

# A Global Transformation of Revenue Compliance on Light Rail and Tram Systems

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STREETCAR CONFERENCE



# Agenda

1. Introduction
2. The Melbourne Research
3. Research Impact
4. International Research
5. Key Take Aways



## **This paper describes an influential research project which has significantly reduced fare evasion in many cities**

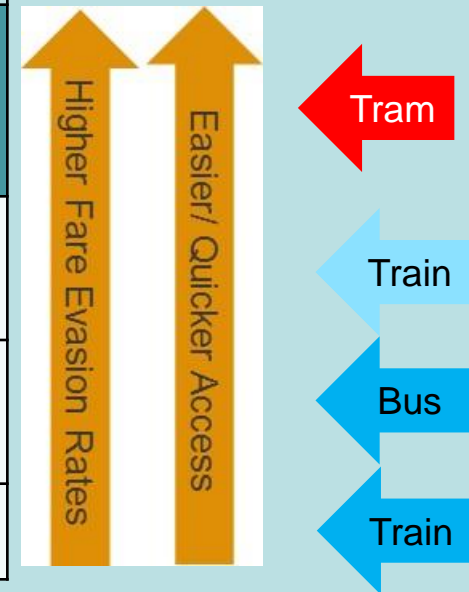
- This paper describes Monash research on revenue protection which has changed global practice
- It describes:
  - The Problem
  - The Melbourne Research
  - Its Melbourne Impact
  - The follow on International Study; and
  - Summarises key take aways

# The [main] problem is LRT/trams and honour based (or Proof of Payment) ticketing...

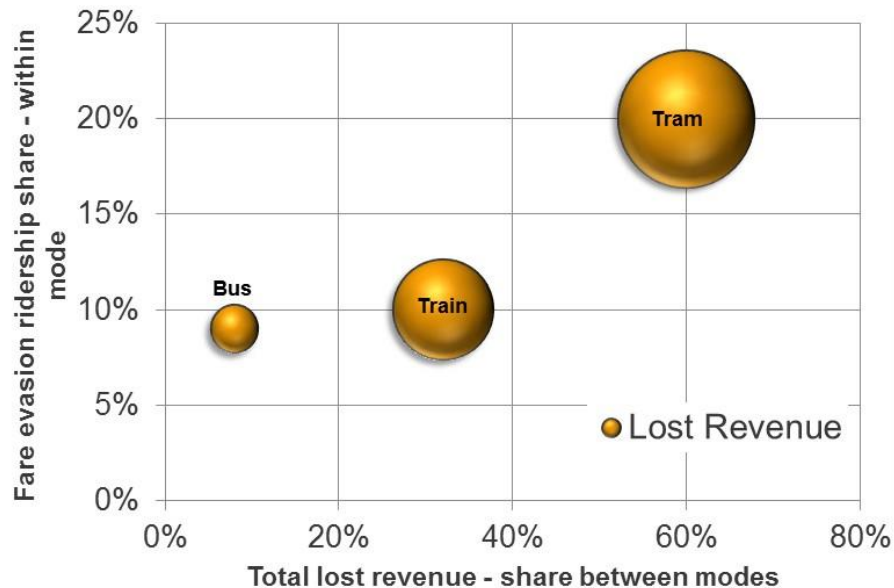
**Table 2.1: Four main types of ticketing control systems**

Source: Updated from (Dauby and Kovacs 2006)

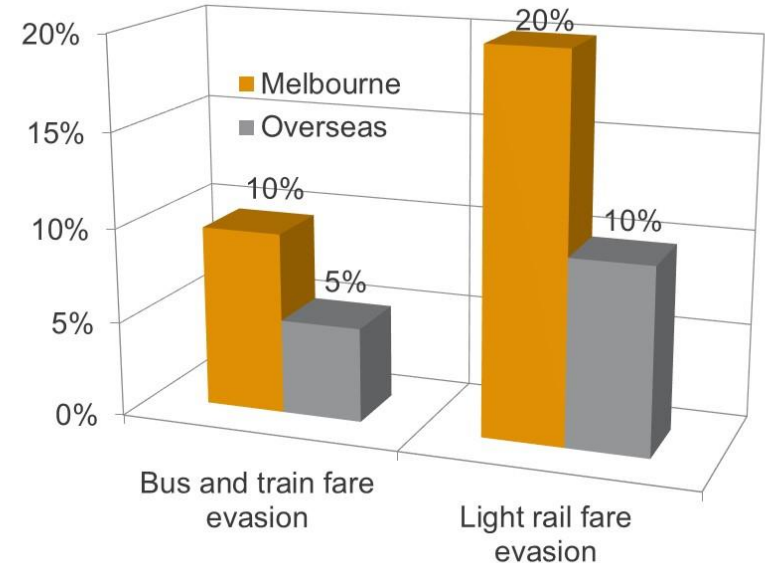
Control type	Features	Advantages	Disadvantages
<b>'Honour' system</b>	Open space, few controls	Urban integration, ticketing enforcement costs low, lower dwell time	Lack of human presence, high fare evasion
<b>Moderate control</b>	Open space, frequent roving inspections	Less fare evasion, urban integration,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



**...in Melbourne tram was 30% of transit trips but 60% of revenue loss; tram revenue loss was 20% trips; \$A79Mp.a. (2011/12)...**

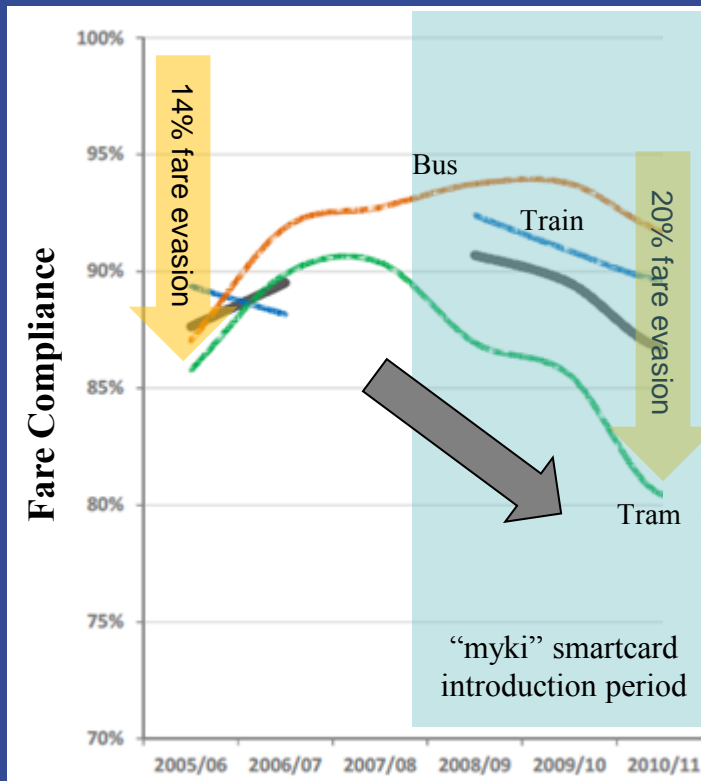


Source: PTRG analysis of the Fare Evasion and Valid Concession Percentage Survey - 2011



Source: PTRG Research

# ...and was getting worse



## Rates of evasion highest on trams

Jason Dowling

Published: October 3, 2011 - 12:00AM

ALMOST 30 per cent of passengers on some Melbourne tram routes are riding free, according to figures released to *The Age*.

Source: Public Transport Victoria *Victorian Official Fare Compliance Series May 2015*

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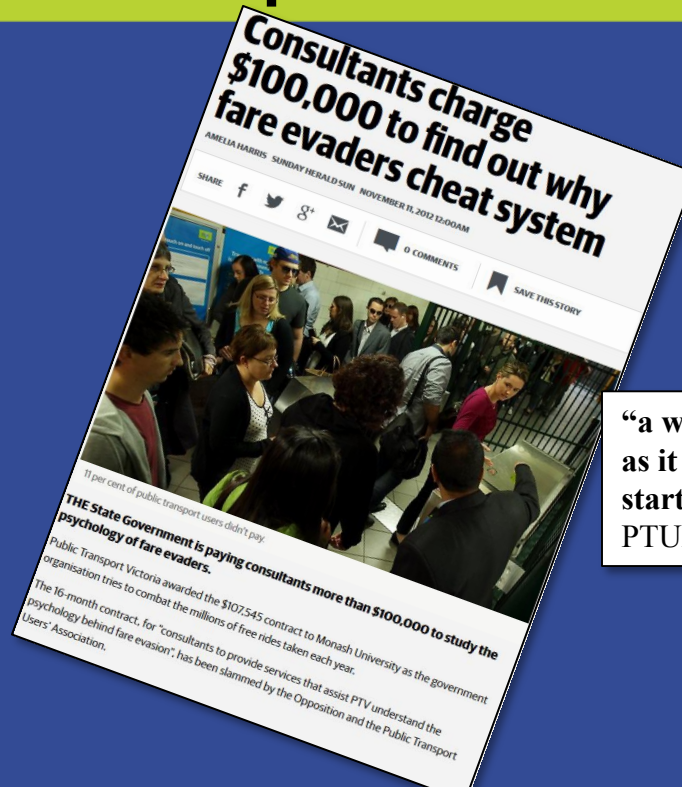
# PTV commissioned PTRG to research the psychology of fare evasion to recommend actionable recommendations – but the project started much political backlash

## Overall project objective:

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

## Aims

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



“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



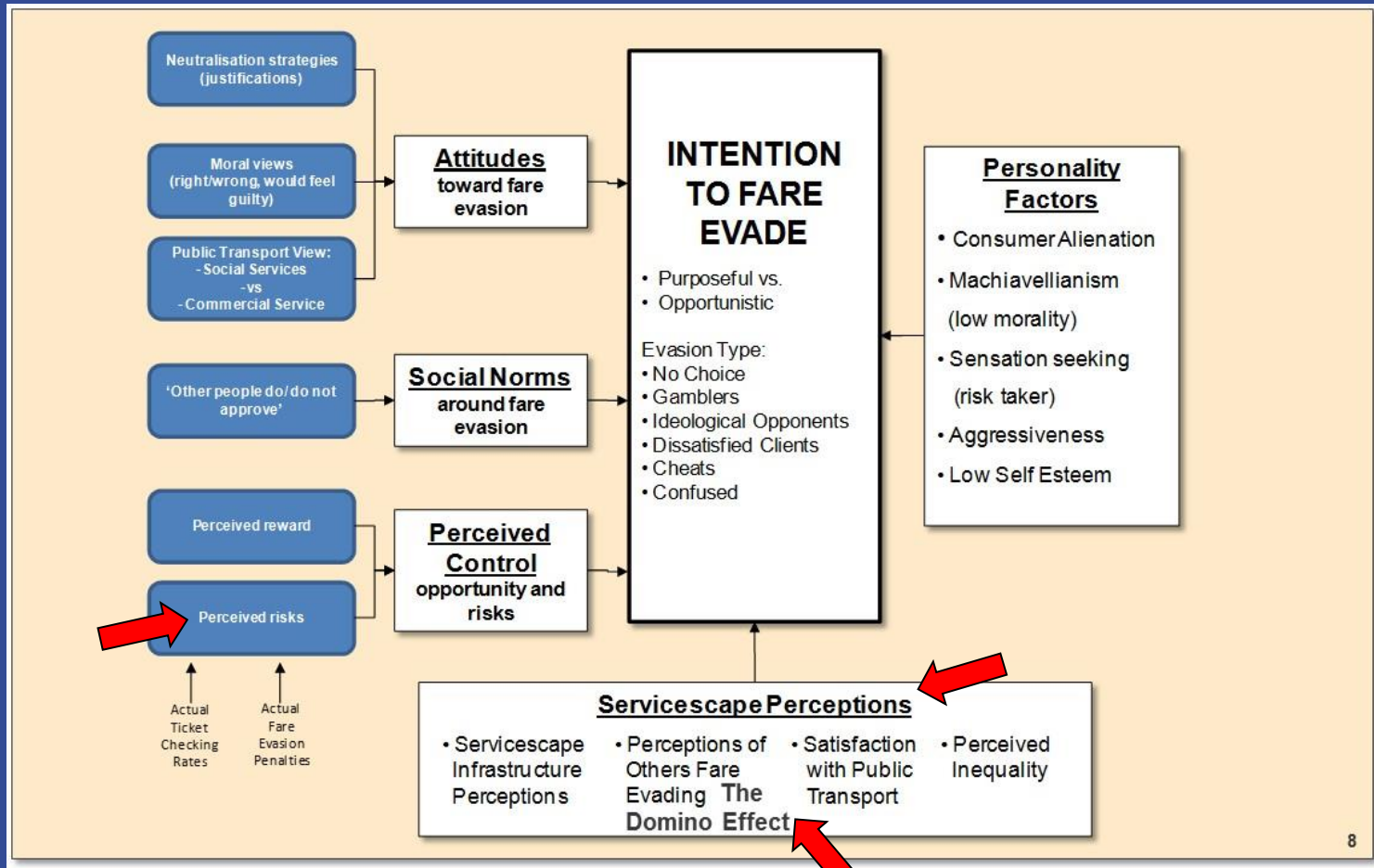
# Discovery 1 – FE attitudes are not what you think

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

	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

Source: Monash User Focus Groups and Discussion Groups

# Discovery 2 – Many factors influence intention including service quality and PERCEPTIONS of penalties



# Discovery 3 – RECIDIVISM causes most revenue loss – a high share of voters accidentally evade about once a year

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

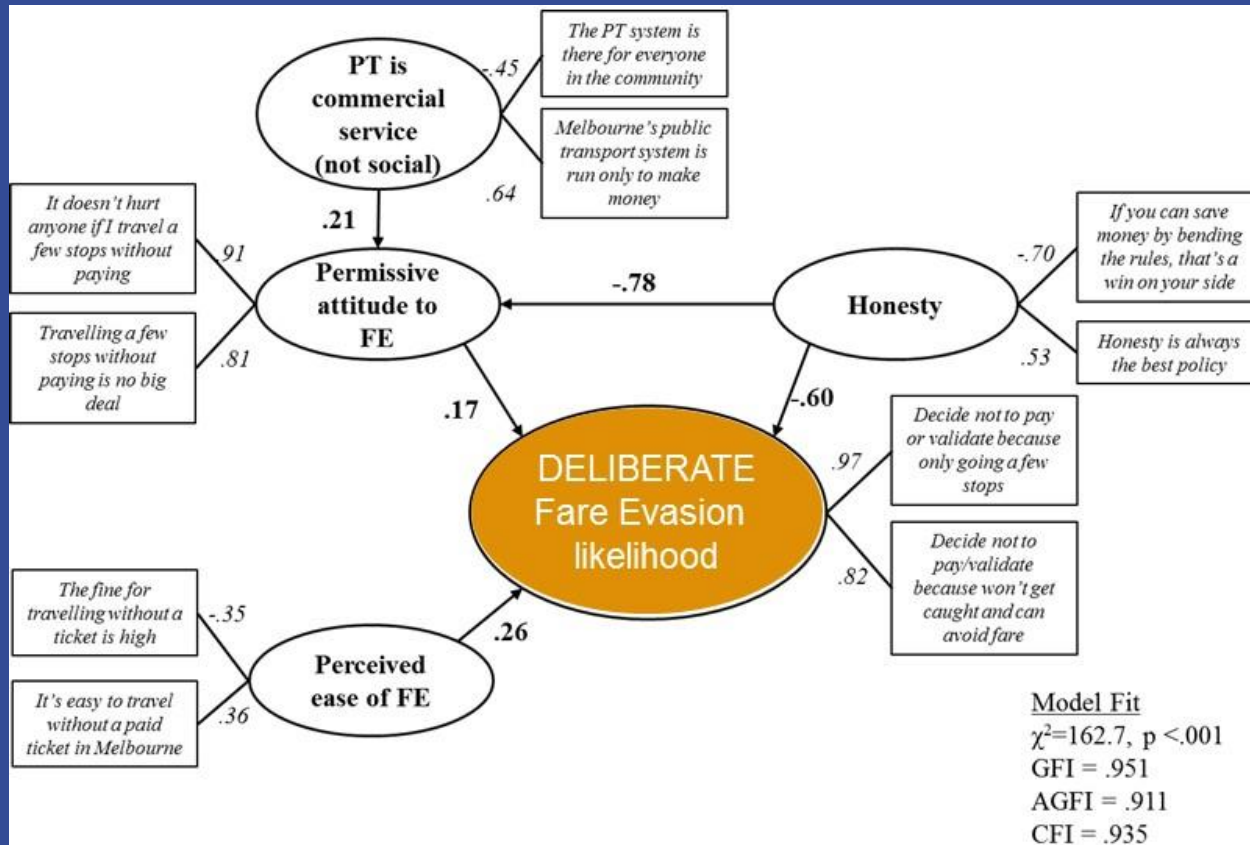
## Discovery 3 – RECIDIVISM causes most revenue loss – a high share of voters accidentally evade about once a year

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



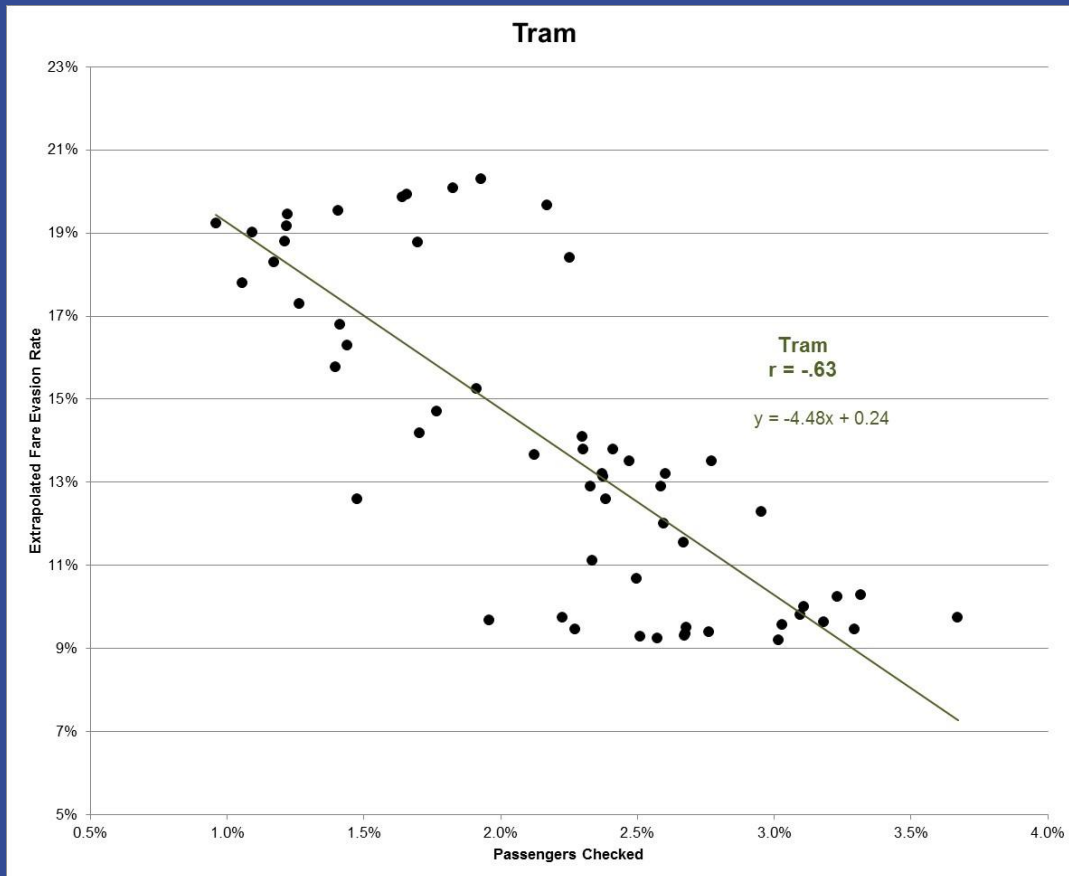
# Discovery 4 – Deliberate FE is driven by (dis)honesty, perception that controls are weak and permissive views



## Key Points

- (dis) honesty a critical driver
- Ease of evasion next followed by permissive attitudes
- (dis) honesty and Permissive attitudes linked
- View PT is provided for commercial (profit) motives affects permissive views
- Negative Servicescape views not a direct driver
- Personality factors a secondary issue

## Discovery 5 – Ticket check rates drive evasion rates; doubling checks would reduce tram evasion by 32%



### 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

# PTRG Recommendations

## Main recommendations:

- Target RECIDIVISTS – record infringers – escalating fines for multi FE – ensure prosecution
- Ease off ACCIDENTAL evaders – teach ‘ticketing competence’ – record infringers
- More ticket checking
- Increase PERCEPTION of ticket checking



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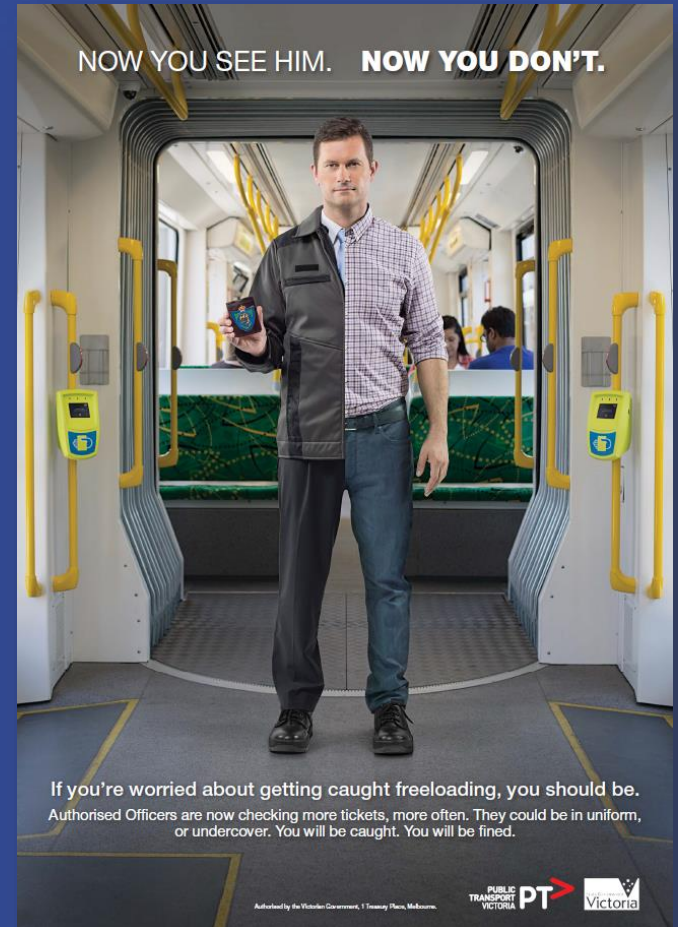
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# PTV Actions

## PTV Action

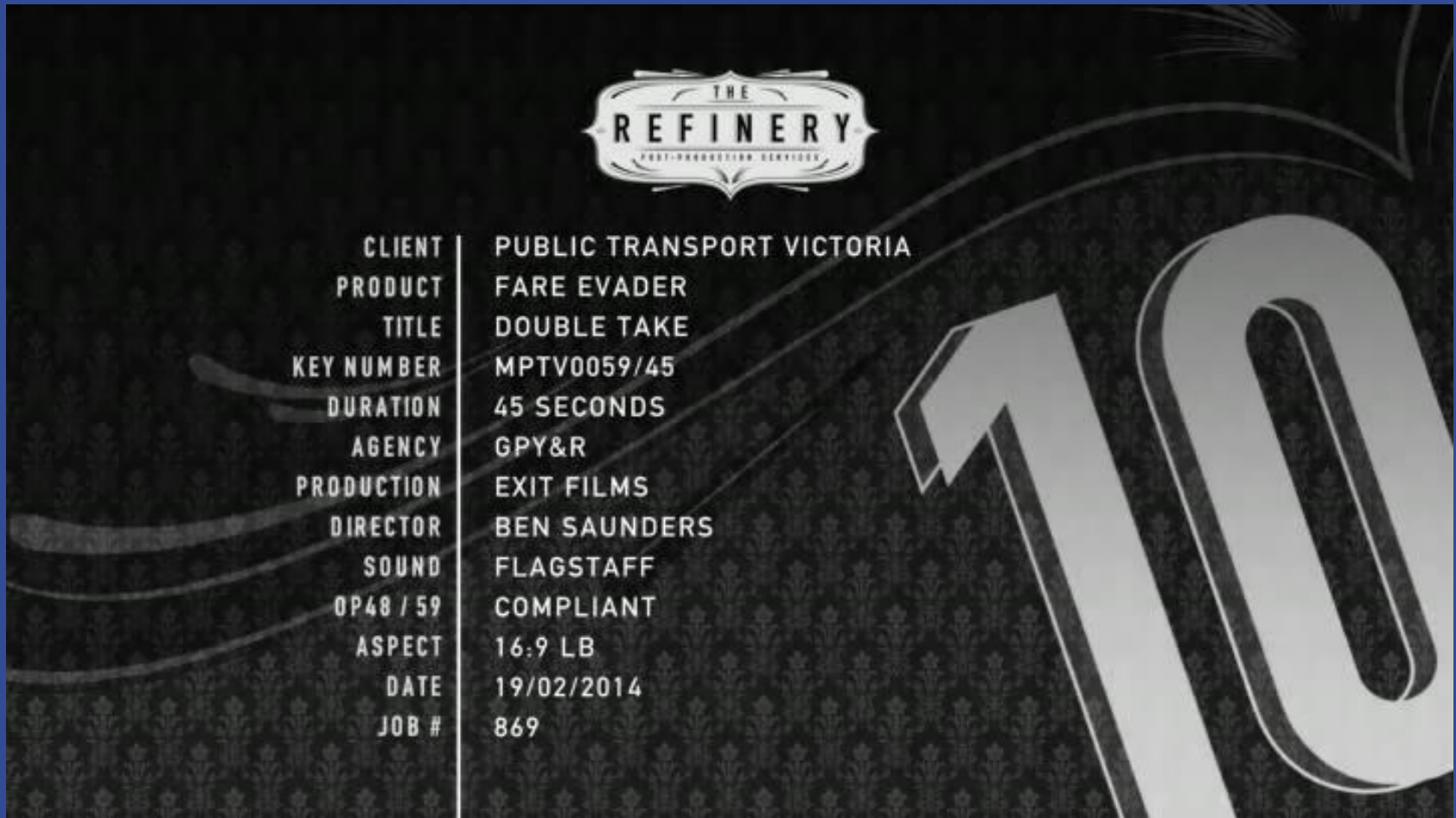
- The “Free Loader” Campaign
- Increase in Ticket Checking



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# PTV Actions



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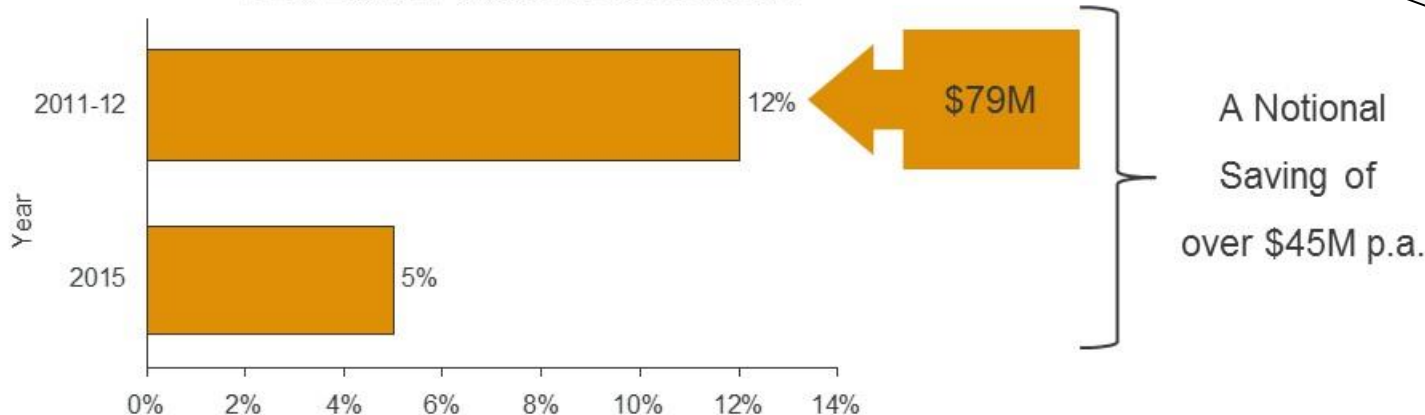
# Outcomes - ~ \$45M p.a. saving 2015 = ~ \$250M

“[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

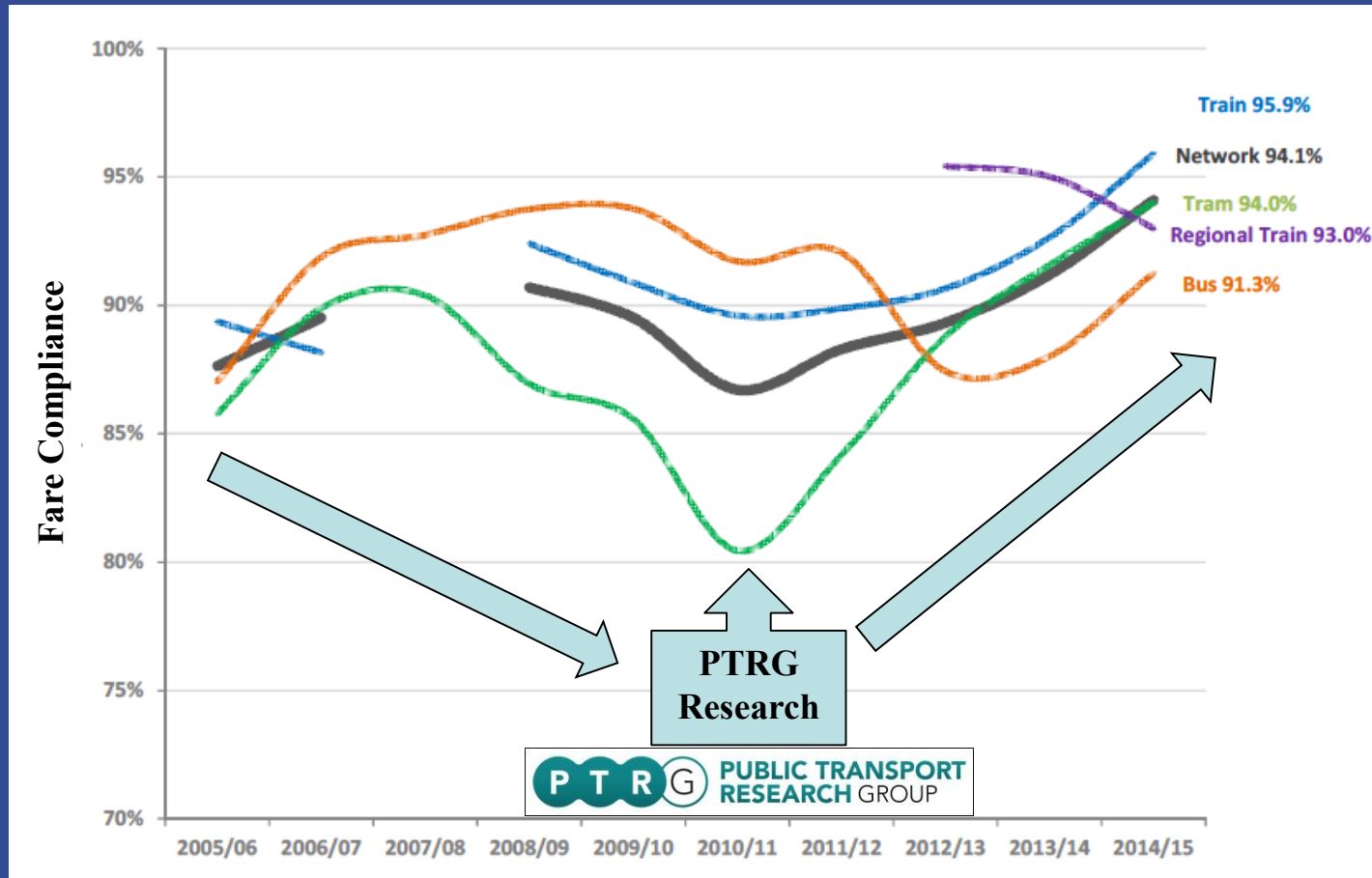


Fare Evasion as a Share of Revenue



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

# Outcomes – a reversal of trend; trams are no longer THE problem



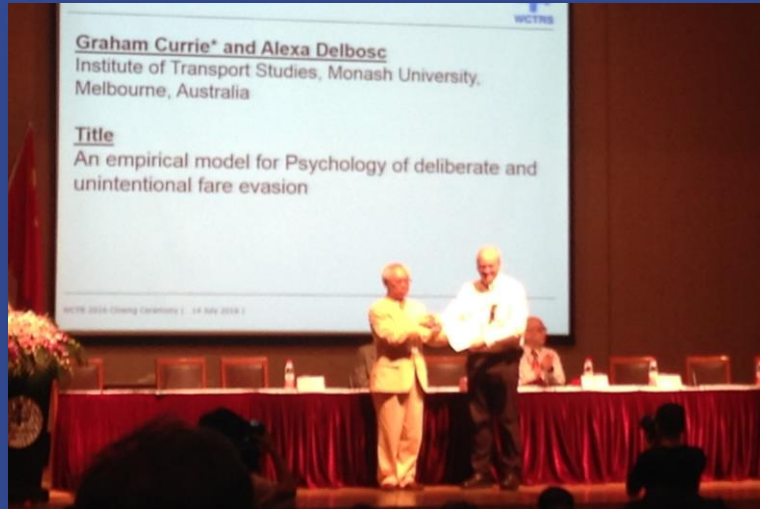
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# Outcomes – some nice academic success



## Best Research Paper - 14th World Conference in Transport Research at Tongji University, Shanghai, China. :

Graham Currie and Alexa Delbosc 'An Empirical Model of the Psychology of Deliberate and Unintentional Fare Evasion'.

## Monash University Vice Chancellors Award for Research – Social and Economic Impact – Graham Currie & Alexa Delbosc



## Australian Road Research Board – Research Impact Award : 'A Global Shift in Public Transport revenue Compliance' Graham Currie & Alexa Delbosc

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# Outcomes – some nice academic success (& references)



Currie G and Delbosc A (2017) 'An Empirical Model for the Psychology of Deliberate and Unintentional Fare Evasion' TRANSPORT POLICY Volume 54, February 2017, Pages 21–29

Delbosc A and Currie G (2016) 'Cluster analysis of fare evasion behaviours in Melbourne, Australia' TRANSPORT POLICY Volume 50, August 2016, Pages 29-36



Delbosc A and Currie G (2019) 'Why do people fare evade? A global shift in fare evasion research' TRANSPORT REVIEWS Volume 39 – 3 pp376-391

Delbosc A and Currie G (2016) 'Four types of fare evasion: A qualitative study from Melbourne, Australia' TRANSPORTATION RESEARCH PART F: TRAFFIC PSYCHOLOGY AND BEHAVIOUR Volume 43, November 2016, Pages 254–264

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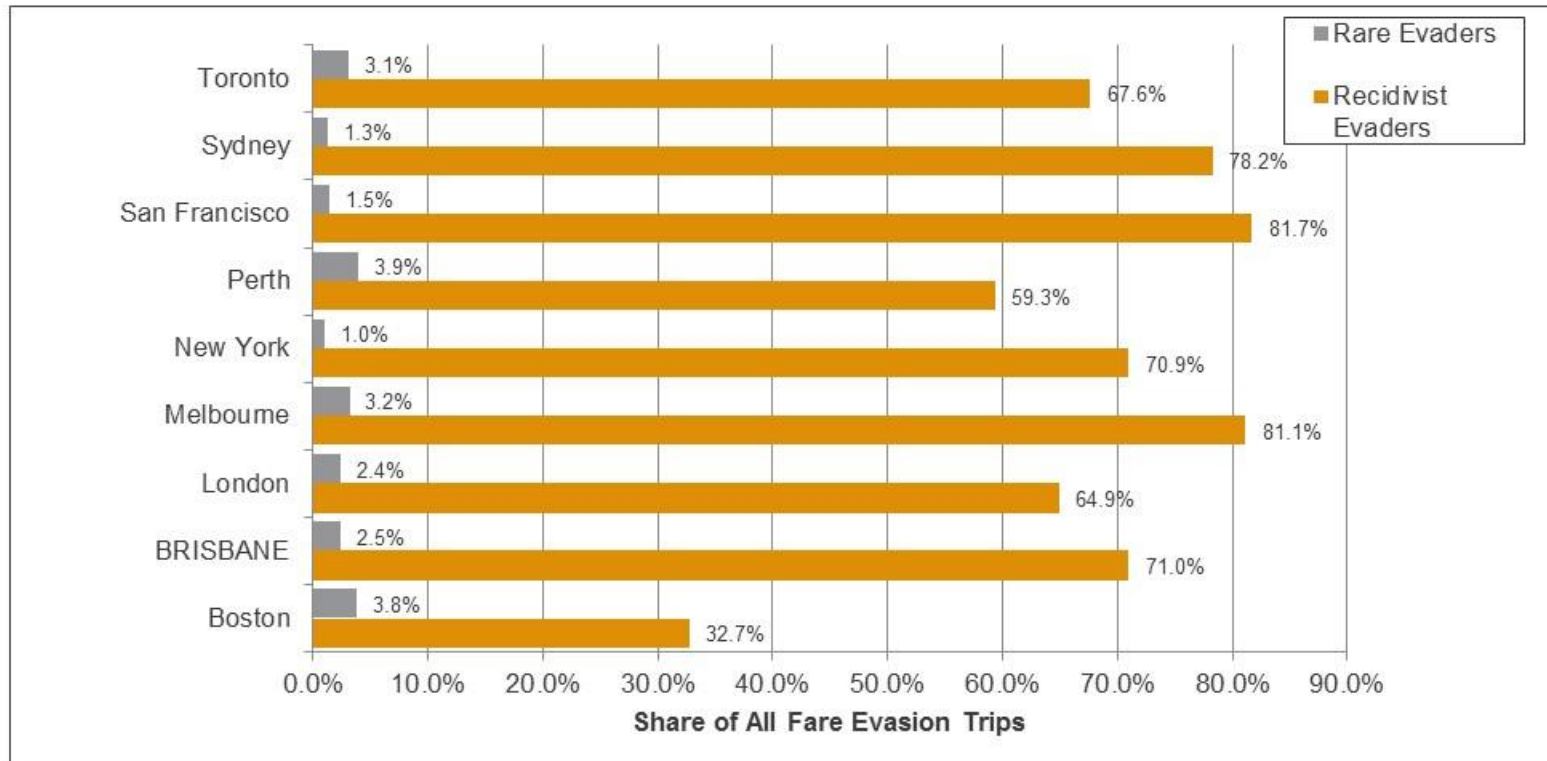
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# Follow on international research findings

## – RECIDIVISM is a global problem

Share Fare Evasion Travel; Recidivist vs Rare Evaders



Source: Monash PTRG Cross National Study

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# Key Take Aways

- Revenue protection needs to change towards a user motivation perspective
- Recommend:
  - High ticket checking rates (10% for PoP)
  - Increase PERCEPTION of ticketing checking
  - Target Recidivists
  - Be lenient to accidental evaders (but check for recidivism)

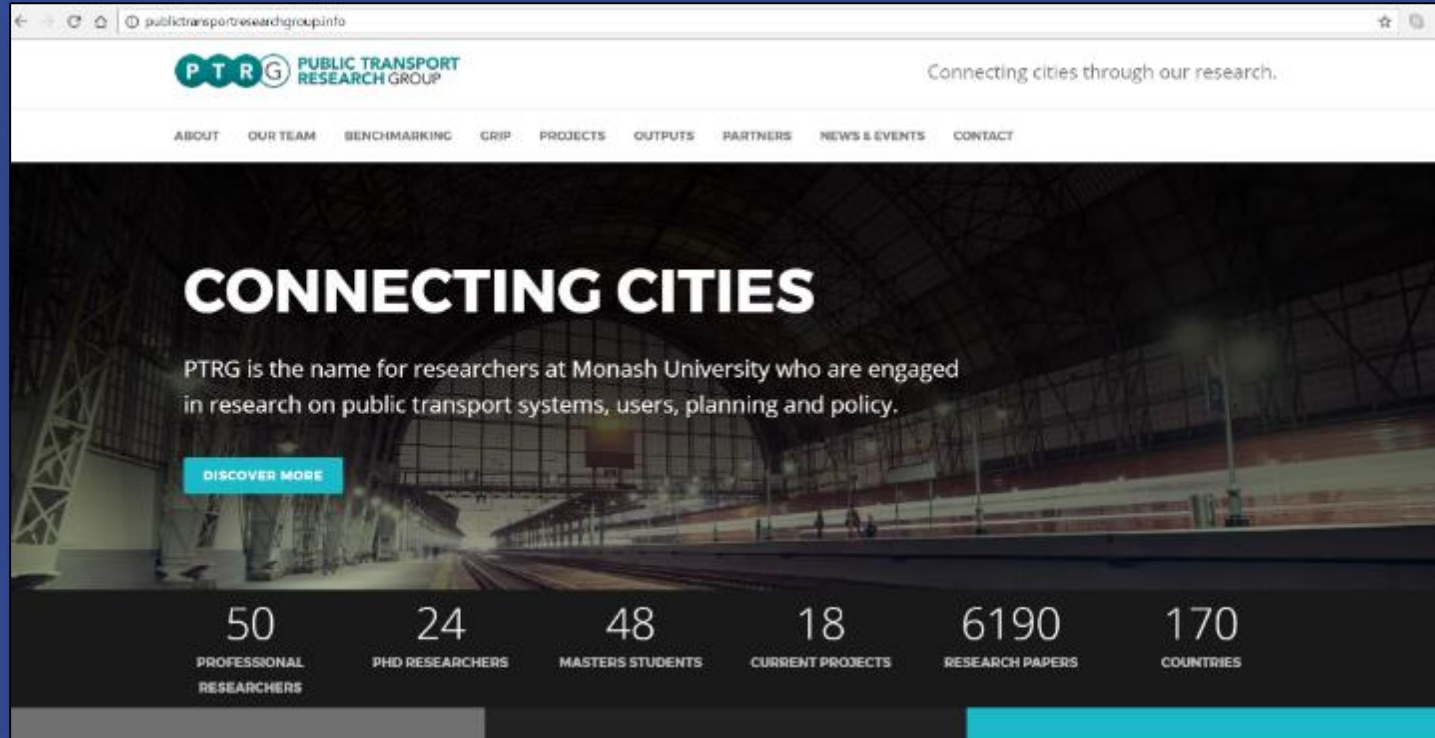


# Questions (and contact)

**Professor Graham Currie FTSE**  
Director, SEPT-GRIP, PTRG



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The screenshot shows the PTRG website homepage. The header includes the PTRG logo and the tagline "Connecting cities through our research." Below the header is a navigation menu with links: ABOUT, OUR TEAM, BENCHMARKING, GRIP, PROJECTS, OUTPUTS, PARTNERS, NEWS & EVENTS, and CONTACT. The main content area features the heading "CONNECTING CITIES" and a description: "PTRG is the name for researchers at Monash University who are engaged in research on public transport systems, users, planning and policy." A "DISCOVER MORE" button is present. At the bottom, a statistics bar displays the following data:

50	24	48	18	6190	170
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