# MONASH University

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Fare evasion research and practice insights

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PTRG PUBLIC TRANSPORT RESEARCH GROUP

GROUP OF EIGHT AUSTRALIA

MONASH INSTITUTE OF TRANSPORT STUDIES
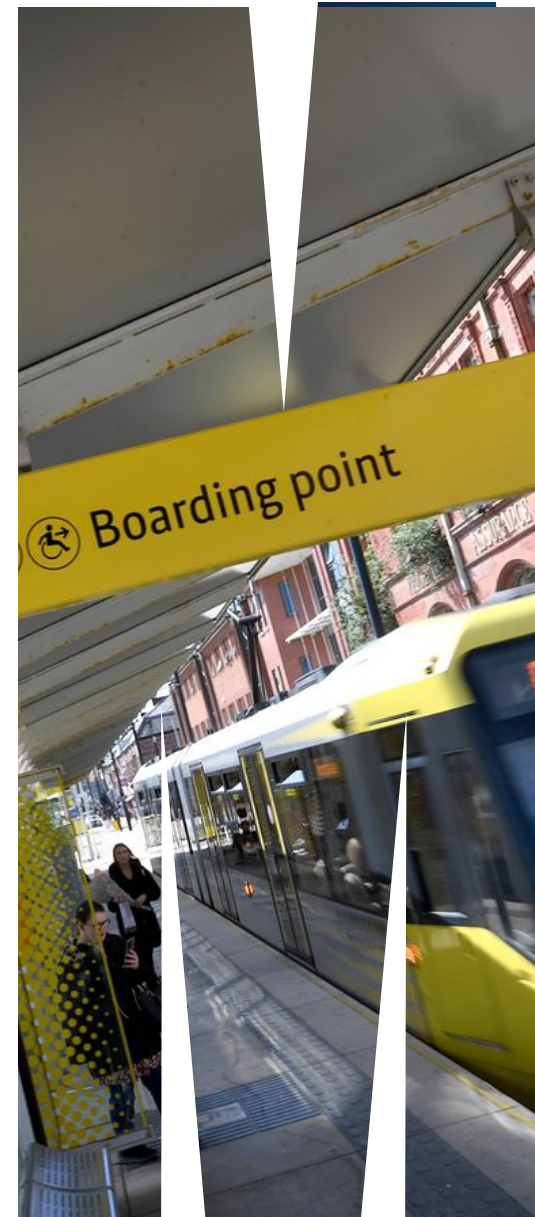
Introduction

Fare Evasion Psychology

International Study

Open Access Trams

This paper outlines key findings of Monash PTRG research on fare evasion and its impact on revenue protection

Fare Evasion Psychology → **International Study** → **Open Access Trams**

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Introduction

**Fare Evasion Psychology**

International Study

Open Access Trams

In 2012 Monash PTRG were commissioned to research the psychology of fare evasion by Public Transport Victoria

- Overall project objective:
  - to understand the psychology behind fare evasion and provide actionable recommendations for use in improving compliance.

- Aims
  1. To understand what motivates people to fare evade
     - What is the prevalence and distribution of unintentional, opportunistic and purposeful fare evasion?
  2. To develop an empirical model that will suggest strategies to reduce fare evasion

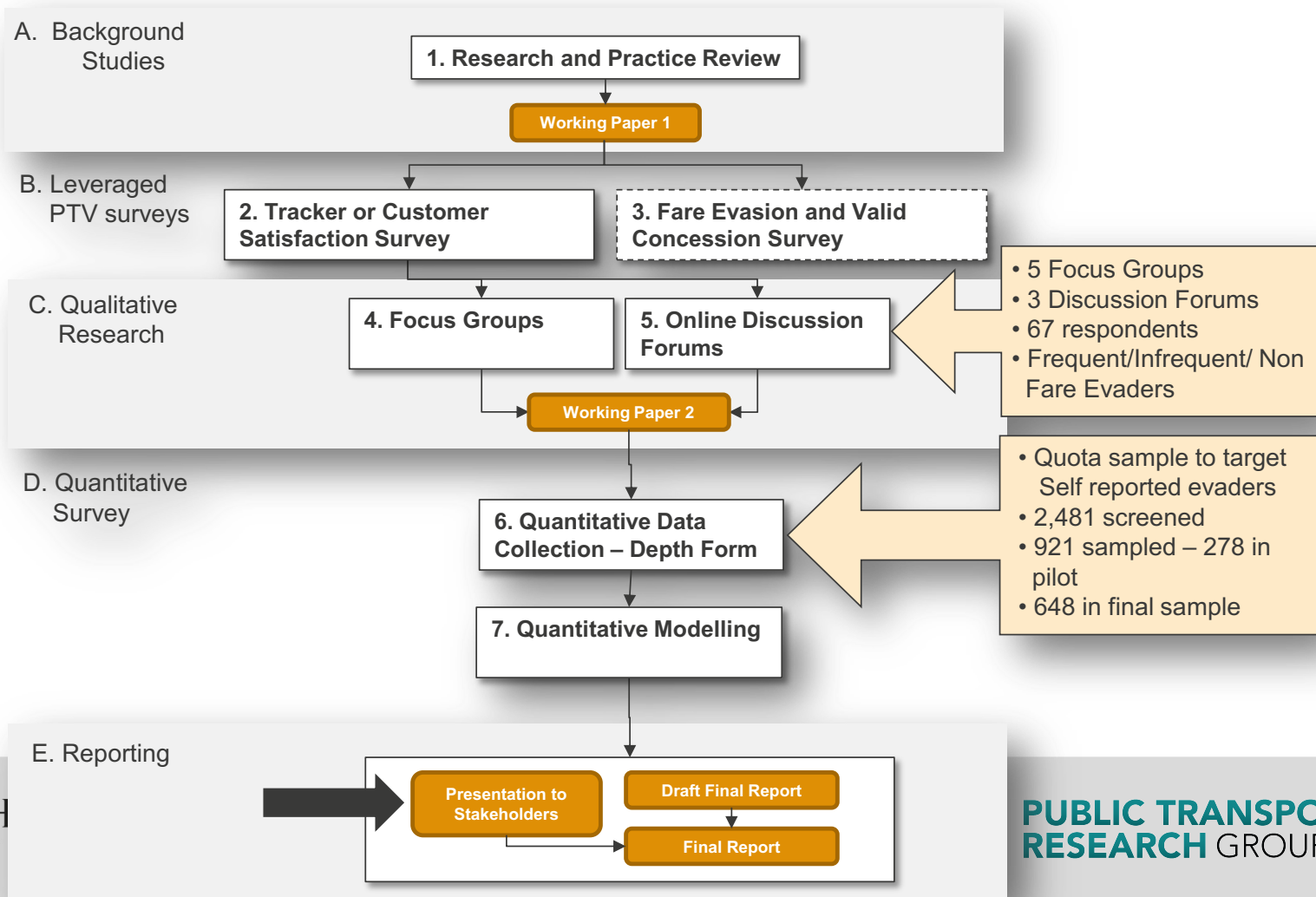# At the time evasion was at 12% (20% trams) costing $80Mp.a. (£42M)
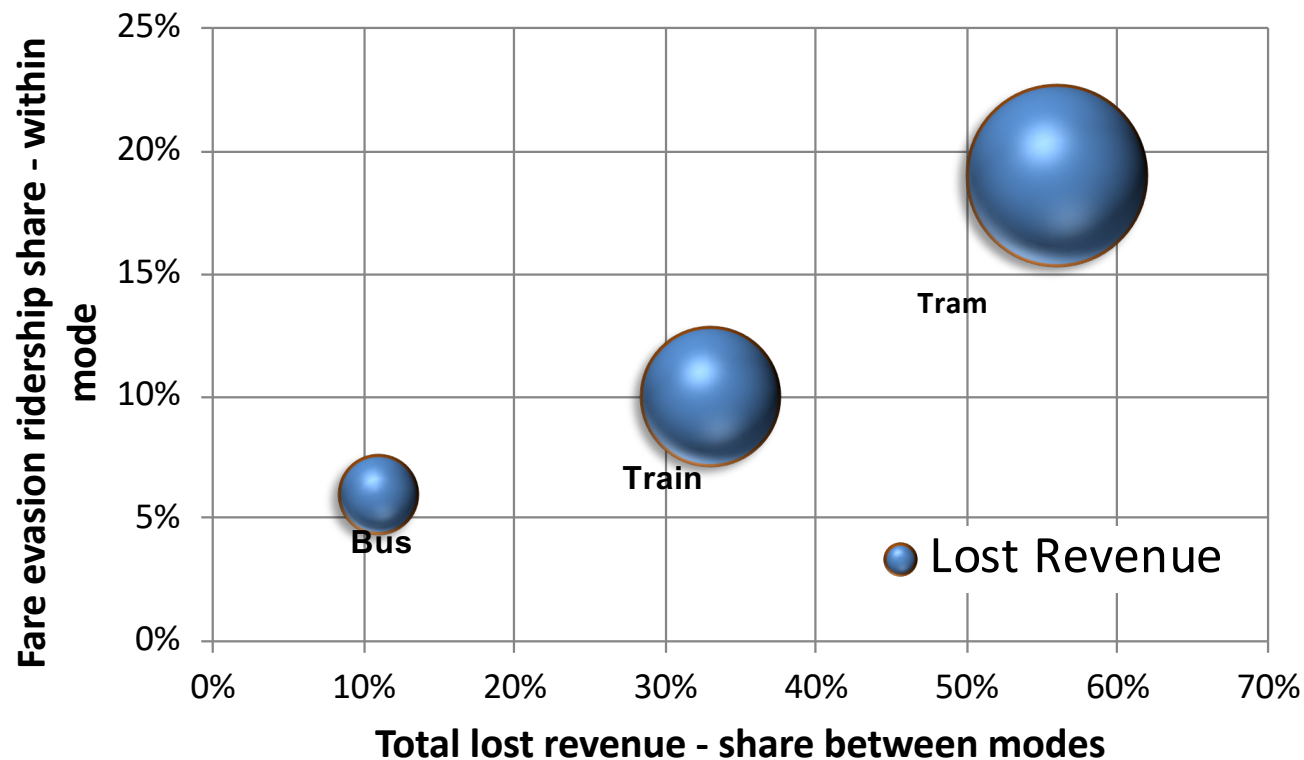
Lost Revenue
= $79.3M p.a. (2011-12)

Share of
Fare Revenue
Lost   = 12%

Source: PTRG analysis of the Fare Evasion and Valid Concession Percentage Survey - 2011

The research reviewed knowledge, leveraged PTV surveys, did qualitative research with evaders then a large online survey


A. Background Studies

1. Research and Practice Review
→ Working Paper 1

B. Leveraged PTV surveys

2. Tracker or Customer Satisfaction Survey

3. Fare Evasion and Valid Concession Survey

C. Qualitative Research

4. Focus Groups

5. Online Discussion Forums
→ Working Paper 2

- 5 Focus Groups
- 3 Discussion Forums
- 67 respondents
- Frequent/Infrequent/ Non Fare Evaders

D. Quantitative Survey

6. Quantitative Data Collection – Depth Form

7. Quantitative Modelling

- Quota sample to target Self reported evaders
- 2,481 screened
- 921 sampled – 278 in pilot
- 648 in final sample

E. Reporting

Presentation to Stakeholders

Draft Final Report

Final Report

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Ticketing design affects FE rates – Honour systems (Tram) are FE vulnerable

Ticketing Design and Fare Evasion Types
Source: Updated from (Dauby and Kovacs 2006)

Control type	Features	Advantages	Disadvantages
'Honour' system	Open space, few controls	Urban integration, ticketing enforcement costs low, lower dwell time	Lack of human presence, high fare evasion
Moderate control	Open space, frequent roving inspections	Less fare evasion, urban integration, lower dwell time	Lack of human presence, cost of inspections may exceed revenue saved
Systematic control	Open space, permanent control (conductor / driver)	Low fare evasion, urban integration, sense of security	Dwell time impacts, cost of conductors, conflicts with staff
Infrastructure control	Closed space, station architecture	Minimal fare evasion	Expensive infrastructure, interruption of urban form

Higher Fare Evasion Rates

Easier/ Quicker Access

Tram

Train

Bus

Train
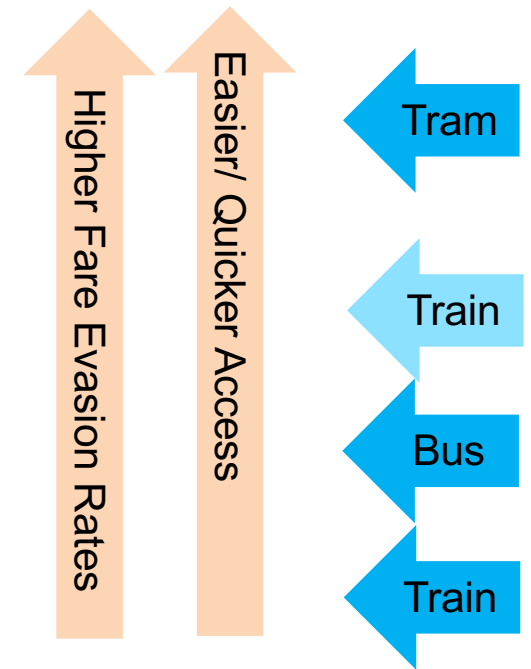
Honour systems common on Light Rail – Typically managed through high ticket checking rates (8% to 15% of trips) – Melbourne tram ticket check rate is 1-2%

A theoretical model was developed for testing based on shoplifting and previous (limited) fare evasion research

Theoretical Model of the Psychology of Fare Evasion
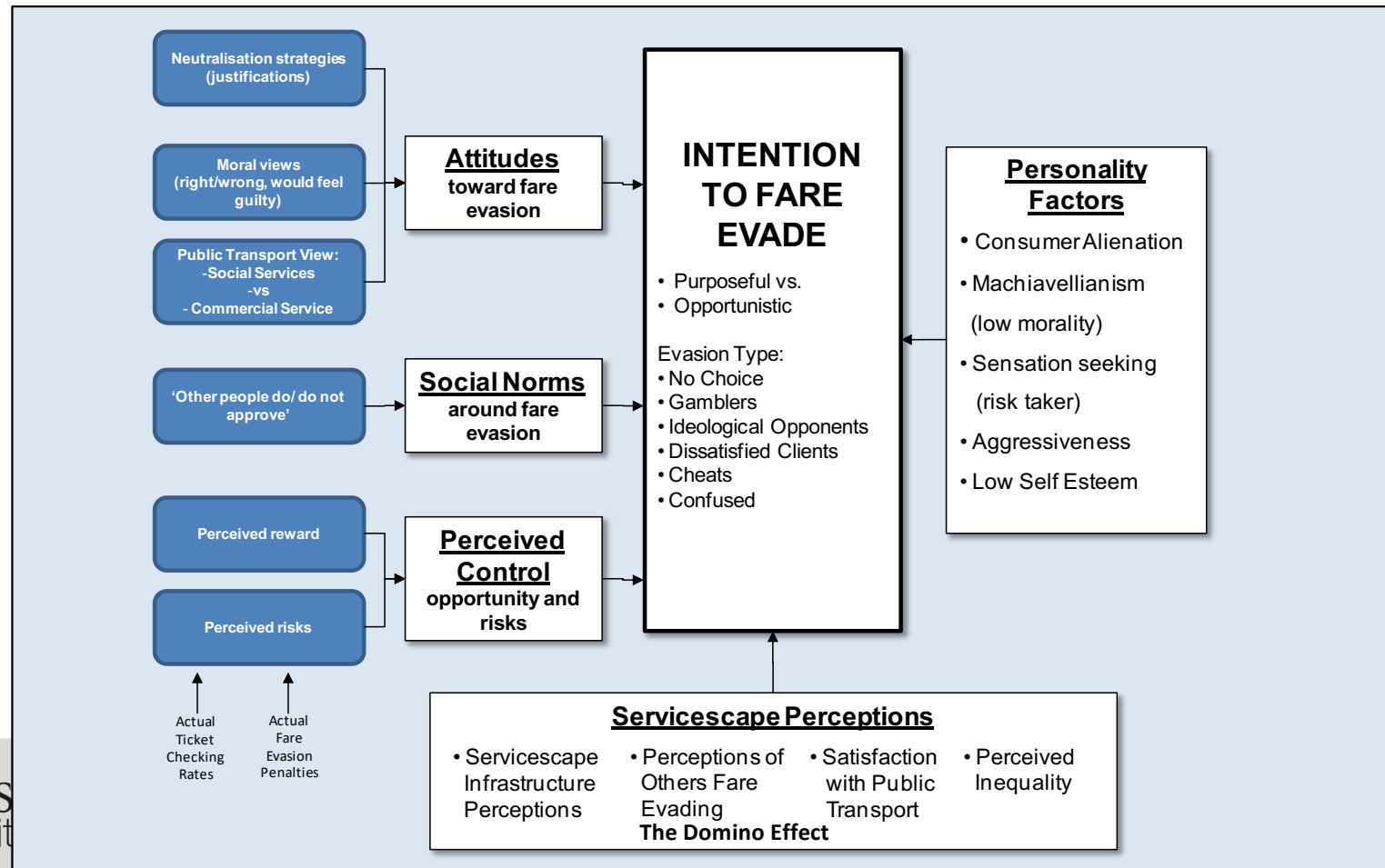
Qualitative research found four 'rationales' for fare evasion with varied occurence, intentions and motivations

Strong view that Fare Evasion Is about INTENT. Feeling of INJUSTICE about being caught if you intended to buy a ticket – feel "THE SYSTEM IS WRONG" if this happens

Source: Monash User Focus Groups and Discussion Groups

Fare Evasion Rationales

Perspective	1. Its wrong – the accidental evader	2. The 'it's not my fault' evader	3. The calculated risk-taker evader	4. Career evaders
Occurrence	Rare	Occasional	Fairly Often	Always
Intentions	No Intention – Evasion by Accident	No Intention – Evasion due to payment barriers	Intention – Evasion due to low risk	Entirely Intentional
Feelings	Guilt/ Embarrassment	Nervous, worried but no guilt	Dispassionate, vigilant, no guilt	Pride
View of Fare Evaders	Condemnation	Empathy - sense of injustice to condemnation	Understanding to condemnation	Empathy

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Quantitative research found most revenue loss was 'recidivist' fare evaders

Table 5.3: Estimated Volume of Trips Made by Fare Evasion Frequency and Public Transport Trip Frequency Groups

	Estimated Share of Trips Involving Evasion	Estimated Fare Evasion Trips Made by People in Each Evasion Frequency Group (M p.a.)						Total Trips (M)	Share of Total Travel	Share of Evasion Trips
		6-7 days a week	5 days a week	3-4 days a week	1-2 days a week	> monthly	Less often			
Always	100.0%	1.2	2.9	-	-	-	0.0	4.1	0.8%	16%
Almost Always	95.0%	1.1	4.6	-	-	0.0	0.0	5.8	1.1%	22%
Mostly	75.0%	0.9	3.7	2.7	0.6	0.1	0.0	7.9	1.5%	30%
Regularly	37.5%	0.4	0.7	0.8	0.3	0.1	0.0	2.3	0.4%	9%
Occasionally	12.5%	0.1	2.8	1.3	0.4	0.1	0.0	4.8	0.9%	18%
Rarely	1.0%	0.0	0.6	0.4	0.2	0.0	0.0	1.2	0.2%	5%
Never	0.0%	-	-	-	-	-	-	0	0.0%	
Sub-Total: Fare Evasion Trips (M p.a.)		3.8	15.4	5.2	1.4	0.4	0.1	26.2	**5.1%**	**100%**
Share of Total Evasion		14.3%	58.7%	19.9%	5.4%	1.4%	0.3%			

Recidivists
- 68% of all FE trips
- 65,400 people
- 81% high frequency PT users

High Frequency Users who Fare Evade
- 73% of all FE trips
- 285,900 people
- 75% Recidivists

All Fare Evaders
- 822,200 people (20.6% of Melbourne population)
- 71% (580,000 people) a one off occurrence never to be repeated

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Recidivist and deliberate evader impact on revenue are significantly different to accidental and unintentional evaders
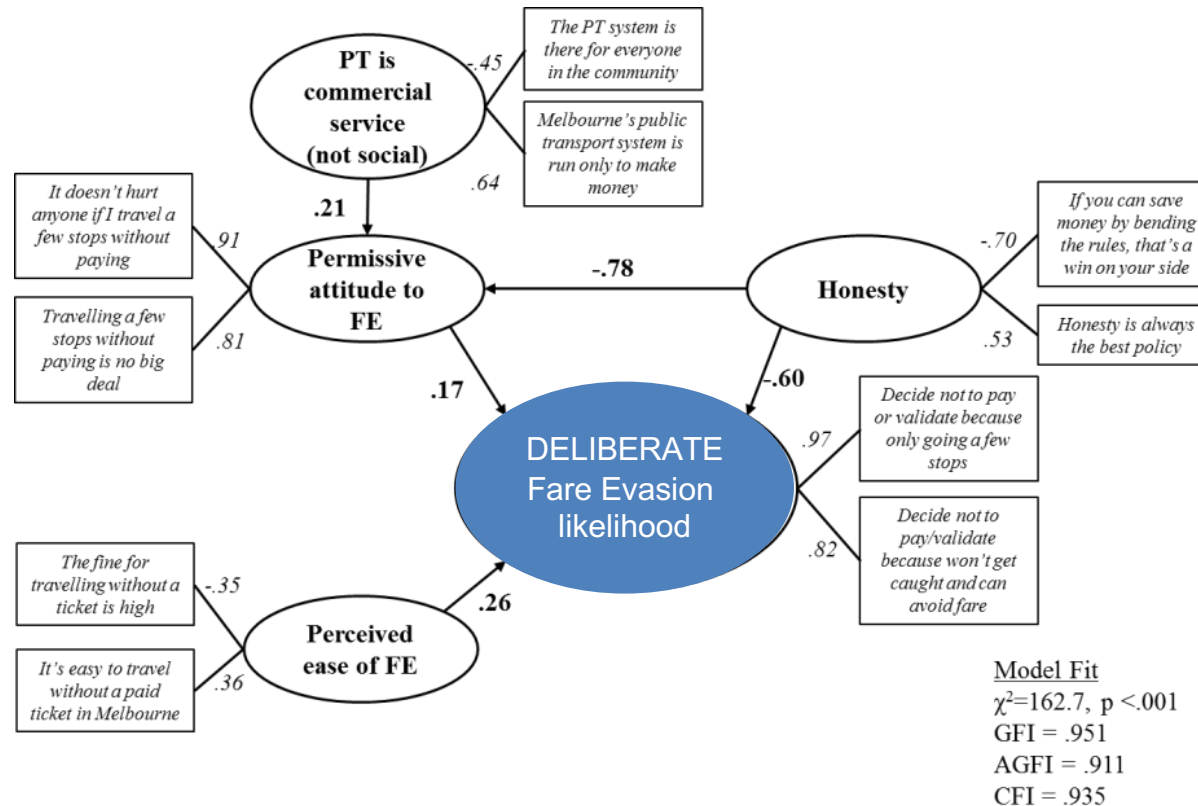
Contrasting Fare Evader Metrics

Measure	Fare Evader Type			
	Recidivists	**Meant to pay, accident, one off**	**Deliberate**	**Unintentional**
Share of people fare evading at least once p.a.	8%	70%	41.0%	44.0%
Share of revenue lost/fare evasion trips	68%	5%	77.4%	15.5%
Estimated Value of Revenue Lost p.a.	$54M	$4M	$47.8M	$9.6M
Number of People	65,400	580,000	702,240	1,388,520
Share of Melbourne population	1.6%	14.5%	17.6%	34.8%
Lost Revenue per person p.a.	$826	$6.90	$68.00	$6.90

Evaders were numerically split into three clusters with contrasting profiles

Fare Evader Clusters

Deliberate Evaders	Unintentional Evaders	Never Evaders
17.6% of market	**34.8% of market**	**47.6% of market**
• Most likely to repeat FE and intend to FE in future • High frequency PT user, full-time worker or student, age 17-34 • Lower self esteem, higher sensation seeking, less honest • More influenced by the 'domino effect' • Most likely to have been caught for FE (8%p.a.) • Have a poorer opinion of PT • Think PT is run for commercial profit	• One-off FE and low future intent • Range of PT use (frequent to infrequent) • Range of demographics (no standout features) • Higher self esteem, lower sensation seeking, more honest • Strongest worry about being caught (5% caught in last year) • Stronger view that PT is for social benefit not commercial	• Almost no FE and very low future intent • Lower frequency PT users • Range of demographics but higher older and retired • Highest self esteem, lowest sensation seeking, highest honesty rating, stronger social beliefs • Stronger view that PT is for social benefit not commercial
Biggest revenue loss	**Very little revenue loss**	**Almost no revenue loss**

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Deliberate FE is driven by (dis)honesty, (weak) perceived control and permissive views
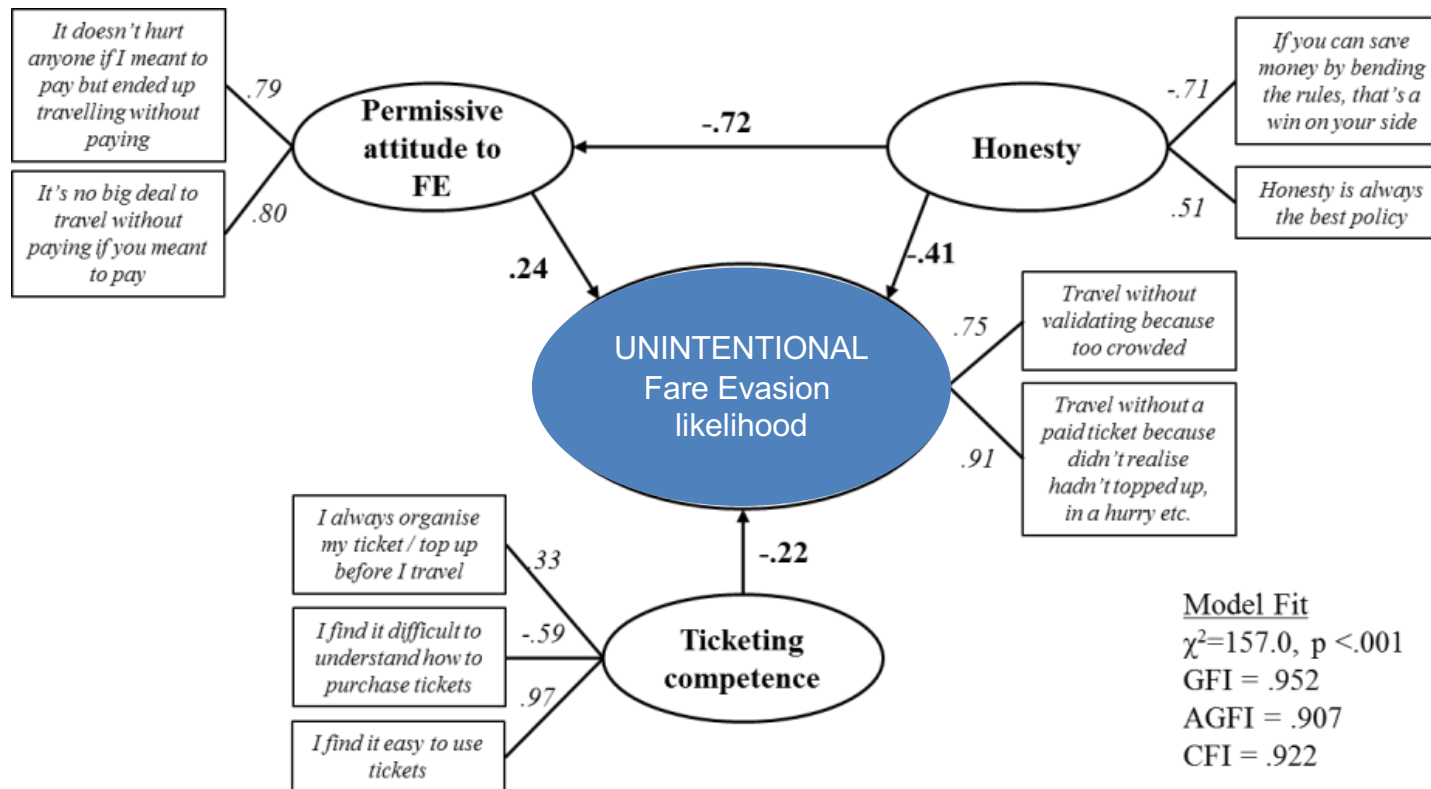
Deliberate Fare Evader Behaviour Drivers

Accidental FE is driven by (dis)honesty permissive views and (poor) ticketing competence

Unintentional Fare Evader Behaviour Drivers

Model Fit
$\chi^2 = 157.0$, p < .001
GFI = .952
AGFI = .907
CFI = .922

Key Points

- (dis) honesty a main driver followed by permissive attitudes then ticketing competence
- Ease of evasion is not an issue since evasion is accidental/ unintended
- Ticketing competence a valuable concept in understanding accidental fare evasion

Key Finding: FE Sensitivity Analysis suggests ticket check rates can reduce tram FE....

Impact of Ticket Checking Rates on Fare Evasion Share

$y = -4.48x + 0.24$
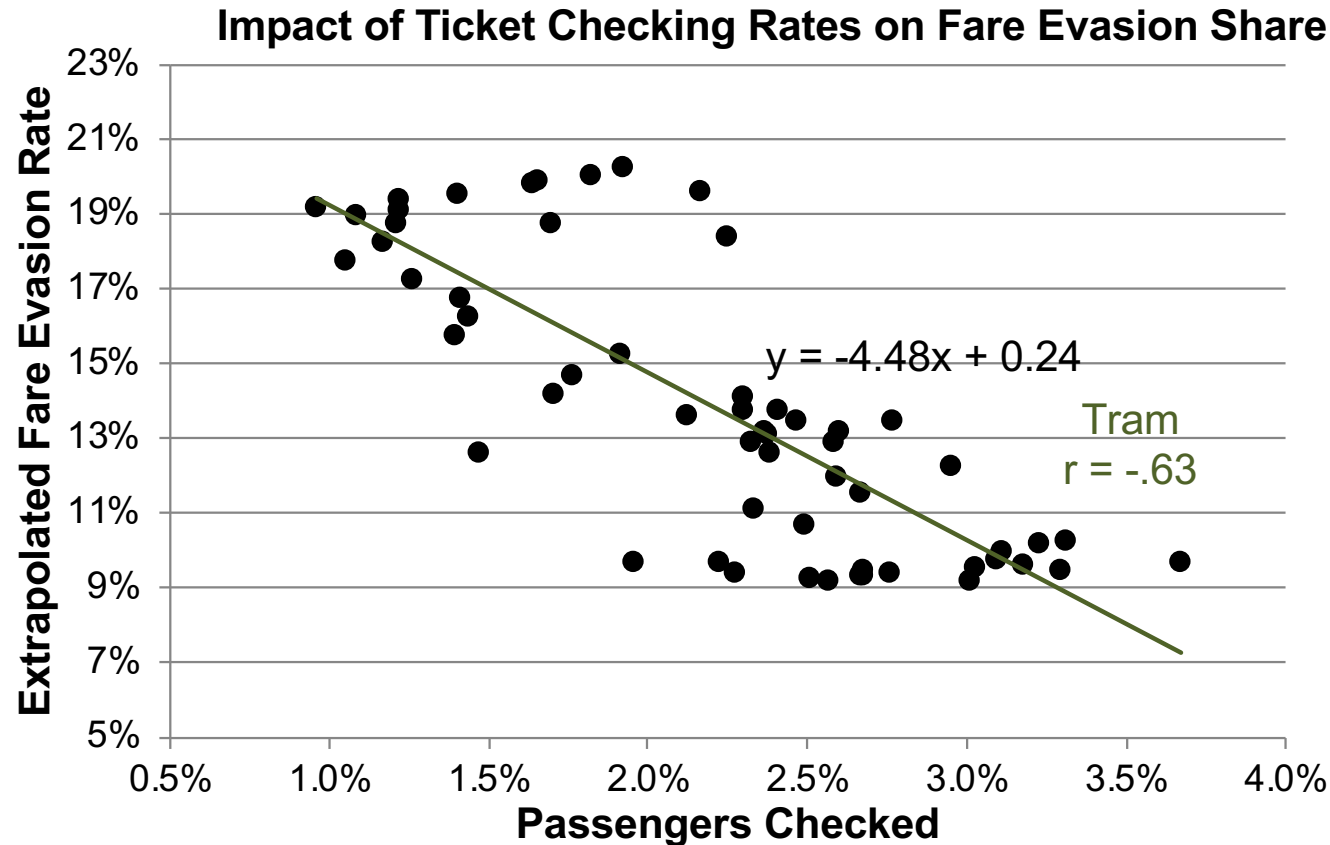
Tram
r = -.63

Key Points

- Doubling ticket inspection rate from 1.31% (average rate in 2011) to 2.62% would act to reduce fare evasion on trams from 18.13% to 12.26%.
- doubling rates acts to reduce fare evasion rates by about a third.
- In financial terms additional revenue of $14M p.a. but doubling checking will cost money
- Implies an elasticity of about -0.32

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....we were able to estimate the effect on FE of a series of measures

Improving Ticketing Competence by 10%	Reduce belief that Fare Evasion is no 'Big Deal' by 10%	Reducing belief in the 'Domino Effect' by 10%
• Reduced intent to fare evade by between 1.4% and 4.5%	• Reduced intent to fare evade by between 1.5% and 3.9%	• Reduced intent to fare evade by between 1.6% and 1.8%
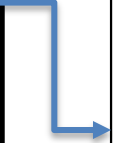
Key areas where messages might change attitudes and have an effect on Fare Evasion:

a. discourage the view that 'it is easy to travel without a paid ticket'
b. reduce the view that 'no one is hurt because of fare evasion'
c. reduce the view that 'it's no big deal to fare evade'
d. increase perceptions that a high share of trips involve ticket checking (particularly on trams)
e. increase 'ticketing competence'
f. increase awareness that public transport is provided for all users, has high social benefits and that it is not a profit making or commercial enterprise.

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Recommendations

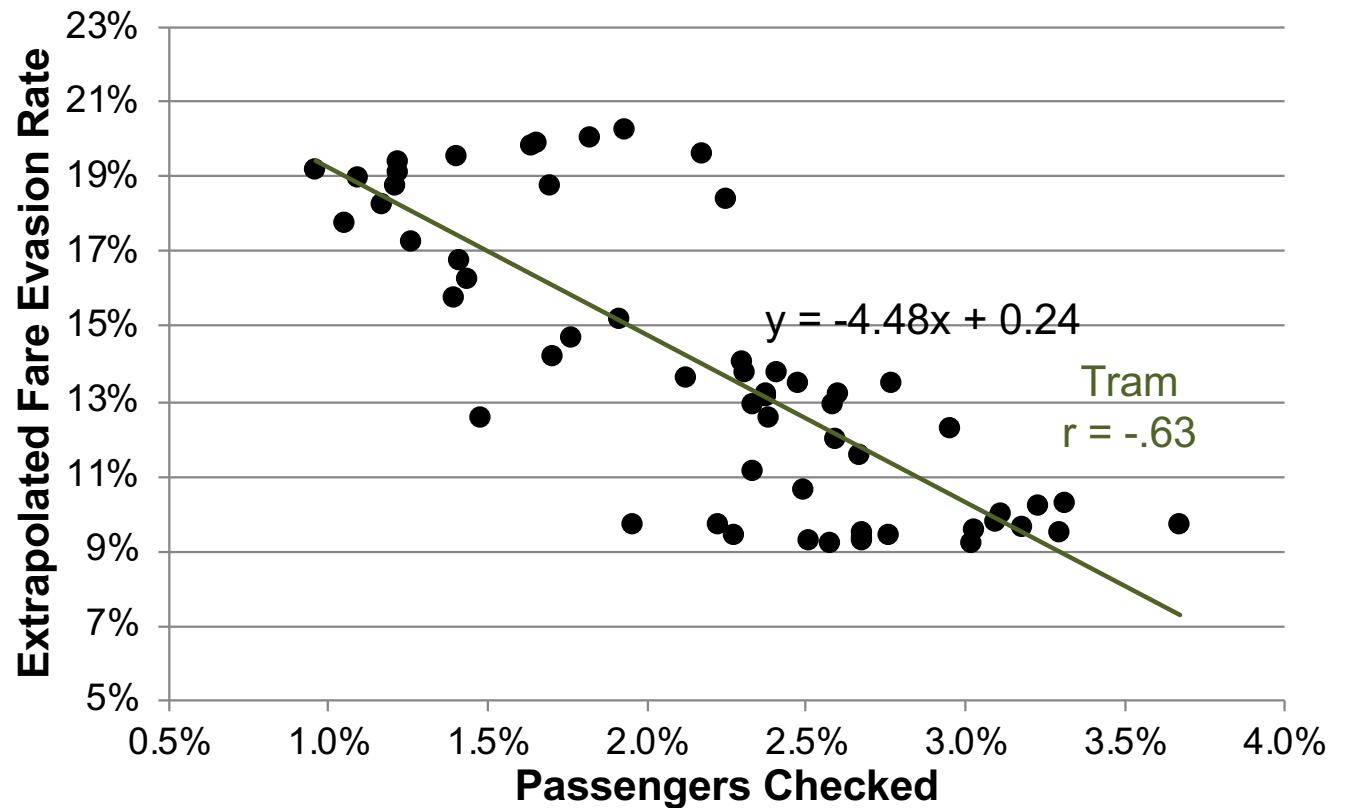**1. Target the reduction of fare evasion amongst recidivist evaders**

a. Targeting of ticket checking to times, modes and locations where recidivists travel
   - Peak travel times (recidivists are typically commuters and students who travel in the peak)
   - Tram and train in the peak (but bus less)
   - Zone 1 travel and Zone 1-2 travel
   - Profiling?
b. Measures to identify recidivist evaders
   - Myki records – better recording of people in sales
   - New approach to fare evasion penalties
c. Restructure the fare evasion penalty system to increase fines with repeat offences
   - FREE for first offence (but record person details and use this to provide info for better ticketing competence
   - $207 * (no offences-1) – a multiplicative fine ($207, $414, $621 etc
d. Increases in ticket checking rates.
   - Notably on trams

2. Be sympathetic to and assist one off/accidental evaders.

a. Restructure the ticket checking system (as suggested above)
   - No fine for first offence
   - Support in terms of info for offender
b. Introduce measures to increase 'Ticketing Competence'.
   - Improved training for public transport users
   - Improved marketing of how to use the ticketing system. This could target messages about not forgetting to top up, swipe or have a valid ticket.

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Recommendations

3. Higher ticket checking rates on trams

Scatter plot: Extrapolated Fare Evasion Rate vs Passengers Checked. Trend line equation y = -4.48x + 0.24. Tram r = -.63

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Recommendations

4. Employ New Marketing Messages

Key attitudes you are trying to influence

a. discourage the view that '**it is easy to travel without a paid ticket**' (ticket check rates, fine for recidivists)

b. reduce the view that **'no one is hurt because of fare evasion'**

c. reduce the view that **'it's no big deal to fare evade'**

d. increase perceptions that a high share of trips involve ticket checking (particularly on trams)

e. increase **'ticketing competence'**

f. increase awareness that public transport is provided for all users, has **high social benefits** and that it is not a profit making or commercial enterprise.

Marketing of the new approach to fare evasion as a program (sell the benefits) . Target Recidivists as the enemy. Key messages:

- Melbourne tax payers on average give frequent fare evaders over $800 annually in free fares
- They cost the community $54M every year in lost revenue.

Recommendations

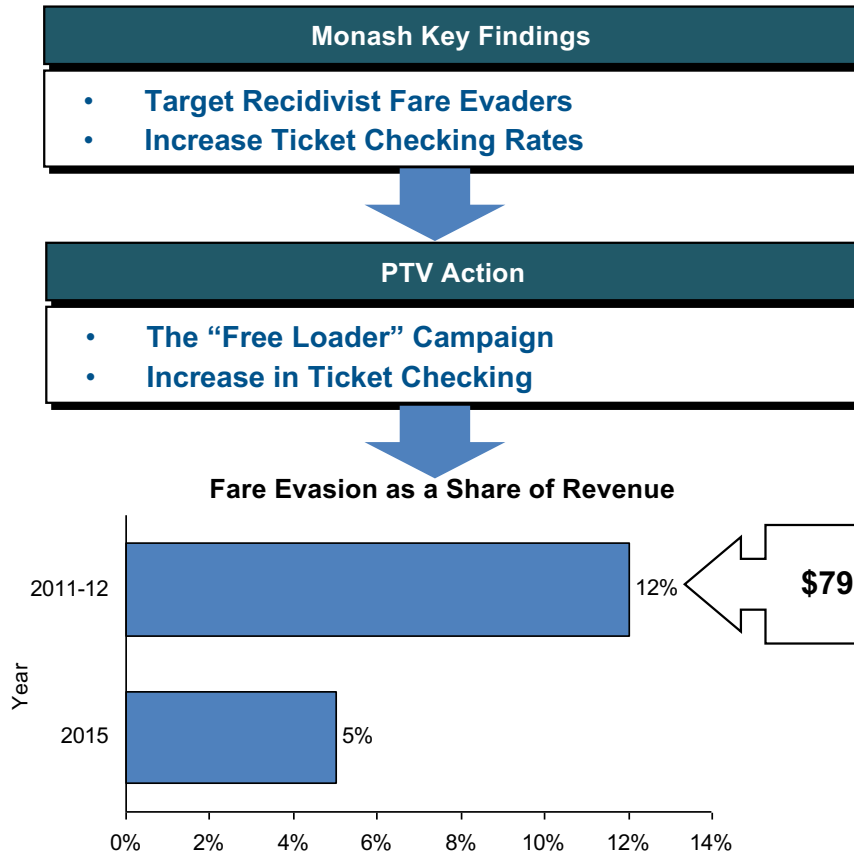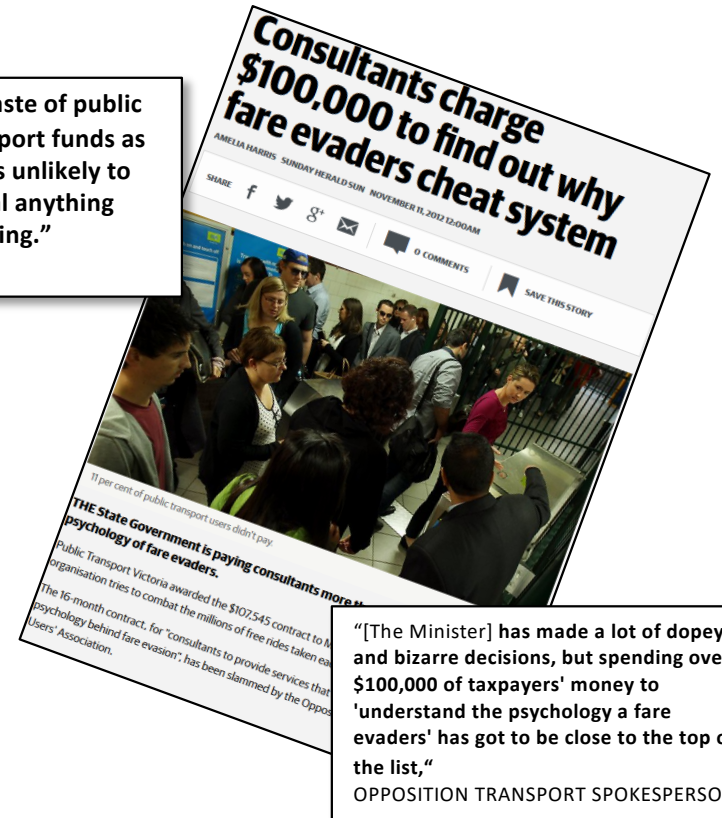|	
5. Address the 'Domino Effect'	a. Regularly advertising actual fare evasion rates on trams as part of monthly/quarterly performance monitoring advertising on public transport b. Add message 'no validation needed for season ticket holders' to advertising [check first for fare system integrity compliance] c. Clarifying the above messages in training activities associated with myki.
6. Continue to Improve Ticketing	Common concerns raised by passengers in the interviews were: • A need to make it easier for infrequent public transport users and visitors to use the ticketing system • The fact that on-line top ups of myki have a 24-hour delay before added value can be used • General difficulties people face in understanding and using the myki website • Lack of support given to infrequent users who don't know how to use the ticketing system, particularly when using the bus system for the first time.
7. Continue to Improve Public Transport	Improving quality and quantity of service and quality of customer service (The servicescape) will have indirect impacts in reducing fare evasion

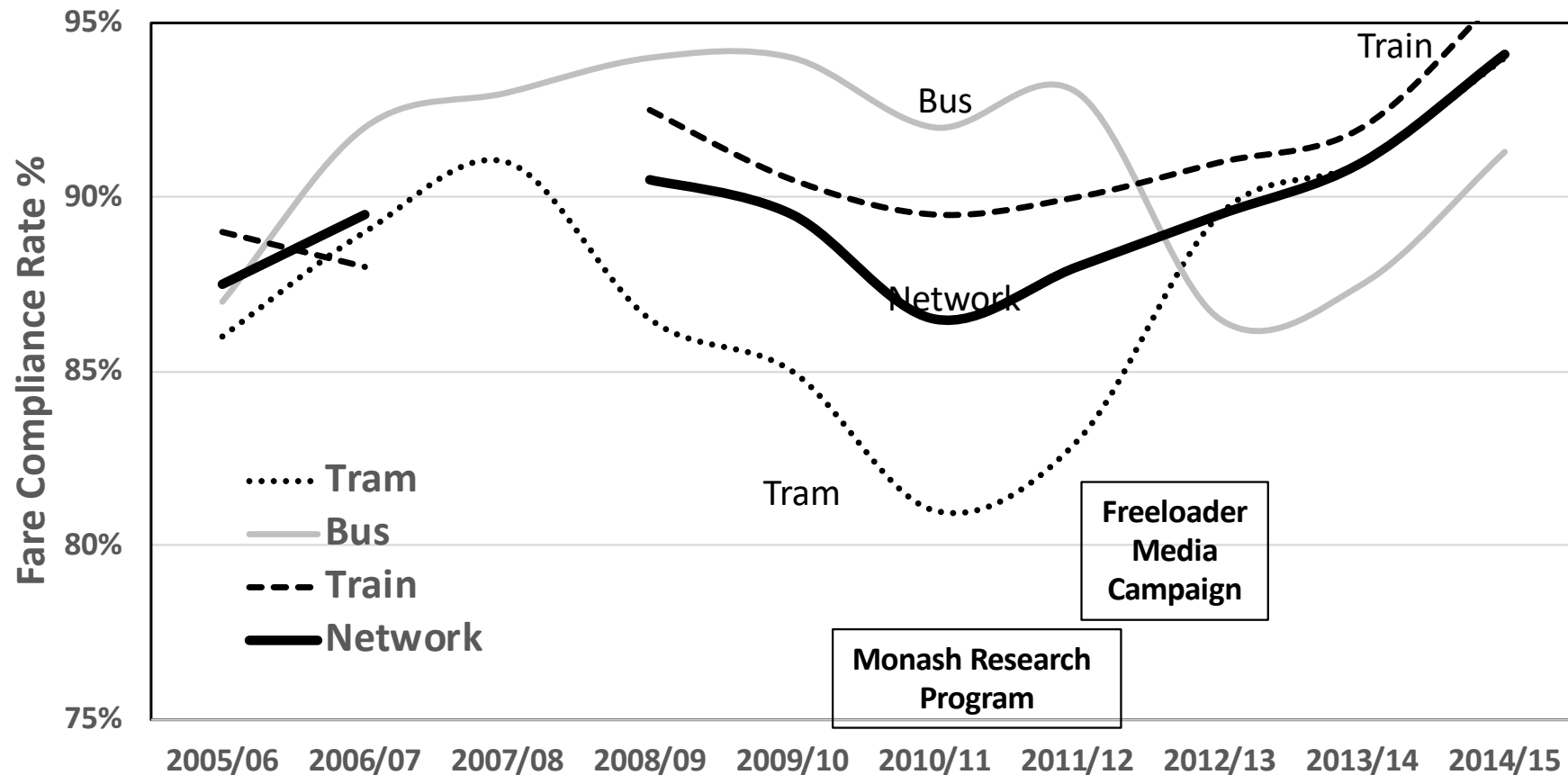# Outcomes: fare evasion halved; saving ~$45M pa (£24Mpa)

Monash Key Findings

- **Target Recidivist Fare Evaders**
- **Increase Ticket Checking Rates**

PTV Action

- **The "Free Loader" Campaign**
- **Increase in Ticket Checking**

Fare Evasion as a Share of Revenue

$79M

A Notional Saving of **over $45M p.a.**

Chart: Fare Evasion as a Share of Revenue (Year)
- 2011-12: 12%
- 2015: 5%
(x-axis: 0% to 14%)

Consultants charge $100,000 to find out why fare evaders cheat system

AMELIA HARRIS SUNDAY HERALD SUN NOVEMBER 11, 2012 12:00AM

11 per cent of public transport users didn't pay.

THE State Government is paying consultants more to psychology of fare evaders.

Public Transport Victoria awarded the $107,545 contract to organisation tries to combat the millions of free rides taken ea psychology behind fare evasion", has been slammed by the Oppo Users' Association.

"a waste of public transport funds as it was unlikely to reveal anything startling."
PTUA

"[The Minister] **has made a lot of dopey and bizarre decisions, but spending over $100,000 of taxpayers' money to 'understand the psychology a fare evaders' has got to be close to the top of the list,"**
OPPOSITION TRANSPORT SPOKESPERSON

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Outcomes: fare compliance increased; bus is the new problem

The PTV Freeloader campaign

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Fare Evasion Psychology

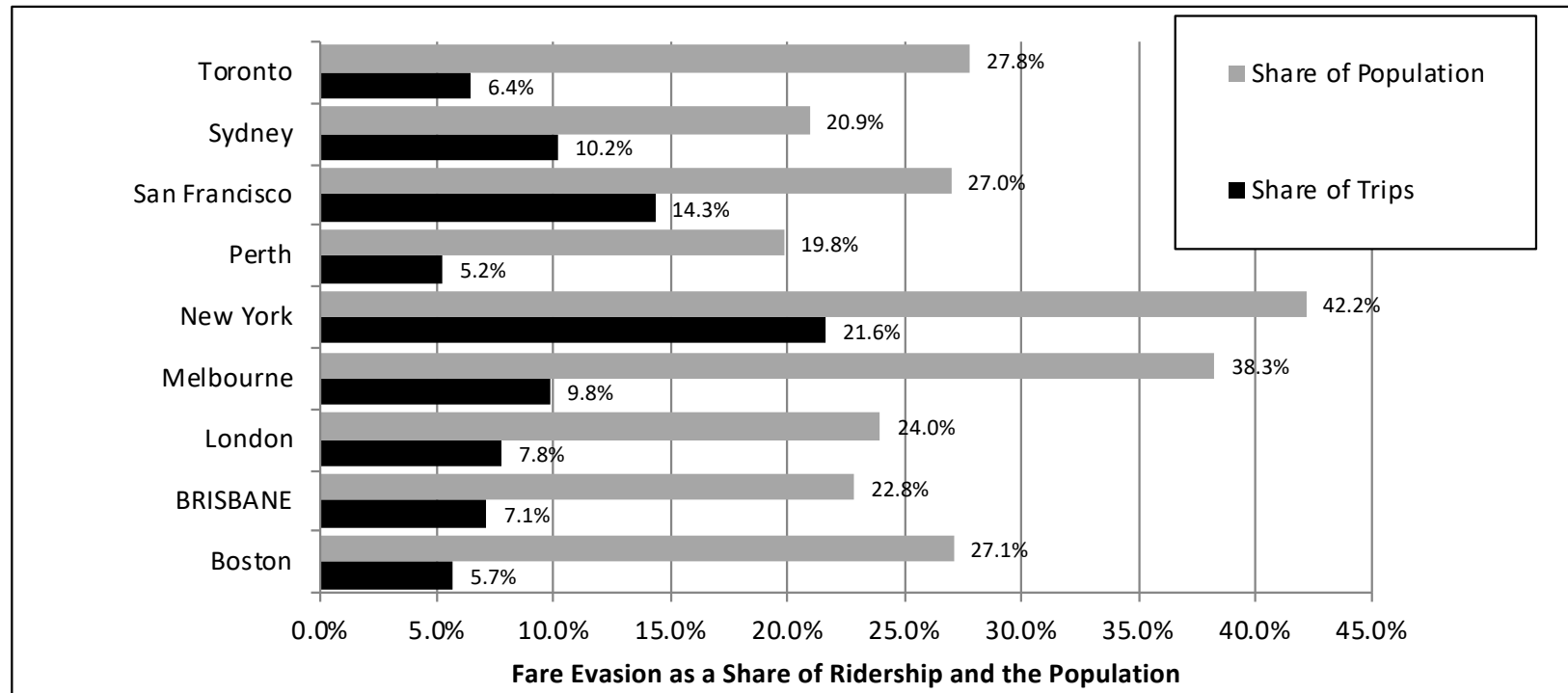**International Study**

Open Access Trams

A follow on study explored evidence of recidivism in 9 international cities

- Overall project objective:
  - Cross national study of 9 international cities including Melbourne, London, Sydney and Perth
- Aims
  - Implement web survey method for fare evasion metrics on a sample on international cities (including London) to estimate broad levels of:
  - Fare evasion (trip share, population share)
  - Recidivism rates
- Approach
  - 200 randomised PT users living in target cities

FE share of trips highest in US; 7.8% London; high shares of the population FE at least once a year
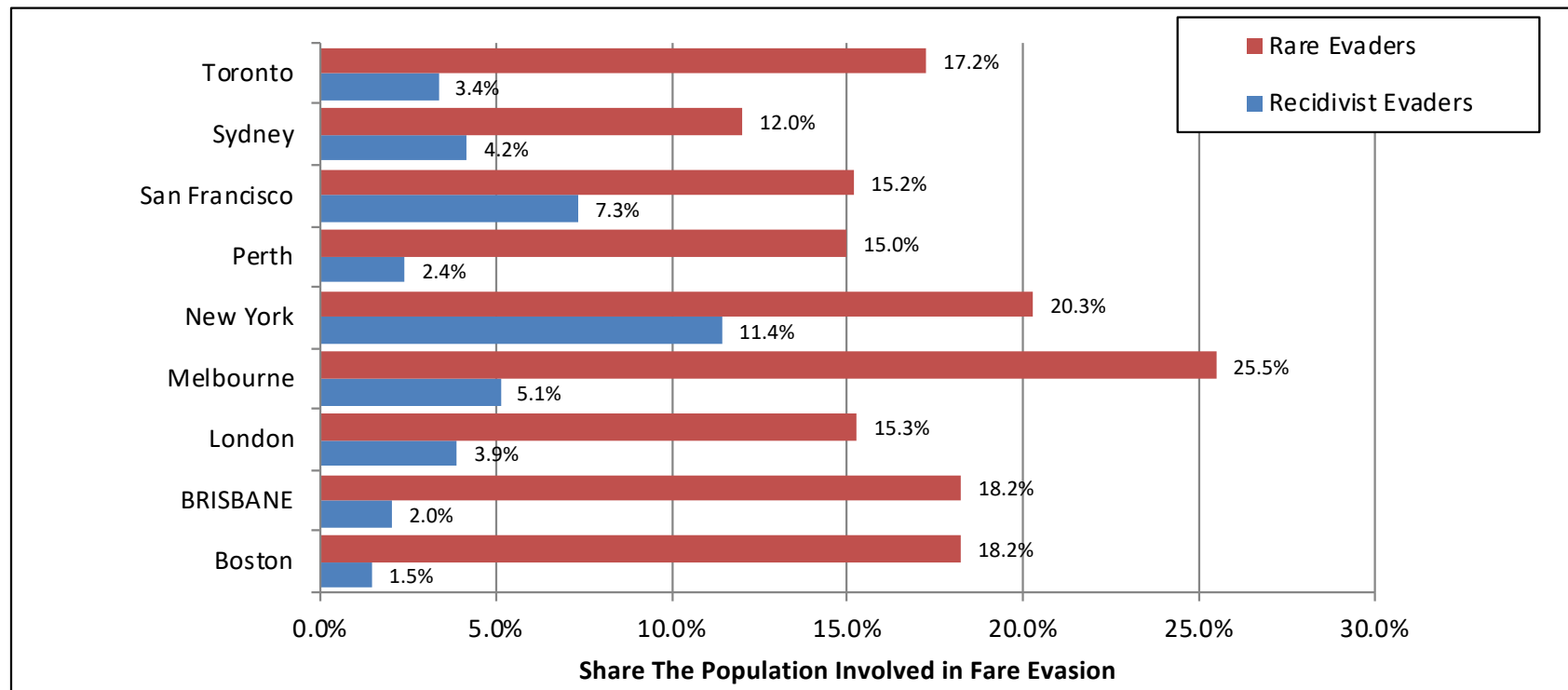
Fare Evasion (at least once p.a.) as a Share of Ridership and the Population

Source: Monash Cross National Study

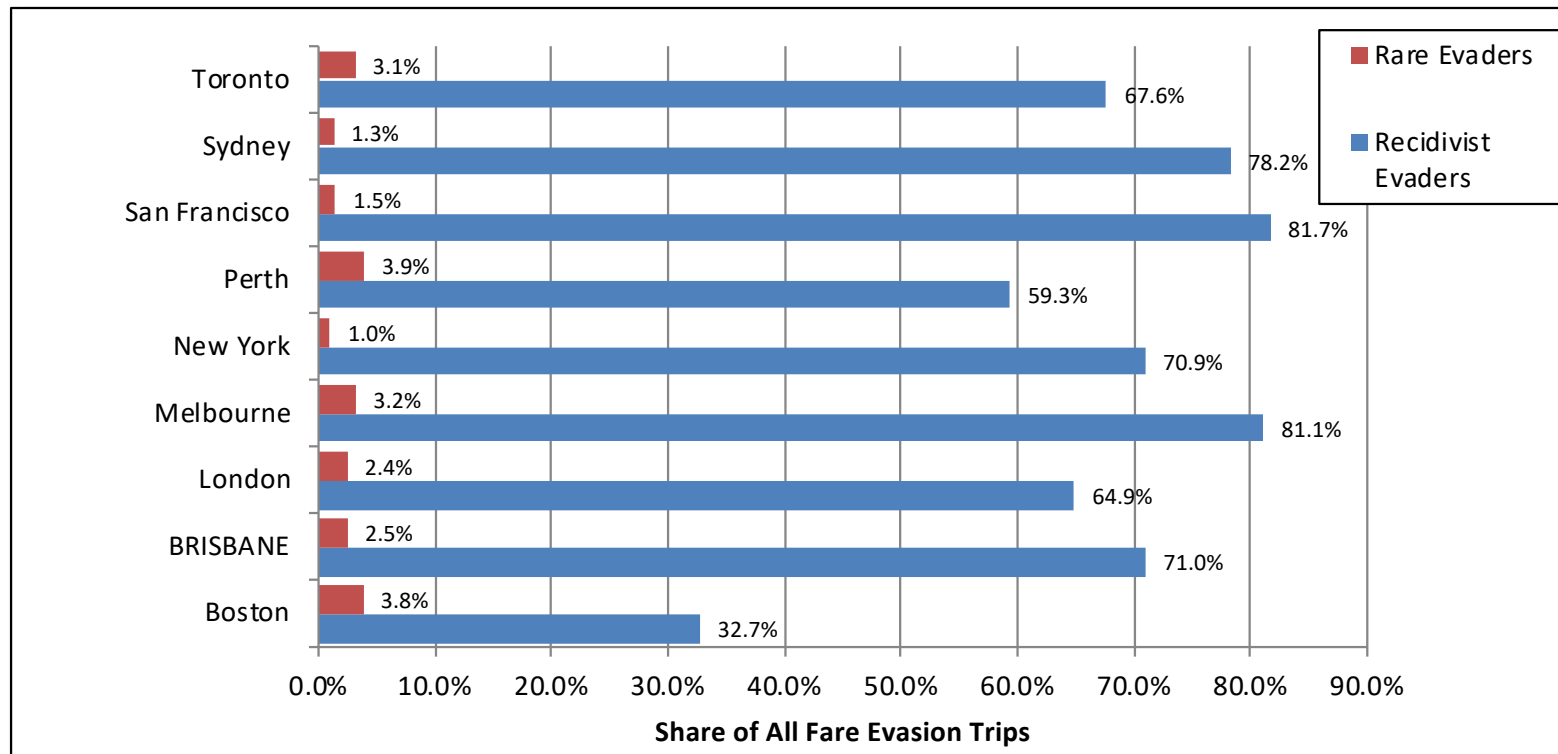# Recidivists represent 1.5%-11.4% of population; rare evaders 15%-25.5%

Share of the Population Engaged in Fare Evasion (at least once p.a.)

Source: Monash Cross National Study

Recidivists represent 32.7%- 91.7% of trips/revenue loss. Rare evaders 1%-3.9%

Share Fare Evasion Travel; Recidivist vs Rare Evaders

Source: Monash Cross National Study

Introduction

Fare Evasion Psychology

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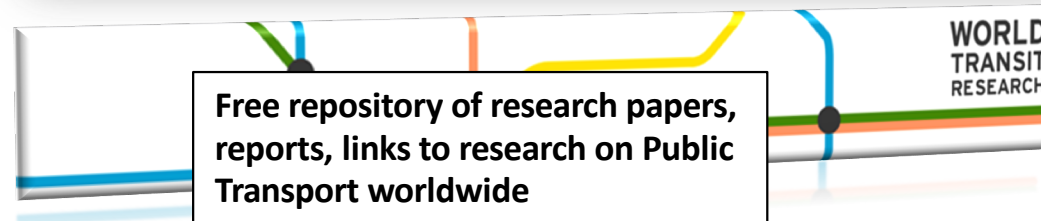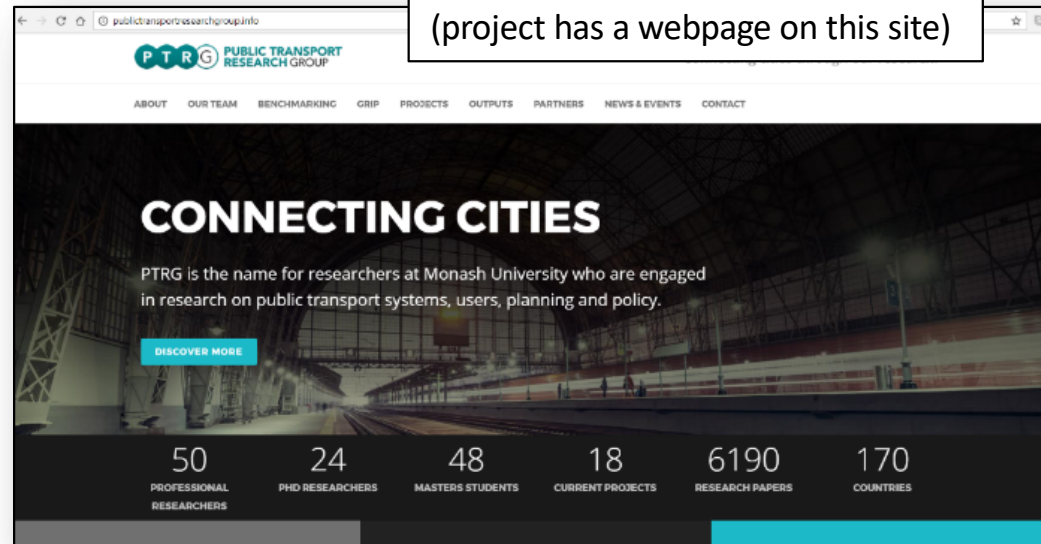
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