# Social Media Utilisation during Unplanned Passenger Rail Disruption – What's not to 'Like'?

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## Abstract

This research explores the role that social media plays in managing unplanned passenger rail disruptions through a review of published research and a survey of international practice. Although there is some existing literature on social media use in transit more generally, this paper presents the first review of its use during transit disruptions.

When disruptions occur there is a clear need to provide passengers with reliable, up-to-date information. This should be transparent and sympathetic to impacts of delays on passengers. Social media is useful to passengers during disruptions because it enables concise real-time information to be provided. However, research shows that social media acts to supplement rather than replace existing media because tweets are too short for wider information needs. The reliability of information was also shown to be critical to its value.

Survey results of 86 rail agencies suggest that 86% use Twitter, 33% use Facebook while only 12% did not utilise social media. Twitter use was most prevalent in high-frequency networks. Its real-time nature provides the most appeal, particularly given the immediate nature of communication. Its ability to monitor and provide commuter feedback was also valued. Staff resourcing was identified as an impediment to its use with slightly more than half of respondents commenting on this issue. Rail agencies also believed that managing commuter expectation in the use of this application was a growing concern and reiterated the point for greater staff resourcing.

The paper discusses the implications of the study findings for future research and practice.

## 1 Introduction

Managing unplanned disruptions in passenger rail services is an important aspect of operations (Kepaptsoglou and Karlaftis 2009; Pender et al. 2012). A major priority for operators is to re-establish planned operations (Boyd et al. 1998), however, research has demonstrated the need to keep passengers informed (Passenger Focus 2011). Passenger satisfaction and credibility have been shown to be closely related to information quality during disruptions (Kepaptsoglou and Karlaftis 2009; Kepaptsoglou and Karlaftis 2010).

Social media has been shown to have particular advantages compared to traditional information systems in communicating during emergency situations (Yates and Paquette 2011). Tools like Twitter can enable real-time, two way communication between large groups and agencies dealing with emergencies (Bruns 2011). A major problem in rail transport is that the pace of development of these communication tools is increasing beyond published research. Although there is an emerging literature documenting the use of social media to collect passenger feedback, aid transport planning or provide news (e.g. Bregman 2012; Collins et al. 2012; Evans-Cowley and Griffin 2012), there is almost no research specifically examining the use of social media in transit disruption management.

This paper reviews current practices in the use of social media in unplanned urban passenger rail disruptions. It does this through a review of the available published research literature and an international survey of industry practices. The latter includes a case study of MetroTrains Melbourne. The paper's structure commences with a review of the research literature followed next by a description of the international survey approach. Results are then described and conclusions are presented including a summary of key findings and a discussion of their implications for future planning, practice and research.

## 2  Research Context

In recent years, social media has been identified as a supplementary information source to meet the information needs of disrupted passengers. A review of passenger experiences of unplanned disruptions in the United Kingdom (UK) found that, the highest priority information needs of customers during unplanned service disruptions were the length and reason for delays and options for alternative travel (Passenger Focus 2011). During London Underground disruptions due to strikes, the impacts of information flows to passengers was researched (Harazeen 2011). This study highlighted that real-time information was a major passenger need, however, reliability of data was a major concern.

Social media is useful as a knowledge management platform during disaster response (Yates and Paquette 2011). Comfort (2007) comments that social media promotes knowledge sharing by individuals and is not reliant on hierarchical structures. Social media "support (s) the creation of informal users' networks facilitating the flow of ideas and knowledge by allowing the efficient generation, dissemination, sharing and editing/refining of informational content" (Constantinides and Fountain 2008) (p. 231). Disaster response typically involves a coordinated response between individuals and agencies that have different functions and expertise (Yates and Paquette 2011). Decision-makers in disaster response require knowledge contributions to be highly contextualised because environments are fluid and misunderstandings are common (Yates and Paquette 2011). Social media has the ability to be flexible to the changing needs of the responders (Sutton et al. 2008).

Twitter has proven to be a highly useful communication platform in emergency situations (Bruns 2011); its real-time nature proving invaluable during fire emergencies and live traffic updates (Sakaki et al. 2010). Furthermore, unlike social networking sites such as Facebook, the relationship between following and being followed requires no reciprocation. As highlighted by Kwak et al., (2010) Twitter users follow others or are followed.

A survey of North American transit agencies found that social media was used to provide agency news, real-time service alerts, context promotions and to provide static service information to their customers. Key reasons for its popularity include d (Bregman 2012):
- Engages customers at a low cost ;
- Keeps stakeholders updated about time-sensitive information;
- Allows customers to bypass agency bureaucracy;
- Makes the agency appear 'in touch' when communicating with younger users; and
- Reaches people where they are communicating.

This research also demonstrated that trust in information is important. Some passengers considered tweets from other passengers to be more reliable than those from the operator. Making tweets specific to passengers in a given location were also identified as an opportunity to better focus information and make it relevant. Twitter was considered an important new and growing tool but only one of many required. 'Channel Integration'; where the mix of communication tools are well adapted to needs was recognised a key future requirement. This research matches the findings of the recent London Underground study

(Harazeen 2011) in agreeing that social media is a complement to existing passenger communications during disruptions rather than a replacement.
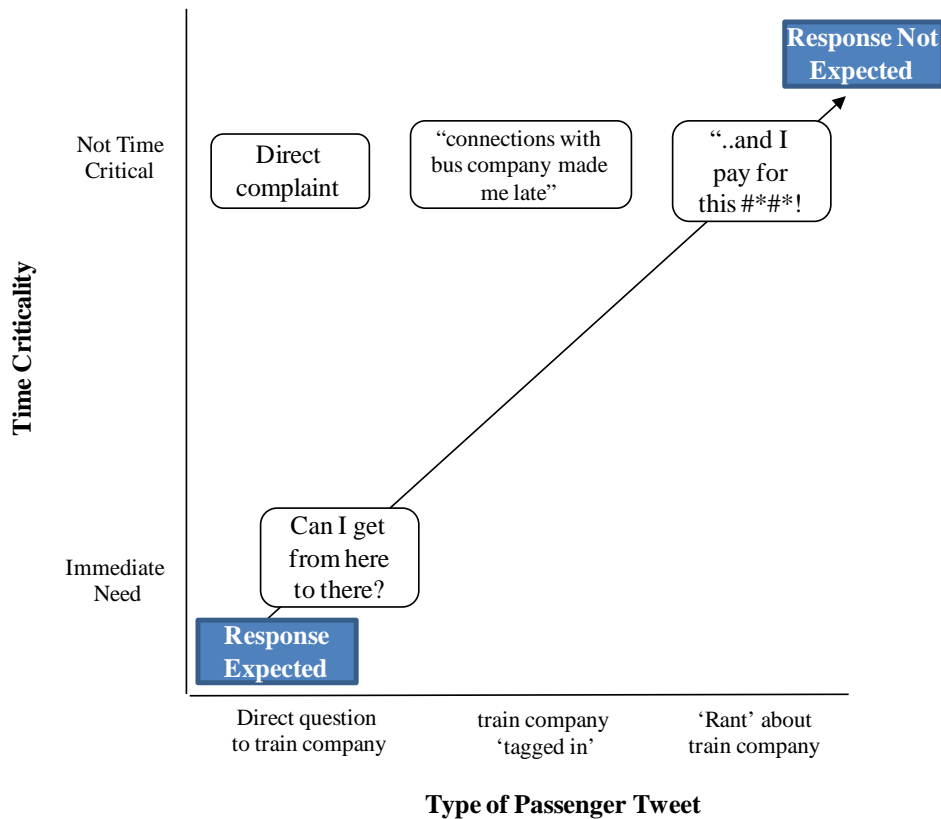


**Figure 1: Suggested Protocol for Passenger Expectations of Interactive Twitter Responses from Operators Source: (Authors adaptation based on Outlook Research Limited 2012)**

Figure 1 presents a protocol for managing passenger expectations of Twitter responses developed from our analysis. Time criticality of issues acts to govern the need for responses from the operator and this is highly related to issues associated with unexpected service disruptions. Responses are not needed when time is not critical. A spectrum of contexts is suggested ranging from insulting passenger feedback to detailed complaints seeking a response which provides information which passengers require. However, time criticality acts to govern the expected immediacy of responses and the overall need for a response.

Although there is an emerging body of research on the use of social media, comparatively little research exists on the design of social media technologies for emergency management in public transport. Only one recent research project considered the specific issue of social media and rail disruption (Outlook Research Limited 2012).

# 3  Industry Survey Methodology

## 3.1 Survey Aims

This paper aims to better understand current industry practice in the use of social media to manage unplanned rail service disruptions. Two analyses were undertaken; an international review of current practices regarding social media utilisation during unplanned service disruptions (Part A) and a case study of MetroTrains Melbourne examining their approach to social media (Part B). The survey of international rail operators aims to understand current approaches to social media utilisation during unexpected rail service disruptions. It contrasts approaches used by the different rail transit modes. The MetroTrains Melbourne case study

aims to specifically explore how this rail agency utilises such technologies. In particular the case study focuses on a recent unplanned service disruption (February 2013) and the role that Twitter played.

**Table 1: Passenger Rail Transit Agencies Surveyed**

| | Location | Operator | LT | RT | SR | IR | CR |
|---|---|---|---|---|---|---|---|
| **Australasia** | Adelaide | Adelaide Metro | | | X | | |
| | Auckland | Veolia Auckland | | | X | | |
| | Australia | GSR | | | | | X |
| | Brisbane | Citytrain | | | X | X | |
| | Melbourne | MetroTrains | | | X | | |
| | N. S. Wales | CountryLink | | | | | X |
| | N. S. Wales | Veolia NSW | X | | | | |
| | N. Zealand | Tranz Scenic | | | | | X |
| | Perth | Transperth | | | X | | |
| | Queensland | Traveltrain | | | | | X |
| | Sydney | CityRail | | | X | X | |
| | Victoria | V/Line | | | | X | X |
| | W. Australia | Transwa | | | | X | |
| | Wellington | Tranz Metro | | | X | X | |
| **Asia** | Bangkok | BTS Sky Train | | X | | | |
| | Bangkok | MRT Bangkok | | X | | | |
| | Kuala Lumpur | RapidKL LRT | X | | | | |
| | Taipei | TRTC | | X | | | |
| **Europe** | Athens | Athens Metro | | X | | | |
| | Belfast | NI Railways | | | X | X | |
| | Berlin | BVG (U-Bahn) | | X | | | |
| | Berlin | S-Bahn Berlin GmbH | | X | | | |
| | Brussels | STIB | | X | | | |
| | Glasgow | Glasgow Subway | | X | | | |
| | Hamburg | Hamburg S-Bahn | | X | | | |
| | Ireland | Irish Rail | | X | X | X | |
| | Lausanne | Lausanne Metro | X | X | | | |
| | Lisbon | Metro. de Lisboa | | X | | | |
| | Lombardy | Trenord | | | X | X | |
| | London | C2C | | | X | | |
| | London | DLR | X | | | | |
| | London | East Midlands | | | X | | |
| | London | First Capital Connect | | | X | | |
| | London | First Great Western | | | X | X | |
| | London | First Hull Trains | | | | X | |
| | London | Greater Anglia | | | X | | |
| | London | London Midland | | | X | | |
| | London | London Overground | | | X | | |
| | London | London Underground | | X | | | |
| | London | Northern Rail | | | | X | X |
| | London | Southeastern | | | X | | |
| | London | Virgin Trains | | | | X | |
| | Milan | Metro. di Milano | | X | | | |

| | Location | Operator | LT | RT | SR | IR | CR |
|---|---|---|---|---|---|---|---|
| **Europe** | Munich | Munich U-Bahn | | X | | | |
| | Netherlands | NS | | | | X | X |
| | Newcastle | Tyne & Wear Metro | | X | | | |
| | Paris | RATP | | X | X | | |
| **North America** | Atlanta | MARTA | | X | | | |
| | Austin | Capital MetroRail | | | X | | |
| | Boston | MBTA | X | X | X | | |
| | California | ACE | | | | X | |
| | California | NCTD | X | | | X | |
| | Canada | VIA Rail | | | | X | X |
| | Chicago | CTA | | X | | | |
| | Chicago | Metra | | | X | | |
| | Cleveland | Grtr. Cleveland RTA | X | X | X | | |
| | Dallas/Fort Worth | DART | X | | | | |
| | Dallas/Fort Worth | TRE | | | X | | |
| | Denver | RTD | X | | | | |
| | Houston | METRO Rail | X | | | | |
| | Los Angeles | LACMTA | X | X | | | |
| | Maryland | MARC | | | | X | |
| | Mexico City | Mexico City Metro | | X | | | |
| | Miami | Miami-Dade Transit | | X | | | |
| | Minnesota | METRO – Blue Line | | | | | |
| | Montreal | AMT | | | X | | |
| | Montreal | STM | | X | | | |
| | New Jersey | New Jersey Transit | | | X | | |
| | New York | Long Is. Rail Road | | | X | | |
| | New York | Metro-North Railroad | | | X | | |
| | New York City | NY City Transit | | X | | | |
| | New York City | PATH | | X | | | |
| | New York City | Staten Island Railway | | X | | | |
| | Pennsylvania | SEPTA | X | X | X | | |
| | Penn./New Jersey | PATCO Speedline | | X | | | |
| | Portland | MAX Light Rail | X | | | | |
| | San Diego | San Diego Trolley | X | | | | |
| | Santa Clara | VTA | X | | | | |
| | Seattle | Sound Transit | X | | | | |
| | St. Louis | Metro Transit | X | | | | |
| | Toronto | GO Transit | | | | X | |
| | Toronto | TTC | | X | | | |
| | USA | Amtrak | | | | X | X |
| | Vancouver | SkyTrain | X | | | | |
| | Virginia | VRE | | | | X | |
| | Washington DC | WMATA | | X | | | |

Note: Transit modes included Light Rail Rapid Transit (LT), Rail Rapid Transit (RT), Suburban Rail (SR), Intercity Rail (IR) and Country Rail (CR)

## 3.2 Survey Approach

An international public transport rail agency survey was conducted to establish current industry practices in the use of social media in managing unplanned service disruptions focussing on urban passenger rail. A semi-structured interview approach was adopted. Participants from a total of 86 international passenger rail transit agencies (representing 108 transit modes) were interviewed (Table 1), during the period of October 2011 to April 2013. Participants were selected with the assistance of associations such as the American Public Transport Association (APTA) and the International Association of Public Transport (UITP).

The interviews covered a broad range of questions about disruption management, the results of which are described elsewhere (Pender et al. 2013). This paper focuses on the investigations surrounding social media used and the general role it played in managing unplanned service disruptions.

# 4 Results – International Survey (Part A)

The following results regarding social media use during unplanned disruptions are described:
- Social media utilisation
- Advantages and disadvantages; and
- Challenges and future development.

## 4.1 Social Media Utilisation

Figure 2 highlights the preferred use of Twitter (86%). Facebook was supported to a lesser extent (33%) and the preferred use of both would be indicative of their real-time nature unlike YouTube (9%). Approximately one-tenth of agencies did not use social media, although affected agencies did state they were in the process of evaluating its effectiveness.
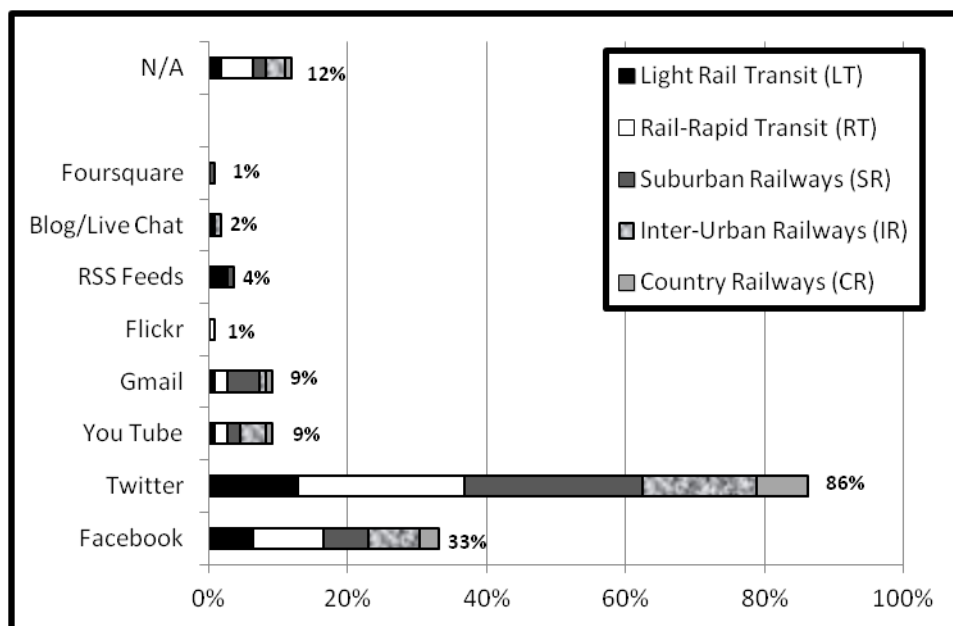


**Figure 2: Utilisation of Social Media During Unplanned Disruptions by Transit Mode**

High frequency transit modes illustrated a stronger preference for the use of social media than lower frequency services such as Country Railways (CR). As noted by Transwa (West Australia), "Currently social media is not warranted'. Transwa simply rings passengers when there are major delays; "we are small enough to do it." For high frequencies transit modes, such as Light Rail Transit (LT), Rail-Rapid Transit (RT) and Suburban Railways (SR), the volume of commuters carried meant there was a need to communicate to a wide group in real-time. Social media was found to provide an effective platform to execute information delivery in this context. Virgin Trains (UK), referred to a recent example in demonstrating the strength of social media and also the two-way nature of the medium:

> *"Details of a recent disruption at Liverpool on a day when Liverpool Football club were playing in London were communicated via Twitter and it had the effect that a significant number of travelling fans drove to Chester and so made it to the match in plenty of time. We are working towards a member of our customer relations team being in the control room from 0700-2200 hours so they have the very best information to give out to customers. Such information works two ways as well and any potential issues that customers face may be communicated very quickly to Controllers who can then address the matter."*
> (Virgin Trains, UK)

5

Figure 3 illustrates that Twitter was considered the most effective social media application by the rail agencies surveyed (77%). Greater Anglia provided a summation as to which social media applications were best suited to different requirements and the future for social media within the agency:

> *"We will continue to build Twitter as our primary platform until something better comes along. Facebook is primarily marketing related. Foursquare will give us better geo-location information but the market is currently limited. We're also looking at Pintrest or another photo sharing platform. More broadly we also need to take Twitter internal so our staff have the two-way benefits and we're also currently recruiting in order to ensure we're staffed seven days a week."*

(Greater Anglia, UK)
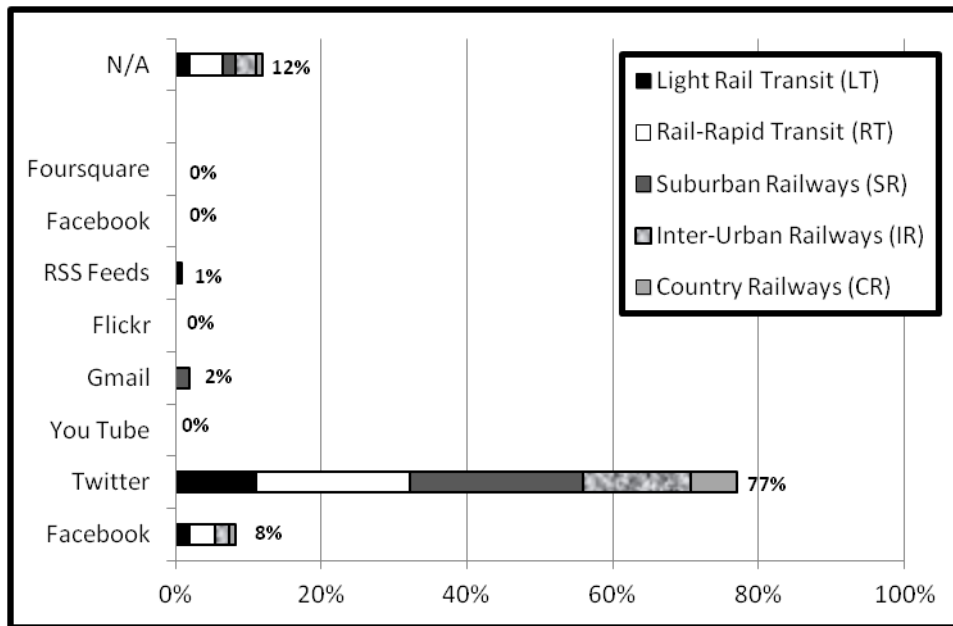


**Figure 3: Preferred Social Media Application During Unplanned Disruptions by Transit Mode**

The philosophy that Facebook was more suited to marketing than real-time communication was supported by TranzScenic (now KiwiRail Scenic Journeys, New Zealand). In their response they noted the importance of network mode in social media usage and also the importance of culture when analysing approaches to communication methods.

> *"KiwiRail Scenic Journeys is now a business more closely aligned to the travel and tourism industry and is not public transport. Our users are coming from various 'booking channels' and from many different countries. All have different ways of communicating. We have a Facebook page to open our business up to those who prefer to use this medium to communicate. May not exactly be our current target market, but we can promote our products via Facebook, and over time we will see this channel grow as both a communication and booking mechanism."*

(KiwiRail Scenic Journeys, NZ)

Feedback from CR operators illustrates the role of Facebook as a marketing mechanism; a fact supported by MetroTrains Melbourne (Australia), "We do hope to maintain a Facebook page at some stage in the future, but more for marketing and customer engagement than for disruption information. Transperth (West Australia) highlighted the role of YouTube is more suited to planned as opposed to unplanned service disruptions when stating, "You Tube is also as a communications tool by Transperth, but these are for frequently asked questions, instructional videos and major planned disruptions.

### 4.1.1 Implications for Practice

Unlike CR networks where travel reservations are made in advance and service levels are limited, social media can fulfil an invaluable role in other networks. It allows real-time communication with a large percentage of affected commuters. Twitter, in particular fulfils such a role given it displays brief messages to a wider audience. Sole use of social media, however, will not solve all of rail agencies' requirements in communicating disruption details and should be used in conjunction with other forms. The fact that all commuters do not utilise social media and the limited text space will mean that traditional approaches will still have an important role to fulfil.

## 4.2 Advantages and Disadvantages

Social media's popularity is due to its real-time/two-way nature (Figure 4 – 64%) and its ability to address a wider audience (47%). Although as noted by TTC (Canada) "ultimately you have to stay current with all trends and technology to ensure you capture the widest groups". Industry respondents also suggested that the ability to target specific groups (27%) and the fact that social media messages are concise (15%) were important advantages. A few participating agencies believed that social media use allowed them to more effectively communicate and therefore attract a younger demographic of clientele.

Ultimately Twitter's real-time ability ensures passengers are advised as early as possible about the location and duration of disruptions and be provided with alternatives:

> *"Electronic media is critical to the ACE service it provides up to date information to passengers and allows staff to send out information as soon information is known, providing passengers with the ability to make decisions on getting to work or getting home if we experience a delay."*
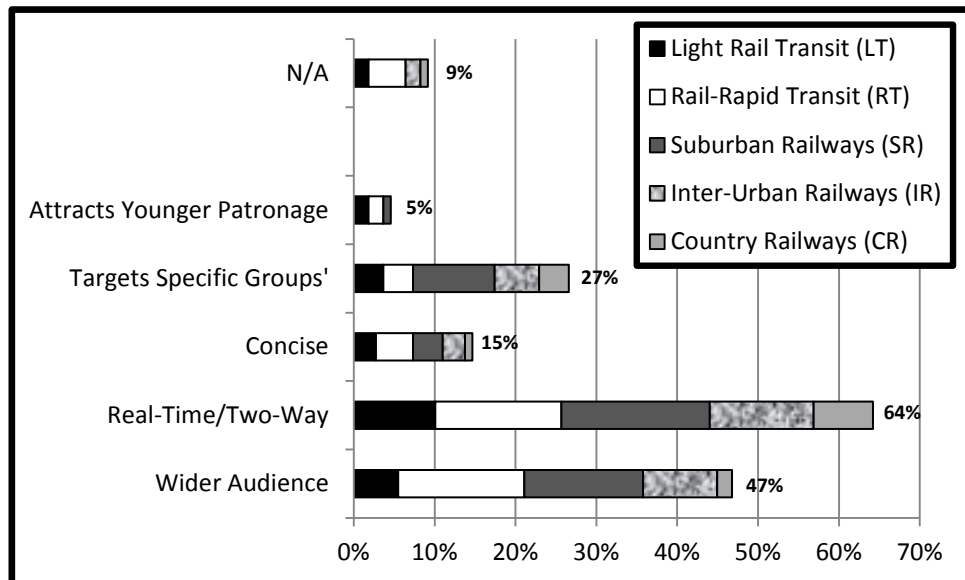>
> (ACE, USA)



**Figure 4: Advantages of Social Media Use during Unplanned Disruptions by Transit Mode**

Greater Anglia (UK) highlighted that Twitter allows them to receive commuter feedback. Often, the commuters on the affected train may actually find out information sooner than the staff on board the train. WMATA (USA) agree, stating in the past twelve months any message tweeted by WMATA was re-tweeted. This is supported by Rapid KL LRT who states that people in the affected train often help them to report on a disrupted situation.

South Eastern Railway (UK) supported the use of social media by highlighting that it's a key element in customer satisfaction and engagement. They further added that some rail companies in the United Kingdom have seen a 17% increase during 2012 in this respect based on the 'how we deal with delays' metric of the customer satisfaction survey regarding social media use.

Social media reduces the flow-on effects of disruptions where alternative services cannot replace the disrupted demand. Long Island Rail Road highlighted, "you can't bus a rush hour, as you cannot bus a train with 1,000 people on board, and you never will." NY City Transit advised that social media communication allows you to "evaporate your market. In the past we assumed that no matter what you did, the rush hour was going to descend on you. You can now make the rush hour go away." Disruptions in the AM peak are often easier to manage given that people at home are more easily able to organise alternative transport or travel to an undisrupted corridor.

Respondents highlight the most important disadvantage to social media use was the staff resources required to administer its ongoing use. This was documented by approximately half of participants 54% (Figure 5). In this respect PATCO Speedline (USA) commented, "we have insufficient staff to increase its usage", whilst Hamburg S-Bahn added that they deliver all messages pertaining to unplanned service disruptions via their company website given it would be expensive to employ extra staff, to maintain a social media account.
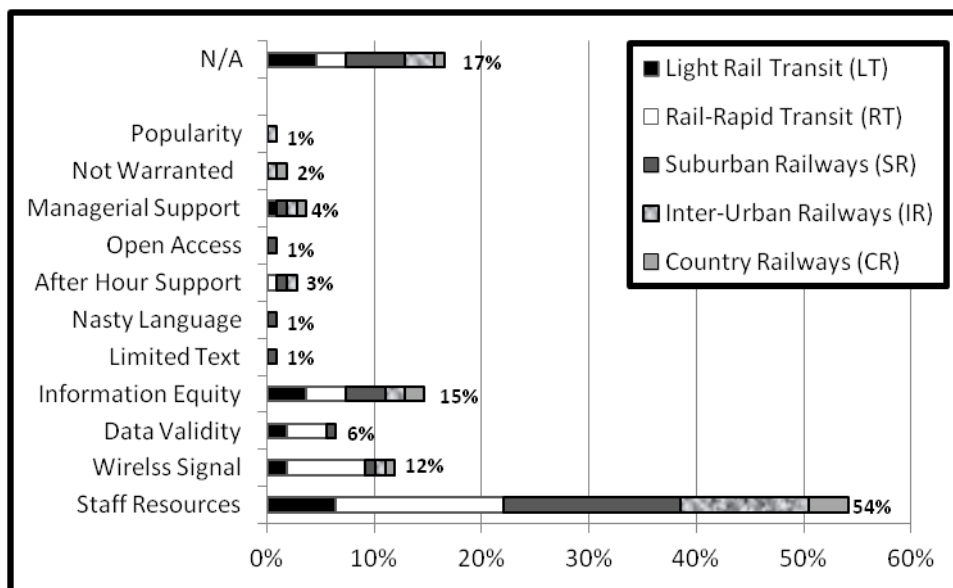


**Figure 5: Disadvantages of Social Media Use during Unplanned Disruptions by Transit Mode**

Some agencies commented that if there are not automated procedures in place to support social media, the resultant use of manual labour can be detrimental to response times:

> *"During unplanned service disruptions, social media can be somewhat helpful, but we do not have an automatic system for service alert information that feeds social media or any of our alerts channels. With everything entered by hand, the alert information is not real-time."*
> (Westside Express Service, USA)

Very few agencies had dedicated social media teams. Inevitably its administration was the responsibility of related departments such as operations (Figure 6 – 34%). Although most agencies who participated in this survey were convinced of its benefits, often the biggest challenge to implementation is organisational support. RTD noted one key difficulty is, "convincing our customer information centre that offering customer service via Facebook and Twitter would be a beneficial use of their time."
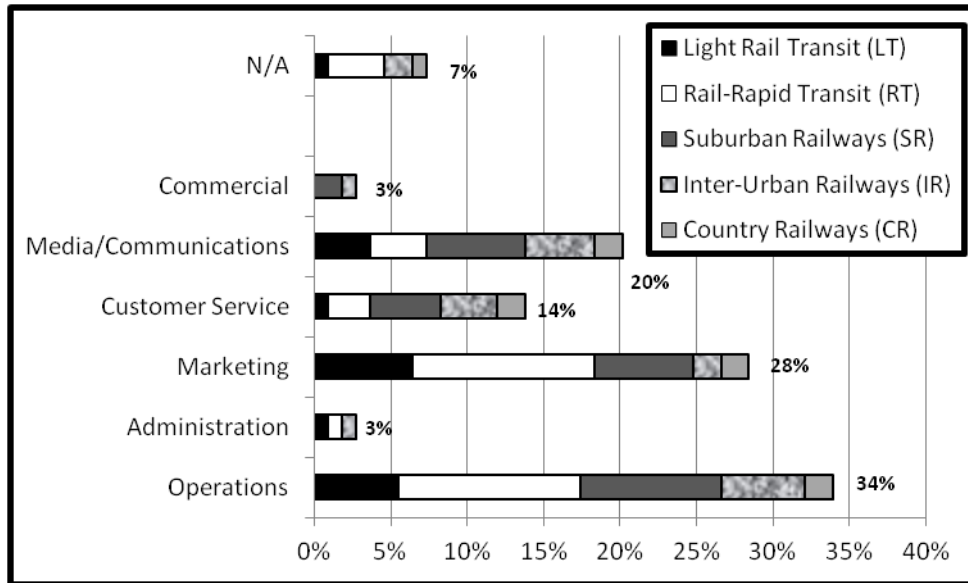
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**Figure 6: Internal Agency Department Responsible for Social Media Use by Transit Mode**

BTS Skytrain (Thailand) documented a related problem was that operational staff are often guilty of using railway terminology not easily identifiable with commuters. This inevitably affects credibility and the ability for commuters to make informed decisions on transport alternatives. MARTA surmised most agencies thoughts when they stated it was their eventual plan to have dedicated teams for such communications.

Wireless signals were identified as an impediment to social media use (12%) whilst information equity was also highlighted as a hindrance (15%); "Not all of our riders have access to social media" NCTD (USA). Although there is a trend towards increased social media use, numerous agencies indicated that it is best used as a complement to traditional approaches and not as a replacement. BTS Skytrain commented that social media plays a supportive function to conventional approaches given the latter captures those in the system.

An increased social media presence has meant that it has inevitably become a victim of its own success. NI Railways (Ireland) documented that the use of social media was becoming more widespread and as a consequence there was now an increased level of expectation in respect to the information provided. This philosophy was supported by Adelaide Metro who mentioned that social media has to be closely monitored, given a key disadvantage would arise if you cannot address or respond to the trends or feedback appropriately. However, real barriers to entry in their opinion are not having a wide-enough audience, not understanding the agency's demographic or relying solely on social media.

### 4.2.1 Implications for Practice

Real-time, two-way communication, targeting a wider audience and concise messaging are reasons to engage in social media. However, social media is resource intensive. As one agency noted, "should we use social media if we cannot do it well?" This is an important consideration in a digital age where social media is increasingly used by commuters to ask questions, because a failure to respond will reduce information credibility.

Given the need to still service traditional communication approaches, it is not always possible to redeploy staff. Initially, hiring staff to monitor Twitter feeds, websites and mobile sites will be costly, however, given the demand it may be unavoidable. Over time, however, effective social media use may result in less staff being required for conventional

approaches and less demand for alternative service initiation, both of which will result in financial savings. These bonuses are in addition to improved customer service which will result in improved patronage although often the associated benefits are difficult to quantify.

## 4.3  Challenges and Future Development

The future for social media is generally considered an area for enhancing customer experiences. First Great Western (UK) suggested "it will become the way we do business in the long run; we need to be ahead of the pack, picking up on new applications, sites and trends rather than following what everyone else has done." In moving forward Newcastle Metro aims to disseminate disruption messages by transport mode, whilst Metro North Railroad like other participants would like to increase their presence and level of interactivity. Transperth highlighted the major impediments to its sustained growth related to staff resourcing and organisational support:

> *"With the development of a social media policy and the addition of resources to monitor and manage social media communications, hopefully social media will become a wider used channel of communications for unplanned disruptions."*
> (Transperth, Australia)

TTC (Canada) noted that there are many different questions and scenarios when an unplanned disruption occurs. Irrespective, the number one component is communication, i.e. making sure your customers know their options, that operators know their instructions and communication with response crews. TfNSW (Australia) highlight that in a complex environment where there are multiple stakeholders and situations that are often changing, it is a significant challenge to have accurate and useful information given to the public in a very short period of time. As the operators of Newcastle's (UK) Tyne and Wear Metro state, the use of social media is critical in advising commuters what the problem is in real-time.

### 4.3.1  Implications for Practice

Social media use does have its barriers to entry, however, organisational support is paramount. It would be remiss of rail agencies to think that social media does not have a role to play. However, as noted its application does vary according to network type. The fact that commuters can now communicate disruption details via Twitter means a failure by rail agencies to engage can tarnish their credibility.

If rail agencies are going to proceed with the use of social media, it requires the complete support of all involved. Demand for two-way communication is increasing and is an issue for most rail agencies to address given currently social media is often only used for outgoing information. Despite the need for real-time information, it is important to only convey factual information as inaccurate details can often be more detrimental. The increased prevalence of social media and the resultant need for greater transparency may force rail agencies to address internal approaches to managing disruptions; a result that will only benefit commuters.

# 5  Results – MetroTrains Melbourne Case Study (Part B)

## 5.1  Social Media Approaches

MetroTrains Melbourne operate Melbourne's suburban railway network including 203 six-carriage electric trains across 830 track kilometres servicing more than 230 million annual customer journeys (MetroTrains 2013). The train fleet covers more than 45 million kilometres per year operating across 15 lines and 215 train stations and involving a workforce of 4,200 staff. MetroTrains utilise four social media platforms to communicate unplanned disruptions:

- ***Metro Health Board*** – website using different colours to depict delays.
- ***Metro Notify*** – smart phone application delivering real-time information about delays.
- ***Twitter*** –provides real-time disruption information to followers.
- ***Text Messaging*** – subscribers receive updates about train cancellations.

MetroTrains do not have a dedicated social media team so resources can be limited; thus the reason for not utilising Facebook. Once unplanned disruption news is conveyed to the control centre, communication officers distribute an internal text message to key staff. The media team is briefed by communications staff and relies on this information to publicly document disruption details. The Twitter feed is continuously monitored given customers often relay information such as faulty air-conditioning. MetroTrains interact on Twitter but will not respond to abuse. During major delays, Tweets are often sent every 10-15 minutes. Most criticism regarding such events relates to information clarity and not the disruption.

MetroTrains do not have performance indicators to satisfy in respect to social media use during disruptions. The big challenge today is that customers want relevant and accurate real-time information. Often when a disruption occurs, required information is not available and available information is inaccurate. MetroTrains acknowledge that in a new era of smart technology, only a small percentage of customers will rely on traditional communication. Whilst such methods were once preferred, they will now fulfil a complimentary role.

## 5.2   Recent Example

Prior to the AM peak on Tuesday the 5th of February, 2013 a disruption occurred in Melbourne's inner east affecting two highly patronised rail lines. Morning commuters reported that journeys to Melbourne's CBD took over 90 minutes compared to 20 minutes (Zielinksi 2013). The resultant disruption continued for two days. On a branch line, buses replaced trains whilst on the main rail corridor train speeds were reduced from 70 km/hr to 25km/hr and only one train in each direction was allowed. Given during weekday peak periods trains operate at 2-3 minute frequencies the impacts were significant (Gough 2013).

Further analysis of MetroTrains Tweets reveals the key messages delivered (Figure 7).
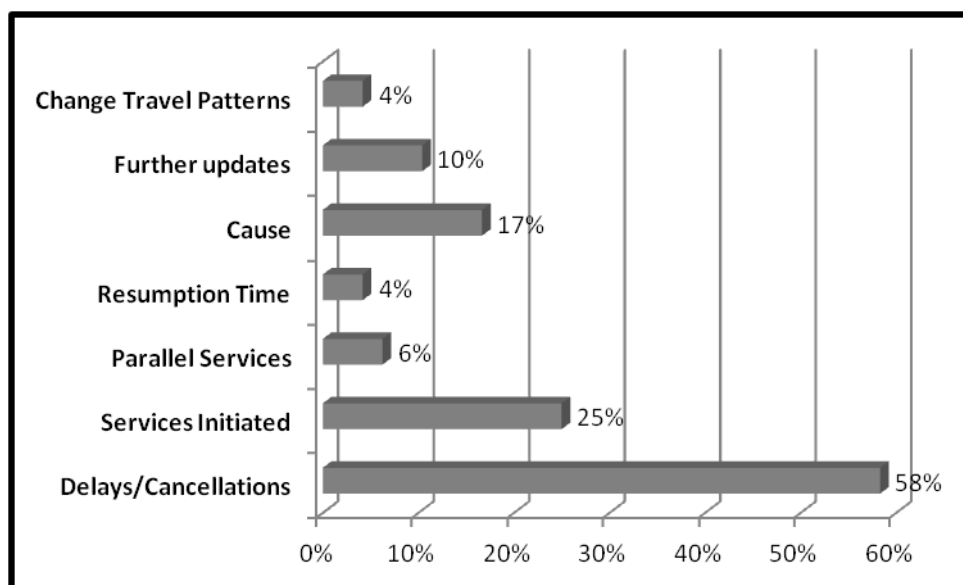


**Figure 7: Content of MetroTrains Tweets (6th and 7th of February, 2013)**

An analysis of MetroTrains Twitter feed during the affected days revealed the following:

- Tweets by MetroTrains – 48 (29 Tuesday and 19 Wednesday);
- Re-Tweets by followers – 492 (396 and 96);
- Responses to queries by MetroTrains – 4 (4 and 0); and
- Follower responses – 139 (71 and 68).

Similar to the survey results, Figure 7 illustrates the key message delivered during the MetroTrains disruptions documented train delays and cancellations (58%). The initiation of alternate services featured (25%), however, unlike the survey responses the advertisement of parallel services or anticipated resumption times was not common. The latter is difficult to ascertain and there is a reluctance to advise particularly if initial estimates are later proved wrong. There is, however, greater scope to promote parallel services. Given in a number of international cities, the rail operator is responsible for other public transport modes, cross promotion is less complex (Pender et al. 2013). For the disruption in question, parallel tram services do exist, although they are indirect. However, for affected commuters such an option may be more feasible than waiting for delayed/cancelled train services.

# 6 Discussion and Conclusions

This research paper explores the role that social media plays in the management of unplanned service disruptions to passenger rail networks. A literature review highlighted that research into social media use in public transport environments is limited. Although there is some literature on the use of social media in disaster management more generally, this paper presents the first overview of its application to transit service disruption management.

During transit service disruptions there is a clear need to provide reliable, up-to-date information. This information should be transparent about the causes of delays and sympathetic to its subsequent impacts. Social media has been shown to be particularly useful during disruptions because it enables short, real-time messages to be provided. However, research shows that social media can only act to supplement existing information, because often more information is needed than can be provided through a tweet. The reliability of information was also shown to be critical to its value.

The industry survey examined the role that social media plays to assist passenger rail transit agencies in managing unplanned service disruptions to their rail networks. A total of 86 rail transit agencies participated. Twitter was found to be the most commonly used (86%), its real-time nature being a key reason for its popularity. Transit mode played a role in respect to the use of such media with high frequency networks demonstrating a stronger preference towards the use of applications of Twitter and Facebook compared to CR networks.

Most agencies stated that the use of social media is extremely important because it keeps customers informed. The results of the survey highlighted not only the role that social media plays in communicating with those immediately connected but also in reducing the flow-on effects to other commuters. Therefore social media reduces the severity and consequences of unplanned disruptions and can reduce the resources required to provide alternative solutions. In some cities, the interactive nature of Twitter resulted in affected commuters quickly relaying details of incidents to agencies.

From the commuter's perspective the advantages of social media are significant and it can be challenging for rail agencies to manage the resultant expectations. The major disadvantage to social media use relates to resourcing. Most agencies surveyed do not have dedicated social media teams and often those responsible combine duties with other roles. These agencies believed that a lack of staff is a hindrance to sustained growth and the ability to capture the application's real potential. Wireless signals and information equity

were other highlighted disadvantages, whilst a select group of respondents did not perceive any weaknesses.

The MetroTrains Melbourne case study highlighted the importance of Twitter. Mobile sites are growing in popularity and according to MetroTrains will eventually replace text messages given the associated cost and reliability issues. An analysis of disruption Twitter feeds highlighted that on average for every Tweet issued by MetroTrains it was re-Tweeted to another ten addresses. Similar to the survey results the main message conveyed during the disruption period was ongoing updates regarding train delays and cancelled services. Unlike the survey results, however, advertising parallel services was not a common message.

Approximately thirty years ago researchers noted the importance of communication in respect to disruption management to railway systems. Unfortunately very little research has been conducted since and as a result very little is known regarding information delivery to affected commuters. This research, which is the first of it's kind in respect to linking the role of social media to railway disruption management, is an investigative study that bridges the gap between two previously unrelated research areas. Further research could encompass the benefits that can be achieved (which could be measured by reduced response times, delays to commuters, commuters affected and resources required) and the methods and approaches to how social media is utilised. First Capital Connect commented that communication is the biggest challenge in respect to the management of disrupted commuters. Clearly social media has an invaluable role to play and it is anticipated that this paper has justified the link between these two unrelated areas.

# 7 Acknowledgements

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