

Unplanned Rail Disruptions

Understanding customer perspectives and the role and use of social media

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ARA Customer Service Forum
3rd May 2016
Perth, West Australia



Agenda

1. Introduction
2. URDs
3. Passengers & URDs
4. Social Media



This paper overviews research on passenger experience, Unplanned Rail Disruptions (URDs) & Social Media...

- PTRG Monash have undertaken a number of research projects in the field of URDs:
 - PhD program (Brendan Pender) on approaches to managing URD's
 - Contract research program with Metro Trains Melbourne on Improved Management and Reporting of Unplanned Rail Disruptions
 - Numerous research papers/presentations (see next)
 - FUTURE – Special URD session as part of the World Conference on Transport Research in Shanghai July 9th-15th 2016
- This paper overview research findings regarding URDs from the Passenger Perspective and the potential role of **social media** and issues for its implementation

...based on the following research publications...

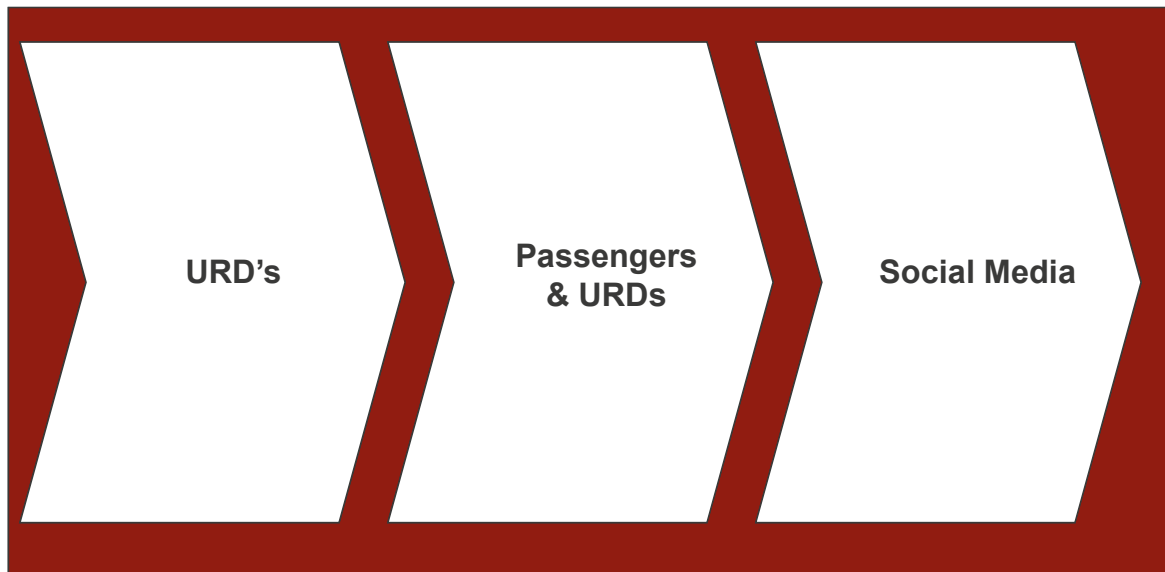
PUBLISHED RESEARCH

- Pender, B Currie G Delbosc A and Shiwakoti N (2014) 'An International Study of Current and Potential Social Media Applications in Unplanned Passenger Rail Disruptions' TRANSPORTATION RESEARCH RECORD Volume 2419, Volume 2419 / Transit 2014, Vol. 5 pp 118-127
- Pender B Currie G Delbosc A Shiwakoti N (2014) 'Social Media Use during Unplanned Passenger Rail Disruptions: A Review of Literature' TRANSPORT REVIEWS Vol 34 No 4 pp501-521
- Pender, B Currie G Delbosc A and Shiwakoti N (2014) 'Social Media Use in Unplanned Passenger Rail Disruptions - An International Study' Transportation Research Board 93rd Annual Meeting, 2014 Washington DC USA Paper 14-1186
- Pender, B Currie, G Delbosc, A and Shiwakoti N (2013) 'Short and Tweet? The Role of Social Media in Unplanned Passenger Rail Disruption Management' 36th Australasian Transport Research Forum, Brisbane Australia 2013
- Currie G Delbosc A (2015) Variation in Perceptions of Urban Public Transport Performance Between International Cities Using Spiral Plot Analysis' TRANSPORTATION RESEARCH RECORD No. 2538 on pages 54-64
- Currie G and Muir C (Under review) 'Understanding Passenger Perceptions and Behaviors During Unplanned Rail Disruptions' World Conference on Transport Research - WCTR 2016 Shanghai. 10-15 July 2016

UNPUBLISHED RESEARCH

- Currie G, Pender B Delbosc A and Muir C (2014) 'Improved Management and Reporting of Unplanned Rail Disruptions - Final Report' Public Transport Research Group, Monash University for Metro Trains Melbourne

..and is structured as follows



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URDs can be a serious problem

- Singapore DEC 2011:
 - 3 train breakdowns in 1 week
 - Affected 350,000 people
 - Official said “public transport can paralyse the entire nation from what we have seen a few days ago”
 - CEO resigns

- UK/Netherlands (Boston) – serious national repercussions of major rail failures in Winter/Snow



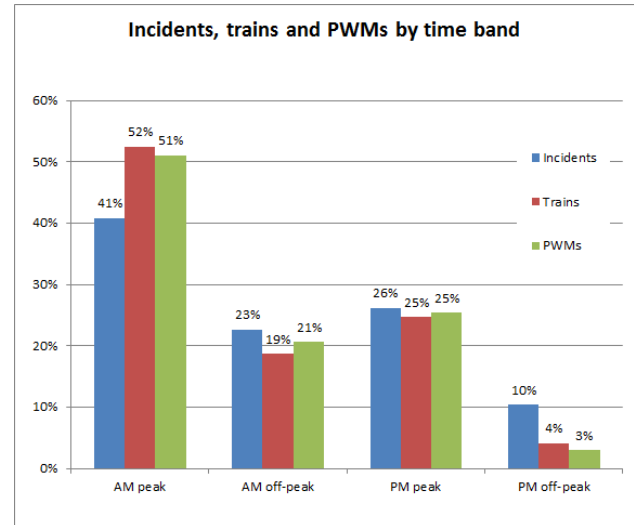
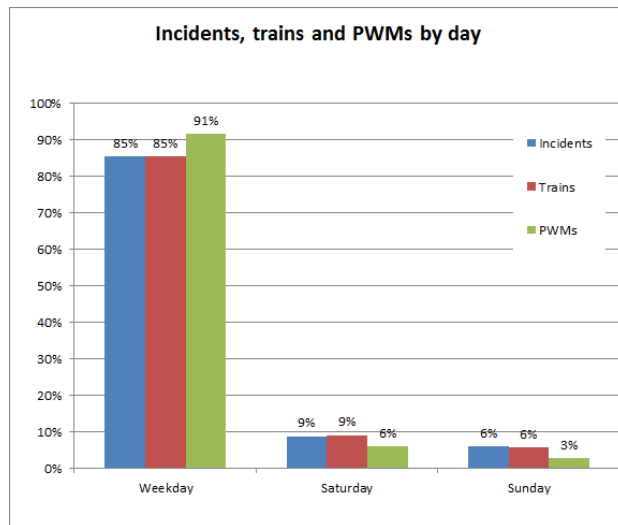
Melbourne, had 8,151 major URDs p.a. (2010-12)...

Average Annual Frequency (2010-12)	Average Incident Profile	
<ul style="list-style-type: none"> • 8,151 per year • 156 per week • 22 per average day 	<ul style="list-style-type: none"> • Trains Affected • Aggregate Minutes • Mins per Train • Aggregate PWM (PW Hours) • Implied Passengers Affected 	<ul style="list-style-type: none"> 24 97 5 42,095 701 431

Implies 3.5M Metro riders impacted p.a. or 1.5% of all boardings p.a.

Source: PTRG analysis of TOPS data 2010-2012 Only incidents with AWM of 20 mins and over included

...most impact is weekday AM peak

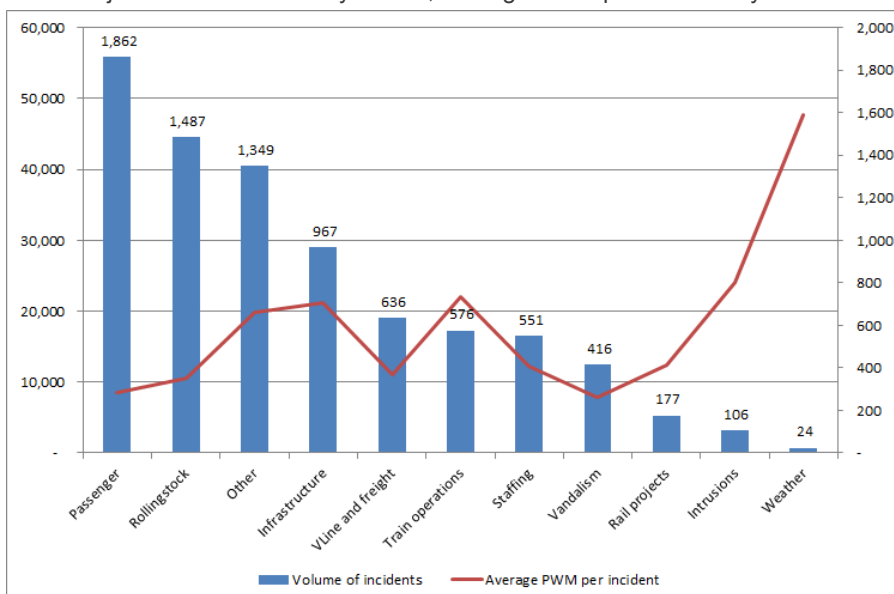


Implies 67% of major incidents, 77% trains affected and 76% PWM impact occurs in the peak

Source: PTRG analysis of TOPS data 2010-2012 Only incidents with AWM of 20 mins and over included

Many causes; rare incidents cause larger delay e.g. weather

Major Incident volume by Cause, Average PWM per Incident by Cause

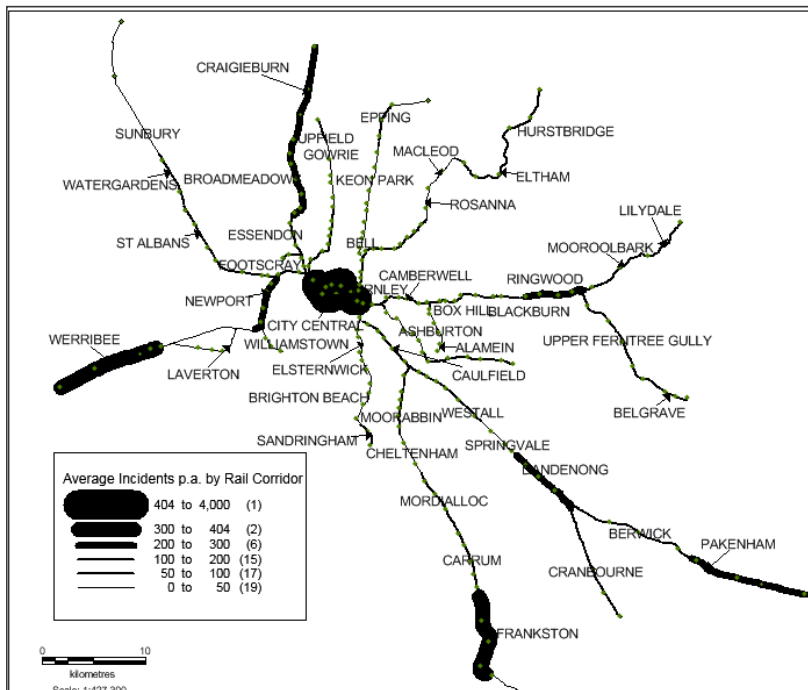


Weather, Train Operations, Intrusions and Infrastructure Failure cause only 21% of incidents but have high PWM of delay

Weather (2 incidents a month) causes 24% of all PWM of delay

Source: PTRG analysis of TOPS data 2010-2012 Only incidents with AWM of 20 mins and over included

URD distribution is no even; Central dominates incident volume followed by Werribee and Frankston



Av Incidents p.a. by Corridor

CITY CENTRAL	3,934
WERRIBEE	403
FRANKSTON	368
CRAIGIEBURN	295
PAKENHAM	287
NEWPORT	252
BROADMEADOWS	221
DANDENONG	216
RINGWOOD	215
BELGRAVE	176
GLEN WAVERLEY	172
EPPING	170
NORTH MELBOURNE	166
LILYDALE	142
CRANBOURNE	141
CAMBERWELL	141
CAULFIELD	138
UPPER FERNTREE GULLY	135
FOOTSCRAY	131
SANDRINGHAM	130
HURSTBRIDGE	127
WATERGARDENS	119
CLIFTON HILL	113
ELTHAM	111

Source: Based on TOPS data 2010-2012 Only incidents with AWM of 20 mins and over included

Note: PTRG Corridor analysis double counts incidents in more than one corridor



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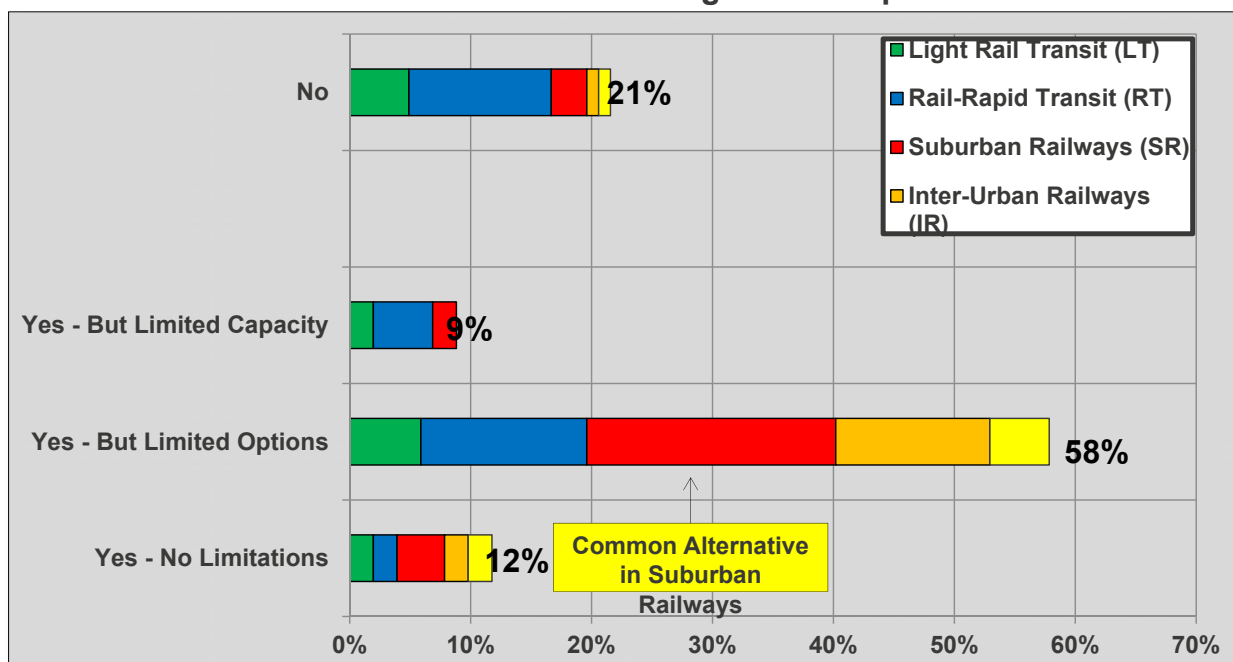


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URD Response - Parallel PT considered viable in some cities; but not all – capacity constraints a major issue

Do You Use Parallel PT During Rail Disruptions?



Source: Pender B, Currie G, Delbosc A and Shiwakoti N (2013) 'Disruption Recovery in Passenger Railways -International Survey' TRANSPORTATION RESEARCH RECORD Journal of the Transportation Research Board Volume 2353 / Transit 2013, Vol. 4 pp22-32



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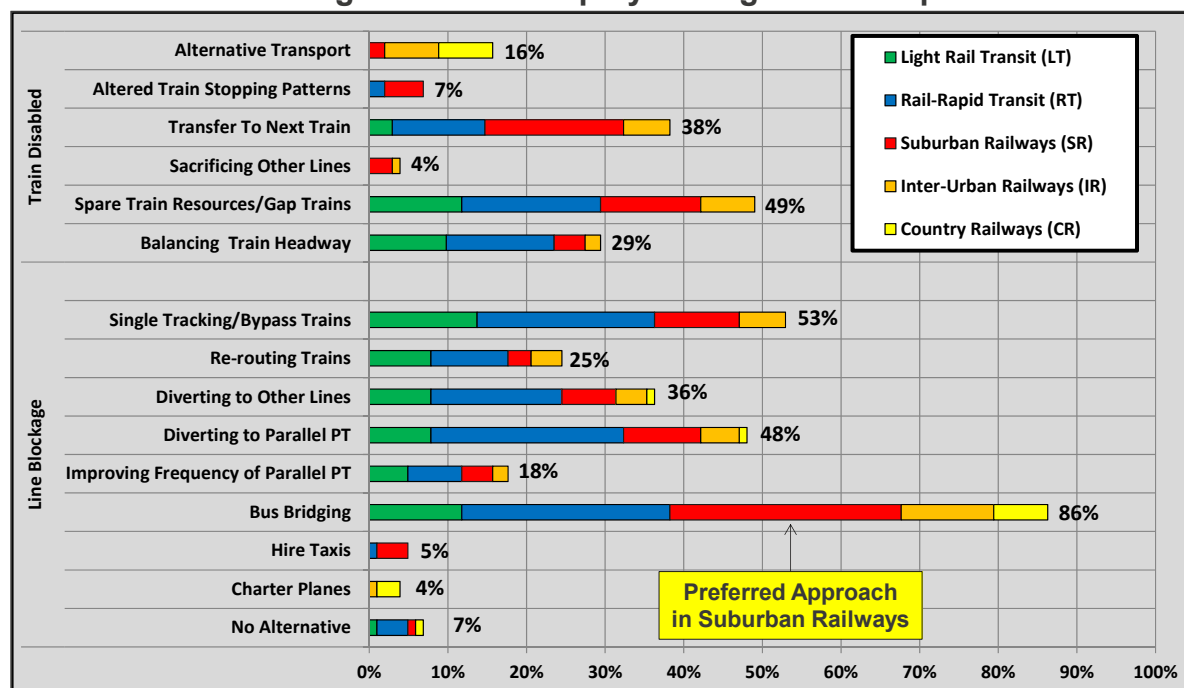


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Of URD Responses - Internal solutions are most popular notably bus replacement (bridging)

What Strategies Do You Employ During Rail Disruptions?



Source: Pender B, Currie G, Delbosc A and Shiwakoti N (2013) 'Disruption Recovery in Passenger Railways -International Survey' TRANSPORTATION RESEARCH RECORD Journal of the Transportation Research Board Volume 2353 / Transit 2013, Vol. 4 pp22-32

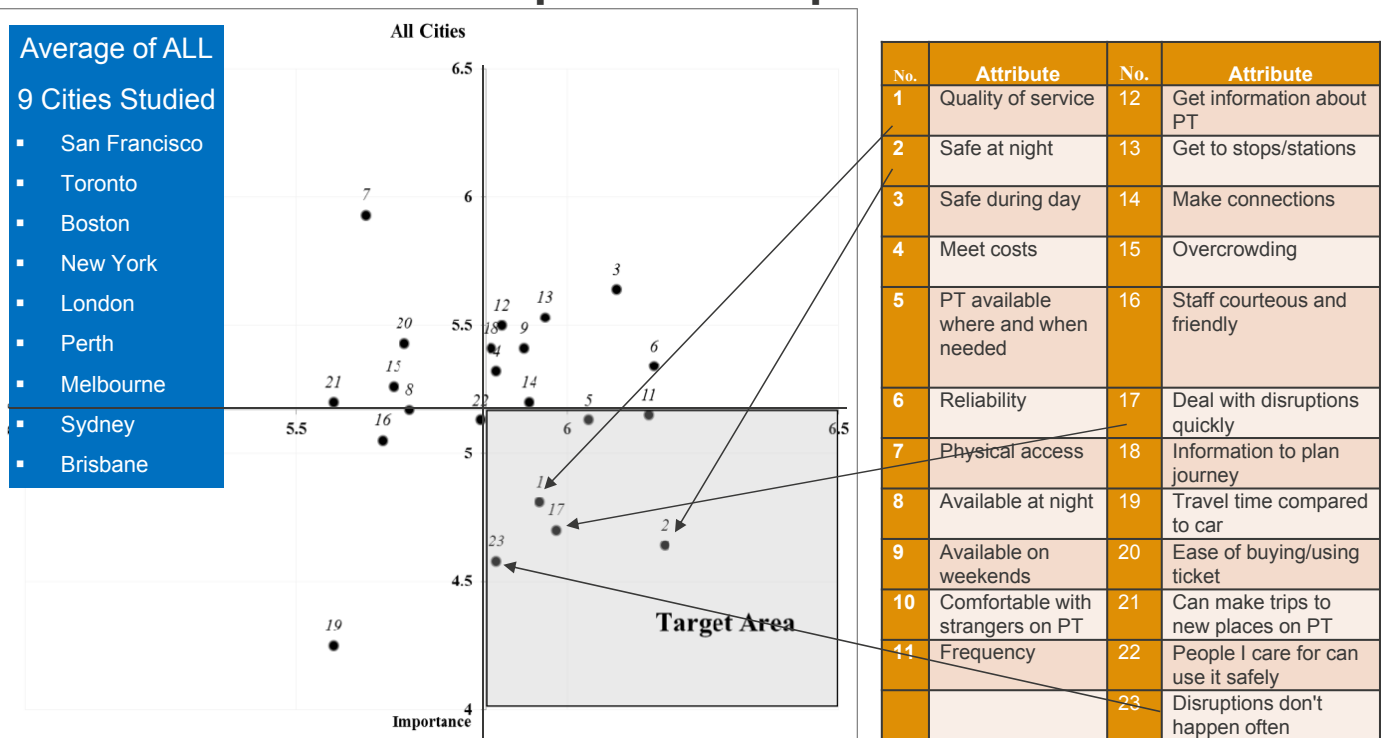
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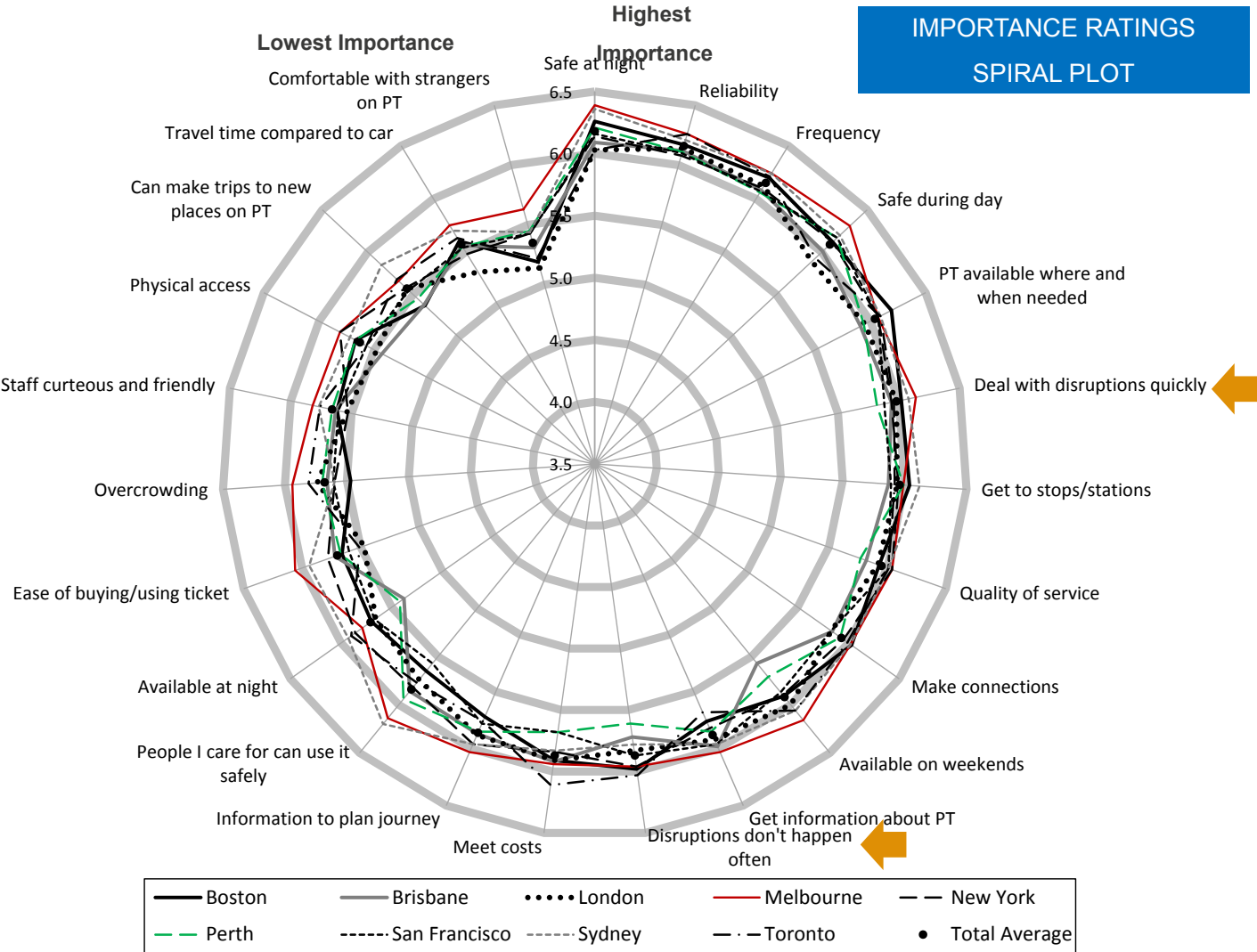




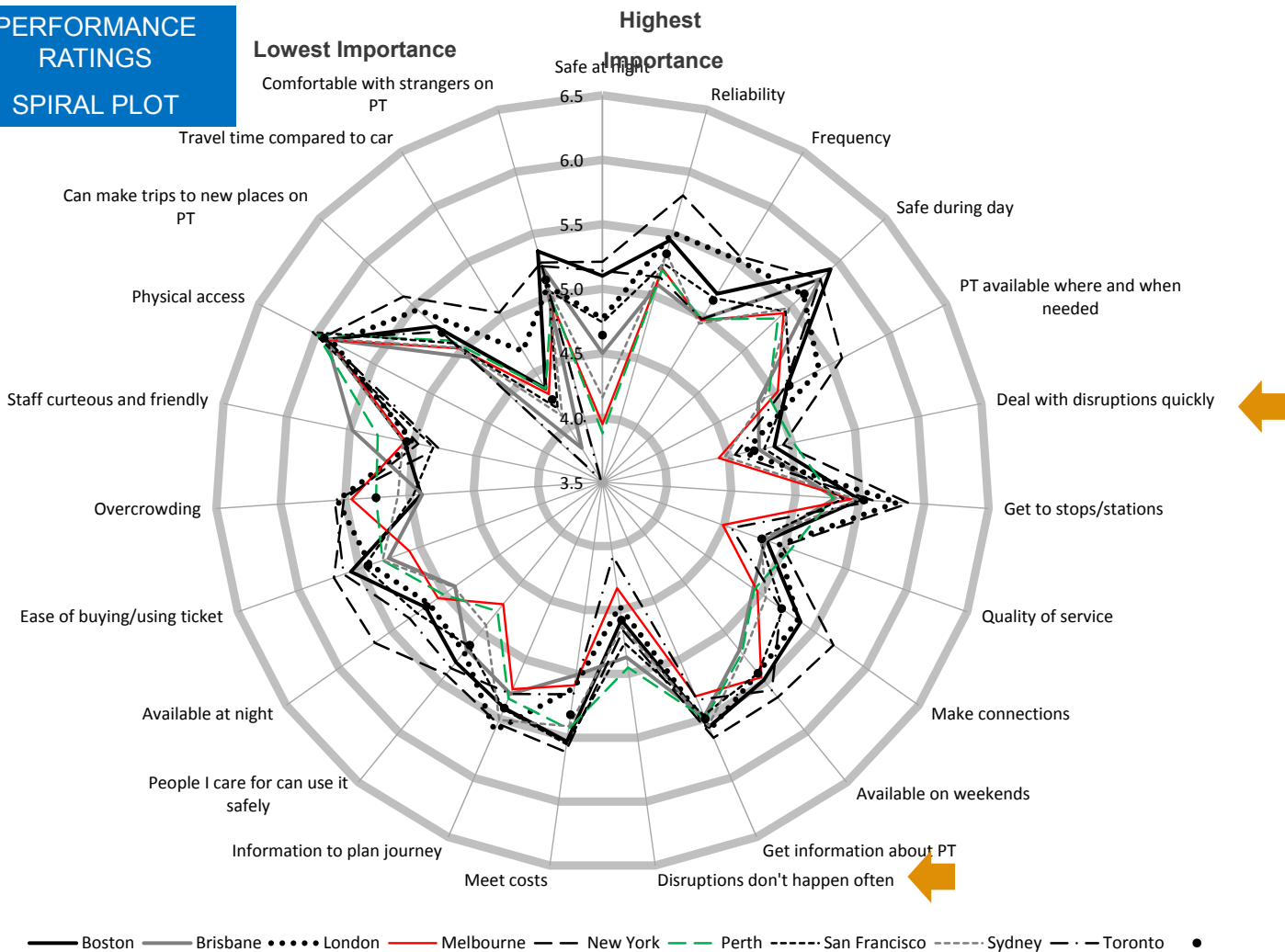
International Study – 9 cities - disruptions rank high in all concerns about urban public transport



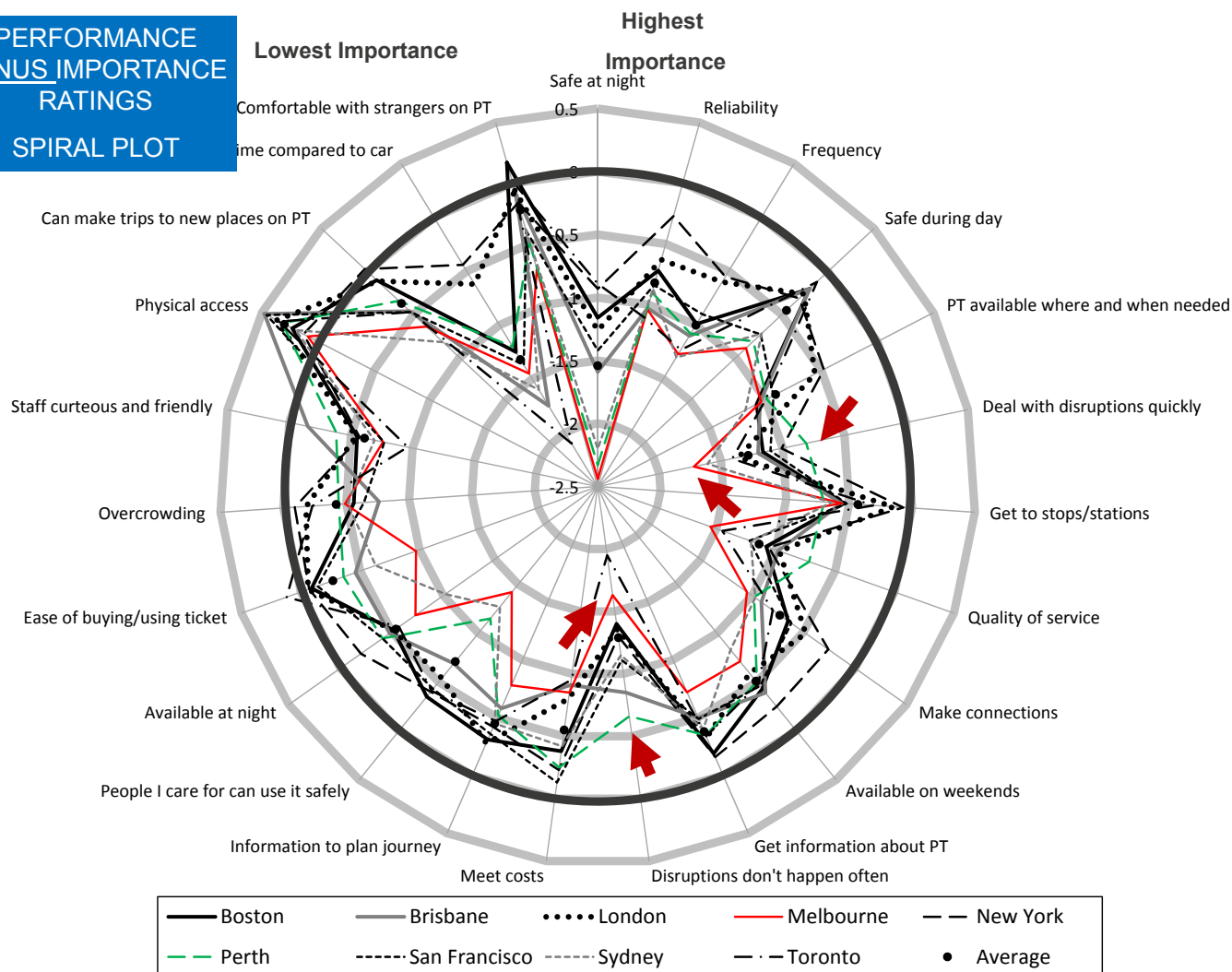
Source: Currie G Delbosc A (2015) Variation in Perceptions of Urban Public Transport Performance Between International Cities Using Spiral Plot Analysis' TRANSPORTATION RESEARCH RECORD No. 2538 on pages 54-64



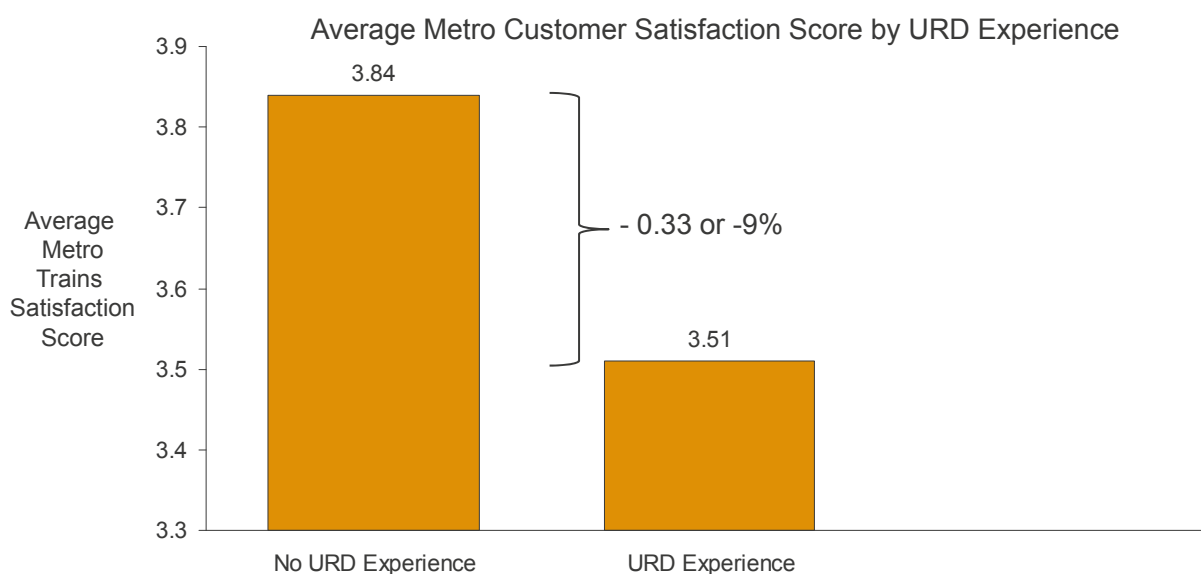
PERFORMANCE RATINGS
SPIRAL PLOT



PERFORMANCE
MINUS IMPORTANCE
RATINGS
SPIRAL PLOT

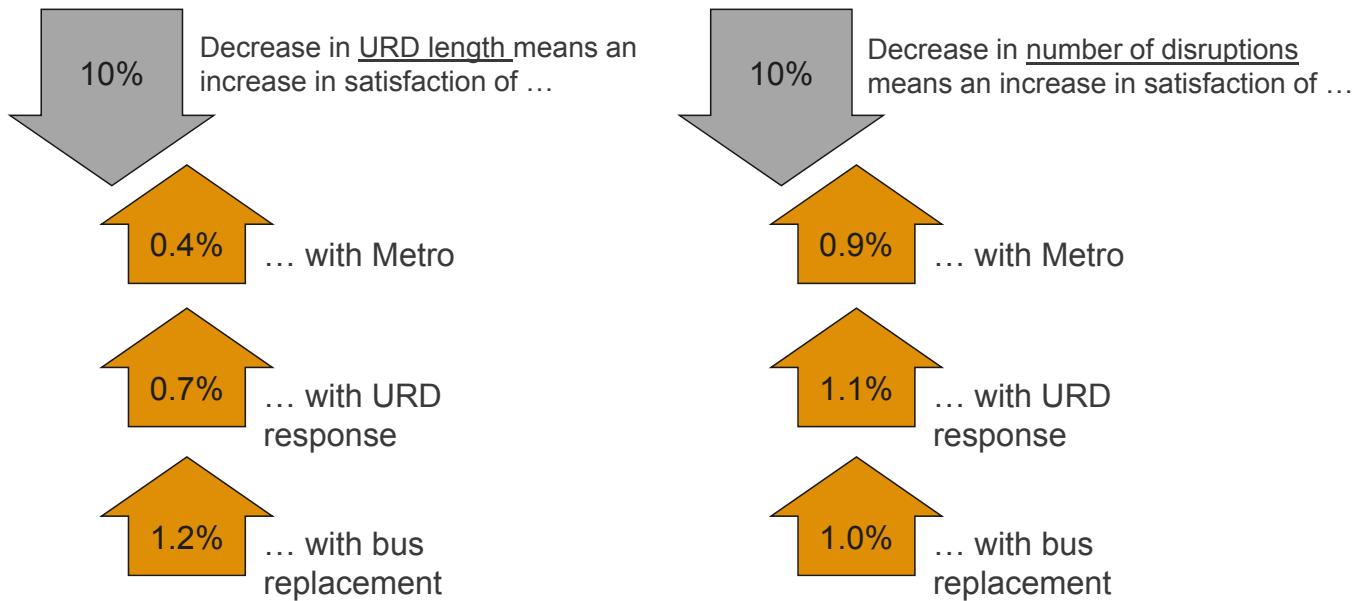


URD experience in Melbourne reduces overall average customer satisfaction by 9%...



Note: Weighted Sample – Representative of the Market in terms of Ridership (frequent users have a higher weighting)
Source: Metro Trains Passenger Opinion Survey Nov 2013

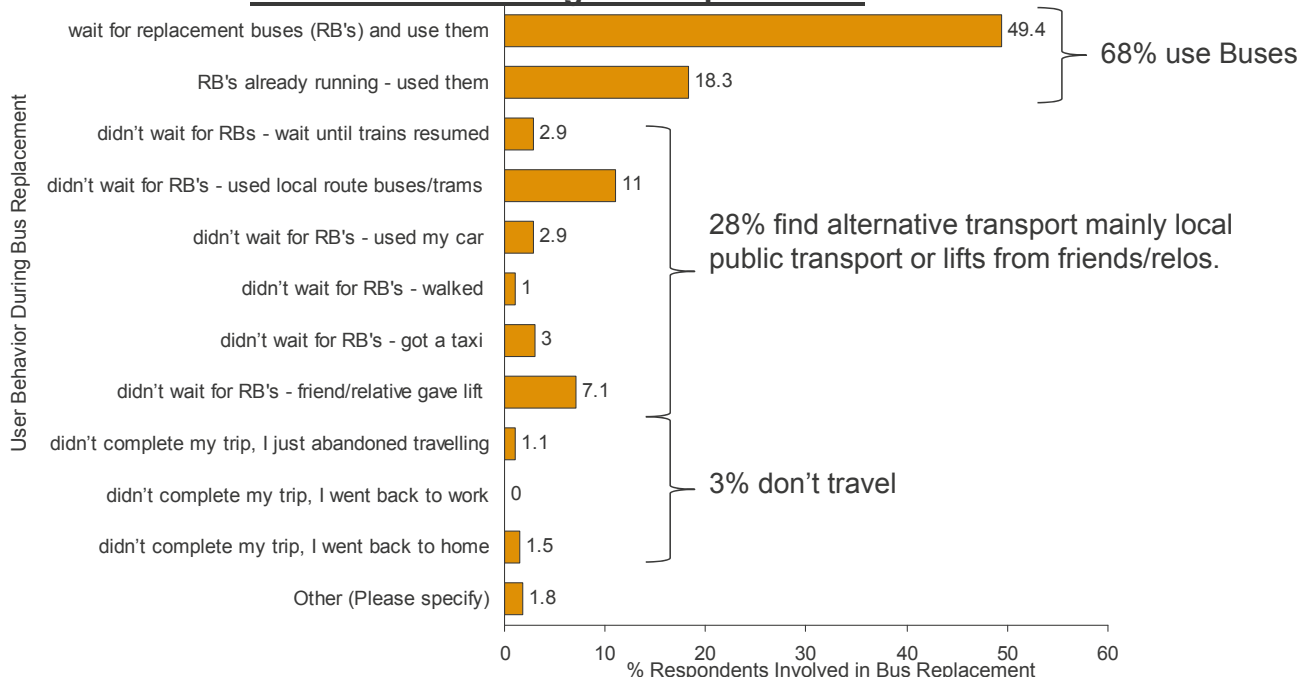
Reducing URD length/number will broadly increase customer satisfaction by +1% for 10% reduction...



Source: Metro Trains Passenger Opinion Survey Nov 2013

When replacement buses are used in URD's; most users (68%) use bus, 28% find alternatives and 3% don't travel

User Behavior During Bus Replacement



Note: Weighted Sample – Representative of the Market in terms of Ridership (frequent users have a higher weighting).

Source: Metro Trains Passenger Opinion Survey Nov 2013

The no.1 priority for passengers was better communications

Priority 1: Improving passenger communication

- Upgrade PA system
- Better social media protocols
- Encourage station staff to assist in URD management

Priority 2: Better staff / internal communications / awareness

- Multi-skill other staff (e.g. protective services officers, cleaners)
- Upgrade CCTV/PIDS
- Wider use of PIDS at unmanned stations – targeted resources

Priority 3: Reducing URDs and their impact

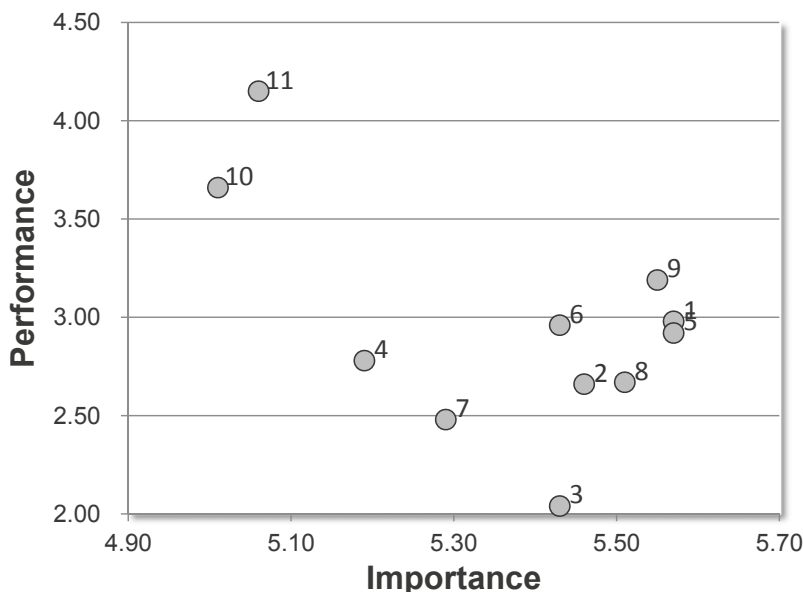
- Upgrade infrastructure (older signal boxes, faulty track, signals)
- Increase number of track crossovers
- Consider bus bridging

Priority 4: Better URD reporting

- Improve quality of reporting on incidents and bus replacement
- Standardise/consolidate reporting
- Review best use of staff time during URDs

Pre-trip URD info, removal from delayed trains & being updated on delay cause/progress are major passenger URD concerns

Passenger Concerns During URD's – Priorities of Importance and Performance (Satisfaction)



Note: Weighted Sample – Representative of the Market in terms of Ridership (frequent users have a higher weighting). Scores are ranked by importance score * performance score
Source: PTRG - Metro Trains Passenger Opinion Survey Nov 2013

Code/ Issue	Rank
3 Being notified that rail services are disrupted before you leave home/work	1
7 Being quickly removed if you are delayed on a train not waiting at a station	2
8 Being kept up to date on progress about disruption recovery	3
2 Being informed in advance that a delay is expected in future	4
5 Being informed when services are expected to resume	5
1 Being quickly informed that a delay has occurred	6
6 Being informed about alternative options for travel	7
4 Being informed about the cause of delays	8
9 Being told when replacement buses will be arrive if they are being provided	9
10 Being able to contact friends/relatives to arrange alternative transport	10
11 Being able to contact friends/relatives to ensure they don't worry about your delay	11

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Social Media – a two way user interface for unexpected events

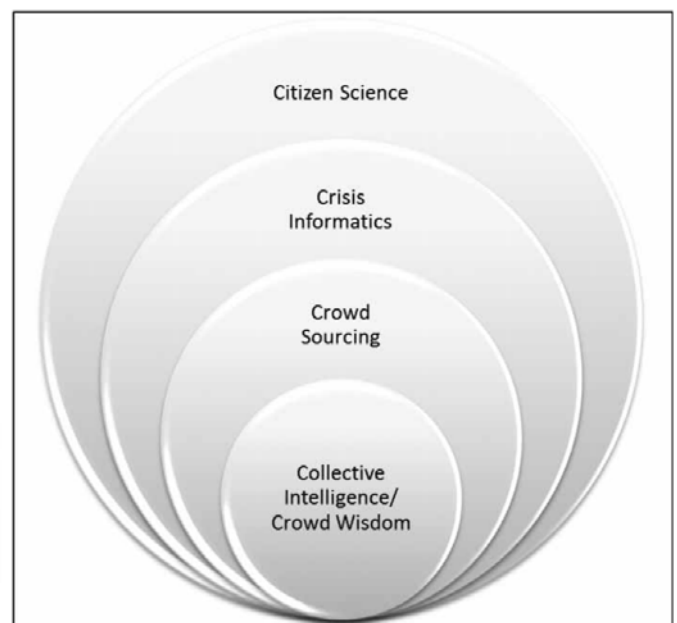


Figure 1. Crisis informatics within a citizen science framework.

Social Media – 3 research components

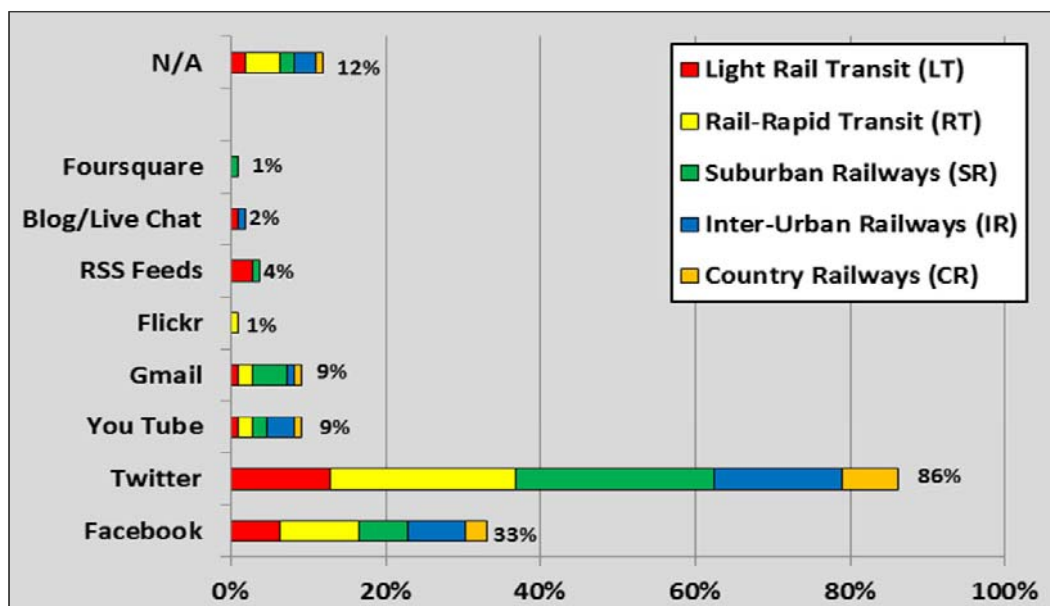
1. Social media utilisation during URDs
2. Advantages and disadvantages
3. Challenges and options for the future



Source: Pender B Currie G Delbosc A Shiwakoti N (2014) 'Social Media Use during Unplanned Passenger Rail Disruptions: A Review of Literature' TRANSPORT REVIEWS Vol 34 No 4 pp501-521

The real-time nature of Twitter makes it for comms in URDs...

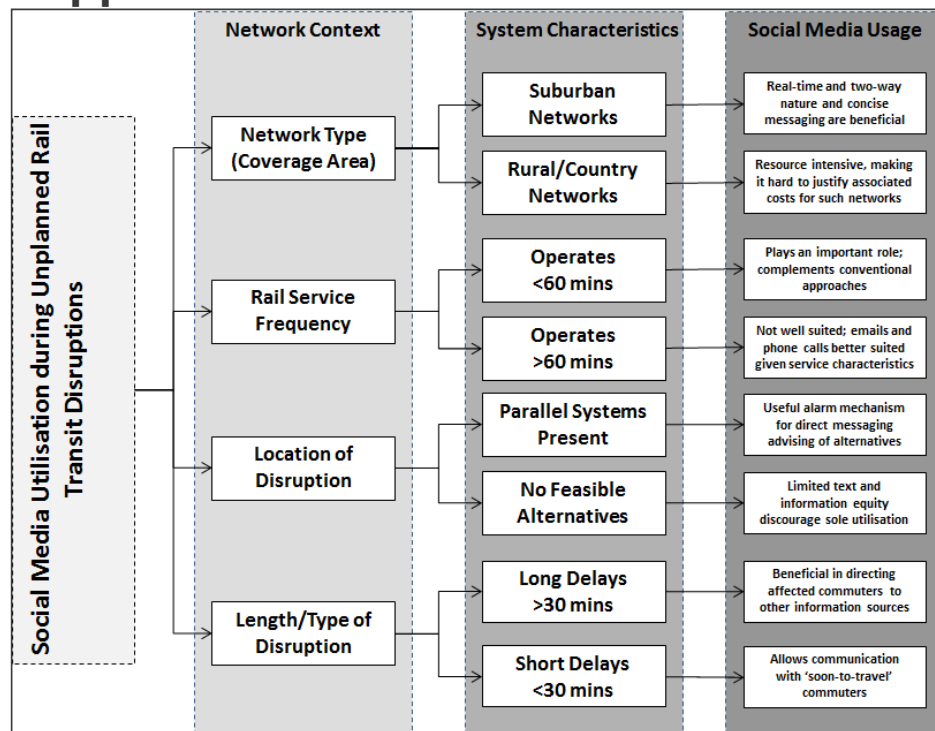
Types of Social Media Used for URD communications in cities



Source: Pender et al. (2013) 'Social Media Utilisation during Unplanned Passenger Rail Disruption – What's not to 'Like'?', Paper presented to 36th Australasian Transport Research Forum (ATRF), Brisbane, Australia

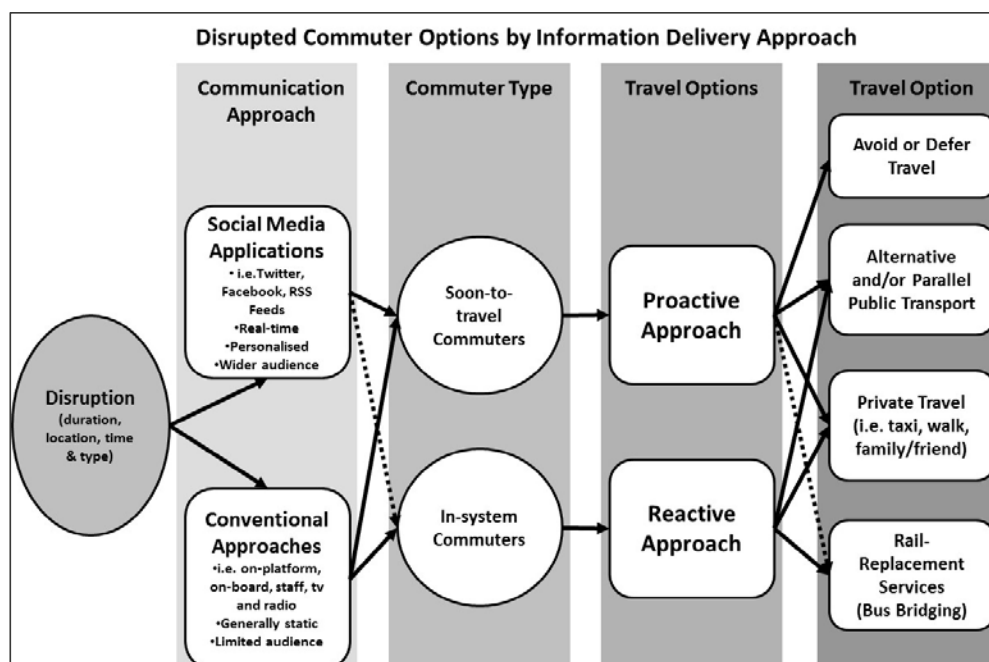
...however frequent urban service & parallel systems are good for SM applications

Figure 3. Social media utilisation according to network and disruption attributes.



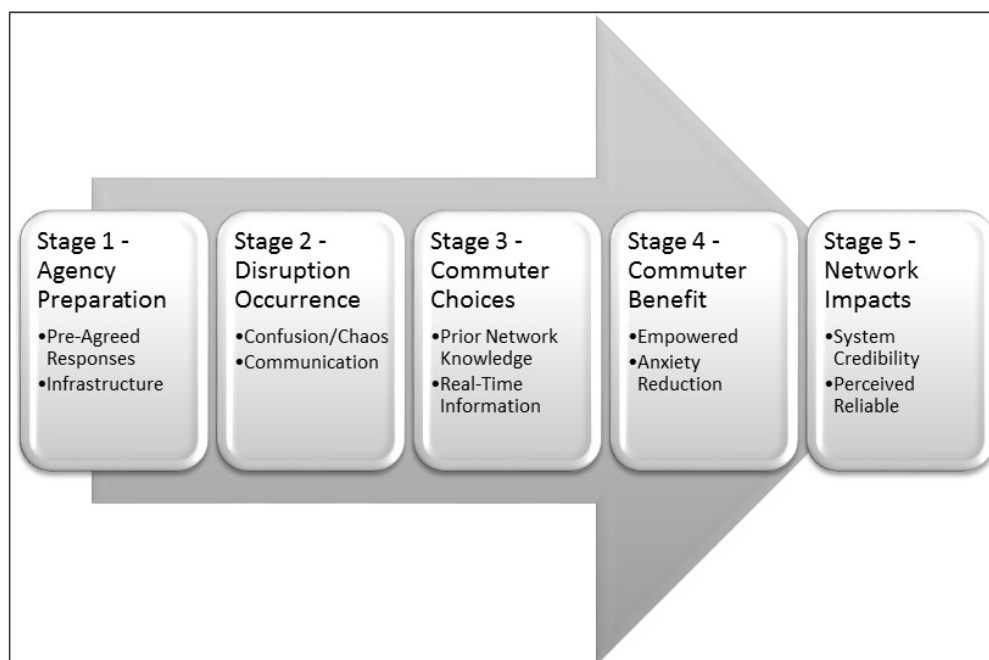
Source: Pender B Currie G Delbosc A Shiwakoti N (2014) 'Social Media Use during Unplanned Passenger Rail Disruptions: A Review of Literature' TRANSPORT REVIEWS Vol 34 No 4 pp501-521

Social media enables pro-active comms...



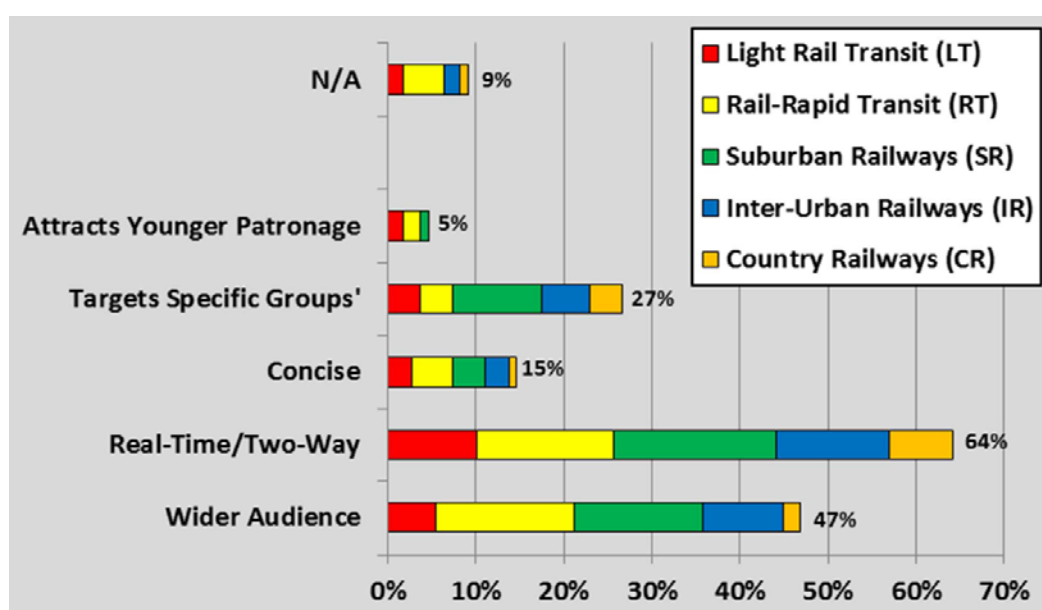
Source: Pender, B Currie G Delbosc A and Shiwakoti N (2014) 'An International Study of Current and Potential Social Media Applications in Unplanned Passenger Rail Disruptions' TRANSPORTATION RESEARCH RECORD Volume 2419, Volume 2419 / Transit 2014, Vol. 5 pp 118-127

...but planning and preparation is required



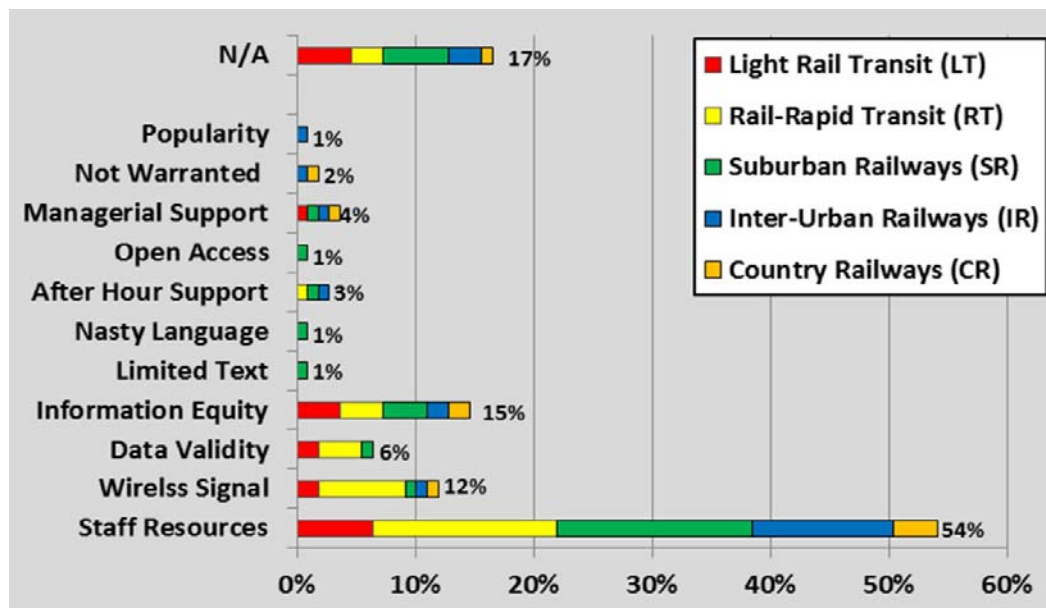
Source: Pender B Currie G Delbosc A Shiwakoti N (2014) 'Social Media Use during Unplanned Passenger Rail Disruptions: A Review of Literature' TRANSPORT REVIEWS Vol 34 No 4 pp501-521

Advantages: Interactive nature is important...



Source: Pender et al. (2013) 'Social Media Utilisation during Unplanned Passenger Rail Disruption – What's not to 'Like'?', Paper presented to 36th Australasian Transport Research Forum (ATRF), Brisbane, Australia

Disadvantages: Very resource intensive...



Source: Pender et al. (2013) 'Social Media Utilisation during Unplanned Passenger Rail Disruption – What's not to 'Like'?', Paper presented to 36th Australasian Transport Research Forum (ATRF), Brisbane, Australia

Challenges and options for the future

- **Social media is a victim of its success...**
 - Increased level of expectation
 - Key challenge: complete organisation support
 - “Should we use social media if we cannot do it well?”
- **Enhancing customer experiences...**
 - Increased presence and interactivity
 - Increased prevalence of social media will create resultant need for greater transparency during URDs
 - Potential for crowd-sourcing, but issues with reliability & accuracy



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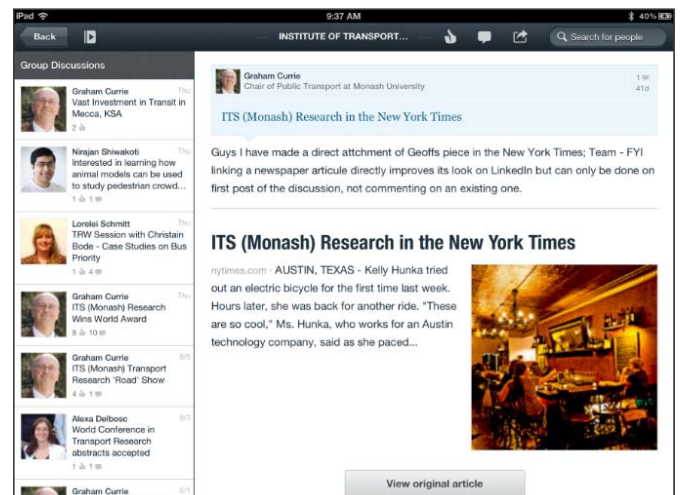
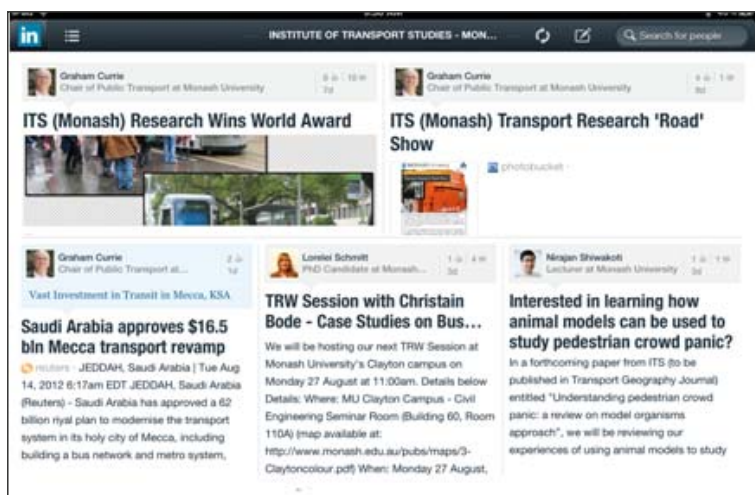

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2. Impacts of track crossovers

- Increase in crossovers increases flexibility to 'turn' trains
- Limited number/location of crossovers impacts service recovery

