

## ABSTRACT

During and after a disaster, affected communities grapple with how to respond and make sense of the experience. The physical and mental health of individuals is often adversely affected, as is the wellbeing of the community. In early 2014, a fire in the Morwell open-cut coalmine adjacent to the Hazelwood power station in the Latrobe Valley, Victoria burned for approximately 45 days, shrouding surrounding communities in smoke. As authorities struggled to put out the fire, the nearby communities became increasingly concerned about the perceived health risks of exposure to the smoke, particulate matter and gas emissions from the burning coal. The Hazelwood mine fire, initially treated as a fire emergency, 'evolved into a chronic technological disaster ... and a significant and lengthy environmental and health crisis' (Government of Victoria 2014, p. 28). In response to the crisis, people turned to social media as an alternative space in which to share information, tell their stories and organise for the purpose of activism. This paper takes the Hazelwood mine fire as a case study to examine how a community used social media (specifically Facebook) during a complex technological crisis involving health effects. It examines the issues facing emergency organisations and communities in relation to information and trust, and identifies the strengths and pitfalls of social media use in relation to community empowerment and engagement.

# Community empowerment and trust: social media use during the Hazelwood mine fire

Dr Susan Yell<sup>1</sup> and Dr Michelle Duffy<sup>2</sup>

1. Federation University, Gippsland, Victoria.
2. University of Newcastle, Newcastle, New South Wales.

Submitted: 27 June 2017. Accepted: 23 September 2017.

## Introduction

Social media platforms increasingly play a key role in the communication landscape during and after a disaster. From the perspective of emergency organisations, social media use has the potential to promote disaster resilience and to keep communities informed about hazards. Social media monitoring can provide emergency organisations with reports from the community that can help inform the emergency response in a fast-moving crisis and can also provide important feedback to emergency organisations on whether they are meeting the community's needs. Like any technology, much depends on how social media is adopted and used in a social context.

## The Hazelwood mine fire

In February 2014, a bushfire in the Latrobe Valley in south-eastern Victoria spread into the Morwell open-cut coalmine. The bushfire was brought under control fairly rapidly, but the fire had ignited the brown coal and burned for 45 days. It shrouded nearby communities in smoke, in particular the town of Morwell located a few hundred metres from the mine. A judicial inquiry (the Hazelwood Mine Fire Inquiry) was set up in response to widespread community concern about the impact of the smoke event. The inquiry expressed strong criticism of the communication from government authorities and the mine operator during the crisis (Macnamara 2015, p. 16, Government of Victoria 2014, pp. 25-28). The inquiry also found that the mine company was 'inadequately prepared to manage the fire' and that there were 'significant shortcomings by government authorities, in communicating throughout the emergency' (Government of Victoria 2014, p. 16, 23).

As the mine fire continued to burn and the community continued to experience the effects of prolonged exposure to the smoke, they turned to mainstream and social media to seek and share information about what they were experiencing. A distinctive feature of this crisis was the extent to which people were expected to continue to lead a relatively 'normal' life because of the absence of an immediate threat of loss of life or property. However, the long duration of the event, the pervasiveness of the smoke, the near-impossibility of avoiding exposure without physically relocating, and the many reports of detrimental effects on people's health<sup>1</sup> led to increasing concern

<sup>1</sup> The Hazelwood Mine Fire Inquiry report (Government of Victoria 2014, p. 309) listed the physical symptoms experienced during the mine fire. These included headaches, nausea and vomiting, sore and stinging eyes, blood noses, shortness of breath, raised blood pressure, tight chest, sneezing, coughing, tiredness, raspy voice, sore throat, mouth ulcers, rash, diarrhoea, chest pain, sinusitis, ear infection, gastric upset, fatigue/lethargy, confusion, decrease in concentration, unusual metallic taste in mouth, loss of appetite and bleeding gums. There was also 'a psychological impact on the community as a consequence of the mine fire. The lack of information about the potential short and long-term effects of the exposure to smoke and ash has caused significant distress to the community' (p. 318).

and anxiety. Crisis communication theory suggests that when a crisis occurs, this creates a demand for information within the affected community (Mcnamara 2015, p. 7). The communication shortcomings exacerbated this information vacuum and, as a result, people sought to fill this gap, particularly through their use of social media.

During the Hazelwood mine fire, community members posted content on a wide range of social media, including Facebook, Twitter and Instagram, as well as using social media pages and Twitter accounts run by media organisations (such as the ABC and the *Latrobe Valley Express*). Three community driven Facebook groups became especially active during this time (The Air that we Breathe, Occupy Latrobe and Voices of the Valley) and were selected for this study. They were chosen because they were created and used by community members and they were specifically posting about the mine fire. These sites do not represent the views of the entire population. However, by examining these Facebook groups insights can be gained into how members of the community who were motivated to speak in these forums experienced the event.

## Method

This research was conducted in the context of a larger study of community wellbeing in relation to the Hazelwood mine fire (the Hazelwood Health Study).<sup>2</sup> Our focus within this larger study was on the impact of the smoke event on community wellbeing, and effective communication during and after the event. The findings in this paper are based on the analysis of 475 social media posts collected from the three Facebook groups during the 45-day timeframe in which the fire was active, as well as interviews with four social media administrators from these groups. Textual analysis was conducted to identify key themes. Interviews conducted with four mainstream media professionals were also drawn on where they made direct observations regarding the functions and uses of social media. Approval for the interviews was gained through Federation University's Human Ethics Committee. Informed consent was gained from all interviewees.

## Social media and disasters

The most popular social media platform in Australia is Facebook (We are social 2016). Facebook allows users to access information and connect with others in a community. In Australia, social media such as Facebook and Twitter emerged as a significant method of disseminating information during the 2011 floods in Queensland (Emergency Management Victoria 2014, Bird, Ling & Haynes 2012). Bird and colleagues note that 'Facebook community pages appeared almost simultaneously with the floodwaters' (2012, p. 28). Similarly, the Facebook pages in this study emerged out of the smoke of the mine fire.

Social media's affordances (Gibson 1979) include timely information exchange and promotion of connectedness (Taylor *et al.* 2012); qualities that are particularly

important to users during a crisis. Kulumeka (2014, p. 55) conducted a study comparing the use of Facebook during the Hazelwood mine fire with the use of Chinese social media platform Tianyua during the 2008 Sichuan earthquake. He found that in both cases, these sites were used by those affected to share or seek information, support each other, express emotion, try to make sense of events and organise action.

Social media plays a substantial role in disaster communications by emergency services organisations and within communities. A considerable body of literature now exists on the use of social media in disasters, including disaster management. Emergency Management Victoria note that it is:

*...widely accepted that social media – predominantly Twitter and Facebook – is now a critical channel for the distribution of emergency warnings and information, and that it represents a shift from more conventional means of communication.*  
(Emergency Management Victoria 2014, p. 47).

Kaminska and Rutten (2014, in Dufty 2016, p. 52) found three main areas where social media has potential for use in disaster risk reduction and crisis response being public awareness, situational awareness and community empowerment and engagement. The first two are related to information dissemination, while the third aspect relates to social relations.

Information dissemination by disaster management authorities is traditionally top-down, flowing from emergency organisations to the public (Low *et al.* 2010, in Simon, Goldberg & Adini 2015, p. 614). Only a small proportion of people rely solely on social media as an information source. Social media serves as a distribution mechanism, directing people to official sources of information, according to Taylor and co-authors (2012, p. 24). However, Taylor and colleagues note that the task of maintaining trust and rebutting misinformation 'requires a high level of active management that can be challenging to community-based SM channels' (2012, p. 25). Public officials also tend to view peer-to-peer communications with mistrust, as 'backchannels' with the capacity to spread misinformation and rumour (Keim & Noji 2010, p. 47). While this does occur, social media also plays an important role in enabling communities to hold the authorities to account. Information dissemination is thus linked to community empowerment and engagement, as demonstrated by the two key themes discussed below.

## Information and trust

A key theme is the close relation between information and trust. Initial findings on the uses of social media during the Hazelwood mine fire show that there were significant issues around which organisations and information sources are trusted.

<sup>2</sup> The Hazelwood Health Study is funded by the Department of Health and Human Services and was set up in response to community concerns, in order to investigate potential health impacts resulting from the smoke from the fire (<http://hazelwoodhealthstudy.org.au/>).

The literature on disaster communications emphasises the influence of trust on how the community regards and responds to information provided by authorities during a crisis. Grannat (2004) argues that creating and sustaining trust between official organisations, the news media and the public is crucial for developing effective partnerships. Evidence suggests that people trust those they know, and that emergency and other disaster communication should be issued by as local a source as possible (CFA 2013, Cohen, Hughes & White 2007). While communities expect emergency communications to come from the appropriate authorities (such as police, emergency services and government departments), the authority of the information is undermined, along with trust in the organisation, if the information received is contradictory (Hagan, Maguire & Bopping 2008). Trust in authorities is built over the long-term (Hagan, Maguire & Bopping 2008) and is easily damaged.

During a crisis, social media occupy an important space in communities as they fill the gap between face-to-face communication and mass media. Social media is viewed as a space where community members can post their accounts of what is occurring, in the form of local knowledge and eyewitness accounts. This role becomes particularly important when official sources of information are perceived as inadequate or untrustworthy. However, social media can become a space of conflict, and in the case of the Hazelwood mine fire, this was exacerbated when apparently conflicting messages were posted or information was misinterpreted.

As one interviewee noted:

*No one knew ... where to go, ... what help was available. ... What we were getting from the media and other services seemed to contradict each other.*  
Social media administrator

One of the overwhelming messages that came through via social media and interviews with social media practitioners, was that those expected by the community to provide correct and timely information about the health effects of the smoke event did not do so. Information from key organisations such as the Department of Health, the Country Fire Authority and the Environmental Protection Agency was questioned and contested on social media.

*At the time when we were told by that woman, ...that we were okay, ... that the smoke won't harm us, she admitted that she didn't know that at the time. ... For me personally at that particular time when she was telling us information, she'd lied to us in, in effect.*  
Social media administrator

This confusion, as well as what was interpreted as silence from authorities on important matters, fuelled suspicion and lack of trust due to questioning of the accuracy of information provided through official channels.

In times of crisis, communities need readily accessible and trustworthy information. When this is not available, community members become anxious and may look to social media to fill the communication gap (Mcnamara 2014). Rather than relying on the mainstream media,

or on government authorities involved directly in emergency management for relevant information, social media users turn to other online sources. Yet some of these information sources are not subject to the forms of gatekeeping that exist in mainstream media and can be inaccurate. This can further complicate an already confusing information space.

A 2012 study by Bird and colleagues on Facebook used during the Queensland floods found that most of their respondents trusted the locally sourced information posted. A key benefit was that it provided local knowledge inherent in the community (2012, pp. 30, 31). However, the social media administrators of the Facebook groups in this study highlighted the risks in providing information from local sources because of the difficulty in verifying its accuracy. As explained by two active members of one Facebook group who were receiving posts regarding conditions inside the mine:

Social media administrator 1: *It becomes hard to know what to share and how do you verify it's true?*

Social media administrator 2: *And protecting the people that were giving this information as well; the last thing you want to do is put them at risk.*

Local knowledge may have been less trusted in the case of the Hazelwood mine fire because, in contrast to a flood, where local eyewitnesses can report roads cut and river heights from their own observation, information about the smoke was contested and dependent on expert scientific reports rather than direct observation by non-experts.

## Community empowerment and engagement

Another theme was the key role of social media in community empowerment and engagement. Social media sites can have positive and negative impacts on a community members' relations with one another and with the authorities responding to the crisis. An important role social media groups had during the crisis was bringing this to the attention of the mainstream media. However, disagreements occurred over who could speak for the community and what experiences were 'real', 'true' and representative. Despite their success in gaining media attention, the organisers of the three Facebook groups were not necessarily seen as representing the community's views. During and after the mine fire, some community members questioned whether the voices emerging strongly via social media could speak for the community. For some, the concern arose out of a lack of ongoing connection (and by implication commitment) to the Morwell community, which was the case for one 'media talent' who was active on social media but had moved away from the area. It was acknowledged that news media play a part as to who was given air space to talk about the event. As one journalist explained:

*I think that groups like Voices of the Valley have gained a real credibility with government and have almost become some sort of de facto spokesperson for the Latrobe Valley community. I think the media*

*certainly has a responsibility to take there. I think and it comes back to that point I made before about in the absence of being able to have other people to speak to you're constantly going to the same people – their profile inevitably gets lifted.*

Local journalist

It is not simply that there was an apparent few who seemed to have greater exposure on social media, but that this highlighted the divisions within the community. The interviewees felt that social media made these divisions more obvious but didn't create them.

*On social media I've noticed a big divide between people, ...it also caused in a lot of ways - oh not the page didn't cause it but it became apparent in the community there were people who thought we should have just sat back, shut up and dealt with it. We got blamed for the downfall of Morwell.*

Social media administrator

A consequence of using social media (and mainstream media) as platforms to highlight inadequacies in emergency response and recovery, is that those speaking out may be seen as exacerbating the difficulties the community is experiencing, despite the fact that their efforts may lead to necessary actions to address shortcomings.

Conflict and disagreements arose over who was genuinely affected by the event and whether or not it was legitimate to complain and to criticise the emergency response. Some in the community regarded this as 'whingeing':

*So then anybody that got funding to leave town, oh yep they got bagged out and anyone who couldn't get it was whingeing and complaining and bagging. It was like them and us and none of us could be in it together, they [the authorities] created these divisions. It was social and geographical.*

Social media administrator

As with any set of social processes, the formation of an online community is not without its challenges. On the other hand, social media had positive functions. They were used to bring people together to organise and advocate for changes. Social media can fulfil a 'watchdog' function, holding government, private companies and other organisations to account, for example on matters of public safety. As one interviewee observed:

*Unfortunately the people, the watchdogs that are supposed to do it have failed, so the communities had to ... take it back and do it themselves.*

Social media administrator

This is viewed as beneficial for community cohesion:

*I think the social media is good for keeping the community, holding the community together.*

Social media administrator

Community groups can form and organise themselves using social media and take on an advocacy role. They can also assist with rebuilding efforts by promoting initiatives and providing a space for considering 'the way forward'. In doing so they can promote a community's

disaster resilience, defined as the ability to 'bounce forward' after a disaster (Dufty 2012).

The relative intimacy of social media, where community members know others in the group, means they may feel comfortable speaking in that forum when some wouldn't go elsewhere with a problem or issue. As a result, community members affected by the Hazelwood mine fire have become better at speaking out and have discovered they have a community voice. This was particularly apparent with the role played by the Voices of the Valley, where, as one journalist explained, this became a avenue through which calls for government and industry responsibility and culpability were made.

Researchers argue that social media can play a significant role in building disaster resilience (Dufty 2012, Keim & Noji 2010). Social media can enable communities to take on important roles during and after a disaster such as advocacy and information sharing. However, Dufty (2012) points out that for emergency managers to take advantage of this potential it requires a 'paradigm shift' from being the 'combat agency' telling others, to one of community engagement; to fully obtain the benefits of social media through shared responsibility'.

## Conclusion

Social media plays a role in helping communities to cope during a crisis and to recover after a crisis, in other words, in developing resilience. Affected communities gain resilience by 'replacing their helplessness with dignity, control as well as personal and collective responsibility' (Keim & Noji 2010, p. 47). Social media can provide a means for empowering communities to help themselves 'through provision of accurate, timely and relevant information and a mechanism to connect with others' (Taylor *et al.* 2012, p. 26). These two functions, provision of timely and trusted information and connections with others, are closely related.

When communicating, it is important to understand the community's perceptions of authorities, why they do or do not trust these organisations and which information sources they do trust. Social media can provide a window into community perceptions and how effectively a response is being managed. The Hazelwood Mine Fire Inquiry found there were significant shortcomings in the emergency communication during the mine fire. It also made the point that 'social media can be a very effective tool for hearing and reading what the community are saying and how they are responding, in turn enabling interventions to acknowledge and correct rumour and innuendo' (Government of Victoria 2014, p. 400).

The findings of this case study suggest that social media plays a complex role during a crisis and people turn to it when they don't trust the information they receive from authorities or are looking to share what they know. Social media fills an information gap, but can also confuse rather than inform. They can empower communities, but they can't necessarily overcome existing divisions.

Positive outcomes depend on the levels of trust within the group and with the community; the provision of accurate, trustworthy information; offline partnerships among participants and follow-up action that delivers

results. In this context, important steps are being taken by Emergency Management Victoria to develop a community based emergency management plan in which community consultation and 'bottom-up' communication plays a key role. As the draft framework states: 'adopting and using the CBEM approach recognises that community members are knowledgeable and should participate in the decision-making processes that affect them' (Mackie 2017). Case study interviews made it clear that social media cannot replace face-to-face communication and this is necessary for rebuilding the fabric of a community. Both the communications literature and findings in this study show the importance of using multiple communication methods and channels to communicate accurate and timely information.

## Acknowledgements

The authors thank the interviewees for their willingness to share their insights. They made an important contribution to this research. Thanks also to research assistants Dr Larissa Walker and Dr Haydie Gooder for their assistance with the data collection and literature review and to Professor Judi Walker, Dr Matthew Carroll and anonymous reviewers for providing invaluable feedback on this paper.

This research was funded by the Victorian Government through the Department of Health and Human Services.

## References

- Bird D, Ling M & Haynes K 2012, *Flooding Facebook – the use of social media during the Queensland and Victorian floods*, *Australian Journal of Emergency Management*, vol. 27, no. 1, pp. 27-33.
- County Fire Authority (CFA) 2013, *Engaging Community Information Networks during Emergencies*.
- Cohen E, Hughes P & White PB 2007, *Media and bushfires: A community perspective of the media during the Grampians Fires 2006*, *Environmental Hazards*, vol. 7, no. 2, pp. 88-96.
- Dufty N 2012, *Using social media to build community disaster resilience*, *Australian Journal of Emergency Management*, vol. 27, no. 1, pp. 40-45.
- Dufty N 2016, *Twitter turns ten*, *Australian Journal of Emergency Management*, vol. 31, no. 2, pp. 50-54.
- Emergency Management Victoria 2014, *National Review of Warnings and Information: Literature Review. EMV/IPSOS*. At: <http://fire-com-live-wp.s3.amazonaws.com/wp-content/uploads/National-Review-of-Warnings-Information-Literature-Review-FINAL-Oct2014.pdf> [23 May 2016].
- Gibson J 1979, *The Theory of Affordances, The People, Place and Space Reader*. Ed JJ, Gieseking W, Mangold S Low & Saegert S. London: Routledge.
- Granatt M 2004, *On trust: Using public information and warning partnerships to support the community response to an emergency*, *Journal of Communication Management*, vol. 8, no. 4, pp. 354-365.

Government of Victoria 2014, *Hazelwood Mine Fire Inquiry Report*. Melbourne: Government of Victoria. At: [www.report.hazelwoodinquiry.vic.gov.au/print-friendly-version-pdf](http://www.report.hazelwoodinquiry.vic.gov.au/print-friendly-version-pdf) [15 May 2016].

Hagan P, Maguire B & Bopping D 2008, *Public behaviour during a pandemic*, *Australian Journal of Emergency Management* vol. 23, no. 3, pp. 35-40.

Keim ME & Noji E 2010, *Emergent use of social media: a new age of opportunity for disaster resilience*, *American Journal of Disaster Medicine*, vol. 6, no. 1, pp. 47-54.

Kulumeka O 2014, *How people affected by disaster use the internet*, *Australasian Journal of Disaster and Trauma Studies*, vol. 18, no. 2, pp. 51-56.

Mackie B 2017, *Building a safer and more resilient community in Morwell and the Latrobe Valley: Project Plan, Emergency Management Victoria*. At: [www.emv.vic.gov.au/how-we-help/community/building-a-safer-and-more-resilient-community-in-morwell-and-the-latrobe](http://www.emv.vic.gov.au/how-we-help/community/building-a-safer-and-more-resilient-community-in-morwell-and-the-latrobe) [www.emv.vic.gov.au/how-we-help/community/building-a-safer-and-more-resilient-community-in-morwell-and-the-latrobe](http://www.emv.vic.gov.au/how-we-help/community/building-a-safer-and-more-resilient-community-in-morwell-and-the-latrobe) [1 June 2017].

Macnamara J 2015, *The Hazelwood coal mine fire: Lessons from crisis miscommunication and misunderstanding*, *Case Studies in Strategic Communication*, vol. 4, pp. 1-20. At: <http://cssc.uscannenberg.org/cases/v4/> [15 May 2016].

Simon T, Goldberg A & Adini B 2015, *Socializing in emergencies – a review of the use of social media in emergency situations*, *International Journal of Information Management*, vol. 35, pp. 609-619.

Taylor M, Wells G, Howell G & Raphael B 2012, *The role of social media as psychological first aid as a support to community resilience building: A Facebook study from Cyclone Yasi update*, *Australian Journal of Emergency Management*, vol. 27, no. 1, pp. 20-26.

We are social 2016, *Digital in 2016 Report*. At: [www.wearesocial.com/uk/special-reports/digital-in-2016](http://www.wearesocial.com/uk/special-reports/digital-in-2016) [15 May 2016].

## About the authors

**Dr Susan Yell** is a senior lecturer in media at Federation University. Her research is on media communication during and after disasters and the formation of emotional communities. In her research within the Community Wellbeing stream of the Hazelwood Health Study, she is investigating the role of media and social media in shaping a community's experience of and response to a disaster.

**Dr Michelle Duffy** is Associate Professor in Human Geography in the School of Environmental and Life Sciences at University of Newcastle. She explores how interactions between people and place contribute to notions of community and identity. She is an investigator on the Communication Wellbeing stream of the Hazelwood Health Study, examining the impacts of the Hazelwood mine fire on community resilience and recovery.