

# Public behaviour in response to perceived hostile threats

An evidence base and guide for policymakers and practitioners



# Contents

1. Who we are.....	4
2. Executive summary .....	5
2.1 Background: Public behaviour and the new hostile threats .....	5
2.2 Re-visiting the relationship between false alarms and crowd disasters .....	5
2.3 Why false alarms occur .....	5
2.4 How the public behave in false alarm flight incidents .....	6
2.5 Public behaviour in response to visible marauding attackers .....	6
2.6 Recommendations for practitioners and policymakers .....	7
3. Introduction: New hostile threats, new public behaviours? .....	8
4. Background: What is already known about public behaviour in response to perceived hostile threats .....	9
4.1 Public ‘panic’ and beyond.....	9
4.2 A social identity model of collective resilience .....	11
4.3 The new hostile threats and public behaviour .....	13
4.4 A framework for understanding false alarms.....	14
5. Gathering new research evidence: Our methods and data .....	16
5.1 Systematic review of false alarm incidents, 2010-2019 .....	16
5.2 Case studies .....	16
5.3 Experiments using virtual reality technology .....	16
5.4 Ensuring scientific quality .....	18
6. A new analysis of the Bethnal Green tube shelter disaster .....	19
7. Why do false alarm incidents occur? .....	22
7.1 Wider context of terrorist threat provides a framing .....	23
7.1.1 Is official threat level associated with false alarm incidence? .....	23
7.1.2 Recent genuine attacks predict false alarms: frequency, magnitude, and psychological relevance .....	24
7.2 The impact of place .....	26
7.2.1 Towns and cities .....	26
7.2.2 Types of location .....	26
7.3 Other people’s urgent behavioural reactions are the basis of perceptions of hostile threats .....	29
7.3.1 Crowd behaviour as source of information .....	29
7.3.2 Impact of police behaviour .....	32
7.3.3 Impact of communications .....	32
7.4 The role of personal history.....	33
7.5 It is a combination of factors that causes most people to interpret an ambiguous signal as a hostile threat.....	33
8. How do the public behave in false alarm flight incidents?.....	34
8.1 Not just running: Diversity of public behaviour within a single flight event.....	36
8.1.1 Hiding .....	36

8.1.2 Supportive behaviours .....	37
8.2 Cooperation between public and authorities .....	37
8.3 When do false alarm flight incidents become disorderly or competitive? .....	37
8.4 What are the psychological impacts of false alarm incidents?.....	38
9. Public behaviour in response to visible marauding attackers .....	39
9.1 Members of the public confronting attackers .....	39
9.2 Spontaneous coordinated public response to a marauding knife attack on the London Underground, 2015 .....	39
10. A guide for practitioners and policymakers .....	42
10.1 The importance of understanding the psychology of public behaviour in emergencies .....	42
10.2 What should we tell the public?.....	42
10.3 How do we get the public to listen to information about hostile threats? .....	43
10.4 How can we facilitate cooperative behaviour among the public in perceived hostile threat incidents? .....	43
10.5 How do we avoid unduly distressing the public?.....	44
10.6 How do we provide emotional support? .....	44
10.7 How do we harness 'zero responders' when there is a visible attacker? .....	45

# 1. Who we are

This briefing document is part of the ESRC-funded project 'Perceived threats and "stampedes": a relational model of collective fear responses' (project reference [ES/T007249/1](#)). The document was written by John Drury (Principal Investigator, University of Sussex), Silvia Arias (Postdoctoral Researcher, Lund University), Terry Au-Yeung (Postdoctoral Researcher, Keele University), Dermot Barr (Postdoctoral Researcher, University of Sussex and Liverpool John Moores University), Linda Bell (Postdoctoral Researcher, University of Sussex), Toby Butler (Consultant, Royal Holloway University of London), Holly Carter (Co-Investigator, UK Health Security Agency), Sanj Choudhury (Research Support Assistant, University of Sussex), Joakim Eriksson (Postdoctoral Researcher, Lund University), Fergus Neville (Co-Investigator, University of St Andrews), Matt Radburn (Postdoctoral Researcher, Keele University), Richard Philpot (Research Associate, Lancaster University), Stephen Reicher (Co-Investigator, University of St Andrews), Enrico Ronchi (Co-Investigator, Lund University), Clifford Stott (Co-Investigator, Keele University), Maika Telga (Postdoctoral Researcher, University of St Andrews), and Anne Templeton (Co-Investigator, Edinburgh University).

Others involved in the project who contributed to the work described in this briefing document include Mark Atkinson (Scottish Government), Nicola Birtwhistle (Make Real), Nils Devynck (University of Sussex), Nick Douglas (University of Sussex), Matt Garland (MakeReal), Çağla Gayretli (University of Sussex), Simran Lalli (University of Sussex), Harry Linfield (University of Sussex), Deborah Tallent (Keele University), Jonathan Wahlqvist (Lund University), and Eve Wilcox (University of Sussex).

Co-production has been a crucial feature of the work described in this document. Public Health England (now the UK Health Security Agency) are represented among the project co-investigators. Many of the specific research questions that shaped the project were developed in a discussion we held with the UK Civil Contingencies Secretariat (now the Resilience Directorate) in 2019. In the planning stages, we also worked with Staffordshire Fire and Rescue Service and Staffordshire Civil Contingencies Unit on ideas for researching and improving training exercises for the emergency response to marauding attackers. In 2021, we presented initial findings at a webinar organized by the Civil Contingencies Secretariat, attended by a number of relevant civil service departments, which was an opportunity for feedback, questions, and dialogue. Towards the end of the project, in January 2023, a knowledge exchange event was organized jointly by Transport for London, Keele Policing Academic Collaboration/Keele University, and the research team. This was attended by civil servants and responders from a range of departments, including the Home Office, Cabinet Office, Department for Transport, Dstl, London Underground, and British Transport Police. The discussion at this event helped in the translation of the findings into useable outputs for practitioners and policymakers. Finally, we are very grateful for the input to the project from our Advisory Group who have provided both practitioner and academic support and guidance over the course of the research: Marcus Beale (Keele University), Daniel Cartwright (Fire and Rescue Service National Resilience), and Erica Kuligowski (RMIT University).

More about this project and our other work on crowd behaviour in emergencies can be found on the project website: <https://www.sussex.ac.uk/research/projects/stampedes/>

Contact: [j.drury@sussex.ac.uk](mailto:j.drury@sussex.ac.uk)

Contact details for other team members can be found here: <https://www.sussex.ac.uk/research/projects/stampedes/people>

## 2. Executive summary

### 2.1 Background: Public behaviour and the new hostile threats

- Civil contingencies planning and preparedness for hostile threats requires accurate and up to date knowledge about how the public might behave in relation to such incidents. Inaccurate understandings of public behaviour can lead to dangerous and counterproductive practices and policies.
- There is consistent evidence across both hostile threats and other kinds of emergencies and disasters that significant numbers of those affected give each other support, cooperate, and otherwise interact socially within the incident itself.
- In emergency incidents, competition among those affected occurs in only limited situations, and loss of behavioural control is rare.
- Spontaneous cooperation among the public in emergency incidents, based on either social capital or emergent social identity, is a crucial part of civil contingencies planning.
- There has been relatively little research on public behaviour in response to the new hostile threats of the past ten years, however.
- The programme of work summarized in this briefing document came about in response to a wave of false alarm flight incidents in the 2010s, linked to the new hostile threats (i.e., marauding terrorist attacks).
- By using a combination of archive data for incidents in Great Britain 2010-2019, interviews, video data analysis, and controlled experiments using virtual reality technology, we were able to examine experiences, measure behaviour, and test hypotheses about underlying psychological mechanisms in both false alarms and public interventions against a hostile threat.

### 2.2 Re-visiting the relationship between false alarms and crowd disasters

- The Bethnal Green tube disaster of 1943, in which 173 people died, has historically been used to suggest that (mis)perceived hostile threats can lead to uncontrolled ‘stampedes’.
- Re-analysis of witness statements suggests that public fears of German bombs were realistic rather than unreasonable, and that flight behaviour was socially structured rather than uncontrolled.
- Evidence for a causal link between the flight of the crowd and the fatal crowd collapse is weak at best.
- Altogether, the analysis suggests the importance of examining people’s beliefs about context to understand when they might interpret ambiguous signals as a hostile threat. The concepts of norms and relationships offer better ways to explain such incidents than ‘mass panic’.

### 2.3 Why false alarms occur

- The wider context of terrorist threat provides a framing for the public’s perception of signals as evidence of hostile threats. In particular, the magnitude of recent psychologically relevant terrorist attacks predicts likelihood of false alarm flight incidents.
- False alarms in Great Britain are more likely to occur in those towns and cities that have seen genuine terrorist incidents.
- False alarms in Great Britain are more likely to occur in the types of location where terrorist attacks happen, such as shopping areas, transport hubs, and other crowded places.

- The urgent or flight behaviour of other people (including the emergency services) influences public perceptions that there is a hostile threat, particularly in situations of greater ambiguity, and particularly when these other people are ingroup.
- High profile tweets suggesting a hostile threat, including from the police, have been associated with the size and scale of false alarm responses.
- In most cases, it is a combination of factors – context, others’ behaviour, communications – that leads people to flee. A false alarm tends not to be sudden or impulsive, and often follows an initial phase of discounting threat – as with many genuine emergencies.

## **2.4 How the public behave in false alarm flight incidents**

- Even in those false alarm incidents where there is urgent flight, there are also other behaviours than running, including ignoring the ‘threat’, and walking away.
- Injuries occur but recorded injuries are relatively uncommon.
- Hiding is a common behaviour. In our evidence this was facilitated by orders from police and offers from staff in shops and other premises.
- Supportive behaviours are common, including informational and emotional support.
- Members of the public often cooperate with the emergency services and comply with their orders but also question instructions when the rationale is unclear.
- Pushing, trampling and other competitive behaviour can occur, but only in restricted situations and briefly.
- At the Oxford Street Black Friday 2017 false alarm, rather than an overall sense of unity across the crowd, camaraderie existed only in pockets. This was likely due to the lack of a sense of common fate or reference point across the incident; the fragmented experience would have hindered the development of a shared social identity across the crowd.
- Large and high-profile false alarm incidents may be associated with significant levels of distress and even humiliation among those members of the public affected, both at the time and in the aftermath, as the rest of society reflects and comments on the incident.

## **2.5 Public behaviour in response to visible marauding attackers**

- Spontaneous, coordinated public responses to marauding bladed attacks have been observed on a number of occasions.
- Close examination of marauding bladed attacks suggests that members of the public engage in a wide variety of behaviours, not just flight.
- Members of the public responding to marauding bladed attacks adopt a variety of complementary roles. These may include defending, communicating, first aid, recruiting others, marshalling, negotiating, risk assessment, and evidence gathering.

## 2.6 Recommendations for practitioners and policymakers

- Embed the psychology of public behaviour in emergencies in your training and guidance.
- Continue to inform the public and promote public awareness where there is an increased threat.
- Build long-term relations with the public to achieve trust and influence in emergency preparedness.
- Use a unifying language and supportive forms of communication to enhance unity both within the crowd and between the crowd and the authorities.
- Authorities and responders should take a reflexive approach to their responses to possible hostile threats, by reflecting upon how their actions might be perceived by the public and impact (positively and negatively) on public behaviour.
- To give emotional support, prioritize informative and actionable risk and crisis communication over emotional reassurances.
- Provide first aid kits in transport infrastructures to enable some members of the public more effectively to act as zero responders.



### 3. Introduction: New hostile threats, new public behaviours?

The programme of work summarized in this briefing document came about in response to the scale and frequency of false alarm incidents involving crowd flight in Great Britain in the 2010s.<sup>1</sup> This includes the mass evacuation incident at Westfield shopping centre in 2018,<sup>2</sup> the crowd flight from Stone Bluewater Shopping Centre in 2018,<sup>3</sup> and most famously the mass flight incident in Oxford Street in November 2017. Similar high-profile false alarm incidents were also reported in Europe in the same period.<sup>4</sup> In Paris in 2016, for example, football fans mistook firecrackers for shots and fled from a fanzone, causing minor injuries.<sup>5</sup> In Turin in June 2017, three people died and over a thousand were injured, seven seriously, when a crowd fled at the sound of pepper spray which was mistaken for gunshots.<sup>6</sup> There were also dozens of similar incidents in the USA in the same period, including several at music festivals, where crowds fled from what they thought was an active shooter.<sup>7</sup>

As well as causing distress and potentially injuries and fatalities, these false alarm incidents can be socially and economically disruptive, and involve resource-heavy emergency responses, including armed police responses. Since there is no genuine threat, they are flight incidents that should not happen.

Yet, despite their significance, these events are under-researched and widely misunderstood. Typically, they are pathologized – as ‘mass panic’, mindless ‘stampedes’, and ‘contagion’<sup>8,9</sup> – judgements which substitute for serious investigation and analysis. Alternatively, some of these flight incidents are conflated with disparate crowd phenomena such as

slow-moving crushes.<sup>10</sup> There is therefore a need for research to properly examine how these false alarm flight incidents occur and what actually happens during them – for understanding, planning and preparedness, and for remedy (if necessary). The present briefing document is a response to that need.

Prima facie, the nature and incidence of false alarm flight events in the UK in the 2010s was linked to the nature and incidence of genuine hostile threat events.<sup>11</sup> However, this link has not been examined empirically until now. Moreover, hostile threats themselves evolved in form since the 2000s. Overwhelmingly, terrorist attacks in mainland Britain from the 1980s to the late 2000s were characterized by the use of explosives. But as the 2020 National Risk Register noted, the ‘nature of terrorism is changing.... Attackers are increasingly acting alone and using low-sophistication methods such as bladed weapons or vehicles.’ (p. 100).<sup>12</sup> Firearms and explosives were used too, though less frequently in the UK than on mainland Europe. Harris’s (2016, p. 6) review of London’s preparedness to respond to a major terror incident considered marauding attacks to now be ‘the new normal’ (p. 6).

Given the prominence of these new hostile threats, it is reasonable to assume that the general public became increasingly aware of them. The contingencies involved in the new threats – knives, vehicles and firearms – are different from the ‘old’ threats as well as from each other, and so it’s necessary to ask whether public behaviour might be different in relation to the threat posed by marauding terrorists compared to earlier forms of hostile threat. Yet until now there has been

---

1. The original plan for this programme was to include a strand of work researching and developing the training exercises for emergency services and resilience planners. This strand had to be dropped when the Covid pandemic restrictions limited in-person activities.

2. [https://www.huffingtonpost.co.uk/entry/westfield-shopping-centre-evacuation\\_uk\\_5c23d451e4b05c88b6fd2998](https://www.huffingtonpost.co.uk/entry/westfield-shopping-centre-evacuation_uk_5c23d451e4b05c88b6fd2998)

3. <https://www.kentonline.co.uk/dartford/news/shoppers-run-from-bluewater-after-loud-bang-heard-192768/>

4. Bartholomew, R. E. (2016). The Paris terror attacks, mental health and the spectre of fear. *Journal of the Royal Society of Medicine*, 109, 4-5.

5. <https://www.thelocal.fr/20160704/firecrackers-spark-panicked-stampede-at-paris-fanzone/>

6. <https://bnonews.com/index.php/2017/06/panic-erupts-during-champions-league-viewing-in-italy-injuring-1500/>

7. For example at the A3C festival in 2018 <https://www.complex.com/music/2018/10/lil-wayne-a3c-festival-set-cut-short-by-panic>, Central Park in 2018 <https://www.cbsnews.com/news/global-citizens-festival-central-park-stampede-chaos-today-2018-09-29/>, and the Rolling Loud festival in 2019 <https://pitchfork.com/news/false-active-shooter-reports-cause-stampede-injuries-at-rolling-loud-miami-report/>

8. Bartholomew (2016) op. cit.

9. Davies, W. (2020). "On the Madness of Crowds in the Global Age of Terror". *Literary Hub*.

10. Alluri, S., Voskanyan, A., Sarin, R. R., Molloy, M. S., & Ciotto, G. R. (2017). It's a crush... It's a collapse... It's... Wait, that's No Stampede!. *Prehospital and Disaster Medicine*, 32(S1), S27-S28.

11. Bartholomew (2016) op. cit.

12. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/952959/6.6920\\_CO\\_CCS\\_s\\_National\\_Risk\\_Register\\_2020\\_11-1-21-FINAL.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/952959/6.6920_CO_CCS_s_National_Risk_Register_2020_11-1-21-FINAL.pdf)



very little behavioural research on possible developments in public responses to these new threats. Therefore, in addition to a focus on false alarm incidents themselves, this briefing document includes new evidence on public behaviour in relation to genuine hostile threats in the form of a visible marauding attacker.

This briefing document therefore addresses two fundamental questions: When and why do false alarm flight incidents occur? And: how do members of the public behave in these incidents, as well as in genuine incidents in which there is a visible marauding attacker? The document is structured as follows. First, we summarize the previous research evidence on public behaviour in response to perceived hostile threats, and briefly describe our research methods and data. Second, we present a new analysis of a flight incident that has long been used to demonstrate the

risks of ‘mass panic’ in relation to (mis)perceived hostile threats – the Bethnal Green tube shelter disaster of 1943. Third, focusing on false alarms in Great Britain in the ten-year period 2010-2019, we describe the key factors determining when members of the public interpret an ambiguous signal as a hostile threat and the range of behaviours and psychological impacts that occur in response to such perceived threats. Fourth, we examine behaviour in response to an actual and visible marauding attack. Finally, we draw out from this new evidence base a set of recommendations for practice and policy.

The focus of this briefing document is public behaviour and policy in Great Britain. However, as many of the patterns of behaviour analysed here have been observed in other countries, the practical implications proposed will be relevant for these countries too.

## 4. Background: What is already known about public behaviour in response to perceived hostile threats

Civil contingencies preparedness for hostile threats requires accurate and up to date understanding of how the public will behave in such incidents. There is now an evidence-base of over 70 years of research<sup>13 14</sup> on human behaviour in emergencies, disasters, and military attacks. Therefore, we can have some confidence in stating what is known about this topic. The following sections provide a brief overview of that knowledge.

### 4.1 Public ‘panic’ and beyond

One of the earliest prompts for the scientific study of human behaviour in response to hostile threats was a concern in the military that soldiers were losing discipline when under fire.<sup>15</sup> These early explanations drew upon the crowd psychology of Gustave Le Bon<sup>16</sup> to explain what they saw as the delusionary beliefs, excessive emotion, and uncontrolled fleeing behaviour in these troops.<sup>17</sup> This idea of ‘crowd panic’ was

subsequently applied to civilians. For example, the British government was advised that the ‘masses’ would panic and otherwise behave in maladaptive ways in response to German air-raids.<sup>18</sup> Indeed, ‘public panic’ became both explanation and explanandum for behaviour across the range of emergencies and disasters.

The various versions of the ‘panic’ model are characterized by some or all of the following features.<sup>19</sup> First a condition for mass panic to occur is when there is perceived to be only limited opportunity for escape from impending danger. Second, the fear response that characterizes panic is said to be unreasonable or disproportionate to the putative threat. Third, the crowd is said to be the conduit for the spread of panic, via a simple social influence process called ‘contagion’. Fourth, panic is expressed in loss of behavioural control, meaning unrestrained or impulsive actions,

---

13. Fritz, C. E., & Williams, H. B. (1957). The human being in disasters: A research perspective. *The Annals of the American Academy of Political and Social Science*, 309(1), 42-51.

14. For sources, see Drury, J. (2018). The role of social identity processes in mass emergency behaviour: An integrative review. *European Review of Social Psychology*, 29(1), 38-81.

15. Bendersky, J. (2007). ‘Panic’: The impact of Le Bon’s crowd psychology on US military thought. *Journal of the History of the Behavioral Sciences*, 43, 257-283.

16. Le Bon, G. (1965). *The crowd: A study of the popular mind*. Dunwoody, GA: Norman S. Berg. (Originally published 1895).

17. Bendersky (2007) op. cit.

18. Jones, E., Woolven, R., Durodié, B., & Wessely, S. (2006). Public panic and morale: Second world war civilian responses re-examined in the light of the current anti-terrorist campaign. *Journal of Risk Research*, 9, 57–93.

19. See Drury (2018) op. cit.

individualistic competitive behaviour, and abandonment of social norms.

The basic conceptual problem of the 'panic' concept when applied to behaviour in relation to hostile threats and mass emergencies more broadly is that of measurement. Psychologically, it is inherently difficult to determine whether a particular public reaction is an over-reaction in events where people often have only limited information on threat. In such events, what is the appropriate framework for making such judgements? What 'should' people do? In many cases of crowd flight, 'panic' seems to be a post hoc judgement rather than an account of psychological process. For this reason, many in the disasters field regard the 'panic' concept as unhelpful or redundant.<sup>20</sup> They recommend focusing instead on the behavioural evidence itself, without unnecessary or untestable assumptions about the reasonableness or otherwise of mental states.<sup>21</sup>

The fundamental empirical problem of the 'panic' explanation is the number of mass emergency incidents in which uncontrolled competition was not observed, and the common finding of behaviours which are the very opposite of what 'panic' explanations would predict. For example, Janis's study of behavioural reactions to the Hiroshima bombing,<sup>22</sup> and Sheppard et al.'s analysis of incidents including the 1995 Sarin attack in Tokyo, anthrax incidents in the USA in 2001, and chemical weapons attacks during World War I<sup>23</sup> each concluded that there was little behavioural evidence for public 'panic'. Moreover, crucially, there is consistent evidence across both hostile attacks and

different kinds of emergencies and disasters that significant numbers of those affected give each other support, cooperate, and otherwise interact socially within the incident itself.<sup>24</sup> This has been observed for example at the 1993<sup>25</sup> and 9/11 World Trade Center attacks,<sup>26</sup> and the 2017 Manchester Arena bombing.<sup>27</sup> Forms of support and cooperation documented in these examples include physically supporting others as they evacuate together, providing reassurance, and sharing information.

The evidence that cooperation is common among those affected by a hostile threat or other emergency does not mean that all emergencies are characterized by the same degrees of cooperation. Some emergency evacuations are characterized by individualistic behaviour and hence lack of coordination.<sup>28</sup> Thus, for example comparisons across case studies suggest that competitive behaviour in emergency evacuations is more likely in narrow exits and where evacuees are unfamiliar with the location;<sup>29</sup> and recent behavioural case studies suggest that pushing behaviour occurs only briefly and at a certain pinch-points during an overall evacuation otherwise characterized by cooperation or neutral behaviour.<sup>30</sup>

Likewise, not everyone caught up in an emergency cooperates or tries to help. Comparisons within events suggest that some individuals may exhibit some form of uncontrolled dysexecutive behaviour, due to fear;<sup>31</sup> thus Leach<sup>32</sup> suggests that up to 15 per cent of people will 'freeze' or weep uncontrollably in emergencies. There are two important points to make here. First, it is

---

20. Quarantelli, E. L. (2001). Panic, sociology of. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social and behavioural sciences* (pp. 11020 - 11023). New York: Pergamon Press.

21. Sime, J. D. (1990). The concept of "panic". In D. Canter (Ed.), *Fires and human behaviour* (2nd ed., pp. 63-81). London: David Fulton.

22. Janis, I. L. (1951). *Air war and emotional stress: Psychological studies of bombing and civilian defense*. New York: McGraw-Hill.

23. Sheppard, B., Rubin, G. J., Wardman, J. K., & Wessely, S. (2006). Viewpoint: Terrorism and dispelling the myth of a panic prone public. *Journal of Public Health Policy*, 27, 219-245.

24. Fritz & Williams (1957) op. cit.

25. Aguirre, B. E., Wenger, D., & Vigo, G. (1998). A test of the emergent norm theory of collective behavior. *Sociological Forum*, 13, 301-320.

26. Averill, J. D., Mileti, D. S., Peacock, R. D., Kuligowski, E. D., Groner, N., Proulx, G., ... & Nelson, H. E. (2005). Federal building and fire safety investigation of the World Trade Center disaster: Occupant behavior, egress, and emergency communications. US Dept of Commerce: NIST.

27. Kerslake, Lord. (2018). *The Kerslake Report: An independent review into the preparedness for, and emergency response to, the Manchester Arena attack on 22nd May 2017*.

28. Frey BS, Savage DA, Torgler B. Interaction of natural survival instincts and internalized social norms: exploring the Titanic and Lusitania disasters. *Proceedings of the National Academy of Sciences, USA*. (2010) 107:4862-5.

29. Chertkoff, J. M., & Kushigian, R. H. (1999). *Don't panic: The psychology of emergency egress and ingress*. Westport, CT: Praeger.

30. Bartolucci, A., Casareale, C., & Drury, J. (2021). Cooperative and competitive behaviour among passengers during the Costa Concordia disaster. *Safety Science*, 134. <https://doi.org/10.1016/j.ssci.2020.105055>

31. Leach, J. (2012). Maladaptive behavior in survivors: Dysexecutive survivor syndrome. *Aviation, Space and Environmental Medicine*, 83, 1152-1161.

32. Leach, J. (2004). Why people 'freeze' in an emergency: temporal and cognitive constraints on survival responses. *Aviation, Space & Environmental Medicine*, 75, 539-542.

hard to find any evidence that these dysexecutive behaviours spread through the crowd. Second, there are numerous examples of the reverse process, whereby strangers in mass emergency crowds 'calm down' those screaming<sup>33</sup> or regulate the behaviour of those seen to be acting inconsiderately.<sup>34</sup>

#### 4.2 A social identity model of collective resilience

The accumulated evidence of survivors cooperating with each other and even acting as responders prompted new kinds of explanations and models. Sociological accounts stressed the persistence of existing social bonds and values in structuring public behaviour even in extreme events, through the concepts of social norms<sup>35</sup> and social capital.<sup>36</sup> However, as well as the social structuring provided by existing relationships, it had been clear since research in the 1950s that new group relationships could arise among the affected members of the public, forged within adversity itself, and that these new connections could be the basis of much of the cooperation observed after disasters.<sup>37</sup> This was an important observation practically as well as theoretically. While many hostile (and other) threats affect people who are with colleagues, family or friends, in many other instances the hostile threat takes place in a crowded space where people are among strangers with whom they have no pre-existing social bonds.

This question of how relations among members of the public are often transformed in emergencies (including hostile threat incidents) was examined in a programme of research funded by the ESRC in 2004-2007.<sup>38</sup> A key plank in the evidence gathered as part of this project was a study of survivor behaviours and experiences in the July 7th 2005 London bombings. The attack comprised three explosions on the London Underground and one on a London bus, in rush hour. Fifty-six people were killed (including the bombers

themselves) and over 700 were injured. Many survivors remained underground out of contact with the emergency services for a period of time. The research comprised interviews and analysis of an extensive corpus of secondary data, which together provided accounts from 90 survivors plus 56 witnesses.<sup>39</sup> Most people involved were commuters and the study found that most were among strangers and only a small minority were with someone they already knew. Interviewees reported a new sense of 'we-ness' with other survivors within the event, which the researchers took as evidence of an emergent shared social identity. This emergent identity in turn was associated with reports of providing support, which was widespread in the accounts. Survivors helped each other up, queued and allowed others to go first, shared bottles of water, and some even tied tourniquets. Examples of cooperation included people removing train doors together. Reports of selfish behaviours were far less frequent.

A comparison study of 21 survivors of different emergency events<sup>40</sup> – including the IRA Harrods bombing of 1983 and two tower block evacuations in the wake of 9/11 – provided more systematic evidence of the mechanisms involved in these cases. Those survivors that expressed a strong emergent shared social identity with others in the event were more likely than those who didn't report such identification to also report an experience of shared danger or common fate. In addition, whereas most of those who identified strongly reported giving help, cooperation, compliance with norms and orderly behaviour, only a minority of people who identified less strongly did so. Experimental evidence using virtual reality technology complemented these findings, showing that high identifiers gave more help and were less competitive than low identifiers in an evacuation from an underground rail station.<sup>41</sup>

---

33. Cocking, C. (2013). The role of "zero-responders" during 7/7: implications for the emergency services. *International Journal of Emergency Services*, 2, 79-93.

34. In David Canter's data on the 9/11 evacuation of the World Trade Center, some survivors described how those delaying the evacuation down the stairs by stopping to use their phones were told forcefully by others in the crowd to carry on moving at the same speed.

35. Johnson, N. R. (1988). Fire in a crowded theatre: A descriptive investigation of the emergence of panic. *International Journal of Mass Emergencies and Disasters*, 6, 7-26.

36. Ntontis, E., Drury, J., Amlôt, R., Rubin, G. R., & Williams, R. (2020). What lies beyond social capital? The role of social psychology in building community resilience to climate change. *Traumatology*, 26(3), 253-265

37. Fritz, C. E. (1996). Disasters and mental health: Therapeutic principles drawn from disaster studies. University of Delaware, Disaster Research Center. Historical and comparative disaster series #10. (Written 1961)

38. Drury, J., & Cocking, C. (2007). *The mass psychology of disasters and emergency evacuations: A research report and implications for practice*. Brighton: University of Sussex.

39. Drury, J., Cocking, C., & Reicher, S. (2009). The nature of collective resilience: Survivor reactions to the 2005 London bombings. *International Journal of Mass Emergencies and Disasters*, 27, 66-95.

40. Drury, J., Cocking, C., & Reicher, S. (2009). Everyone for themselves? A comparative study of crowd solidarity among emergency survivors. *British Journal of Social Psychology*, 48, 487-506.

41. Drury, J., Cocking, C., Reicher, S., Burton, A., Schofield, D., Hardwick, A., Graham, D., & Langston, P. (2009). Cooperation versus competition in a mass emergency evacuation: A new laboratory simulation and a new theoretical model. *Behavior Research Methods*, 41, 957-970.

Together this and other evidence – on behaviour in earthquakes, floods, and dangerously crowded events<sup>42 43</sup> – led to the development of a social identity model of collective resilience. Shared social identity means people seeing others in the crowd as ‘us’, thereby broadening the boundaries of concern and interest. Shared social identity provides the motivation to support others, but also the expectation that others will be supportive and coordinate – because they are ‘us’. In an emergency, shared social identity among those affected can arise from the shared reference point or experience of common fate. Therefore, in this model, ‘collective resilience’ refers to the way a shared identification allows groups of survivors to express and expect solidarity and cohesion, and thereby to coordinate and draw upon collective sources of support, to deal with adversity.

The social identity model therefore assumes that the public has the capacity to respond in a meaningful way to a hostile threat. This has implications for practice, and has clear advantages over approaches that assume that the public don’t have such capacity and so can’t be trusted. Thus, the concern that the public will panic has led to the withholding of information on the threat.<sup>44</sup> The problem here is that withholding information reduces the ability of the public to respond promptly and effectively to a threat.<sup>45</sup> It also creates anxiety and can reduce trust in the authorities,<sup>46</sup> thereby undermining future efforts to inform the public.

By contrast, the social identity model has more compatibility with key aspects of the community resilience framework that arose in the wake of the 9/11 attacks, floods, and other civil contingencies crises.<sup>47</sup> In relation to both terrorism and floods, the increased threat, and the likelihood that there would not be sufficient professional responders immediately available for each incident, were among the factors that led the UK government to look increasingly to the capacities of the public. The Civil Contingencies Act of

2004 was the institutional expression of this recognition. The inclusion within this civil contingencies framework of the programme of ‘community resilience’ was an explicit acknowledgement not only of the *need* for active public cooperation in emergencies (both with professional responders and with each other) but also of the *de facto* reality. While much of the Strategic National Framework on Community Resilience is focused on the role of existing bonds (or ‘social capital’), one of the four types of community cited is a ‘community of circumstance’ which describes precisely the type of emergent collectivity that the social identity model seeks to explain:

These communities are created when groups of people are affected by the same incident, such as a train crash. These groups of individuals are unlikely to have the same interests or come from the same geographical area but may form a community in the aftermath of an event. Although this sense of community may be temporary, some communities of circumstance grow and are sustained in the long-term following an emergency. (page 12)<sup>48</sup>

The social identity model and the associated body of research evidence is the basis of a series of specific practical recommendations for policymakers and practitioners designed to facilitate collective resilience before, during, and after emergencies.<sup>49</sup> The key factors in the model – common fate and shared social identity (including shared social identity with professional responders) – are variables which professional responders and authorities can support (or undermine) through their actions. The recommendations include: understand group psychology; work with (not against) group norms in the public; communicate – including listening as well as conveying practical information; build shared identity through providing support; accommodate the public

---

42. Drury, J., Carter, H., Cocking, C., Ntontis, E., Tekin Guven, S., & Amlôt, R. (2019). Facilitating collective psychosocial resilience in the public in emergencies: Twelve recommendations based on the social identity approach. *Frontiers in Public Health*, 7(141) doi: 10.3389/fpubh.2019.00141.

43. Ntontis, E., Drury, J., Amlôt, R., Rubin, G. R., Williams, R., & Saavedra, P. (2021). Collective resilience in the disaster recovery period: Emergent social identity and observed social support are associated with collective efficacy, wellbeing, and the provision of social support. *British Journal of Social Psychology*, 60(3), 1075-1095.

44. Clarke L & Chess C. (2008). Elites and panic: more to fear than fear itself. *Social Forces*, 87, 993–1014.

45. Proulx G & Sime JD. (1991), To prevent “panic” in an underground emergency: why not tell people the truth? *Fire Safety Sci.* 3:843–52.

46. Carter, H., Drury, J., & Amlôt, R. (2020). Social Identity and Intergroup Relationships in the Management of Crowds during Mass Emergencies and Disasters: Recommendations for Emergency Planners and Responders, *Policing: A Journal of Policy and Practice*, 14(4), 931–944.

47. However, there remain significant tensions in post 9/11 resilience policy and practice, including continued assumptions of inherent passivity in the responding public. See Drury, J., Novelli, D., & Stott, C. (2013). Representing crowd behaviour in emergency planning guidance: ‘Mass panic’ or collective resilience? *Resilience: International Policies, Practices and Discourses*, 1(1), 18–37.

48. Cabinet Office. (2011). *Strategic National Framework on Community Resilience*. London: Cabinet Office.

49. Drury et al. (2019) op. cit.

urge to help; and work with group prototypes (group exemplars that embody what is distinctive about the group) in the public for social influence. The utility of this framework has now been demonstrated in a number of relevant domains including crisis communication guidance,<sup>50</sup> the UK National Risk Register, crowd event safety management, and UK Fire and Rescue Service training for CBRN mass decontamination.<sup>51</sup>

### Delays in evacuation

Cooperation and social support among members of the public in emergencies, including hostile threats, are critically important. Cooperation can lead to a more efficient escape/ evacuation than competition,<sup>52</sup> and social support can save lives and reduce injuries.

Giving support to others is also one of the main causes of delay in emergency evacuations, however.<sup>53</sup> (The extensive evidence of delay in evacuation due to people giving support to others demonstrates that assumptions of a 'starburst' formation in public evacuation behaviour are simplistic. This in turn means that computer modelling of public pedestrian and evacuation behaviour can be enhanced and improved by taking into account group processes including the role of shared social identities.<sup>54</sup>) There are two other key causes for delays in emergency evacuation, in addition to people stopping to help others. The first is public intervention against the threat, and the second is public (mis)interpretation of the threat. These are both highly relevant for the topic of perceiving hostile threats. As important as the existing research on public cooperation and social support has been, it has mostly not addressed these important features of behaviour in response to new hostile threats. Before introducing a new framework for understanding false alarms, we briefly review recent evidence on the new hostile threats.

### 4.3 The new hostile threats and public behaviour

Intuitively, hostile threats may be more frightening than other types of threat (such as natural hazards, accidents, and fires). A hostile threat implies an

intention to cause harm (injury, pain or death). It has been argued that the attribution of agency behind a threat amplifies expectation of pain and threat perceptions, and there is some experimental evidence for this, using a vehicle attack scenario.<sup>55</sup> It is not clear, however, that the greater fear necessarily translates into differences in behaviour compared to other kinds of threat.

There has been relatively little research on public behaviour in response to the new hostile threats of the past ten years. There are a few important exceptions, however.

Dezecache et al. (2021)<sup>56</sup> interviewed 32 survivors of the 2015 firearms attack at the Bataclan, Paris, in which 92 people died. In line with previous research, social supportive behaviours were commonly reported. Such supportive behaviours were associated with the inability to escape (i.e., if people could escape, they were less likely to help), having little protection from danger, and psychological closeness with others in the crowd.

Bernardini and Quagliarini (2021)<sup>57</sup> analysed 39 video tapes taken from eight terror related incidents across Europe (three vehicle attacks, three explosions, and two firearms attacks). They classified characteristics of each attack scene by type of attack, built environment (indoor vs outdoor), presence of safety/ security personnel, density of pedestrian crowd and other factors. In terms of the pre-evacuation phase of the events analysed, the authors suggest that curiosity effects were the most common behaviour (as noted also in other kinds of evacuation, such as floods). In the evacuation phase of the incidents analysed, some of the most typical behaviours were attraction to safe areas (63% of scenes), running far from the event triggers (28%), pro-social behaviours (e.g., giving information; 58%), curiosity effects, selfish and competitive behaviours (40%). The analysis suggests that when pedestrians (are close to the source of threat, the act of running far from the threat seems to be more frequent. Attraction to staying in a group and supporting vulnerable pedestrians while evacuating

---

50. Government Communication Service (2022). [Crisis communication: A behavioural approach](#).

51. Research Excellence Framework 2021 impact case study: [Improving crowd safety procedures and reducing risk through social psychology](#)

52. Mintz, A. (1951). Non-adaptive group behaviour. *Journal of Abnormal and Social Psychology*, 46, 150-159.

53. Von Sivers, I., Templeton, A., Köster, G., Drury, J., Philippides, A. (2014). Humans do not always act selfishly: Social identity and helping in emergency evacuation simulation. *Transportation Research Procedia*, 2, 585–593.

54. Templeton, A., Drury, J., Philippides, A. (2018). Walking together: Behavioural signatures of psychological crowds. *Royal Society Open Science* 5, 180172.

55. Goh, P. (2022). *The Effects of Perceptions of a Malicious Intent to Harm on Victims' Prosocial Intentions During a Crisis*. Unpublished PhD thesis. Nanyang Technical University, Singapore.

56. Dezecache G, Martin J-R, Tessier C, Safra L, Pitron V, Nuss P, et al. (2021) Nature and determinants of social actions during a mass shooting. *PLoS ONE* 16(12): e0260392.

57. Bernardini, G., & Quagliarini, E. (2021). Terrorist acts and pedestrians' behaviours: First insights on European contexts for evacuation modelling. *Safety Science*, 143, 105405.

seemed more common at lower levels of crowd density as well as when there were fewer safety/ security staff present. Not engaging with evacuation procedures was more common in outdoor scenarios and when security/ safety staff were not present. Post-evacuation, pro-social behaviours, often in collaboration with security/ safety staff, were common. In addition, there was a pattern of people returning to the scene to try to retrieve belongings (e.g., bags).

The 2017 Turin false alarm incident (see section 3 above) was included in Bernardini and Quagliarini's database. Rather than an actual terrorist attack, this incident involved robbers using a stinging spray. The authors note that the videotape analysis suggests that the crowd simultaneously started to evacuate after having seen the behaviour of a restricted group of other pedestrians, without perceiving any other sign of the real presence of a risk. (It's worth noting here, however, that it is not clear whether the subjective accounts of members of the public were analysed; we cannot be confident from video analysis alone whether it was the sight of the crowd alone that drove people to run.)

Philpot and Levine (2022)<sup>58</sup> carried out a rare study of flight behaviour in a false alarm – the Tower Hill tube train evacuation of September 2017 (which was prompted by a mobile phone charger overheating and exploding). Fine-grained video-based analysis of the behaviour of 40 passengers in the same carriage as the explosion found passengers' first actions varied: 22.6% ran, 18.9% walked, 16.2% picked up an item not to hand, 13.5% remained observing, and 13.5% allowed others through. Anti-social behaviour was rare and displays of pro-sociality were more common: people moved aside or retracted their arms to let others through. Almost all waited patiently and queued to exit. In contrast to previous research showing that evacuees typically vacate via the closest familiar exit,<sup>59</sup> in the Tower Hill incident the majority of passengers vacated via the exit furthest from the explosion, regardless of whether this was the individual's closest exit or not, suggesting the role of social influence processes. After evacuating the train, a number of the passengers were seen checking if others were okay and enquiring about the availability of fire extinguishers, seemingly intending to tackle the blaze.

There have been few studies on the topic of the public

intervening against marauding attackers. There is international evidence that it occurs, however. Blair and Martindale's (2013) review of 84 active shooter incidents in the USA 2000-2010 found that in 16 cases, members of the public stopped the attacker.<sup>60</sup> There are obvious differences between the USA and the UK in relation to marauding attacks – more citizens carry firearms in the USA and there is a campaign of 'Run Hide and if no other choice Fight' rather than 'Run, Hide, Tell'. Norway is another country that advises 'Run, Hide, and if no other choice Fight'. Lindekilde et al. (2021)<sup>61</sup> ran a large-scale experiment using representative samples in the UK and Denmark in which they presented attacker scenarios and varied the 'Run, Hide' advice. The authors found no evidence that the 'Run, Hide, Fight' guidance led to unnecessary 'heroism', but they did find that the 'Run, Hide, Tell' message led to increased likelihood of public passiveness in attacker scenarios where more pro-active reactions would be beneficial. As we will see in section 9, however, there are now numerous recorded incidents of members of the public in the UK intervening in response to (non-firearms) marauding attacks.

#### 4.4 A framework for understanding false alarms

One feature of many threats, including hostile threats, is that they are not necessarily directly evident to many of those who might be affected. Indeed, the initial (or only) evidence of threat maybe indirect or ambiguous. Rather than seeing the fire, bomb, or marauding attacker, people hear an alarm, a rumour, or a noise, or they hear other people telling them about the threat or they observe other people's response behaviour. Experience of the threat is therefore socially mediated. This is obviously true for impending threats (flood warnings, hurricane warnings), but it is also true for present and immediate threats, such as many fires. It is true too for many hostile threat incidents (guns, knives, vehicles, CBRN). Crucially, because the public are aware that there is a degree of uncertainty between a signal and an actual threat, there is always the possibility of a false negative (ignoring a signal of a real threat) or a false positive (treating a signal as indicating a threat when it turns out not to be).

In the literature on public behaviour in emergencies and disasters, the focus has been on public discounting

---

58. Philpot, R., & Levine, M. (2022). Evacuation Behavior in a Subway Train Emergency: A Video-based Analysis. *Environment and Behavior*, 54 (2), 383-411.

59. Donald, I., & Canter, D. (1992). Intentionality and fatality during the King's Cross underground fire. *European Journal of Social Psychology*, 22 (3), 203-218.

60. Blair J. P., & Martindale M. H. (2013). United States active shooter events from 2000 to 2010: Training and equipment implications. San Marcos, TX: Texas State University.

61. Lindekilde, L., Pearce, J., Parker, D., & Rogers, B. (2021). "Run, Hide, Tell" or "Run, Hide, Fight"? The impact of diverse public guidance about marauding terrorist firearms attacks on behavioral intentions during a scenario-based experiment in the United Kingdom and Denmark. *International Journal of Disaster Risk Reduction*, 60, 102278.

threat signals rather than false positives. The evidence across a range of threats suggests a clear pattern whereby people are often biased to underestimate risk and disregard possible signals of danger.<sup>62 63</sup> Most notably the public ignore or respond too slowly to fire alarms.<sup>64</sup> This ‘under-reaction’ is a serious problem and a major cause of death and injury. As has been said, it is not ‘panic’ – over-reaction – that kills people in fires, but the opposite.<sup>65</sup> Public information campaigns therefore have sought to counteract this bias by making people more vigilant.

It’s not clear that the existing explanations for the discounting of signals of threat can be used to explain false alarms – at least not sufficiently. The defining features of false alarms – a perception of and reaction to threat greater than the actual threat – at one level resemble definitions of panic. However, the assumption that false alarms are straightforward cases of public panic only holds well if the comparison between perception and reality is viewed post hoc, rather than as an account of mental processes. There is a need to understand how public perceptions and behaviour arise as responses to particular signals. As with genuine emergency incidents, fear and flight behaviours may be reasonable and even proportionate given the (lack of) available information. However, there has heretofore been little work on false alarm flight incidents let alone the underlying psychological processes.

The lack of adequate models and the scarcity of systematic research evidence prompted the programme of work described in this briefing document. On the one hand, given that until a false alarm is declared the threat is perceived as real then we might expect the same kinds of behaviours as found in real emergencies. For example, where the common experience of perceived threat gives rise to a shared social identity, we might expect public cooperation and

social support. On the other hand, for ambiguous signals (such as sounds) which are not objectively signs of a threat, there is still the key unanswered question of how, why and when these are interpreted as hostile threats, as in our opening examples (Westfield, Bluewater, Oxford Street and so on).

In order to try to begin to explain false alarm flight incidents – when they occur and how people behave during them – we drew upon concepts from three different frameworks. First, *signal detection theory*<sup>66</sup> suggests that perceptions of risk are affected by frequency of prior genuine threat incidents, and would predict an increase in vigilance, leading to more false positives, when there is a relatively large number of previous signals that turned out to be genuine threats. Social appraisal theory<sup>67</sup> suggests that people use evidence of others’ emotions to infer information about shared situations (such as threat). Experimental tests using different emotions, including fear, demonstrate that people are particularly motivated to employ social appraisal under conditions of uncertainty.<sup>68</sup> In such situations, source (or ‘sender’) characteristics matter, and in particular whether the sender is perceived as competent to judge the issue in question. The *social identity approach*<sup>69 70</sup> adds that judgements about competence and trustworthiness operate through the prism of identity. Both social appraisal theory and the social identity approach would therefore suggest that others who are seen as self-relevant to who ‘we’ are in a particular context are more likely than others to be a source of influence. Our previous ESRC-funded work reported evidence across multiple experiments that self-relevance to a given social identity is a key mechanism of unintended influence in following behaviour<sup>71</sup> The present research builds on this by applying these explanatory principles to the domain of fear and flight behaviour in perceived emergencies.

---

62. Atwood, L. E., & Major, A. M. (2000). Optimism, pessimism, and communication behavior in response to an earthquake prediction. *Public Understanding of Science*, 9(4), 417-432.

63. Kinsey, M. J., Gwynne, S. M. V., Kuligowski, E. D., & Kinatader, M. (2019). Cognitive biases within decision making during fire evacuations. *Fire Technology*, 55(2), 465-485.

64. Proulx, G. (2007). Response to fire alarms. *Fire Protection Engineering*, 33, 8.

65. Canter, D. (1990). *Fires and human behaviour* (2nd edn) London: David Fulton.

66. Wormwood, J. B., Lynn, S. K., Barrett, L. F., & Quigley, K. S. (2016). Threat perception after the Boston Marathon bombings: The effects of personal relevance and conceptual framing. *Cognition and Emotion*, 30(3), 539-549.

67. Manstead, A. S. R., & Fischer, A. H. (2001). Social appraisal: The social world as object of and influence on appraisal processes. In K. R. Scherer, A. Schorr, & T. Johnstone (Eds.), *Appraisal processes in emotion* (pp. 221-232). New York: Oxford University Press.

68. Bruder, M., Fischer, F., & Manstead, A. S. R. (2014). Social appraisal as cause of collective emotions. In C. von Scheve & M. Salmela (Eds.), *Collective emotions: Perspectives from psychology, philosophy, and sociology* (pp.141-155). Oxford, UK: Oxford University Press.

69. Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33-48). Monterey, CA: Brooks/Cole.

70. Reicher, S. D., Spears, R., & Haslam, S. A. (2010). The social identity approach in social psychology. In M. Wetherell & C. T. Mohanty (Eds.), *The Sage handbook of identities* (pp. 45-62). London: Sage.

71. Neville, F. G., Drury, J., Reicher, S., Choudhury, S., Stott, C., Ball, R., & Richardson, D. C. (2020). Self-categorization as a basis of behavioural mimicry: Experiments in The Hive. *PLoS One* 15(10): e0241227.

## 5. Gathering new research evidence: Our methods and data

Our methodological approach entailed addressing the question of public behaviour in response to perceived hostile threats using a wide variety of research methods and datasets. By using a combination of archive data, interviews, video data analysis, and controlled experiments we were able to examine experiences, measure behaviour, and test hypotheses about underlying psychological mechanisms.

### 5.1 Systematic review of false alarm incidents, 2010-2019

We carried out a systematic review using the Nexis media database to identify and analyse the nature of false alarm flight incidents in Great Britain over a ten-year period.<sup>72</sup> Content analysis of 630 relevant news articles revealed 126 incidents, 26 of which included evidence of members of the public running – see Table 1.

We analysed both textual accounts and video clips of public behaviour in each of these 26 ‘urgent’ crowd flight incidents, coding all observed and mentioned public behaviours. We also analysed the relationship between the occurrence of these false alarms and other key variables, in particular the incidence and seriousness of real terror attacks in the UK and Europe.

### 5.2 Case studies

We carried out three case studies, using very different datasets for each of them. For the *Bethnal Green tube station disaster 1943 case study* (see Box 1), we drew upon the 85 witness statements from the Dunne Inquiry of the same year. We used these to reconstruct the psychological process underlying this tragedy whereby 173 people died during a crowd flight incident in response to the perceived threat of a German bombing raid.<sup>73</sup>

For our case study of the false alarm on *Oxford Street, London, in November 2017* (see Box 2) we carried out two analyses. First, we combined multiple data sources to construct a triangulated account of events that day.<sup>74</sup> Archive sources included 59 news articles and 34 videos. Second, we interviewed 39 people who were present on Oxford Street during the events, in order to understand the psychology of the event.<sup>75 76</sup>

For our case study of the *2015 marauding knife attack at Leytonstone tube station* (see Box 3), we drew upon footage from 27 CCTV cameras across the station footprint, plus social media, news footage, and incident reports, to analyse patterns of public behaviour across the incident.<sup>77</sup>

### 5.3 Experiments using virtual reality technology

Virtual reality technology is increasingly being used to study public behaviour in emergency evacuations and similar incidents, as a way of combining experimental control with psychological immersion.<sup>78</sup> Working with Make Real, a company specializing in immersive technologies, we constructed a virtual reality animation of a street scene (based on Oxford Street). At one point in the animation, members of the public flee apparently to get away from something. The animation allowed for the manipulation of a number of relevant features, including the cause of the flight (e.g., an ambiguous or unambiguous noise), the visible appearance of characters in the animation, and the speed and coordination of the crowd flight. Participants in the study are able to control a character to walk or run to different locations, or ignore the potential threat.

In a first series of experiments (total N ~1000),<sup>79</sup> we used the animation as a vignette and measured participants’ reported perception of threat and intentions to run in response to a crowd in the

---

72. Barr, D., Drury, J., & Choudhury, S. (2022). [Understanding collective flight responses to \(mis\)perceived hostile threats in Britain 2010-2019: a systematic review of ten years of false alarms in crowded spaces](#). *Journal of Risk Research*, 25(7), 825-843.

73. Barr, D., Drury, J., Butler, T., Neville, F., & Choudhury, S. (2022). [Beyond ‘stampedes’: Towards a new psychology of crowd crush disasters](#). *SocArXiv doi 10.31235/osf.io/hrqx5*

74. Bell, L., Drury, J., & Barr, D. (2023). [The Oxford Street false alarm, 24th November 2017: Full triangulated account](#). University of Sussex.

75. Barr, D., Drury, J., Bell, L., Choudhury, S., Devynck, N., Gayretti, C., Lalli, S., & Linfield, H. (in preparation). When do people interpret an ambiguous signal as a hostile threat? The Oxford Street 2017 false alarm.

76. Bell, L., Choudhury, S., Barr, D., & Drury, J. (2023, February 8). The Oxford Street False Alarm, 24th November 2017. OSF. <https://osf.io/8f6xn/>

77. Au-Yeung, T., Philpot, R., Stott, C., Radburn, M., & Drury, J. (2023). [Emergent public response to a marauding knife attack on the London Underground: Sociality, coordination and a repertoire of actions evidenced by CCTV footage](#). SSRN: <http://dx.doi.org/10.2139/ssrn.4330168>

78. Templeton, A., Telga, M., & Arias, S. (2021). Understanding crowd responses to emergencies using virtual reality and social psychological methods. *PsyArXiv* <https://psyarxiv.com/6yz5c/>

79. Telga, M., Neville, F., Templeton, A., Atkinson, M., Ronchi, E., Arias, S., Drury, J., Walqvist, J., Garland, M., Birtwistle, N., & Reicher, S. (in preparation). Emergent shared social identity and social influence in collective responses to perceived threats.



**Table 1. Urgent false alarm incidents in Great Britain, 2010-2019**

Urgent incident location	Date	Cause of crowd flight
London Oxford Circus	29/11/2019	Fight
Manchester Arndale Shopping Centre	27/11/2019	Fireworks
Manchester Arndale Shopping Centre	04/10/2019	Conflict between security staff and youths
London Waterloo Station	02/08/2019	Loud bangs
London Bank & Monument Station	02/08/2019	Fight
Manchester Arndale Shopping Centre	13/07/2019	Intentional scare
London Westfield Shopping Centre	26/12/2018	Arrest of someone in possession of offensive weapon at the same time as smashed countertop creates loud bang
Stone Bluewater Shopping Centre	04/11/2018	Menu board fell over creating loud bang
London Sony HQ	02/11/2018	Knife fight
London Southgate Station	19/06/2018	Battery short circuit in power drill caused small explosion
London Oxford Street	26/12/2017	Smashed window
London Oxford Street	24/11/2017	Fight
London Westfield Shopping Centre	11/11/2017	Fire
Stone Bluewater Shopping Centre	21/10/2017	Fire caused fire curtain to slam to the ground
London Euston Station	07/10/2017	A boy 'activated the emergency stop button on one escalator while raising his mobile phone in the air and possibly shouting something.'
London Natural History Museum	07/10/2017	Car crash
London Tower Hill Station	26/09/2017	Mobile phone charger over heated and exploded
London Euston Station	29/08/2017	E-cig exploded
London Elrow Festival	20/08/2017	Coughing from unknown gas
Manchester Arndale Shopping Centre	23/05/2017	Customer argument caused disruption
London City Airport	21/10/2016	Coughing from unknown gas
London Bromley Intu Shopping Centre	26/12/2015	Knife fight
London Liverpool Street Station	08/12/2015	False fire alarm
London Charing Cross Station	23/11/2014	Fire on train
Liverpool National Express Station	08/10/2014	Collapsed African woman thought to have Ebola
London Chancery Lane Station	19/01/2014	Overheating laptop

animation that either ran or ignored a potentially threatening noise. In a second series of experiments (N ~ 1200),<sup>80</sup> we examined participants' behavioural

responses when the fleeing crowd was presented as ingroup or as non-ingroup to the participant, and when the threatening noise was present or absent.



Screen capture of the virtual scenario with agents walking and running.

#### 5.4 Ensuring scientific quality

Scientific quality has been assured at all stages of the work described in this briefing document so that there is confidence in the findings in both academic and practitioner audiences.

**Design:** The project as a whole has employed principles of methodological and data triangulation, so that most analytic claims are supported by more than one piece of evidence.

**Pre-registration:** All the experiments described in this briefing report were pre-registered.

**Ethics:** Ethical clearance for all studies involving primary data collection was granted by the relevant committees at the University of Sussex and University of St Andrews. All participants' data was anonymized.

**Sampling:** As we are principally focused on the situation in Great Britain, the samples recruited for the

experiments were all British, and the interviewees in the Oxford Street study were all British apart from four people (reflecting the fact that Oxford Street attracts tourists as well as Londoners).

**Reliability and validity:** Where possible, the experiments drew on existing validated measures. All scales were checked for reliability. The qualitative analysis was checked by a research team rather than a single individual. Coding in the archive and video analysis was checked for inter-rater reliability.

**Data availability:** All primary and some secondary datasets are, or soon will be, fully open access.<sup>81</sup>

**Peer review:** All the studies carried out as part of this project have been peer reviewed, or will be undergoing peer review shortly. All publications including pre-prints can be freely accessed at the project website: <https://www.sussex.ac.uk/research/projects/stampedes/research-outputs>

---

80. Telga, M., Neville, F., Ronchi, E., Arias, S., Atkinson, M., Templeton, A., Walqvist, J., Garland, M., Birtwistle, N., Drury, J., & Reicher, S. (in preparation). Shared social identity and situational cues predict social influence in mass evacuation virtual reality experiments.

81. Datasets can be found on the project website here: <https://www.sussex.ac.uk/research/projects/stampedes/research-outputs/data-sharing>. After February 2022, datasets will also be available on the UK Data Service site (locate via the ESRC grant reference number ES/T007249/1).

## 6. A new analysis of the Bethnal Green tube shelter disaster

The Bethnal Green underground ('tube') shelter disaster occurred on 3<sup>rd</sup> March 1943 and was the worst civilian disaster in Britain during World War II. The event has become a byword for how a 'stampede' induced by 'mass panic' can cause a crowd disaster.<sup>82</sup> The notion of 'mass panic' has been widely discredited in research on behaviour in emergencies and disasters,<sup>83 84</sup> but even authors who have otherwise contributed significantly to this discrediting have treated Bethnal Green as an exception.<sup>85</sup> The example of the Bethnal Green disaster therefore has been used

to make the argument that mass dangerous mass panic in response to hostile threats remains a real possibility.

If our analysis finds an absence of 'mass panic' in the case of Bethnal Green, this does not in itself falsify the 'mass panic' concept; there could still be counter-examples, given further observations.<sup>86</sup> Nevertheless, to demonstrate that there is a better way of explaining behaviour in this emblematic event is an important step in improving our understanding of public responses to perceived hostile threats.

### Box 1: The Bethnal Green tube station disaster, 1943

This timeline is based upon the report from the original governmental inquiry into the disaster, known as The Dunne Report.<sup>87</sup>

London Underground railway ('tube') stations were routinely used as air-raid shelters in the UK throughout the second world war. When an air raid siren sounded at 20:17 on 3<sup>rd</sup> March 1943, between 500 and 600 people were already in Bethnal Green underground station, the only deep underground shelter in the borough. From 20:17-20:27, 1,500 people are estimated to have entered the shelter, with hundreds more unable to enter. Some came directly from their homes, some came from cinemas, others arrived on buses which disgorged directly outside the shelter in short succession. This confluence created an extremely dense crowd attempting to enter the shelter.

Dunne states 'the trouble started at 20:27 precisely' (p. 12). The precision of this start point relates to the recorded firing of British anti-aircraft guns. Dunne reported that public misperception of this rocket-fire as German bombs caused a crowd surge. At around the same time, a woman and child fell on the third from bottom step, on a 19-step stairway with poor lighting, uneven steps, and no central handrail. This fall, at the front of a dense crowd of several hundred, caused those behind to fall in turn which obstructed further ingress to the shelter. The interlocked mass of bodies congested the stairs in such a way that extrication from neither the top nor the bottom of the stairs was possible. Despite the jam, several hundred people continued to attempt entry, and extrication of the seriously injured was not possible until 20:45. The crush continued for many hours, as extricating people was not complete until 23:45.

One hundred and seventy-three people died in the crush – 27 men, 84 women and 62 children. A further 62 were injured and detained in hospital.<sup>88</sup> Despite attributing the crush largely to public misperception of the sound of British rockets, Dunne also equivocates, stating 'either as a result of this pressure from behind or by an unlucky coincidence simultaneously with the pressure reaching the people immediately behind her, a woman, said to have been holding or leading a child, fell on the third step from the bottom' (1943/45, p. 10).

The coroner's inquest stated that deaths were not caused by a 'stampede' but by asphyxiation.<sup>89</sup> A civil court case (Baker v. Bethnal Green Corporation, 1945) found that the poor shelter conditions to be a primary factor in the disaster. Despite this rejection of 'mass panic' as an explanation, the disaster has been subject to persistent misrepresentation in both the mass media<sup>90</sup> and academia as an exceptional 'stampede' incident induced by 'mass panic' in the public.<sup>91</sup>

82. Skoulding, L. (2019, September 8). The horrific London Underground stampede that killed 173 people. *My London*. <https://www.mylondon.news/news/nostalgia/horrific-london-underground-stampede-killed-16854445>

83. Canter (1990) op. cit.

84. Quarantelli, E. L. (2001). Panic, sociology of. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social and behavioural sciences* (pp. 11020 - 11023). New York: Pergamon Press.

85. Wessely, S. (2005). Don't panic! Short and long term psychological reactions to the new terrorism: the role of information and the authorities. *Journal of Mental Health*, 14(1), 1-6.

86. Popper, K. R. (1959). *Logic of Scientific Discovery*. Basic Books. New York.

87. Dunne, L.R. (1943) *Report on an Inquiry into the Accident at Bethnal Green Tube Station Shelter on 3rd March 1943*. HMSO.

88. Butler, T. (2015). *The 1943 Bethnal Green tube shelter disaster: An oral history*. University of East London.

89. Butler (2015) op. cit.

90. BBC. (2016, April 1). Bethnal Green Tube Disaster: 'I tried to black it out'. BBC News. <https://www.bbc.co.uk/news/uk-england-london-35938274>

91. Jones, E., Woolven, R., Durodié, B., & Wessely, S. (2006). Public panic and morale: Second World War civilian responses re-examined in the light of the current anti-terrorist campaign. *Journal of Risk Research*, 9(1), 57-73.

In summary, the ‘mass panic’ explanation for the Bethnal Green disaster is that local residents mistook the sound of British rockets for German bombs and therefore over-reacted. They surged to the steps of the tube shelter and lost behavioural control, causing the fatal crush. It is now well established that a woman and child fell on the third from bottom step, at the front of a dense crowd of several hundred, causing those behind to fall in a crowd collapse. The ‘panic’ explanation suggests the reason for the fall was the thoughtlessly surging crowd.



**Bethnal Green tube disaster memorial**

Our own analysis, based on the contemporaneous witness accounts, problematizes the ‘panic’ explanation in four main ways. First, public perception of impending threat was not as unreasonable as suggested in the ‘panic’ account. Some people within the evacuating crowd did indeed misperceive the British rockets as German bombs. But the rockets, which were extremely noisy, jettisoned shell casings mid-flight and could mis-fire, were capable of producing noise that could easily mislead. As German raids were likely and an air-raid warning was given, the misperception was grounded in, and proportionate to, the reality of threats posed by German bombers flying in the vicinity.

Indeed, in the fleeing crowd as a whole, perceptions and behaviours appeared to be contextually calibrated to a situation of genuine threat, rather than disproportionately anxious. The wider context of World War II made the threat of deadly bombing raids plausible as Bomber Command had successfully and repeatedly bombed Berlin the month before. The disaster occurred during a period of reprisal raids, after a lull. A raid was widely expected, and this context led to a widespread (and understandable) belief among people in Bethnal Green that they would suffer a

deadly reprisal raid.<sup>92</sup> No bombs fell in Bethnal Green on 3rd March, but a bomb was dropped that night in Poplar, just two miles away. The general pattern of reprisal raids and shelter policy required increased public vigilance.

Importantly, the likelihood of a serious bombing raid increased the perceived costs of inaction. The deadly potential of not seeking shelter urgently during a bombing raid was clear to Bethnal Green residents, not least because of the January raid on London.

Moreover, there were other reasons to assume that the danger that people were concerned about was genuine, not illusory. The British rockets themselves posed a danger to people below as shrapnel, splinters, and rocket tubes fell back to earth. Indeed, Webb (2020)<sup>93</sup> suggests as many as half of British civilian deaths were caused by British artillery rather than German bombs.

The second way that our analysis problematizes the ‘panic’ explanation for the disaster is that it suggests that only a small minority in the crowd misperceived the sound. Therefore, misperception cannot explain the surge of hundreds of people towards the shelter. Several witness statements suggested that some people shouted about their (mis)perceptions, leading others to take cover. In some cases, this reportedly led to urgent flight towards the shelter. However, the overwhelming majority of witness statements suggest that most people were already following contextually relevant norms of seeking shelter after an air-raid warning, rather than responding to these shouts.

The third way that our analysis problematizes the ‘panic’ explanation for the Bethnal Green disaster is in terms of what people did when faced with the perceived threat. Behaviour appeared to be structured by social norms and relationships, rather than being uncontrolled or competitive. Safety seeking was encouraged by authorities and people tried to adhere to that advice. The shared nature of the expectation of a bombing raid is likely to have added further weight to individual expectations, contributing to many people attempting to access the shelter in a short period of time. Norms of protecting the vulnerable, especially within family bonds, were also evident in witnesses’ accounts of their flight behaviour.

Crucially, the evidence suggests that public behaviour on the shelter steps was a continuation of that in the flight phase before people got to the shelter entrance. Rather than a qualitatively different psychological process of panic explaining the exceptional tragedy, what stands out instead is both the ordinariness of the

92. ‘People were jittery about the possibility of a heavy reprisal raid following the attack on Berlin (London Region). <https://moidigital.ac.uk/reports/home-intelligence-reports/home-intelligence-special-reports-inf-1-292-2-a/idm140465677049456/>

93. Webb, S. (2020). *Secret casualties of World War Two*. Barnsley: Pen & Sword History.

conditions and the continuity of the psychology. The crowdedness was normal and expected, and people's behaviour was not uncontrolled or competitive, but rather was shaped by shared expectations of the requirement to get into the shelter, plus concerns for loved ones. In the witness statements, references to 'panic' were used to express alarm at the outcome of events, rather than reference to a process causing them.

The fourth way that our analysis problematizes the 'panic' explanation for the Bethnal Green disaster is that it suggests that evidence for a causal link between the surge and the fall on the steps is weak at best. Those witnesses who were best placed to witness the initial fall denied any causal role for misperceptions or indeed surges. Those witnesses that misperceived rockets as bombs and complained of surges arrived at the shelter later, were further from the entrance, and were not able to see the effect of any surge at the bottom of the stairway. There were also no shelter staff or police present at the shelter entrance, to monitor and restrict access accordingly. Certainly, surges took

place, exacerbating the deadly situation on the stairwell, but it is unlikely they played the initial causal role implied by the 'mass panic' explanation.

There are a number of elements in this re-analysis of a historic event that we suggest are important to take forward into understanding contemporary public responses to perceived hostile threats. First, there is a need to look closely at the context of the incident and at people's beliefs about that context to explain the social and psychological conditions under which ambiguous signals are perceived as threats. Second, there is a need to examine closely what people actually do in false alarm incidents. Third, there is the usefulness of reference to social norms and relationships as alternatives to 'mass panic' mechanisms. One of the limitations, however, of relying on secondary data is that the variety of these social relationships and sources of norms – in particular the role and nature of social identities -- cannot be probed or manipulated by the researcher. This is why, in the other research reported in this briefing document, we also made use of interviews and controlled experiments among other methods.

## 7. Why do false alarm flight incidents occur?

In this section and section 8, we focus on false alarm incidents in Britain 2010-2019, drawing on our systematic review, our analyses of the Oxford Street

false alarm in November 2017, and our experiments using virtual reality technology.

### Box 2: The Oxford Street false alarm, Black Friday, November 24<sup>th</sup> 2017

In 2017, there were nine false alarms in the UK involving crowd flight (running) from a perceived hostile threat.<sup>94</sup> The largest of these false alarms took place in and around Oxford Street, London, on November 24<sup>th</sup>, which was Black Friday, the busiest shopping day of the year. Just after 16.30 that day, a small altercation involving two men on an Oxford Circus tube station platform led to the evacuation of hundreds of passengers amid reports of gunshots being fired. There were hundreds of 999 calls, and a police armed response unit quickly arrived, entering the tube station, as other law enforcement officers on the street instructed people to move out of the area and take shelter. Three fire engines and 15 firefighters were also dispatched. At around five o'clock, cordons were being erected as more police vehicles sped to the scene, while the area was being cleared of people who were told to move along and 'go inside' shops for shelter. Fearful passengers joined an already crowded Oxford Circus busy with shoppers taking advantage of Black Friday bargains. Hundreds, possibly thousands, of people fled from the area. Some people reported hearing more gunshots on the streets, adding to the spread of alarm and crowd flight. People seeking refuge poured into Bond Street station, one stop along from Oxford Circus, and there were some chaotic scenes as people tried to get down the escalators. Another report of gunshots emanated from nearby Selfridges which led to the store being evacuated, an event amplified by a tweet from pop singer Olly Murs. Shopping was abandoned and stores overturned, the spread of people fleeing and hiding reached as far afield as Soho, Piccadilly, Mayfair, Covent Garden and Marble Arch.

As instructed by the police, while some people moved away along the streets, others sought refuge inside. As well as hiding in shops, some went into offices, pubs and cafes, hiding in basements or lying on the floor. A number of pubs kept strictly to the same numbers policy that they would use on any normal business day, and once the limit was reached, they shut their doors to any newcomers. People had to move along and try somewhere else. Boots, just round the corner from the Oxford Circus station entrance on Regent Street, was one of the first refuges for fearful passengers.

Around an hour and a half after the initial call, the Metropolitan police stood down the operation. It had been a false alarm.

Afterwards, some department stores looked as if a 'whirlwind' had gone through them and one of them had a large window broken. Later that evening London Ambulance Service released an update, confirming sixteen people required medical attention while leaving the Oxford Circus area. Seven patients were discharged at the scene, eight patients were taken to two central London hospitals for minor injuries, and one patient attending a major trauma centre for leg injuries.

British Transport Police released a CCTV image of two men they wanted to talk to in relation to the incident. The following day the men identified themselves and were released without charge.<sup>95</sup>

In addressing the question of why false alarm flight incidents occur, we need to examine why members of the public interpret an ambiguous signal as a hostile threat. The size and geographical spread of the November 2017 Oxford Street false alarm incident, and the relatively large number of recorded injuries, mark it out as different from the other false alarms in Great Britain in the period 2010-2019. At the same time, the event has a number of features in common with the other false alarms considered here, including the false positive itself, the blue light response, the role of social

appraisal and rapid spread of behaviour, and the mixed pattern of disorderly as well as orderly self-evacuation. Therefore, the Oxford Street incident, in combination with our other evidence, allows a detailed examination of why members of the public interpret ambiguous sounds and sights as evidence of a hostile threat.

There were several points during the Oxford Street incident as a whole at which members of the public interpreted sounds, and sometimes sights too, as evidence of a hostile threat. First, some people in Oxford Circus station took the sounds of the fight as

94. Barr, D., Drury, J., & Choudhury, S. (2022). [Understanding collective flight responses to \(mis\)perceived hostile threats in Britain 2010-2019: a systematic review of ten years of false alarms in crowded spaces](#). *Journal of Risk Research*, 25(7), 825-843.

95. For a full account of the events that day, see Bell, L., Drury, J., & Barr, D. (2023). [The Oxford Street false alarm, 24th November 2017: Full triangulated account](#). University of Sussex.

gunshots. There were further reports of gunshots as people fled from the station into the street. Around 30 minutes later, the pop singer Olly Murs who was in Selfridges (1.2 miles from Oxford Circus station) tweeted that he could hear gunshots, a tweet that got considerable attention.<sup>96</sup> Most of our interviewees inferred that what was happening was a marauding terrorist attack, although a significant minority thought that what was happening was a random shooting or gang violence. Those who said they didn't know what was happening assumed that it was 'something bad'.

Our interviewees reported the snapping of planks of wood and shutters slamming to the ground being misinterpreted as gunshots. Many of these reports of gunshots were then shared as rumours. Certainly not everyone who heard these noises interpreted that as gunshots, however. For example, one of our witnesses recounted hearing a loud bang from the Oxford Circus direction, along with screaming and yelling. He tried to calm them down as he knew that was not the sound of a gunshot.

Aside from the misinterpretation of sounds in the Oxford Street false alarm, there were also misinterpretations of sights. One interviewee mentioned someone seen with blood on their leg in Debenhams store, which she said led some people to think the person had been shot.

The question once again therefore is under what conditions do the public interpret such ambiguous signals as evidence of hostile threats? In our analysis of false alarm flight incidents 2010-2019 and our interviews with people who were on Oxford Street on Black Friday 2017, we identified two sorts of key factors that help explain this public behaviour. First, the wider context -- the background of terrorist threat and the vulnerability of certain locations. These provide prior framing for the incoming information. Second, during the incident itself, the urgent behaviour of other people (including both members of the public and professional responders) provides indirect evidence of hostile threat. Our studies using virtual reality technology tested the role of some of these factors experimentally. In addition, in Oxford Street in 2017 there were variations between individuals in the importance they placed on context or their observations in their perception of threat, sometimes based on their personal history and prior experience. Below, we describe the evidence for each factor.

## 7.1 Wider context of terrorist threat provides a framing

Our systematic review of collective flight responses from misperceived threats in Britain<sup>97</sup> 2010-2019 identified 126 incidents. This comprised 26 'urgent' crowd flight incidents, involving groups of people running, and 100 'non-urgent' incidents, with no evidence of running. Our analysis examined several contextual factors that could have been associated with the occurrence of the urgent flight incidents, and which therefore could be said to predict them: specifically the official threat level and the magnitude, frequency, and psychological relevance of real terrorist incidents.

### 7.1.1 Is official threat level associated with false alarm incidence?

Public perception of the risk of terrorism is affected by media and government messaging.<sup>98</sup> MI5's website states that changes in the Joint Terrorism Analysis Centre's assessment of the terror threat level do not require specific public responses. However, increases in the threat level are often accompanied by government statements (such as those reported on the BBC website on 29 August 2014 and 3rd November 2020). Furthermore, the official threat level provides the context for news media articles. As such, the threat level is a key component in British government communications with the public about risks from terrorism and might therefore affect the public's level of vigilance, possibly leading to some false positives.

Our systematic review found that an elevated official national terror threat level between 2014-2019 was associated with the occurrence of false alarm incidents (both urgent and non-urgent), which peaked in 2017. However, false alarms were less common in 2010 when the threat level was elevated; and small peaks occurred in false alarms in 2013 and 2014 when the threat level was lowest. This suggests the public were not always or necessarily responding to official information about the threat level at least in the early part of the decade.

Our interviews with witnesses from the Black Friday 2017 Oxford Street false alarm are consistent with the above point. Only a small number of interviewees reported being aware at the time of the official threat level during the Oxford Street incident.

---

96. Eriksson Krutrök, M., & Lindgren, S. (2022). Social media amplification loops and false alarms: Towards a Sociotechnical understanding of misinformation during emergencies. *The Communication Review*, 25(2), 81-95.

97 Northern Ireland (NI) data was excluded from the analysis for two reasons. The first is that the Nexis search only identified one false alarm in Northern Ireland, despite including Northern Irish media. Intentional bomb-scares are relatively common in NI; for example, there were 363 hoax bomb alerts in 2010 and 339 in 2011. One possible explanation for the lack of results in our Nexis search is that people in NI have become habituated to these incidents. Another is that false alarms are less newsworthy in a post conflict society where incidents of actual terrorist activity are plentiful.

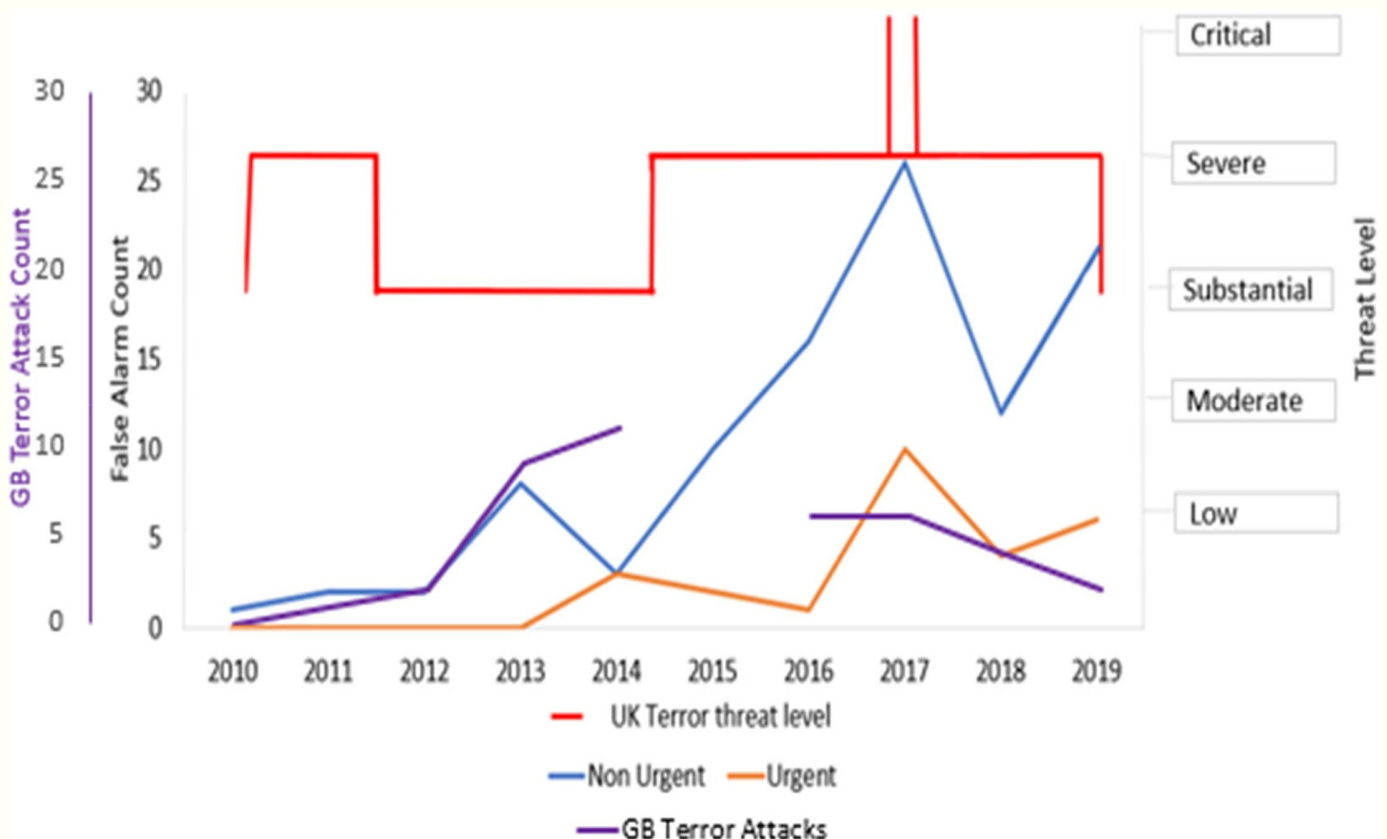
98. Wormwood, J. B., Lynn, S. K., Barrett, L. F., & Quigley, K. S. (2016). Threat perception after the Boston Marathon bombings: The effects of personal relevance and conceptual framing. *Cognition and Emotion*, 30(3), 539-549.

### 7.1.2 Recent genuine attacks predict false alarms: frequency, magnitude, and psychological relevance

Previous research has observed that, in some cases, public perceptions of risk are surprisingly accurate reflections of objective risk.<sup>99</sup> Thus our systematic review found that there was a relationship between false alarms and genuine terrorist attacks in the ten

years from 2010. However, the relationship between them was not straightforward.

While the 2017 peak of false alarms in Great Britain followed several real attacks that year, there were in fact (five) more real attacks in 2014 than in 2017, yet the number of false alarms in 2014-15 was much lower than in 2017. Therefore, the relationship between the *number* of UK attacks and false alarms was uneven.



Comparing false alarms, the frequency of terrorist attacks in Great Britain and the UK terror threat level

However, there was a relatively consistent association between false alarm incidents and the *magnitude* of terror attacks in Great Britain (as measured by the number of dead). Thus, peaks in the number of people killed in terror attacks and false alarms were observed in 2013, 2017 and 2019.

While there were also a large number of attacks in Western Europe in this same period, and some association between these and the number of false alarm incidents. However, the magnitude of attacks in Europe appeared to have little relationship to the false

alarms in Britain.

Previous research has found that risk perception is a function of the relevance of the threat to identity, beyond the magnitude and frequency of risk.<sup>100</sup> The indiscriminate nature of Islamist MTAs compared to the targeting of minorities by far-right terrorists means the perceived risk of terrorist attacks varies for different groups in Britain. Given British security services' primary concern with Islamist terrorism,<sup>101</sup> and the 'clash of civilizations' framing of the 'war on terror',<sup>102</sup>

99. Loewenstein, G., & Mather, J. (1990). Dynamic Processes in Risk Perception. *Journal of Risk and Uncertainty*, 3(2), 155-175.

100. Stapel, D. A., Reicher, S. D., & Spears, R. 1994. Social identity, availability and the perception of risk. *Social Cognition*, 12(1), 1-17.

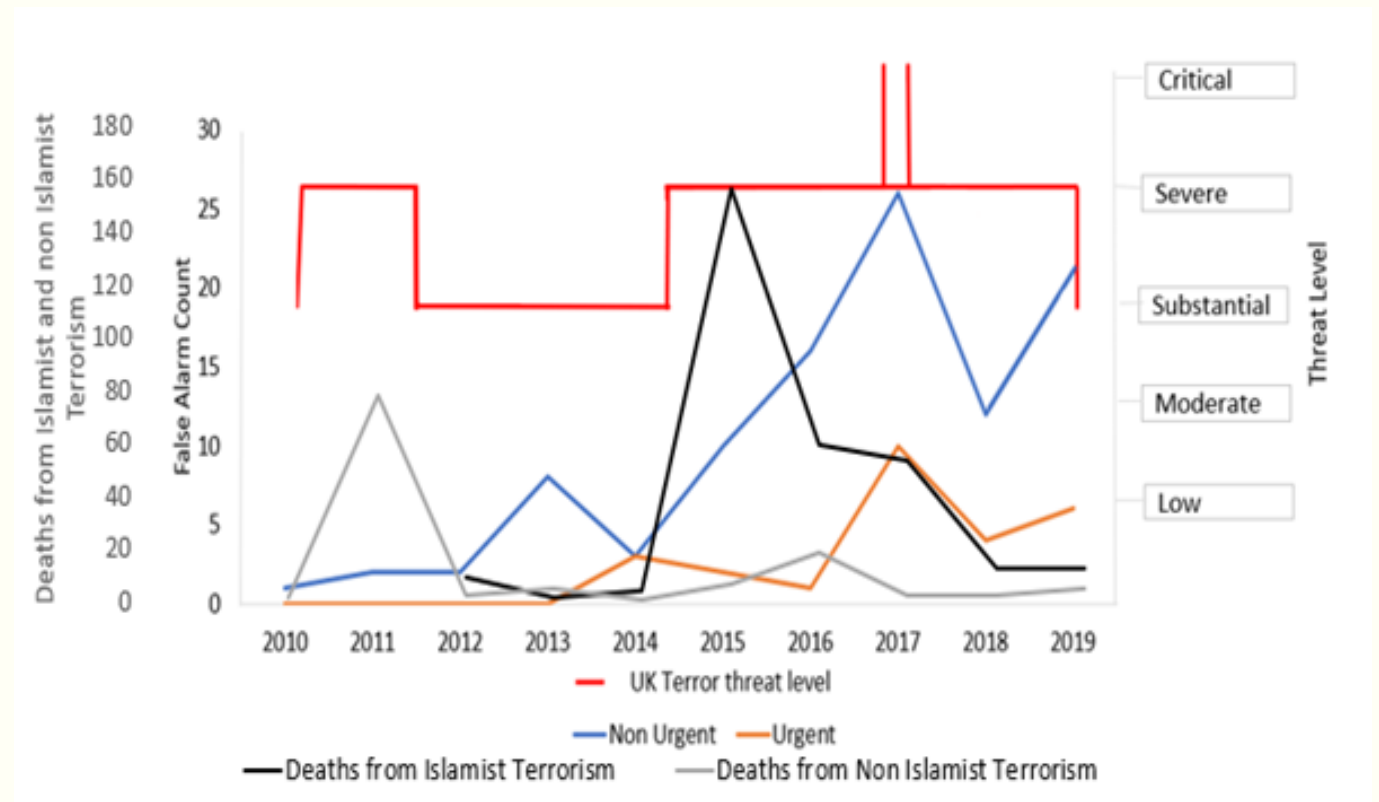
101. Hall, J. (2021). *The Terrorism Acts in 2019: Report of the independent reviewer of terrorism legislation on the operation of the Terrorism Acts 2000 and 2006*. Gov.uk.

102. Sultan, K. 2016 'Linking Islam with Terrorism: A Review of the Media Framing since 9/11', *Global Media Journal*, 1-9(2) .



and only relatively recent acknowledgement of the risks of far-right terrorism, it is likely that public perceptions of the risk of terrorism in Britain would be dominated by the threat from Islamist terrorism in the period 2010-19. Thus, the relationship between terrorist attacks in Western Europe and false alarms in Britain became much clearer when we separated out the attacks by ideology. Some of the largest attacks in the period in question were by far-right terrorists – the firearms attack in Utøya, Norway, in 2011 involved 77

deaths, many of them children, for example. Yet it was not these, but the Islamist-inspired attacks that showed an association with frequency of false alarm flight incidents in the UK. The absence of false alarm incidents following the Norway attack, and the association with the magnitude of the Islamist attacks, suggests the role of group-based relevance in public perceptions of the risk of terrorism, beyond simple frequency and magnitude.



Comparing false alarms and the national terror threat level in the UK, and the magnitude and ideology of European terror attacks

Again, it is likely that media coverage was important in the impact of the Western European attacks on British false alarm incidents. Numerous solidarity demonstrations were held in Britain following the high-profile terrorist attacks in France in 2015. The demonstrations emphasized a shared identity associated with attack from a common enemy.<sup>103</sup> They reflected online solidarity campaigns such as ‘Je suis

Charlie’, reported on the BBC website on 3rd January 2016, and Facebook’s French flag campaign<sup>104</sup> which also emphasized a shared identity. The attacks in France were not only salient and shockingly severe, but also collectively self-relevant to people in Britain. As such, they arguably contributed to increased public perceptions of risk which was reflected in the increase in false alarm reports.

103. Bauer, M., C. Blattman, J. Chytilová, J. Henrich, E. Miguel, & T. Mitts. (2016). Can war foster cooperation?" *Journal of Economic Perspectives*, 30 (3): 249-74.

104. Feeny, F. (2015). Facebook’s New Photo Filter Lets You Show Solidarity With Paris. *Time* <https://time.com/4113171/paris-attacks-facebook-filter-french-flag-profile-picture/>

The Utøya MTA in 2011 was also shocking and severe. However, despite links between Breivik and the English Defence League,<sup>105</sup> the attack was arguably not as self-relevant for most people in Britain. The attack was discussed less on social media by news agencies.<sup>106</sup> It was also targeted rather than indiscriminate, and did not fit easily into 'clash of civilizations' discourse prevalent in British media. These factors arguably meant that this attack was not construed as an attack on an ingroup including British citizens. Accordingly, it was not associated with an increase in crowd flight incidents.

In our interviews with 39 witnesses from the Oxford Street Black Friday 2017 false alarm, almost everyone said they had been aware at the time of the recent terrorist attacks. Most of them (26) volunteered this information spontaneously in the interview. In addition, some of them (including those who were working in shops on Oxford Street during the incident) reported being particularly vigilant at this time, for precisely this reason:

I think most people who work in like central London at some point, maybe think 'oh that could be a possibility at some point', especially back then because, like I said, there was so many. Maybe there was like two in a year and I don't like I said I'm not sure if Manchester had happened then, and like it was definitely a running of attacks which made you a bit more heightened to it. ('Jeremy')

In short, for some of those present the immediate historical context operated as a relevant reference point for the day. This meant inferring that a further terrorist attack was possible, and provided a framing for the sights and sounds of the day.

Together, then, this evidence suggests that the context of recent genuine terrorist attacks increased vigilance amongst members of the public. Given the larger number of attacks in 2017 than in previous years, and indeed the 'severe' official threat level from 2014 to 2019, the degree of public vigilance at this time was arguably calibrated proportionately, rather than random or not associated with the reality of terrorist threat.

## 7.2 The impact of place

The data in our review of false alarm incidents 2010-2019 enabled us to examine associations with cities and towns and with types of locations within cities and towns.

### 7.2.1 Towns and cities

Table 2 shows that London and Manchester were the cities in Great Britain that saw the largest number of 'urgent' and 'non-urgent' false alarms in the period between 2010 and 2009. The high-profile terror attacks in Manchester and London, particularly in 2017 suggest an association between where terror attacks actually occurred in Britain and false alarms.

### 7.2.2 Types of location

In the period 2010-2019, there were considerable variations across different physical locations (e.g., shops, transport hubs, entertainment venues) in the occurrence of false alarms in Great Britain. Table 3 shows that transport hubs and shopping centres were the most common locations for urgent incidents. Among the most common targets for terrorist attacks in Britain in the 2000s and 2010s were crowded public spaces including transport hubs, again suggesting an association between false alarms and the type of locations where real terrorist incidents took place.

---

105. Taylor, M. (2011). Anders Behring Breivik had links to far-right EDL, says anti-racism group. *The Guardian* <https://www.theguardian.com/world/2011/jul/26/anders-behring-breivik-edl-searchlight>

106 Roman N, Alkazemi MF, Stewart MC. (2020). Tweeting about terror: A World Systems Theory approach to comparing international newspaper coverage online. *International Communication Gazette*, 82(6):507-525.

**Table 2. Cities and towns in Great Britain where false alarm incidents occurred, 2010-2019**

Place	Non-urgent	Urgent
London	47	19
Manchester	14	4
Edinburgh	5	
Aberdeen	5	
Luton	3	
Glasgow	3	
Stone	2	2
Sutton Coldfield	2	
Bristol	2	
Liverpool	2	1
Worcester	1	
Salford	1	
Bromley	1	
Foleshill	1	
East Renfrewshire	1	
Wrexham	1	
Derby	1	
Birmingham	1	
London Elrow Festival	1	
Reading	1	
Leeds Bradford	1	
Dundee	1	
Cardiff	1	
Weston-super-Mare	1	
Bolton	1	
Harlow	1	
Grand total	100	26

**Table 3. Types of locations where false alarms occurred in Great Britain, 2010-2019**

Location	Non-urgent	Urgent
Transport hub	34	12
Shopping centre	13	9
Airport	11	
Transport	6	
Entertainment venue	6	
Stadium	5	
Hotel	4	
City centre street	3	1
Shop	2	
Museum	2	1
Scotland Yard	1	
Transport Hub	1	
Job Centre	1	
TV set	1	
Grenfell Tower inquiry	1	
Nightclub	1	
Tower block	1	
Pub	1	
Library	1	
Transport hub / shopping	1	
Event	1	
University sports centre	1	
Office building	1	1
Parliament	1	
Transport hub / shopping street		1
Music festival		1
Grand total	100	26

Fifteen of our interviewees from the Oxford Street Black Friday 2017 false alarm said they had thought before the incident that London or Black Friday were a possible target for terrorists. Seven of our interviewees reported being worried about a possible threat ahead of the day, and ten more reported being aware of a possible threat though not actually worried. Again, given the context – frequency and location of recent terrorist attacks – the public concerns were clearly related to the increased likelihood of an incident in this crowded space, rather than being a groundless fear.

### **7.3 Other people's urgent behavioural reactions are the basis of perceptions of hostile threats**

For many who were present on Oxford Street on Black Friday 2017, the first sign that something was wrong was not the sound of 'gunshots' or even the sirens but the sight of other people who were already responding to something. Seeing a blue light response and armed police operated as a further indication that there was a hostile threat nearby.

#### **7.3.1 Crowd behaviour as source of information**

As British government advice on recognizing an MTA states 'Often the first indication of an attack is people moving in the same direction forming a large crowd.' (CPNI 2018, 9).<sup>107</sup> This seems to describe the inference process among many members of the public on Oxford Street on Black Friday 2017 – except that in some cases it took several instances of crowds rushing before people were confident there was an MTA.

Thus, the initial rush from Oxford Circus station meant

that other people, as they were approaching the station, saw large groups of people running and hurrying towards them. This caused some of them to turn round and join the throng in running away from the direction of Oxford Circus. Most of our interviewees – 20 of the 39 – reported seeing urgent mass movements of people often described as 'stampedes'. For many this was the first sign of an incident:

imagine seeing a sea of screaming people running towards you. So, your day changes in an instant. ('Emma')

Many participants focused on the emotions displayed by people in the running crowds in order to assess the situation, in a clear social appraisal process:

And I remember quite clearly heading up this huge group of people there was one woman who was blonde and had this look of terror on her face, and I thought. 'Oh my god, what are they running away from?' I don't know what they're running away from but there's no way I'm continuing in this direction. Literally turned around, and ran up the street myself and got to Selfridges. ('Isla')

Our experiments using virtual reality technology tested systematically the hypothesis that other people's flight behaviour provides those who observe it with information about threat (and thereby influences their own decision to flee). These experiments were also able to unpick the factors that determine when people in a situation of ambiguous threat are more likely to be influenced by the example of others' behaviour.



**Bird's-eye view of the virtual scenario.**

107. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1079724/MTA\\_Guidance\\_SG\\_Preparing\\_Personnel\\_OFFICIAL\\_OPEN\\_SOURCE\\_FINAL\\_V2.1\\_WITHDRAWN.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1079724/MTA_Guidance_SG_Preparing_Personnel_OFFICIAL_OPEN_SOURCE_FINAL_V2.1_WITHDRAWN.pdf)

In our first set of experiments, using a vignette animation, participants were presented with a 30-second video of a virtual urban scene depicting a large shopping street in the evening – see image below. Participants were asked to imagine that they were the character navigating the street, where they encounter other crowd members. At the end of the video, participants were asked to complete a brief questionnaire of preliminary measures. Next, participants were presented with a second video (approximately 50 seconds long) continuing the previous scene. This showed the character navigating to a newspaper stand and picking up a newspaper. Participants were asked to read the front page of the

newspaper carefully, which was a distraction task so that they would not expect the incident which followed. After being presented with the headlines of the newspaper, a potentially threatening loud sound was made and the crowd in the video reacted to that sound. We manipulated the crowd's behavioural response to the noise, with crowd members either ignoring or running away from the noise. In the control condition, the screen faded to black before the participants could see the crowd's behavioural response to the noise. Finally, participants completed a questionnaire assessing their perception of the scenario, behavioural intentions and perception of the crowd members.

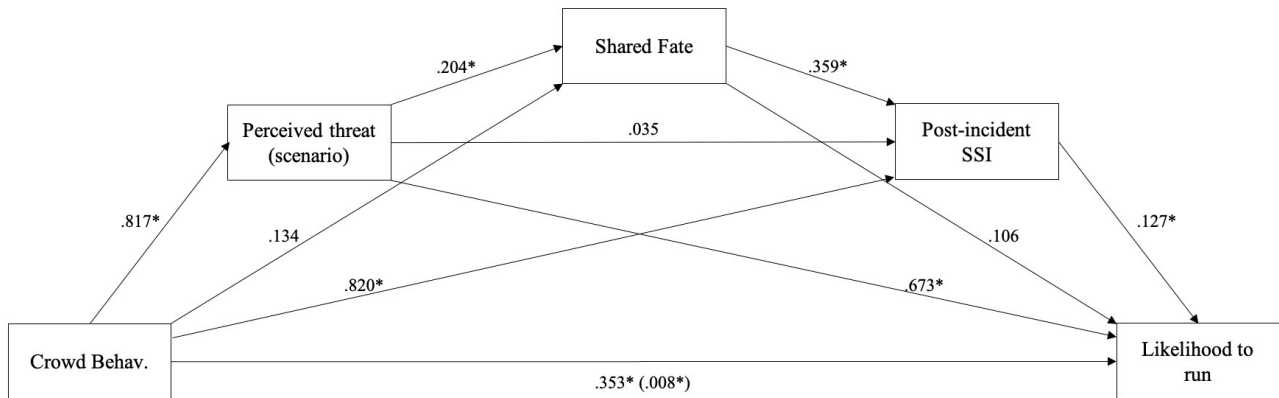


**Screen capture of the virtual scenario with agents walking and running.**

In vignette experiment 1, we found that participants were more likely to perceive a threat when the crowd in the animation ran away from the noise, compared to when the crowd ignored the noise or when the behaviour of the crowd was not shown. Perceived threat predicted the participant's decision to run. This pattern of results is consistent with an appraisal process whereby, following an ambiguous and possibly threatening sound, the sight of crowds running increase attributions of threat and hence

feelings of danger and the decision to flee.

In vignette experiment 2, using a similar procedure, the findings of experiment 1 were replicated and expanded. Again, participants were more likely to perceive a threat when the crowd in the animation ran away from the noise. Again perceived threat predicted participants' decision to run. Overall, the impact of the crowd's behaviour on participants' own behaviour was mediated by perceived threat, shared fate, and shared social identity - see figure on page 31.



**Observing crowd flight increases likelihood of running, via perceived threat, shared fate, and shared social identity**

In vignette experiment 2, we also manipulated the ambiguity of the sound by exposing participants to either an ambiguous or non-ambiguously threatening noise (resembling a gunshot). We found that the effect of the crowd’s flight response on participants’ decisions to run was greater when the sound was ambiguous. Thus, when the crowd didn’t flee (or when there was no visible crowd), participants ran only when the noise was unambiguously threatening; they didn’t run when the noise was ambiguous. But if there was crowd flight in the animation, participants decided to run whether the noise was ambiguous or not.

In our online experiments, we were able to add behavioural measures to the self-report measures, by enabling participants to manipulate an avatar in the animation, thereby adding a degree of validity to the basic design. These online studies tested a hypothesis derived from the literature on social influence<sup>108</sup> that the perceived identity of people in the observed crowd matters. Specifically, the behaviour of those seen as ingroup to self will be more influential (and hence lead to more ‘copying’ behaviour) than same behaviour exhibited by outgroup (or non-ingroup) members.<sup>109</sup>

In online experiment 1, we made salient a relevant identity for participants (‘environmentalists’) and presented the crowd in the animation as fellow ingroup

members in one condition and as non-ingroup members in another condition. As expected, we found that participants who heard the threatening noise and who saw ingroup members running from it reported greater threat perceptions than those who saw non-ingroup members running. Threat perceptions were associated with the behavioural measures. Thus, those in the ‘ingroup’ condition spent a larger proportion of their time moving towards safety than those who saw non-ingroup members running from the noise; and more participants finished at a safe location in the condition in which an ingroup crowd ran compared to the one in which a non-ingroup crowd ran. The same pattern was also replicated in online experiment 2, demonstrating the robustness of the effect. Again, then, these results are consistent with the notion that people in a potential hostile threat incident use the flight behaviour of (self-relevant) people in the crowd to infer judgements of danger.

In many situations, observing the behaviour of the majority of people is a good guide for how one should behave – it is a reasonable heuristic.<sup>110</sup> Situations which are novel or where there is uncertainty are a good example. Thus, copying behaviour is commonly observed among individuals in crowd flight situations in emergencies.<sup>111 112</sup> Self-categorization theory adds to this notion of heuristics the suggestion that we are

108. Neville, F. G., Drury, J., Reicher, S., Choudhury, S., Stott, C., Ball, R., & Richardson, D. C. (2020). Self-categorization as a basis of behavioural mimicry: Experiments in The Hive. *PLoS One*, 15(10): e0241227.

109. Neville et al. (2020) op. cit.

110. Gigerenzer, G. (2008). Why heuristics work. *Perspectives on Psychological Science*, 3, 20-29.

111. Kinatader M, Müller M, Jost M, Mühlberger A, & Pauli P. (2014). Social influence in a virtual tunnel fire—influence of conflicting information on evacuation behavior. *Applied ergonomics*, 45(6):1649–59.

112. Kinatader M, Comunale B, & Warren WH. (2018). Exit choice in an emergency evacuation scenario is influenced by exit familiarity and neighbor behavior. *Safety Science*, 106:170–5.

more likely to take others as exemplars for our own conduct when we share a social identity with them,<sup>113</sup> and our evidence using virtual reality technology is in line with other experiments demonstrating this principle.<sup>114</sup>

### 7.3.2 Impact of police behaviour

Among our interviews from the Oxford Street Black Friday 2017 false alarm, for those witnesses who had already inferred that an attack was going on, the sight of the police on Oxford Street was reassuring. For others, however, the sight of the police, and the manner of their behaviour, served to increase concerns and beliefs that a terrorist attack was happening:

Thus for example for one of our interviewees the arrival of armed police and their 'aggressive' actions confirmed that something serious was happening. Indeed, for many the police indicated not just that 'an incident' was occurring but that 'a terrorist incident' was occurring. It was not the mere presence of police that indicated this, but the scale of the police response, the security measures they took including 'stab vests', armed police, aggressive actions, urgent movement, the sight of armoured vehicles and helicopters. There was a visible and audible blue light response, including multiple sirens, which many people would have become aware of.

There is some evidence, from both the interviews and the video material, that on some occasions police were mistaken for terrorists. Thus, one interviewee reported thinking armed police, who were all in black and with no 'police' lettering on their front bursting through the door of Selfridges were terrorists themselves. A similar pattern was observed at the Bank tube station false alarm in 2019 (an incident associated with rumours of a marauding knife pattern was observed at the Bank tube station false alarm in 2019 (an incident associated with rumours of a marauding knife attack). Here, armed officers deployed with short arms didn't cause public alarm and were ignored, but when during the incident officers with long arms appeared, those evacuating responded as if the police were the threat, and ran back the way they had come in response.

The police themselves were on a very high level of alert that day. Their visibly extra vigilant response would likely have significantly contributed to the public's relative readiness to interpret what was happening as a hostile threat. Of course, the police's initial intervention only followed hundreds of calls from

the public about the Oxford Circus 'incident', only illustrating how the perception of threat spiralled. Also included in this spiral of escalation are the police's tweets during the period of the false alarm incident, which we discuss next.

### 7.3.3 Impact of communications

**7.3.3.1 Twitter** Eriksson Krutrök and Lindgren (2022)<sup>115</sup> report that tweeting activity increased suddenly and dramatically following the first report on the evacuation of Oxford Circus tube station on Black Friday 2017. The first hour after the initial alarm was the most busy, with a high point of ~2750 tweets per minute. The most common words in tweets posted in this period were 'police', 'scene', 'shots', 'panic', 'run', and 'safe', all relating to either the supposed incident itself or the behaviour of the public and others present at the scene.



At 17.07, Metropolitan Police tweeted 'If you are on Oxford Street go into a building. Officers are on scene and dealing. More info when we can'. About ten minutes after that – about 40 minutes after the fight in Oxford Circus tube station – the Metropolitan Police sent the following tweet, which was most retweeted tweet (7947 times) in the dataset collected by Eriksson Krutrök & Lindgren:

Police called at 16:38 to a number of reports of shots fired on #OxfordStreet & underground at Oxford Circus tube station. Police have responded as if the incident is terrorist related. Armed and unarmed officers are on scene and dealing along with colleagues from @BTP<sup>116</sup>

Significantly, the police tweet labelled the situation as being potentially 'terrorist related'.

After the Metropolitan Police and British Transport Police, some of the more influential Twitter accounts using the hashtags #oxfordcircus or #oxfordstreet

113. Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987). *Rediscovering the social group: A self-categorization theory*. Oxford, UK: Blackwell.

114. Neville et al. (2020) op. cit.

115. Eriksson Krutrök, M., & Lindgren, S. (2022). Social media amplification loops and false alarms: Towards a Sociotechnical understanding of misinformation during emergencies. *The Communication Review*, 25(2), 81-95.

116. <https://twitter.com/metpoliceuk/status/934108530809999363?lang=en>



during the incident were those of the pop star Olly Murs, the far-right activist Tommy Robinson, and the Daily Mail. Robinson was not present on Oxford Street but tweeted claiming that the alleged attack was a case of Islamist terrorism. The Daily Mail reported several misinformed stories regarding a gunman present at the scene, and also about an alleged truck attack.<sup>117</sup>

It might seem that these much-shared tweets influenced people in the Oxford Street area to believe there was a terrorist attack in progress. However, a limitation of this analysis of Twitter is that it is not clear how many people actually in Oxford Street at the time feature in the numbers of people tweeting, retweeting or viewing tweets. Certainly, some of our interviewees consulted Twitter. But others couldn't get a signal on their phones and so were unable to check social media for periods during the incident.

**7.3.3.2 Word of mouth** For a few of our Oxford Street interviewees, either the first indication that 'something was wrong' or the 'confirmation' of a terrorist attack came from word of mouth from other members of the public. Colleagues told them or they received phone calls with the information or someone in the street shouted something. In addition, the video evidence from the incident clearly demonstrates information being passed on by word of mouth as people exited the area.

#### 7.4 The role of personal history

How do individual differences (e.g., in knowledge, experience, or training) interact with context and situational factors in false alarm incidents? Are some people less likely than others to interpret an ambiguous signal as a hostile threat? The answer would be yes, as for most human behavioural responses, and the interview data from Oxford Street Black Friday 2017 identifies some of the relevant variables.

Among our interviewees, perhaps as part of their training, many people who worked in central London shops, banks and offices during the incident were prepared to accept that urgent crowd movement was a sign of attack. In some cases they said they were prepared to shelter people with very little explanation:

I thought, literally, 'where is the safest place to be', it's going to be in a bank. And I'd not hear of anyone running into a bank. So I ran into this Barclays, which is on the corner, and um, and I remember I was one of the first people to run into it, like quickly joined by others. And I remember just, I can't remember the looks on

the people's faces but I remember the manager came out from behind the counters and he came and like stood, and he quickly picked up on what was going on, he could tell what was going on and he went 'this way' ('Charlie')

These people had a huge responsibility thrust upon them to protect the public and indeed their own staff. They didn't know who was running into their premises and the decision to take in shelter seekers appeared to be impressive acts of prosociality.

Fourteen interviewees reported some level of experience of previous terrorist attacks. Two had been at the scene during a previous terrorist attack (the 2017 London Bridge attack and the 1996 Manchester IRA attack). The others reported being affected by or aware of the aftermath of previous terrorist attacks, when transport systems were shut down for example. It's not clear, however, what impact this had on their perceptions or behaviour.

Twenty-seven interviewees lived or worked in London, while 12 were visiting at the time of the Black Friday 2017 false alarm. About equal numbers in each group ran vs did not run. The 'visitors' were more likely to be already in a shop when the incident began than the 'Londoners', so were able to hide more quickly. Other than this, we did not detect differences in behaviour between 'Londoners' and others.

#### 7.5 It is a combination of factors that causes most people to interpret an ambiguous signal as a hostile threat

Shortly after the altercation on Oxford Circus station on Black Friday 2017, there was an announcement on the platform communications system asking the public to evacuate the station. Interestingly only one of our interviewees said they immediately interpreted this 'alarm' signal as indicating an attack. For the other interviewees who heard the 'alarm', it was only in combination with other evidence that they interpreted it as a sign of an attack.

In practice then, the wider context of genuine terrorist attacks and their observations at the time combine with personal history to shape people's judgements about threat. Indeed, most of our witnesses reported that it was the incremental combination of factors, including the repeated sight of other people running, that eventually led them to conclude that there was a terrorist incident. Only a minority said seeing a running crowd alone was sufficient to convince them that an attack was taking place. Others additionally heard communications about a number of potential threats consistent with a terror attack: stabbings, a gunman,

---

117. Eriksson Krutrök & Lindgren (2022) op. cit.

bombs, a van attack. Some looked online for evidence that could explain what they were witnessing. Others also saw discarded shoes and shopping bags. Some reported that they also saw injured people. Indeed, while many interviewees reported witnessing others (strangers) shouting that there was an attack of some sort, this operated as another piece of information alongside the other evidence, rather than something they responded to unquestioningly.

Most interviewees therefore reported evaluating multiple pieces of evidence in order to explain the disruption as a hostile threat. This cumulative evidence also meant however that further ambiguous sounds were misinterpreted as gunshots.

In sum, there were many factors which led people to perceive a hostile threat on Oxford Street on Black Friday 2017. A heightened awareness of the possibility of terrorist attacks in London on Black Friday provided a framing for the sights and sounds on the day. Some people reporting hearing sounds they thought were gunshots. Most people perceived the urgent movement of frightened crowds as the initial evidence of hostile threat. Most interviewees reported continuing to gather and evaluate evidence that could explain their situation.

This evidence included information inferred from police actions, further crowd movements, rumours of threat, observed injuries, and discarded belongings. Interviewees said they took into account these multiple pieces of evidence before concluding there was a serious (but in many cases undefined) threat.

This evidence makes the important point that for many people on Oxford Street on Black Friday 2017 the decision to flee was not sudden or impulsive. Rather, in a similar way that people tend to (initially) discount more common threat signals (such as fire alarms), at first many people on Oxford Street rejected that interpretation and it was only gradually that they changed their mind, often influenced by the observed behaviour of others. Even in the context of genuine threats, public response was not a hair trigger, but rather was somewhat disbelieving.

In line with this case study evidence that it is the combination of sources that produces the threat perception and flight response, in our online experiments we found that participants who did not hear or who were not exposed to the threatening noise exhibited a much more mixed behavioural response than those who both heard the noise and saw the crowd.

## 8. How do the public behave in false alarm flight incidents?

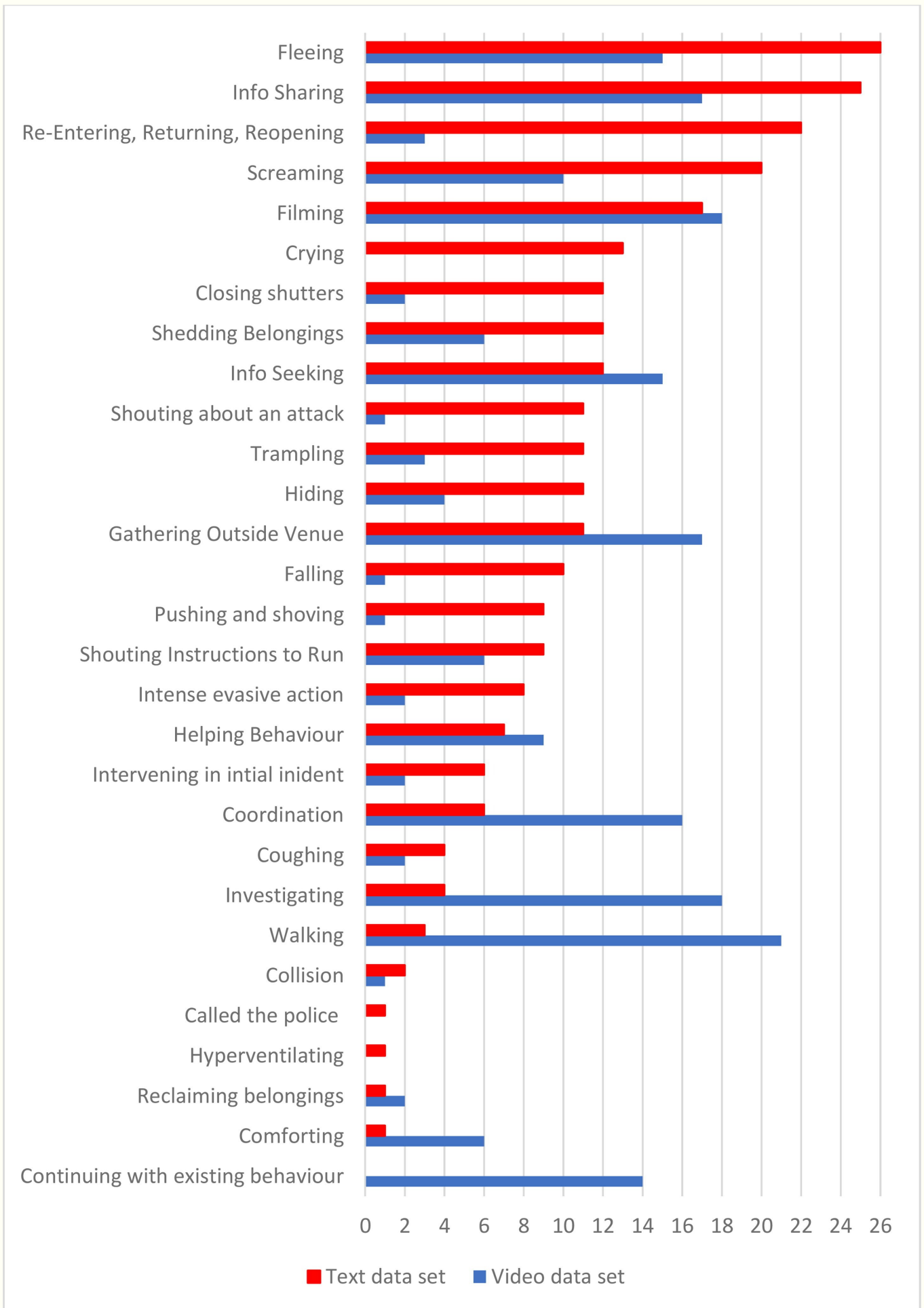
In our systematic review, out of 126 false alarm incidents in the years 2010-2019, we identified just 26 'urgent' crowd flight incidents, defined by groups of people running from the misperceived threats. In other words, flight incidents during false alarms were less

common than those incidents where we found no record of people running.

The number of times each behaviour was noted across the 26 incidents is displayed in the graph on page 34.<sup>118</sup>



118. Definitions of each coded behaviour can be found in the OSF site for the study. [https://osf.io/tx5fc/?view\\_only=d0e80d1bef5845d593e55826a757d793](https://osf.io/tx5fc/?view_only=d0e80d1bef5845d593e55826a757d793)



Behaviours observed in urgent false alarms in Great Britain, 2010-2019

## 8.1 Not just running: Diversity of public behaviour within a single flight event

In line with the findings in Philpot and Levine's (2022)<sup>119</sup> fine-grained CCTV analysis of flight behaviour in the Tower Hill tube train evacuation of September 2017, our review of 'urgent' crowd flight incidents suggests that a diverse range of public behaviours was exhibited – see graph on page 35. While some people did run, not everyone did. Some apparently ignored the 'threat'. Many walked away without much urgency, others stopped and filmed, others investigated the reason for the commotion. In some cases, people intervened against the apparent sources of threat (such as a fight or a fire). As well as fleeing, the most common behaviours observed included sharing and seeking information,<sup>120</sup> returning to shops and other properties, hiding, and gathering outside venues. There were also instances of spontaneous mutual coordination amongst people. The video data also includes examples of people continuing with their existing activities, rather than changing course in the face of the possible threat. Fewer than half the urgent flight incidents featured reports or videos of competitive behaviours (like pushing and trampling). Incidents where people engaged in intense evasive actions such as vaulting escalators were also rare.<sup>121</sup>

Reported injuries from crowd flight were rare in the 2010-2019 urgent false alarms. In our dataset, there were more reported injuries (47) resulting from the cause of the crowd flight incident (e.g., fights, exploding batteries, a car accident) rather than from running (19). Four of the 'urgent' false alarm incidents resulted in nineteen injuries from crowd flight, sixteen were from just one incident (the Oxford Street Black Friday 2017 false alarm).

The 2017 Oxford Street triangulated data evidence provides a rich illustration of the variety of behaviours during a false alarm incident. Thus, the initial evacuation of Oxford Circus tube station was a mixture of both urgent and non-urgent. A witness who was on the top steps of one of the exits described how a crowd of people came towards him 'sprinting upstairs', looked around as got they out, and 'sauntered away.' A passenger arriving on a train on the same platform as

the altercation described how people left in a 'civilized manner' when they got to the main concourse and started to walk up the steps to the exit.

The variety of behaviour continued on the street. Although many people ran from the station, footage from the east side of the station also shows people walking away in an orderly fashion as the announcement to evacuate the station can be heard in the background. Further up the east side of Oxford Street 'loads of people' were reported running down the road from Oxford Circus. A crowd of people were standing around and walking away from the station, when suddenly people started running and hurrying away.

Among our Oxford Street interviewees 20 of 39 reported that they ran. The rest said they did not run.

This was a pattern that was repeated: There was a lot of running, but other people also stood around asking for information, others walked quickly, others walked quite normally. There are often verbal descriptions on video of 'running' when in fact there is a variety of movement, including not just running but also purposeful walking and walking briskly.

There were frequent reports of people dropping their shopping, and people falling over. There were also accounts of pushing. Often this happened in shops with people trying to get into an already crowded space or tripping over each other people.

Urgent efforts by crowds of people to get into Bond Street station to escape from the 'threat' were chaotic at times, especially since some people attempted to go down the up escalator. There was some pushing and shoving here, though from a minority only.

Behaviour was often a mixture frantic escape efforts with cooperation. As well as people falling over, people often held hands and hugged each other. The public and the police helped those who had fallen over.

### 8.1.1 Hiding

About half of our 39 interviewees said they hid in shops and other premises during the false alarm on Oxford Street, Black Friday 2017. Eleven were already in premises when the incident began, seven ran then

---

119. Philpot, R., & Levine, M. (2022). Evacuation Behavior in a Subway Train Emergency: A Video-based Analysis. *Environment and Behavior*, 54(2), 383-411.

120. DeYoung et al. (2019) found that those affected by the false alarm ballistic missile warning that occurred in Hawaii (United States) in January of 2018 sought additional information and cues about the potential threat, similar to what happens in a real incident alert. DeYoung, S. E., Sutton, J. N., Farmer, A. K., Neal, D., & Nichols, K. A. (2019). "Death was not in the agenda for the day": Emotions, behavioral reactions, and perceptions in response to the 2018 Hawaii Wireless Emergency Alert. *International Journal of Disaster Risk Reduction*, 36, 101078.

121. The articles and video data sources diverged somewhat. Running, screaming, crying, and shouting about an attack featured in text more than in the videos. Competitive behaviours such as pushing and trampling also featured in text more than the videos.

hid, 13 just ran, and eight neither ran nor hid. Much of the behaviour was therefore in line with the ongoing 'Run, Hide, Tell' campaign<sup>122</sup> -- although, of the 36 interviewees who were asked about it, only seven said they were aware of 'Run, Hide, Tell' at the time.

Interviewees reported that they ran with the intention of getting to safety. Once in shops, hiding behaviour continued with many seeking shelter in basements, upstairs, and in cupboards. Hiding in shops was often supported by shop staff, who were some of the most prepared among our interviewees to accept this was a real terrorist incident:

Our counter was at the front, and I remember seeing loads of people running towards me. And I kind of thought, this is it, it's happening, you know there's you know there's been terror attacks in London before. There had been quite a few I think around that year, there had been a few, I think that been like I think, maybe that was around the time where there was the one that happened in Borough Market and, like Westminster Bridge and stuff. And I thought right this is happening. ('Jeremy')

### 8.1.2 Supportive behaviours

Supportive behaviour was common in interviewees' accounts of the false alarm on Oxford Street, Black Friday 2017. Some of the supportive behaviour involved warnings: interviewees reported warning others as well as receiving warnings from other members of the public, from people they were with, and from shop staff:

I got to the top and then heard someone shouting about a van mowing people down. ('Grace').

Interviewees also reported instructing people, as well as receiving instructions from members of the public, from people they were with, and from shop staff:

The shop people said something like you can't go upstairs because like the windows are glass, we'd rather everyone was downstairs. ('Akira').

Interviewees also reported reassuring others and being reassured by people they were with and shop staff:

I felt like a little bit of a sense of responsibility... to be sort of more logical and try and...reassure some of the younger people who were quite upset. ('Abigail').

Further instances of supportive behaviour were also

reported included people running to try to help other before the emergency services arrived and others helping elderly people.

As with the Tower Hill incident,<sup>123</sup> supportive behaviours at Oxford Street on Black Friday 2017 ranged from simple cooperation (e.g., moving aside for someone to pass) to emotional support (e.g., checking that others are ok). Much of this was amongst strangers.

A pattern that comes across in the Oxford Street interviews is that supportive and cooperative existed particularly in pockets rather than as a general feature or norm across the crowd as whole. The triangulated evidence is consistent with this point. Some people reported very distressing experiences of others pushing them aside or even trampling them. Others reported a camaraderie and support, particularly when people were gathered in shops, hiding together:

I said we're all safe, we're all locked in, yeah, it was, general chitchat in the shop was, I was saying, do you want my charger, you know, people were just trying to help each other or if they didn't have a phone, saying you can use my phone. ('Grace')

### 8.2 Cooperation between public and authorities

In Oxford Street on Black Friday 2017, there were numerous examples of police officers telling people to move away from the area and or to hide in nearby shops, and of members of the public following this advice. Section 7.3.2 suggests however that there were sometimes conflicting reactions to the appearance of the police. At times, however, people were puzzled by the police actions and orders. Thus at 17.17 the Metropolitan Police posted a tweet instructing people to take shelter in shops.<sup>124</sup> One person's tweet echoed the confusion some experienced: 'I don't understand why they are telling everyone to go into the nearest building but evacuating Selfridges meaning loads of scared n confused people on the street??' Therefore, although members of the public often cooperated with the emergency services and complied with their orders, they also questioned instructions when the rationale was unclear.

### 8.3 When do false alarm flight incidents become disorderly or competitive?

As noted in section 8.2, there were significant reports of disorderly or competitive behaviours during the false alarm on Oxford Street on Black Friday 2017. As well

---

122. 'Run, Hide, Tell' was launched by the UK National Police Chiefs' Council in 2015 following the marauding terrorist attacks in Paris that year. Communicated via a short 'Stay Safe' film and accompanying leaflet for pre-emptive education, the guidance aims to help anyone caught up in such an attack to protect themselves. It is also issued by the police in the event of an attack, via their social media channels.

123. Philpot & Levine (2022) Op cit..

124. Tweet <https://twitter.com/metpoliceuk/status/934108841318502408>

as cooperative and supportive behaviours, there were also instances of people pushing and even trampling. Six of our interviewees mentioned pushing for example. A sense of unity and instances of supportive behaviour seemed to exist only in pockets – for example in shop basements where people hid together – rather than being a feature of the crowd as a whole. Based on the literature on the obstacles to the emergence of cooperation among those affected in mass emergencies – see sections 4.1 and 4.2 – we explore here why there was only limited coordinated and supportive behaviour across the public during the Black Friday 2017 Oxford Street false alarm.

It is important to note first of all the sheer variety of experiences different members of the public had across the false alarm: there wasn't a single, unified, shared experience. There was not a shared understanding of what the threat was or where the threat was coming from. For example, video footage shows some people fleeing towards Oxford Circus, rather than away, and then being directed back. Rather than a shared perspective or experience, there was a highly fragmented perspective across the crowd. Without the emergence of a sense of common fate – or a common reference point – it seems unlikely that a shared identity could develop across the crowd as a whole.

Our vignette experiments replicated this effect of lack of common coherent experience. In both of the experiments, when participants saw a running crowd in response to the potentially threatening noise, they tended to identify more strongly with the crowd and to run, via perceived threat and common fate. But, in the online experiments, in those conditions where participants did not hear the same noise and simply saw a running crowd, participants were less likely to join in with the running crowd, meaning an overall reduction in collective behaviour.

In Oxford Street, it's notable that the pockets of unity and camaraderie in the incident were in those locations – such as shop basements – where people were grouped together as one and shared a common experience.

It was actually ... quite nice, people were being quite friendly. I had a really long conversation with some complete random stranger. ... it felt like we kind of clustered into groups, the people that were panicking, the people that were just chilling, and the people that were just like, we're here, we might as well get to know each other. ('Akira')

In another example, staff and shoppers rushing from a store on Oxford Street ended up at the Royal Society of Medicine on Wimpole Street nearby. Staff endeavoured to calm people down and bring them together; chairs were found, and water offered for 300 visitors who were ushered into the lecture hall. They were treated to a talk on resilience from one of the staff to help keep them occupied during the wait.<sup>125</sup>

Those locations where more pushing or other competitive behaviour was reported or observed included some of the shops as people were trying to get in or escape, and the escalators in Bond Street station. This is in line with the observation made at past (genuine) emergency evacuations that it tends to be the narrow pinch points in an evacuation route where greater competitive behaviour occurs.<sup>126</sup>

#### **8.4 What are the psychological impacts of false alarm incidents?**

In addition to the psychological impacts described above, there was evidence from our Oxford Street interviews for two further psychological impacts of false alarm, which can inform recommendations for follow-up in the recovery phase. First, there were a number of reports of distress during the incident. People were frightened and upset. They were sometimes very distressed by the behaviour of others, as well as by the threat they understood to be facing them. DeYoung et al. (2019)<sup>127</sup> in their study of experiences of the 2018 Hawaii Wireless false alarm describe some participants reporting symptoms of traumatic stress after the event, similar to a real emergency where there is a threat of death.

Second, however, was a form of distress for some people that followed the declaration of a false alarm and in the days afterwards. Some interviewees still believed there had been an attack, and were mistrustful of the authorities announcements. Some others felt angry and humiliated at the way they were treated and talked about after the event, particularly by the news and social media coverage that depicted them as stupid, panicky, and irrational:

Like I say, was not impressed with people who were saying that was a false alarm, or you, you know, stupid people, no you weren't there, you didn't, you, we had no information to say it was a false alarm, it's all very well, hindsight is a wonderful thing, for the people on the ground who were running, we're not running for a false alarm. ('Grace')

---

125. See Wessley, S., (2017, December) President's Update: Black Friday at the RSM. Retrieved from: The Royal Society of Medicine (rsm.ac.uk)

126. Chertkoff, J. M., & Kushigian, R. H. (1999). *Don't panic: The psychology of emergency egress and ingress*. Westport, CT: Praeger.

127. DeYoung et al. (2019) op. cit.

## 9. Public behaviour in response to visible marauding attackers

Our main focus in this briefing report has been on those situations where there is no visible and unambiguous hostile threat and threat is instead inferred. This situation of ambiguity is often true for many phases of genuine hostile incidents. However, in many incidents there is a visible attacker that people are exposed to. Bladed attacks in particular have become more common. Arguably they afford greater possibility of public preventative intervention than other modes of attack. Nevertheless, pro-active public interventions have been observed at different stages of various MTA incidents in the last ten years or so. Here, we present some of the first detailed evidence on the nature and dynamics of such public interventions.



Screenshots showing the first attack at Leytonstone tube station, 2015.

### 9.1 Members of the public confronting attackers

The following are just some recent examples of members of the public actively confronting marauding attackers in the UK and elsewhere, illustrating some of the public behaviours that have been observed in such incidents.

In March 2017, three men deliberately drove a van into pedestrians on London Bridge. The occupants then ran to Borough Market area and stabbed people. One member of the public fought them off by striking them with his skateboard. Other members of the public threw bottles and chairs at the attackers. A bakery worker hit one of the attackers with a crate before giving shelter to 20 members of the public in a bakery. Another man fought the three attackers with his bare hands, shouting 'Fuck you, I'm Millwall', giving other members of the public the chance to run away.<sup>128</sup>

In June 2017, a terrorist drove a vehicle into a group of people gathered near an Islamic Centre in Finsbury Park in North London. When he attempted to flee the scene, he was held by members of the public. Witnesses stated that the man was beaten until the Imam of the mosque persuaded people to stop, and requested for him to be handed over to police.<sup>129</sup>

In November 2019, after attacking people with knives and wearing a fake suicide vest on London Bridge, a terrorist was attacked by members of the public with a fire extinguisher, a pike, and a narwhal tusk. After being partially disarmed by a plain-clothes police officer, he was held by members of the public.

In Norway, during the 2019 Bærum mosque firearms attack, the attacker was held by mosque attendees before he was able to hurt anybody.<sup>130</sup>

### 9.2 Spontaneous coordinated public response to a marauding knife attack on the London Underground, 2015

Our analysis of CCTV footage of the Leytonstone tube station attack, 2015, enables a new and more detailed understanding of processes of spontaneous coordination among members of the public confronting a marauding attacker. In particular, it suggests that members of the public may spontaneously self-organize and enact roles that complement each other.

The Leytonstone incident can be divided into three phases:<sup>131</sup>

1. **Arrival and initial attack:** The arrival of the attacker, initial assault, and egress of the attacker from the station.
2. **Return to normality:** A lull as the passengers began to return, establishing a movement pattern akin to that observed prior to the attack.
3. **Secondary attacks:** The return of the attacker into the station, a series of further assaults concluding with the incapacitation and handcuffing of the attacker by the police.

Analysis of the CCTV data suggested that across all three phases of the emergency, the behaviour of passengers was diverse and complex. In phase 1,

128. <https://www.theguardian.com/uk-news/2017/jun/06/millwall-fan-roy-lamer-london-bridge-attackers>

129. <https://www.bbc.co.uk/news/uk-40323769>

130. Lindekilde, L., Pearce, J., Parker, D., & Rogers, B. (2021). "Run, Hide, Tell" or "Run, Hide, Fight"? The impact of diverse public guidance about marauding terrorist firearms attacks on behavioral intentions during a scenario-based experiment in the United Kingdom and Denmark. *International Journal of Disaster Risk Reduction*, 60, 102278. <https://doi.org/10.1016/j.ijdr.2021.102278>

131. To view our full animation of the phases of the event, see <https://osf.io/qn8sr>

when the initial knife assault occurred, rather than a rapid collective egress, large numbers of passengers simply stood watching the attack unfold just a short distance away. Some in proximity to it moved toward the danger, intervening to stop the attack. The first collective flight occurred sometime into the assault and then at the specific point that the attacker shouted jihadist slogans and began cutting the victim's neck. But even at this point, not all passengers fled. The footage shows that a handful remained in the ticket hall with some appearing to try to de-escalate the attack or

contact the emergency services with their mobile phones. Others positioned themselves outside the ticket hall and appeared to try to stop otherwise naïve arriving passengers from inadvertently placing themselves in harm's way. Throughout this initial attack, there was limited staff intervention, although one staff member remained in the vicinity and likely called either the control room or the emergency services. Equally, the attacker also appeared to permit some passengers to leave without further confrontation.

### **Box 3: The Leytonstone tube station attack, 2015**

The incident occurred in Leytonstone tube station, London, at approximately 7.05pm on Saturday, December 5th, 2015. The knife attacker, a 29-year-old male from Somalia, attempted to murder a 59-year-old white male using a blunt three-inch knife. The attack triggered a rapid egress of passengers out of the ticket hall area. After leaving the station temporarily, the attacker remained outside the station before re-entering and attacking more passengers and a police officer. While incidents of rapid egress did occur as the threat escalated, at every phase of the incident several members of the public intervened spontaneously with coordinated actions, as described in Table 4 (page 41). The attack was concluded after additional police officers arrived and subdued the attacker with Tasers. Police said that one victim had sustained serious, but not life-threatening, knife injuries, and two others were later treated for minor injuries.

The attack took place just three days after the UK parliament voted in favour of joining the international coalition engaging in airstrikes against the Islamic State militants in Syria. The attack was initially perceived to be and reported as an Islamic terrorist attack, as demonstrated by the response of a present onlooker who is documented as rebuking the attacker by saying 'You ain't no Muslim, bruv'. The incident was later understood as a product of the attacker's mental illness.

The incident had a number of features in common with a marauding terrorist attack – a fast-moving incident involving attacks on multiple people, and using a bladed instrument, like other marauding terrorist incidents. However, technically it does not fit the description since the stabbings and attempted stabbings were targeted rather than indiscriminate.

At the end of phase 1, the attacker left the station and entered the street level. Consequently, at the beginning of phase 2, the ticket hall and tunnel areas were largely empty of passengers. This soon changed, however, as new trains arrived, and both returning and new arriving otherwise naïve passengers flowed into the station. During this phase, it is apparent that several passengers began to adopt coordinated roles which appear to have been important in providing potentially lifesaving care for the victim, transmitting information, and facilitating movement flow. Passengers appeared to move around the station assessing the ongoing threat levels and disseminating this information to other newly arriving passengers, suggesting a high level of spontaneous organization and division of labour. There was also a notable tendency to return to normality once the immediate danger had apparently subsided. As new trains arrived, passengers from phase 1 appeared to seek out – and apparently find – a passenger with medical expertise. They then worked collaboratively to create formations which allowed medical assistance to

be delivered by creating makeshift corridors for unobstructed passenger flow. This information flow and coordination coincided with a return to 'normality' with passengers resuming a normative pattern of movement through the ticket barriers and out of the station.

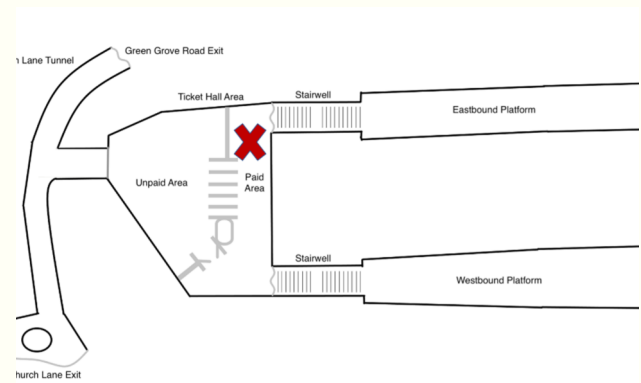
Phase 3 described the period in which the attacker returned onto the station footprint and once again began attacking passengers. Here it is evident that the attacker was not indiscriminate in his attack; he walked past several individuals without displays of aggression, the majority of who were non-white, before turning to attack two white passengers at the entrance to the ticket hall. During these attacks, there was collective flight egress, but once again passenger behaviour was complex and certainly not uniform. Some passengers actively approached the attacker and placed themselves in extreme danger to distract him from attacking others. Others documented the incident through their mobile device. These interventions appear to have allowed those providing medical care to



defensively escort the initial victim out of the ticket hall to a place of relative safety. At much the same time, at the station entrances and ticket barriers, passengers appeared to inform one another about the shifting threats, with some even physically blocking naïve passengers from entering the high-risk area. As the incident progressed, the attacker began to slash out at the trio of apparent strangers working together in their attempt to restrain and corral him. These actions were even extended to shielding a police officer from the knife in the wake of the officer's failed attempt to disarm the attacker with a taser. Taken together, phase 3 once again showed evidence of complex, spontaneous coordination between passengers, as well as pro-sociality and care to protect others who were apparently strangers to them.

Far from a uniform rapid mass egress driven by selfishness and fear in the context of an apparent marauding knife attack, the behaviour of those in the

immediate vicinity of the Leytonstone attack showed considerable sociality, complementarity and coordination, therefore. We suggest that the different behavioural patterns observed can usefully be categorized into eight different repertoires – see Table 4.



**A layout diagram of Leytonstone station with a red cross marking the location of the initial attack**

**Table 4. Repertoires of actions by zero responders at the Leytonstone tube station attack.**

Categories	Definition
Defending	An individual who placed themselves at risk by moving into proximity of the attacker and confronted them forcefully, either alone or with others.
Communicating	An individual who interacted with other passengers and appeared to relay information to them about threat and risk.
First aid	An individual who alone or with others provided direct care to a victim, or who assisted those who were doing so.
Recruiting	An individual who appeared to enlist assistance from other passengers or the emergency services.
Marshalling	An individual who alone or with others interrupted or dissuaded the movement of other passengers, in an apparent attempt to protect them from harm.
Negotiating	An individual who approached the attacker, interacted verbally, or gestured toward them apparently seeking to pacify and de-escalate.
Risk Assessing	An individual who moved from an area of lower to one of higher risk, apparently to gather information about the unfolding situation frequently relaying this to others around them.
Evidence-gathering	An individual who videoed or photographed the situation on their personal device.

Prima facie, these patterns might also be present at similar incidents, and they map onto some of the behaviours observed in the London Bridge incidents in 2017 and 2019. Nevertheless, some caution is necessary in considering their generality to other bladed attacks. In particular, the fact that the attack was targeted rather than indiscriminate may have made it easier for members of the public to intervene in various

ways and given them confidence to do so. An attack perceived as both hostile and indiscriminate may be both more dangerous and more frightening to potential 'zero responders'. In addition, clearly other forms of attack – such as firearms – introduce quite different contingencies and therefore likely different patterns of public intervention behaviour.

## 10. A guide for practitioners and policymakers

The evidence described in this briefing document, in combination with the accumulated existing knowledge on public behaviour in response to hostile threats (see Section 4),<sup>132</sup> provides a base for a number of practical recommendations for those working in the field of civil contingencies and emergency response.

### 10.1 The importance of understanding the psychology of public behaviour in emergencies

Knowing that cooperation and supportive behaviour among members of the public are common in emergencies, and that competitive behaviour is less common, should be crucial foundational assumptions that should inform all planning and preparation in civil contingencies. In addition, it's important to recognize that false alarm flight incidents do not in the main involve a lapse into irrationality, since their occurrence is meaningfully related to both the wider context of threat and the observed behaviour of other people on the day.

Of course, to some extent there is already official recognition of the tendency to cooperation and social support among members of the public in emergencies – from the Community Resilience programme's 'communities of circumstance' to the Kerslake report's conclusion on the value of 'zero responders'.<sup>133</sup> In addition to embedding these facts about behaviour, however, it's crucial to understand the underlying psychology, in order to scaffold and support the processes involved, where possible. This means knowing the key variables that determine the extent of public cooperation versus competition.

Much of the cooperation and social support observed in crowds in emergencies, particularly amongst strangers, is due to shared social identity. This fact points to the need for authorities and responders to reinforce and work with (not against) a shared social identity in an evacuating crowd, including considering their own position in relation to that shared identity: are responders seen as one of 'us', or not? (This is the focus of some of the other recommendations below.) It

also means understanding what kinds of signals – including responders' own behaviour – might be interpreted by the public as evidence of a hostile threat in certain contexts (see Recommendation 6).

In other words, procedures and processes put in place to facilitate collective resilience processes in the public should be informed by the most up to date crowd psychology theory and evidence. A simple way to achieve this would be for key points from this briefing document to be embedded in the relevant guidance and training.

### Recommendation 1: Embed the psychology of public behaviour in emergencies in your training and guidance

### 10.2 What should we tell the public?

The old orthodoxy of withholding information from the public ('in case they panic') has been strongly challenged on several fronts. In the case of fires, there is evidence demonstrating that when members of the public are told what the threat is and where it is they evacuate more efficiently compared to a simple alarm or non-specific evacuation order.<sup>134</sup> In a range of emergencies, withholding information can seriously damage relations with the authorities, impacting on subsequent trust as well public self-confidence and efficacy.<sup>135</sup> Therefore, the public should be told about clear threats – but what should the authorities say when there is uncertainty about the threat?

As discussed in section 4.4, there is a well-documented tendency for the public to discount signals of threat for many types of emergency and disaster. Thus, the main argument in favour of campaigns (such as 'Run, Hide, Tell') to raise public vigilance is that they can reduce false negatives; that is, threats are correctly identified and casualties reduced. (Recent research<sup>136</sup> suggests there are other benefits to campaigns like 'Run, Hide, Tell', including increasing both perceptions of the security services' preparedness and trust in the police

---

132. Drury, J., Carter, H., Cocking, C., Ntontis, E., Tekin Guven, S., & Amlôt, R. (2019). Facilitating collective psychosocial resilience in the public in emergencies: Twelve recommendations based on the social identity approach. *Frontiers in Public Health*, 7 (141) doi: 10.3389/fpubh.2019.00141

133. Kerslake, Lord. (2018). *The Kerslake Report: An independent review into the preparedness for, and emergency response to, the Manchester Arena attack on 22nd May 2017*.

134. Proulx G & Sime JD. (1991), To prevent "panic" in an underground emergency: why not tell people the truth? *Fire Safety Science*, 3, 843–52.

135. Carter, H., Drury, J., & Amlôt, R. (2020). Social Identity and Intergroup Relationships in the Management of Crowds during Mass Emergencies and Disasters: Recommendations for Emergency Planners and Responders, *Policing: A Journal of Policy and Practice*, 14(4), 931–944 .

136. Pearce, J. M., Lindekilde, L., Parker, D., & Rogers, M. B. (2019). Communicating with the public about Marauding terrorist firearms attacks: Results from a survey experiment on factors influencing intention to "run, hide, tell" in the United Kingdom and Denmark. *Risk Analysis*, 39(8), 1675-1694.

to provide effective advice, which are important predictors of the public following relevant guidance.)

However, a raised level of vigilance can lead to a greater number of false positives.<sup>137</sup> The Oxford Street Black Friday 2017 false alarm, along with the similar events across 2010-2019, re-ignited discussions around the wisdom of attempting to increase the public's level of vigilance. This was because false alarm in Oxford Street incurred some significant costs:

- Physical costs: the number of unnecessary injuries
- Psychological/emotional costs: distress, unnecessary fear, humiliation for some.
- Social/ economic costs: The massive outlay of responder resources and the massive disruption

In considering these and other costs, however, our analysis suggests the following needs to be taken into account. First, although there was certainly a raised level of public vigilance, the main cause of this seems to have been the magnitude of recent genuine attacks, not the public information campaigns or official threat level. Second, much of what was negative on Oxford Street that day (the at times chaotic public response, and the low levels of coordination and mutual cooperation in the public, the instances of pushing and trampling) was due to the contingencies of the perceived threat, not the fact that it was a false alarm. People's experiences that day were very fragmented, with multiple different subgroups having different experiences, because there was no shared perception of the threat (in particular, where the threat was coming from). (Compare that to the 7/7 London bombings, for example, where there was very quickly an unambiguous shared experience that was then the basis of a shared identity and hence a collective response.<sup>138</sup>)

Whether a false alarm is 'too costly' – or whether there are too many false alarms for the level of public vigilance achieved by campaigns -- is a judgement call to be made by those who want to the public to not be complacent when risk levels are high. Our own analysis suggests no reason to think that informing the public or running terrorism awareness campaigns or otherwise trying to raise public vigilance is a problem; and the

broader literature suggests that such public information strategies are beneficial.

**Recommendation 2: Continue to inform the public and promote public awareness where there is an increased likelihood of threat.**

### 10.3 How do we get the public to listen to information about hostile threats?

The relationship between the public and the source of information is crucial for determining whether information is trusted and internalized. In social identity terms, trust is a function of the perceived identity of the source in relation to that of the recipient. Members of the public will be more persuaded by messages from fellow ingroup members than those seen as outgroup members. Therefore, those responsible for emergency preparedness need to prioritize relationships -- and specifically shared social identity -- with the community as part of their work of communicating. There are many ways to build shared social identity with communities and the wider public, including listening to them to understand their identities and norms, being seen to trust them (as opposed to being seen to distrust them and withhold information), and including them in decisions (to encourage a sense of ownership).<sup>139</sup>

Linked to this advice is the recommendation that the rationale for any instructions given to the public should be clearly explained, to increase engagement with those instructions.<sup>140</sup>

**Recommendation 3: Build long-term relations with the public to achieve trust and influence in emergency preparedness.**

### 10.4 How can we facilitate cooperative behaviour among the public in perceived hostile threat incidents?

A problem of the public response during the Oxford Street Black Friday 2017 false alarm was a relatively low level of coordination in public behaviour, which was a function of a relatively low level of psychological unity, or shared social identity, across the crowd. A question therefore arises over whether the authorities and responders can do anything to help promote or enhance a sense of unity. Previous research has

---

137. However, the Pearce et al. (2019) study found that 'Run, Hide, Tell' did not raise risk perceptions in their respondents; and among our interviewees, only seven of 36 who were asked about it said they were aware at the time of 'Run, Tell, Hide', so it would appear to have had little impact on this false positive.

138. Drury, J., Cocking, C., & Reicher, S. (2009). The nature of collective resilience: Survivor reactions to the 2005 London bombings. *International Journal of Mass Emergencies and Disasters*, 27, 66-95.

139. Drury et al. (2019) op cit.

140. Carter et al. (2020). op. cit.

suggested that there are actions that can be taken to support, scaffold, and facilitate the shared identity within the crowd, as well as between the professionals and the crowd. Thus, communications with the crowd should use collective nouns (e.g., 'community'). Where there is a particular group involved, use the group's own name for itself (e.g., fans of a particular music artist) to reinforce the collective identity. To create or enhance shared identity between the crowd and professionals, simple techniques include referring to 'us' and 'we' (rather than just 'you') when addressing the public, and referring to common context, common experience, and common goals. In addition, communications that are experienced as helpful, open, and respectful can build a bond between the two parties (see also Recommendation 3).<sup>141</sup>

**Recommendation 4: Use a unifying language and supportive forms of communication to enhance unity both within the crowd and between the crowd and the authorities.**

### 10.5 How do we avoid unduly distressing the public?

In (perceived) emergencies and other events, crowd behaviour is to a significant degree a function of the perceived legitimacy of other groups' behaviour. More broadly, the meaning that members of the public attribute to the actions of the police and other responders will affect how they think, feel and act. Therefore, authorities and responders should understand that the way in which they manage an incident will directly impact on public concerns and behaviour, on top of how the public respond to the 'threat' itself. On Oxford Street on Black Friday 2017, it was evident that the police's own urgent response impacted on the inferences made, concerns, and behaviour exhibited by the public. Not all of this was as intended. For example, both at this false alarm and at

least one other that we are aware of, the police armed response itself was misinterpreted as a terrorist threat. A simple solution to the problem of the public mistaking police for terrorists is for police to display the word 'police' in large letters on the front of their chests (rather than just on their backs). More generally, police and others convey (or fail to convey) information not just with words but with what they do (or don't do). Therefore, a reflexive approach is recommended, whereby authorities and responders think carefully about how their appearance and actions might be construed by the public, and whether that is the construal they want.

**Recommendation 5: Authorities and responders should take a reflexive approach to their responses to possible hostile threats, by reflecting upon how their actions might be perceived by the public and impact (positively and negatively) upon public behaviour.**

### 10.6 How do we provide emotional support?

Members of the public caught up in the false alarms examined in this briefing document often described being distressed and fearful, and the word 'panic' was frequently used to describe people's emotional state during these events. Often, the advice given to the public both before and during an emergency is on their emotions, or on how to feel: 'remain calm', 'don't panic'. We are not aware of evidence that this kind of advice either reduces unnecessary anxiety or increases the sense of efficacy or confidence people need in an emergency. Indeed, if people are already very anxious, this advice on emotions is probably not enough to change that. Moreover, if there is already mistrust between the public and the authorities, advice that there is nothing to worry about might itself increase public anxiety.<sup>142</sup> In an emergency, members of the

---

141. Carter et al. (2020). op. cit.

142 Wessely S. (2005). Editorial: don't panic! Short and long term psychological reactions to the new terrorism: the role of information and the authorities. *Journal of Mental Health*, 14,1–6.

143. Drury, J. (2018, July 18th). [Responding to people's emotional needs in an emergency](#). *Festival Insights*.

144. Lindekilde, L., Pearce, J., Parker, D., & Rogers, B. (2021). "Run, Hide, Tell" or "Run, Hide, Fight"? The impact of diverse public guidance about marauding terrorist firearms attacks on behavioral intentions during a scenario-based experiment in the United Kingdom and Denmark. *International Journal of Disaster Risk Reduction*, 60, 102278.

public require practical information; this will help them to make informed decisions (see Recommendation 2), but will also meet their emotional needs and make them less distressed.<sup>143</sup> Practical information is more likely to be listened to, trusted and internalized, and therefore provide emotional support, when there is a positive relationship with the source providing the information (see Recommendations 3 and 4).

**Recommendation 6: To give emotional support, prioritize informative and actionable risk and crisis communication over emotional reassurances.**

### **10.7 How do we harness ‘zero responders’ when there is a visible attacker?**

As mentioned earlier, Lindekilde et al.’s (2021) scenario-based experiment suggests that the ‘Run, Hide, Tell’ message may lead to increased likelihood of public passiveness in situations where more pro-active reactions would be beneficial.<sup>144</sup> Other versions of the advice include the US guidance ‘Run, Hide, Fight’. However, it’s worth making several points in response, in relation to the evidence presented in this briefing document. First, the ‘Run, Hide, Tell’ guidance was live and actively promoted in much of the period covered in this report, yet at the same time there were numerous ‘zero responder’ incidents in relation to visible marauding attackers. It’s not clear therefore to what extent the guidance deterred members of the public from interventions. Second, it is not necessary for everyone in an affected crowd to try to play an active role in dealing with an attacker; and promptly leaving the scene and hiding may be the best advice for the majority. Third, of course there are likely to be differences of advice across different types of hostile threat. Running and hiding might be particularly appropriate in the case of a firearms attack. When there is a visible bladed attacker, it seems likely that

members of the public will feel able to intervene in various ways, to prevent injury and fatality, to apprehend the attacker and so on. The key question then becomes how to harness this behavioural tendency in the public.

The various ‘zero responder’ roles identified in our analysis of the 2015 Leytonstone tube incident echo and enlarge upon those identified in previous research on public responses to hostile threats. Thus, in the midst of the 7/7 bombings, members of the public attempted to provide first aid, tied tourniquets, and in other ways acted as responders, as well as trying to help others to evacuate.<sup>145</sup> There is a strong argument for equipping the public to properly enable the tendency to community resilience. Thus, we suggest that it would be beneficial for the infrastructure at ‘vulnerable’ crowded locations such as transport hubs to provide easily accessible medical kits for members of the public to make use of. In addition, as zero-responders are likely to disseminate information regarding threat to one-another and the authorities (i.e., risk-assessing, communicating, and recruiting) infrastructures could invest in communication mediums which facilitate peer-to-peer and public-to-authority interactions, such as phone app technology.

**Recommendation 7: Provide first aid kits in transport infrastructures and communication mediums to enable some members of the public more effectively to act as zero responders.**

---

145. Cocking, C. (2013). The role of “zero-responders” during 7/7: implications for the emergency services. *International Journal of Emergency Services*, 2(2), 79-93.

## Data availability statement

The data that support the findings of this study are openly available at the following sites:

- The project website: <https://www.sussex.ac.uk/research/projects/stampedes/research-outputs/data-sharing>
- UK Data Service (via the project reference number ES/T007249/1, at <https://reshare.ukdataservice.ac.uk>)

## Licencing

This is an open access publication distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

## How to cite

Drury, J., Arias, S., Au-Yeung, T., Barr, D., Bell, L., Butler, T., Carter, H., Choudhury, S., Eriksson, J., Neville, F., Philpot, R., Radburn, M., Reicher, S., Ronchi, E., Stott, C., Telga, M., & Templeton, A. (2023). *Public behaviour in response to perceived hostile threats: An evidence base and guide for practitioners and policymakers*. University of Sussex. <https://dx.doi.org/10.20919/VJVT7448>





THE UNIVERSITY  
of EDINBURGH

US

UNIVERSITY  
OF SUSSEX



UK Health  
Security  
Agency



University of  
St Andrews



Keele  
UNIVERSITY



LUND  
UNIVERSITY

make [REAL]

<https://www.sussex.ac.uk/research/projects/stampedes/>