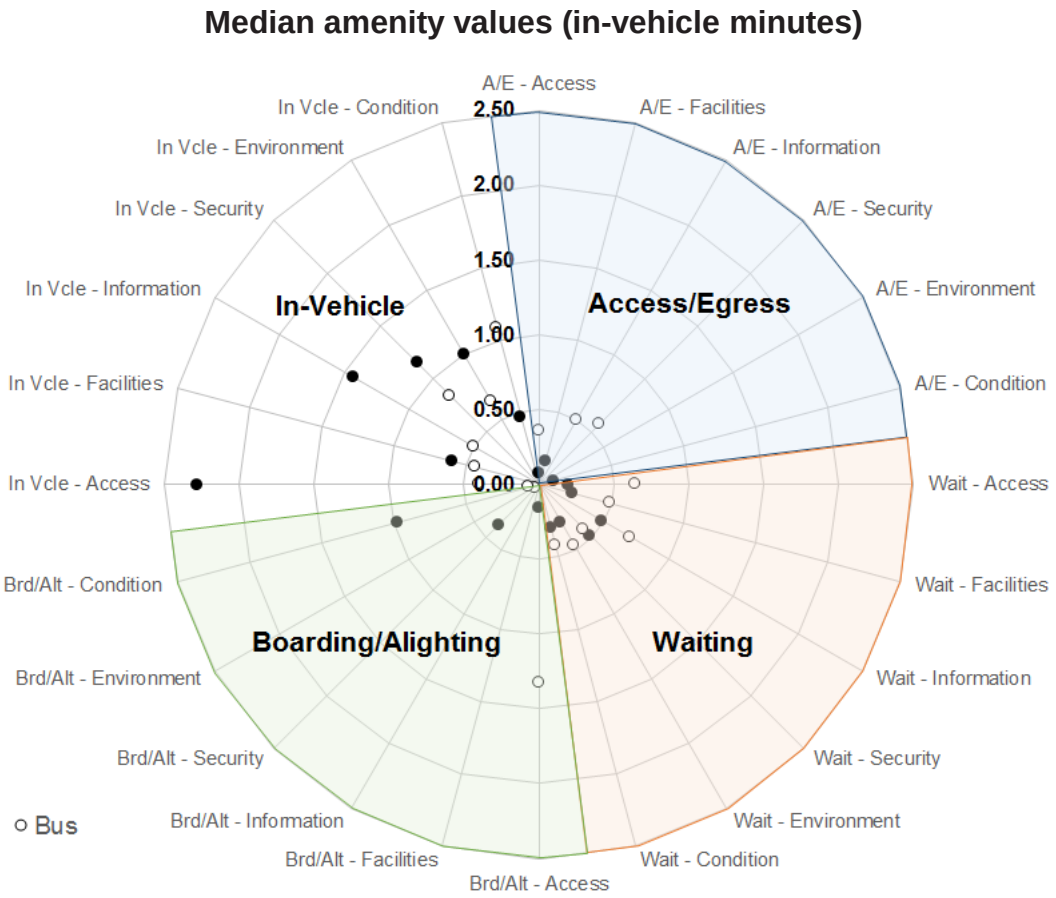
- In-vehicle

Value variability

Considerable variability in individual amenity values was found

with notable variation between modes and different stages of the journey





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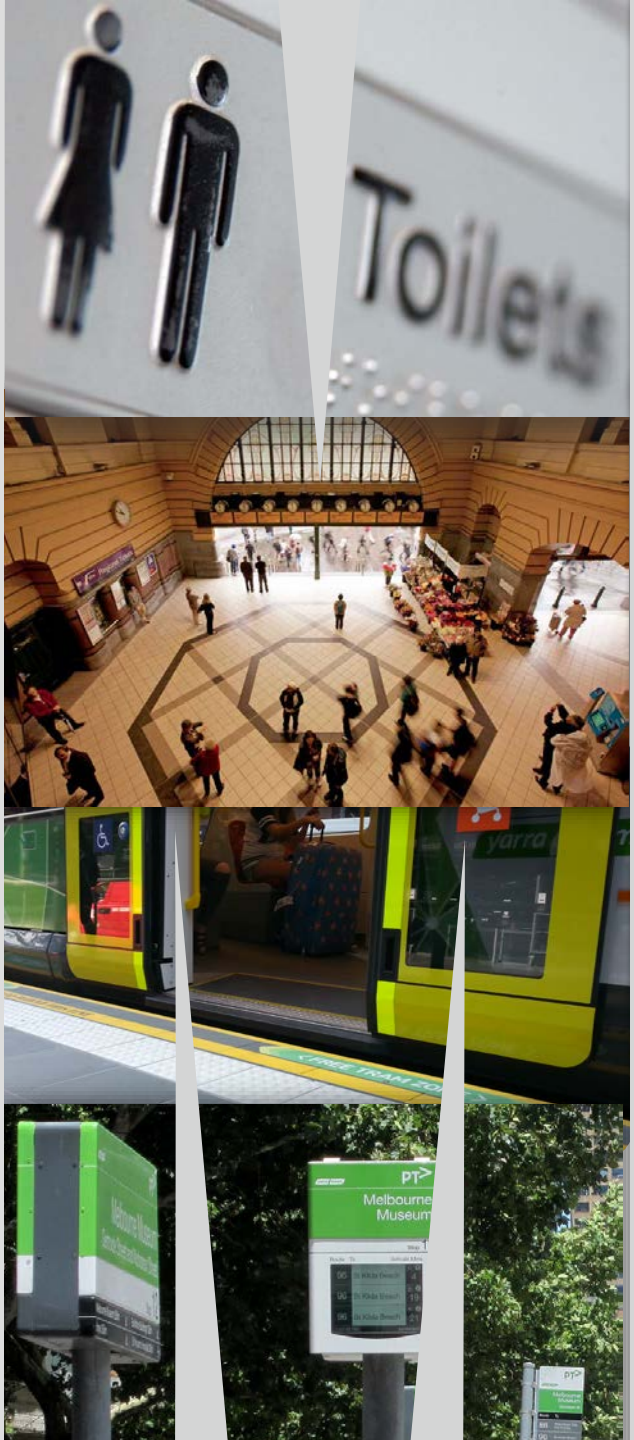

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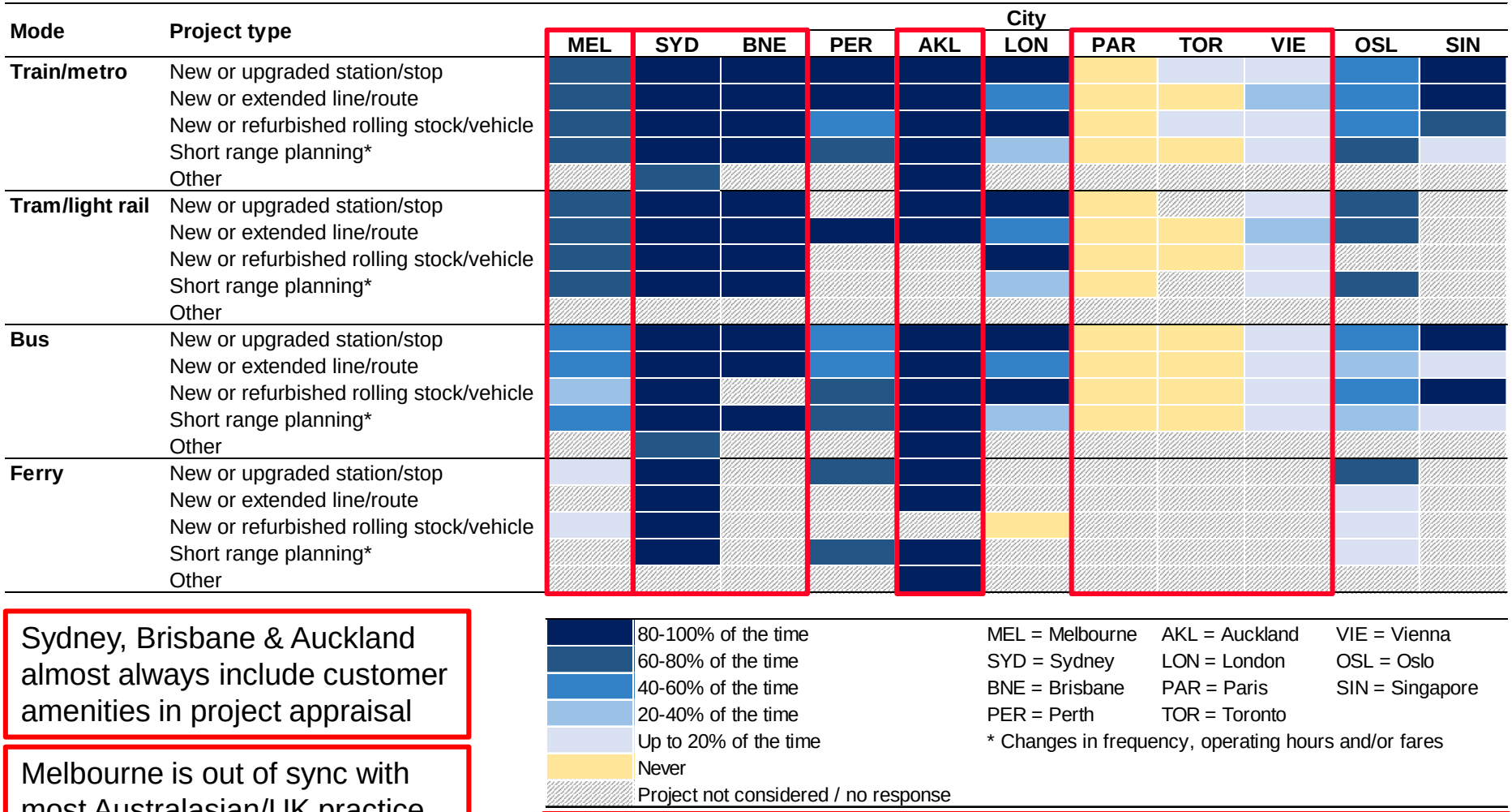
Phase 2: World transit industry practice review

- Aim is to understand current practice among public transport agencies
- Research method involved a survey of agencies in 12 target cities
- Cities were selected with relevant context to Melbourne; some diversity included

Australasia includes Amenities at high shares; excluding Melbourne with lower adoption; Paris, Toronto, Vienna have low/no amenity appraisal in PT projects

Extent to which CUSTOMER AMENITIES are included in appraisal of public transport projects



Sydney, Brisbane & Auckland almost always include customer amenities in project appraisal

Melbourne is out of sync with most Australasian/UK practice

80-100% of the time
60-80% of the time
40-60% of the time
20-40% of the time
Up to 20% of the time
Never
Project not considered / no response

MEL = Melbourne
SYD = Sydney
BNE = Brisbane
PER = Perth
AKL = Auckland
LON = London
PAR = Paris
TOR = Toronto
VIE = Vienna
OSL = Oslo
SIN = Singapore

* Changes in frequency, operating hours and/or fares

Paris, Toronto & Vienna rarely (if at all) include customer amenities

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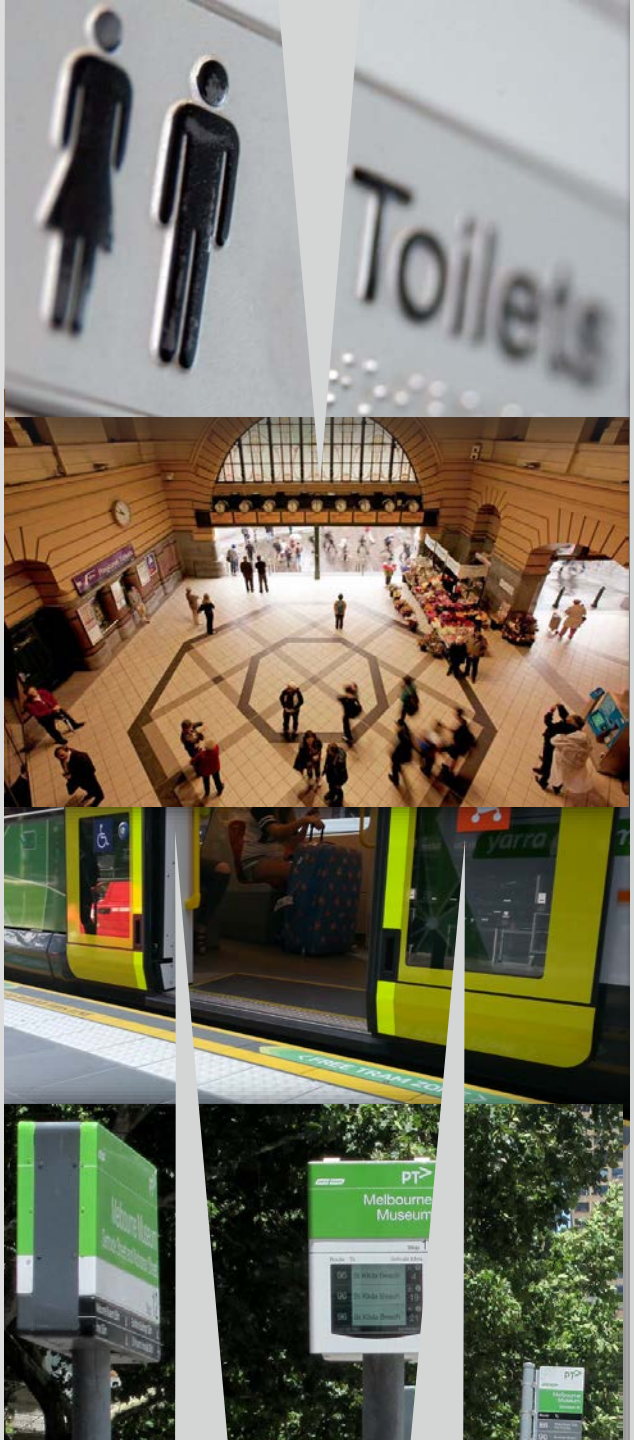

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Phase 3: The Delphi Survey aims to understand expert views on good practices

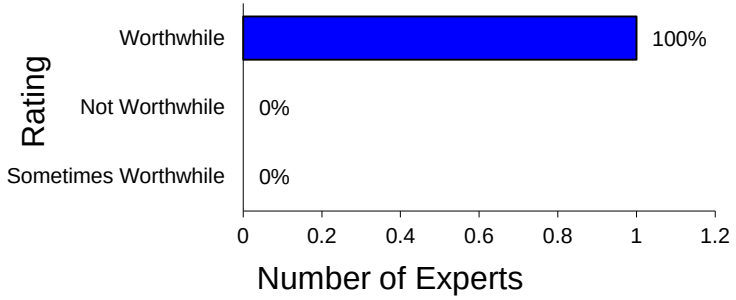
- The “Delphi method” is a structured survey method aimed at consensus building
- Questions are given iteratively, providing anonymised feedback after each round
- Anonymity is key to avoiding ‘bandwagon-ing’ behind dominant participants’ opinion

Topics Covered in the Expert Survey	
1. Valuation Worthwhile? • Is amenity valuation worthwhile and if yes why? **2. Overall Rating of Practice** • How good is current practice? **3. Post-Implementation Reviews (PIR) of Values** • what share are checked? How close are PIR values to estimates? Should more PIR valuations be undertaken? **4. Share of organisations adopting amenity valuations** • What share of public transport organisations adopt amenity valuation? **5. Leading Practitioners** • Leading Companies, Experts, Authorities, what share adopt amenity valuations, reasons not adopted more	**6. Method Advantages/Disadvantages** • What are the advantages/disadvantages of the measurement methods? **7. Method Suitability** • Which methods are more suitable for estimating PT amenity values? **8. Problematic Amenities** • Are there amenities that cannot be valued? **9. Measurement Issues** • How important are common measurement issues/problems? How often do they occur? **10. Best Practices** • What are best practices in the field?

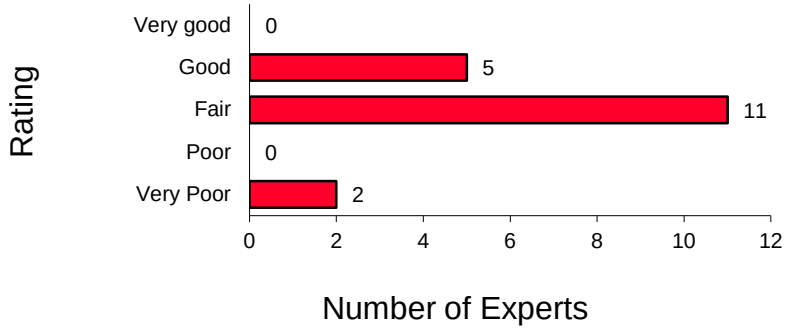
Current practice does not match expert expectations

- All respondents said amenity valuation is worthwhile,
- but rated current practice as “fair” and
- only 51% of organisation adopt amenity valuations

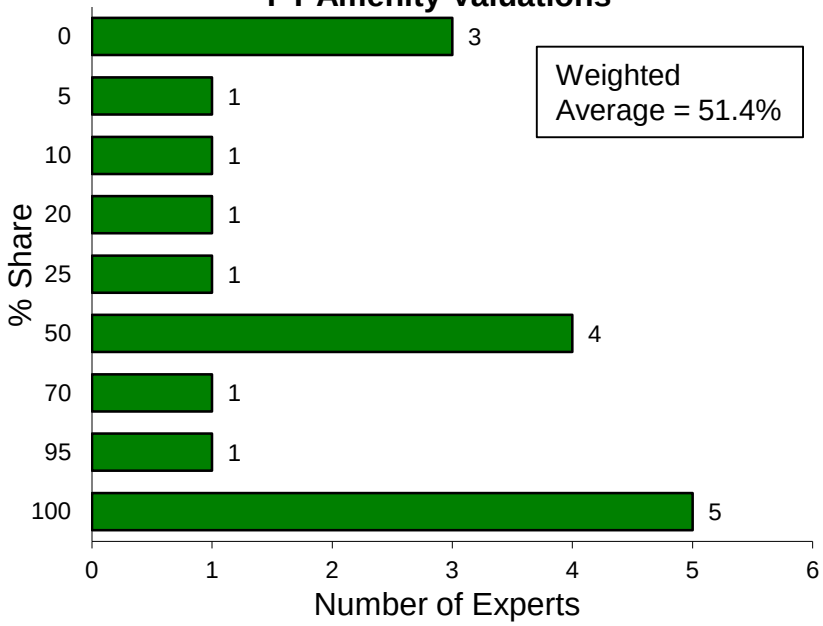
Is public transport amenity valuation worthwhile?



Overall Rating of Current Practice



Share of Transport Organisations Adopting PT Amenity Valuations

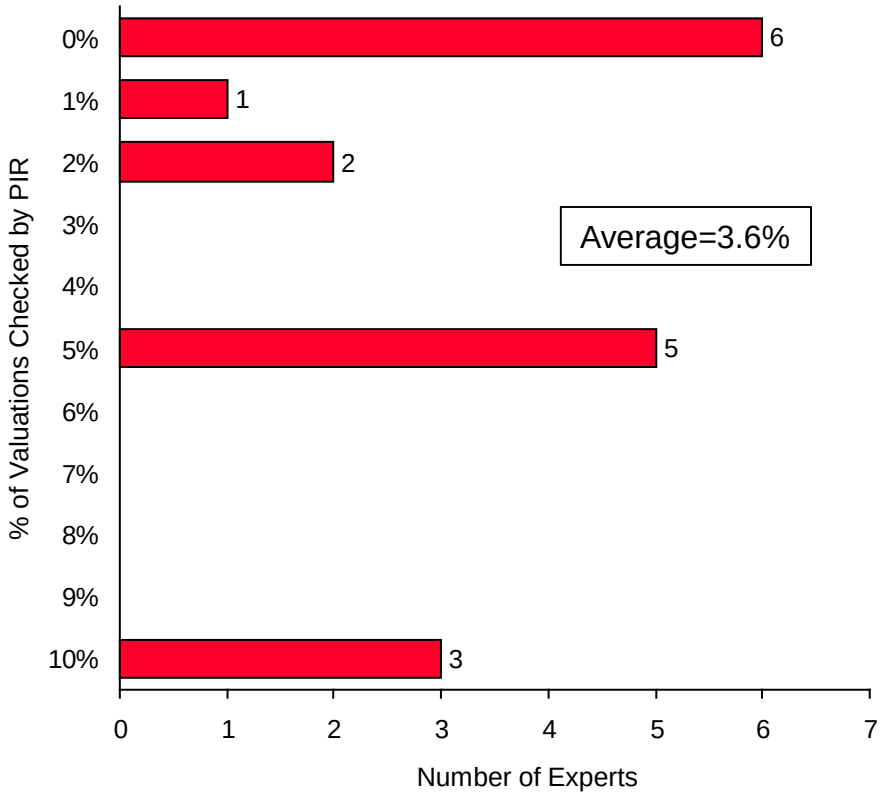


Note: 17 out of the 18 experts said YES (valuation was worthwhile) ; 1 out of the 18 did not respond to this question

Post-Implementation Review is rare and values are generally less than the original values

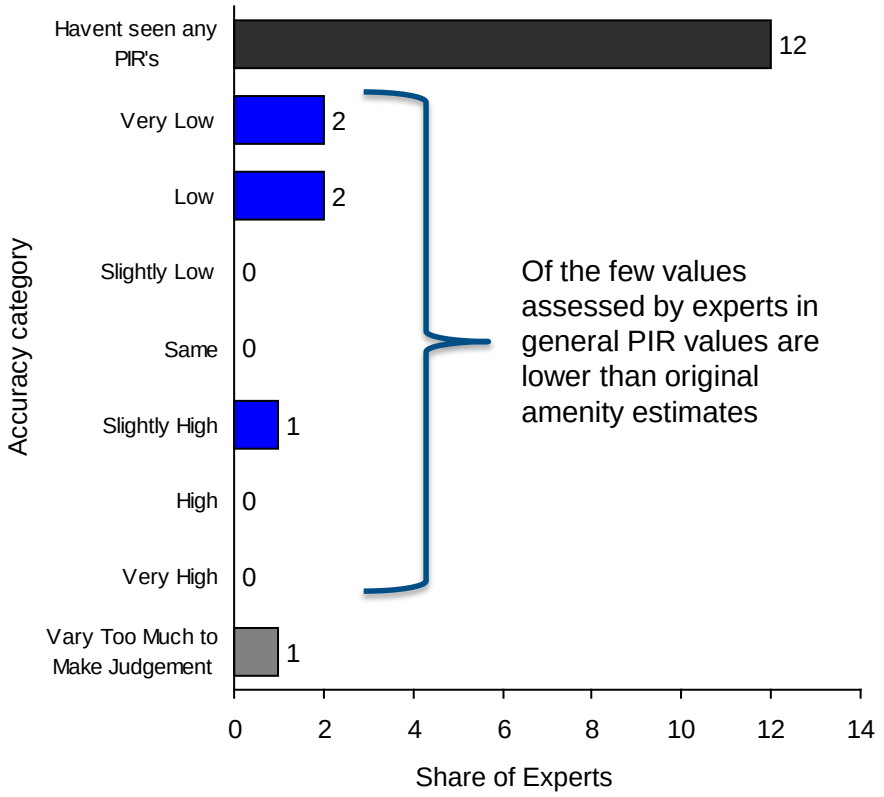
% of Amenity Valuations Checked by Post Implementation Reviews (PIRs)

In your experience, what percentage of amenity valuations are checked by post implementation reviews?



Post Implementation Review (PIR) Value vs Amenity Valuation

Of the Post Implementation Reviews you have seen, in general, how close have measured values been to estimates



Key advantages and disadvantages: Experts ranked 1st SP, then RP, then BVT

Q1. Method Advantages/Disadvantages

Key Advantages of Methods

"What do you believe are the key advantages of the following methods for estimating the value of public transport customer amenities?"

Stated preference (SP)		Revealed preference (RP)		Customer ratings (CR)		Priority evaluator (PE)		Maximum difference scaling (MDS)		Benefit/value transfer (BVT)	
Comment	No.	Comment	No.	Comment	No.	Comment	No.	Comment	No.	Comment	No.
Enables full control of a range of variables	6	Based on real observed actual behaviour	12	Can collate lots of info cheaply/simply	4	Forces users to make trade-offs	3	Captures negative as well as positives in experience	2	Cheap/quick/ practical to use	8
Flexible - can measure new unobserved variables/ hard to value amenities	4	Avoids market research weaknesses	1	Provides relativities/ preferences/ rankings very easily	4	Cheap/easy to collect	2	Cheaper/simpler (than SP)	2	Easier to explain to client	1
Flexible - can measure new contexts/concepts	2	Free from bias	1	Easy for respondents to complete	3	More realistic/ closer to money value	2	Enables relative importance fond	1	No fieldwork needed	1

Flexible, but biased and hypothetical

Realistic, but limited control

Cheap! But subjective, indirect, or inaccurate

Key Disadvantages of Methods

"What do you believe are the key disadvantages of the following methods for estimating the value of public transport customer amenities? "

Stated preference (SP)		Revealed preference (RP)		Customer ratings (CR)		Priority evaluator (PE)		Maximum difference scaling (MDS)		Benefit/value transfer (BVT)	
Comment	No.	Comment	No.	Comment	No.	Comment	No.	Comment	No.	Comment	No.
Too much bias/ 'Bonkers' results via bias/ scaling problems	8	Causal factors unclear/ no attribute control	7	Indirect value estimation biased	4	Too complex for respondents	4	Only measures outliers not central measures	3	Loses local context/ limits on transferability to context	9
Too hypothetical/ unreal study; unconstrained respondent budgets/ user view	4	Poor data/ data quality/ errors	3	Too subjective	3	Difficult to set budget	3	Gives no valuation	1	Only as good as studies adopted	2
Often too complex for users to understand	3	Cant measure many amenity types	3	Vague/too general for respondents	2	Valuation issues over time/ currencies	2	Best/worst often not symmetrical	1		

Note: all experts permitted multiple points; above is a synthesis of all points made in their text responses

A range of amenity value measurement concerns/issues were identified

Measurement Issues

Amenity Value Measurement Issues/Problems

	Measurement issue	Description
3	**Values Context Specific**	▪ High variability makes it difficult to estimate values that are transferrable to other services/cities ▪ Differences in values may be observed by age, gender, income, location and trip characteristics
2	**Application of 'average' values for benefit transfer**	▪ Average values may be skewed towards higher/extreme values ▪ Generally not appropriate where proposals are targeted at specific groups (e.g. mobility impaired)
	Absence of natural and/or meaningful units	▪ Lack of natural/meaningful units limits the transferability of valuations ▪ Metric scales are often not meaningful to respondents (e.g. decibels for noise)
1	**Packaging effect**	▪ Where values for individual amenities sum to more than the value of a package of improvements ▪ Valuations for individual amenities are typically scaled down to deal with the problem
	Interaction and 'halo' effects	▪ Where improving one amenity can change the perceived value of other amenities ▪ Example is mobile phone based information which may reduce the value of information displays
	Changes in customer expectations	▪ Willingness to pay for particular amenities may change over time as minimum standards increase ▪ Quality of customer amenities may need to continually evolve in order to stand still
	Survey response bias	▪ Strategic response bias – respondents' overstate their valuations to influence policy ▪ Non-commitment bias – respondents' lose nothing by indicating value for certain amenities
	Respondents' understanding of amenities & levels of provision	▪ Unfamiliarity with amenities can affect respondents' valuations ▪ Use of focus groups beforehand can help to ensure amenities are framed appropriately

Source: De Gruyter, Currie and Naznin (2018) 'Best Practice Approaches to Public Transport Customer Amenity Valuation - Research Literature Review'

Problematic amenities are transformational effects, low frequency events, ride quality, amenities with no measurement scale and wheelchair/ disabled access amenities difficult to measure

Are There Amenities Which CANNOT Be Valued?

Are there are specific public transport customer amenities that you believe cannot be valued appropriately?

"**Transformational effects** where a lot of improvements are made and the value becomes greater than the sum of the parts."

"Some are very **context-specific** – e.g. information may often be unnecessary but critical in the context of incidents. Also comfort variables are likely to have a (travel) time-dependent value component."

Difficult for people to value **high impact but low frequency events** - i.e. getting splashed by roadside puddles. People systematically value them too highly because of the large negative impact. But it is a rare almost never sort of event. Yes people would be willing to pay £5 to avoid being soaked by a passing vehicle but not every single day."

"**Ride quality** (and the related comfort factors) has proved surprisingly difficult to value."

"Where there is **no established measurement scale** of the amenity in question, you can only provide study-specific valuations. In general there are lots of problems with qualitative improvements"

"Those that relate to amenities that are only valued by a **small minority of passengers** - many amenities for disabled passengers fall into this category."

Note: Above shows individual comments by separate experts – some word editing has occurred to aid readability

Recommended best practices: good survey design, validating results, and something is better than nothing.

Expert View of Best Practice

Q9. What best practices would you recommend for valuing public transport customer amenities? Please provide reasons in your response below

"Ensure biases are minimized in **survey design** and collection"

"Very careful survey design, cognitive testing, piloting Sense **checking of responses against revealed preference** (RP) data - this includes where a study gives high values, which if real would have been detected by RP, but was not supported by RP Comparison of results with those found in other studies and provide plausible explanation (can be qualitative) of differences"

"Realism checks, is new seat fabric really worth 10% off journey time etc."

"costs could be reduced by developing **agreed upon valuations** and then publishing and updating those valuations in say, the ATAP guidelines and ensure that they are **publicly available"**

"Better to do a cheap valuation than not because of cost"

Note: Above shows individual comments by separate experts – some word editing has occurred to aid readability

Closing comments

- Melbourne is behind other Australian and world cities
  - If Customer Experience is important, it is important to measure and justify investment in Customer Experience Infrastructure
- Proper survey design and validation
- Using multiple methods are best (SP/RP common methods)
- Resources are now available for use PTRG.Info

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