

Safety Management for Public Events



Tim Roberts

- 18 years Director & senior consultant at The Event Safety Shop Ltd
- 30 years in the concert and event industry
- C.M.I.O.S.H.
- Board Member of the Event Safety Alliance
- Finishing Masters Degree in crowd science
- Wide range of clients across all event sectors

Stadium Touring



Festivals



Arena Shows



Sporting Events



Fashion Shows



Movie Premieres





Global reach



What can go wrong at an event?

You tell me...

The recent record;
it has not been good

Tomorrowland Festival Barcelona



[Fire video](#)

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Falling tree crushes Madeira festival-goers: 11 feared killed before street procession



BBC

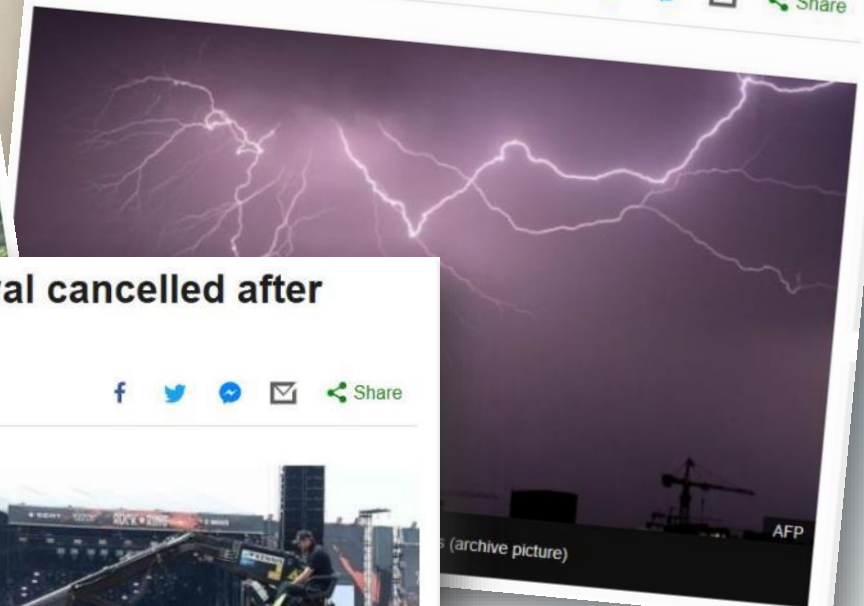
Your account

NEWS

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Lightning strikes hurt 15 people at French music festival

2 September 2017 | Europe



Germany rock festival cancelled after lightning strike

5 June 2016 | Europe



The bad weather has forced organisers to bring the festival to an early end



FYRE STARTERS

To ignite the Fyre Festival we compiled 400 of the most influential personalities globally to launch a **coordinated influencer marketing campaign**.

On Monday, December 12th at 5pm an ambiguous orange tile was posted to the below accounts reaching over **300mm people in 24 hours**.

THESE AMBASSADORS STAND AS PART OF, AND REPRESENTATIVE OF, THE FYRE TRIBE.

They are **key personalities** to lead the attendance of an influential audience at the Fyre Festival around the world and therefore your potential brand partners.



[Kendall Jenner](#)

72.5m followers
6.3m likes



[Emily Rataikowski](#)

10.6m followers
48k likes



[Bella Hadid](#)

9.7m followers
94k likes



[Chiara Ferragni](#)

7.8m followers
13 k likes



[Hailey Baldwin](#)

8.6m followers
56.1k likes



[Rocky Barnes](#)

885k followers
14.6 likes



[Alessandra Ambrosio](#)

7.6m followers
21 k likes



[Nick Bateman](#)

6m followers
34k likes



[Yovana Ventura](#)

4.7m followers
6.7k likes



[Bella Thorne](#)

14.8m followers
4.5k likes



[Marcus Butler](#)

3.6m followers
39.2k likes



[Elsa Hosk](#)

3.2m followers
19.2k likes



[Jen Selter](#)

10.5m followers
5k likes



[Paulina Vega](#)

2.7m followers
5.5k likes



More than 1,500 Juventus fans in Turin injured after stampede

- Witnesses suggest firecrackers mistaken for explosions caused panic and crowd surge
- Three people seriously hurt, including seven-year-old boy

DECEMBER 31 2016

Falls Festival: More than 60 people injured in crowd crush at Lorne music festival

Neelima Choahan, Emily Woods, Broede Carmody, Jane Lee



SHARE



TWEET



MORE

Worksafe has blamed bottle-necks at exits and unstable ground for the stampede at Falls Festival, with one doctor saying he was amazed no one was killed in the crush.

More than 60 people were injured and 19 hospitalised during a human crush at the Grand Theatre stage of the Lorne Falls Festival as fans rushing to see a headline act triggered a stampede on Friday.

SAVE PRINT LICENSE



	2012	2013	2014	2015	2016
All drug poisoning deaths	2,597	2,955	3,346	3,674	3,744
Any opiate ⁴	1,290	1,592	1,786	1,989	2,038
- Heroin and/or morphine	579	765	952	1,201	1,209
- Methadone	414	429	394	434	413
- Tramadol	175	220	240	208	184
- Oxycodone	37	51	51	51	75
- Fentanyl	22	22	40	34	58
Cocaine	139	169	247	320	371
Any amphetamine	97	120	151	157	160
Any new psychoactive substance	55	63	82	114	123
Any benzodiazepine	284	342	372	366	406
Pregabalin	4	33	38	90	111
Gabapentin	8	9	26	49	59
All antidepressants	468	466	517	447	460
Paracetamol ⁵	182	226	200	197	219
Propranolol	39	46	54	55	45

Source: Office for National Statistics



Drug Briefing

The Drug Expert Action team will be based on site at the Security Control. We have the capability to test just about all drugs evidentially and for emergency identification.

Below are three tablets that have been reported as causing issues when consumed:

Yellow HOMER SIMPSON / Green and yellow PENTAGONAL tablets



This type of tablet was seen recently at ***** Festival where the users believe it to be ecstasy. The tablets contain 2C-B. This is a hallucinogenic drug.

These Green and yellow pentagonal tablets have been identified at the lab as containing 2C-B



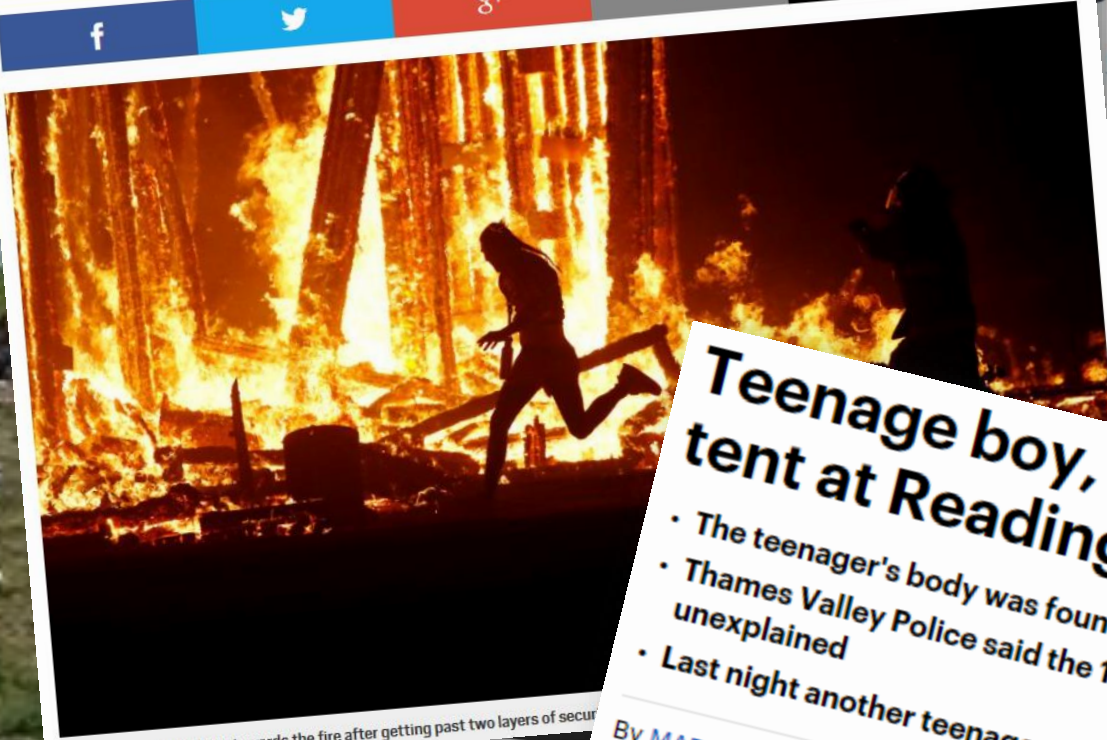
Blue & Yellow IKEA tablets

These tablets have also been seen at ***** Festival. They contain MDMA, but are reported to be a lot stronger than normal ecstasy tablets.

Example of intelligence sharing between UK police and event organisers regarding drug concerns

Man dies after diving into fire at Burning Man Festival

Richard Hartley-Parkinson for Metro.co.uk Monday 4 Sep 2017 7:09 am



Aaron Joel Mitchell ran towards the fire after getting past two layers of security

Teenage boy, 17, is found dead in his tent at Reading Festival

- The teenager's body was found in his tent at Reading Festival in the early hours
- Thames Valley Police said the 17-year-old's death is being treated as unexplained
- Last night another teenager was stabbed as he watched Kasabian's headline set

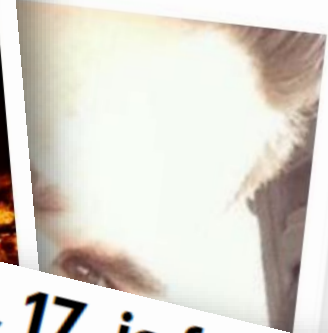
By MARTIN ROBINSON, UK CHIEF REPORTER FOR MAILONLINE

PUBLISHED: 08:06, 28 August 2017 | UPDATED: 23:15, 28 August 2017

A teenager who became ill with meningitis at the festival, officials have confirmed.

Home UK World Science Health Education Entertainment

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CARNAGE AT POP CONCERT

At least 19 dead and scores injured as 'terror blast' rips through Manchester Arena



Horror: An injured concert-goer is helped by police and emergency crews following the explosion at the Ariana Grande show in Manchester last night

AT least 19 music fans were killed last night in a suspected suicide attack at a concert in Manchester.

Thousands of youngsters fled in terror after an explosion ripped through Manchester

By Kate Pickles, Xantha Leatham, James Tozer and Thomas Burrows

Arena. As blood-covered victims sought safety, armed officers surrounded the 21,000-seat venue. The 10.35pm blast came seconds after US singer Ariana Grande finished performing.

'She had just left the stage when a huge explosion sounded,' said concert-goer Evie Brewster.

'Suddenly everybody started screaming and running for the exit. It was terrifying. There were thousands of people trying to get out at once. They were all screaming and crying.

The whole place smelt of burnt.' Many of the audience members were separated from their parents in the panic.

At least 50 were offered sanctuary by the nearby Holiday Inn. At 11pm, police confirmed 19 fans had been killed.

Turn to Page 4

So, much for the bad news.
But, what do you want
from an event?

Common aims

- No matter who we work for, we all want events to be:
 - Safe
 - Successful
 - Enjoyable
 - Economically productive
 - Repeatable and expandable
 - Enhance HK reputation

How to ensure a happy event?



Avoid bad things, so good
things can happen

Risk Assessment

- The concepts of Hazard and Likelihood
- Combine to give an overall Risk Level
- Things that are higher risk get priority
- “Suitable and sufficient” assessment of “reasonably foreseeable” risks

Risk Matrix

	Trivial Injury 1	Minor Injury 2	Serious Injury 3	Single Fatality 4	Multiple Fatality 5
5 Near Certain	5	10	15	20	25
4 Probable	4	8	12	16	20
3 Possible	3	6	9	12	15
2 Unlikely	2	4	6	8	10
1 Remote	1	2	3	4	5

Beware of the Numbers

- Using a simple number matrix can be deceptive
- Risk values do not range from 1-5
- A multiple fatality is **definitely** worse than five minor injuries
- The numbers don't really help – a longer narrative is needed in most cases

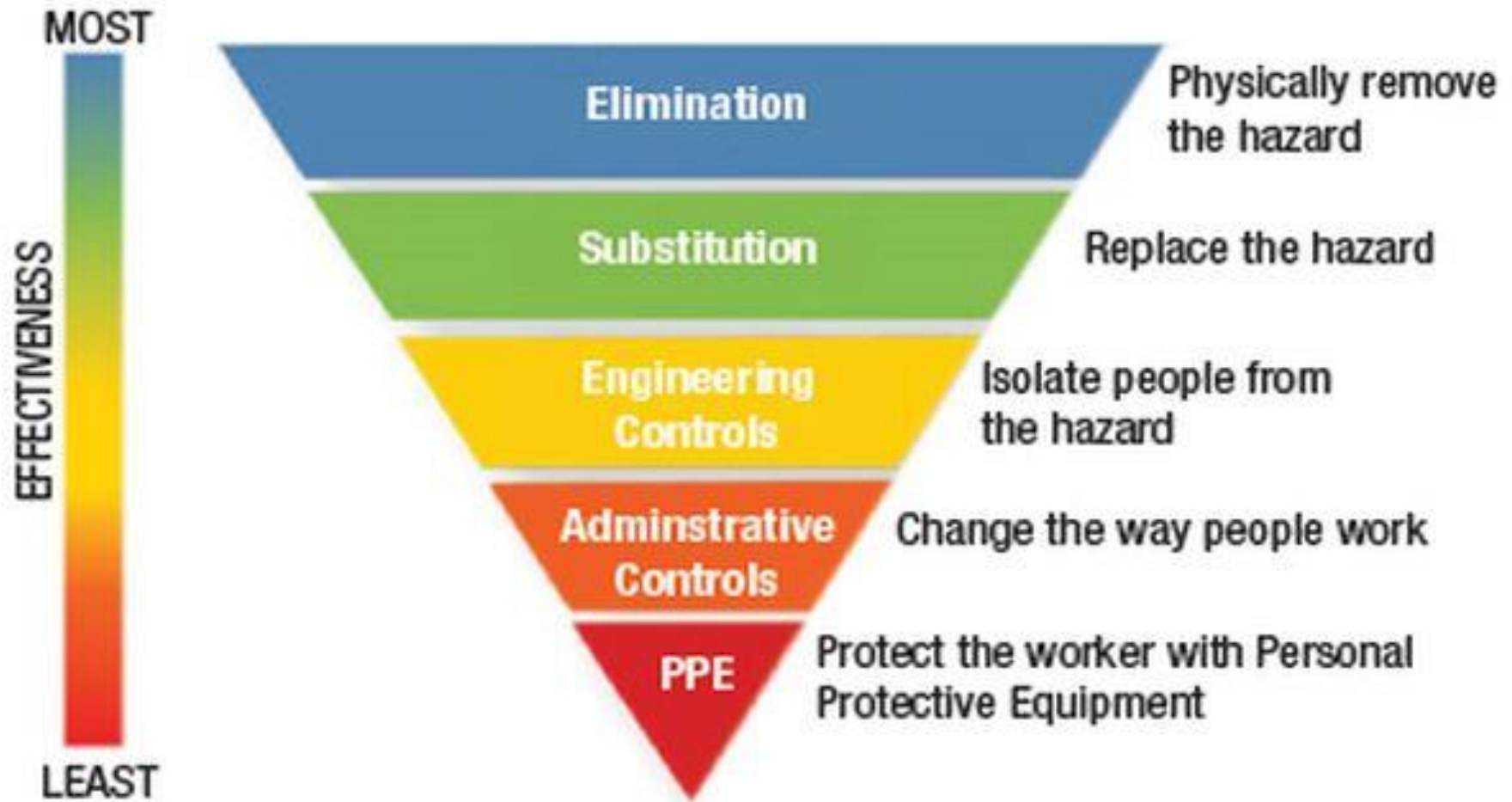
It's not just about injury

- The standard Risk Matrix only considers physical harm and injury
- Events give rise to risks of all types, including; environmental, legal, reputational, and financial
- A 6-hour traffic jam should be on the Risk Assessment even if there is no injury!

Examples of non-injury loss.

Insignificant	Minor	Moderate	Major	Catastrophic
Health and Safety				
No treatment required	Minimal medical attention	Injury requiring three or more days off work	Serious injury, hospitalisation or fatality	Multiple fatality or life-changing injury
Social, cultural, reputation or media				
Minor social impacts or local complaints	Media attention or medium term social impacts	Local media attention with potential impact on current Venue	National media attention. Future events affected	Sustained international media outcry. Cancellation of event(s)
Legal				
Minor or technical non-compliance	Breach of regulation leading to potential enforcement action	Litigation or prosecution leading to fine. Enforcement affects show	Serious breach of regulation or major litigation. Enforcement affects multiple shows	Significant prosecution, Class Action litigation. Severe impact on future events
Environment				
Negligible adverse effects on biological or physical environment	Moderate short-term effects, not impacting ecosystem functions	Medium-term environmental effects and effects on eco-systems	Serious medium-to- long term environmental effects	Very serious long-term and irreversible environmental impairment

HIERARCHY OF CONTROLS



A couple of real-world examples

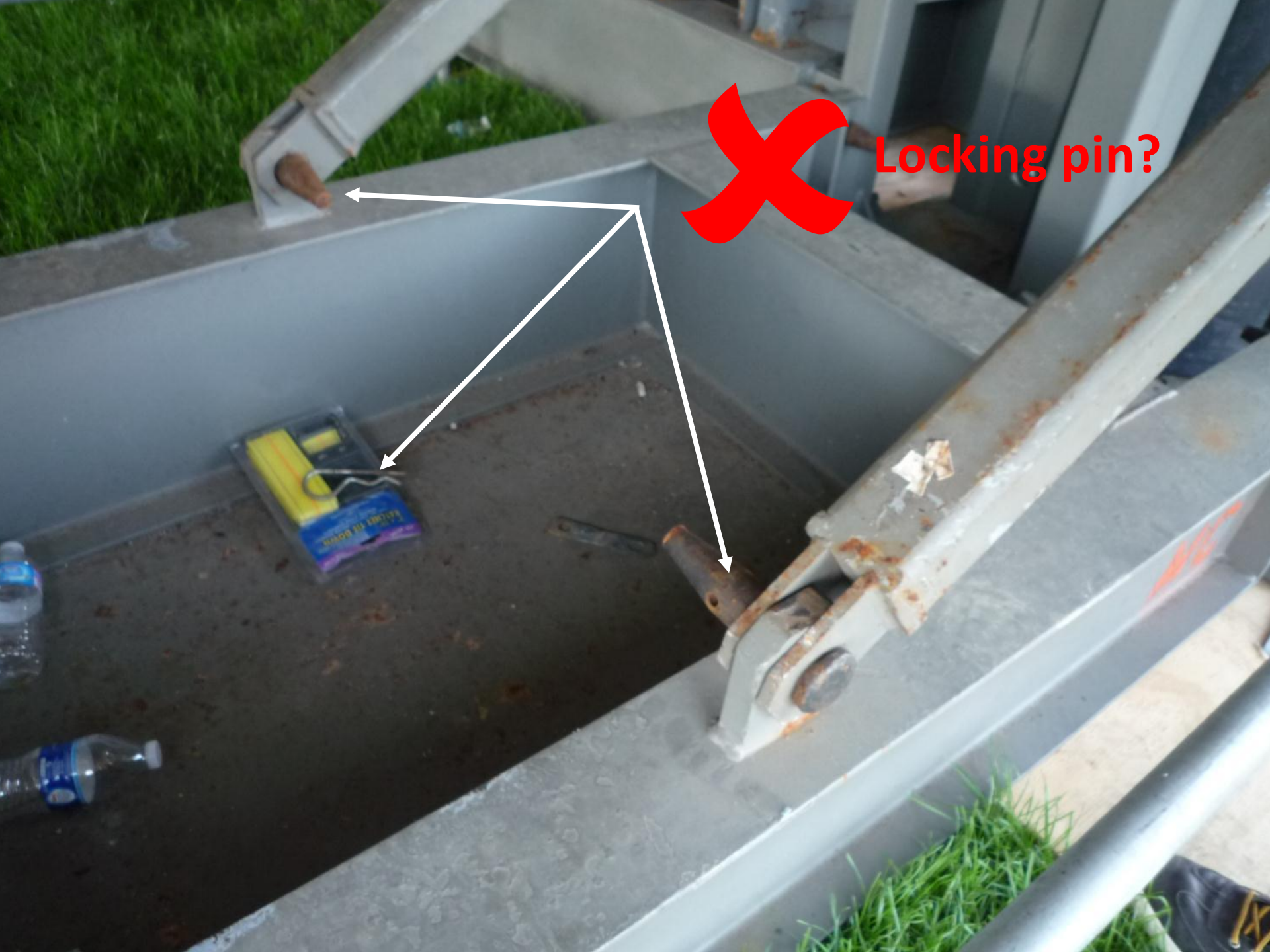
5-Year Loss History (USA)

Ranking	Claim Frequency	Cost
1	Vehicle	Vehicle
2	Hit/Struck by	Collapse
3	Slip/fall	Flood
4	Flood	Hit/Struck by
5	Assault	Fall from height
6	Collapse	Slip/fall
7	Fire/Water	Assault
8	Fall from height	Fire/Water









Locking pin?

Severe Weather



Crowd Management







Simple Tools for Crowd Risks

- Thanks to Prof. GK Still. “Introduction to Crowd Science” [ISBN 9781466579644]
- The DIM-ICE meta-model
- Acronym gives the three main tools available and the phases to consider:

DESIGN

- What is the effective capacity
- What is exit capacity
- How will design features enable or defeat safe movement

INFORMATION

- Covers everything from social media and advance website info through to site signs, alarms and announcements
- Hugely important element to get people to behave 'correctly'
- Spectrum of information channels
- Good organiser uses full range
- Targeted in time

MANAGEMENT

- Physical resources to interact with crowd
- Includes manpower, fencing, traffic controls
- Plan should consider type, number and deployment position

Phases

- **Ingress**
- **Circulation**
- **Egress**
- Add to this Assembly and Dispersal

A DIM-ICE Matrix

	DESIGN	INFORMATION	MANAGEMENT
Assemble	Promote public transport	Advance maps to public Info from metre	Meet & Greet staff
Ingress	Multiple search lanes	Different ticket types to gates A – D CCTV & ticket reports	Soft ticket check Full search
Circulate	Ample circulation space	Good signs & illumination	Arena and stage staff report to control room
Egress	Exit in multiple directions	Clear exit signs VMS changed for egress	Pre-deploy for exit Re-arrange barrier
Disperse	Signs to metro & bus park Queue lanes at metro	Clear directional signage Promote walking	Staff briefed Barrier and response team available

DIME-ICE

- Add in another E for **EXPECTATION**
- What will the public want
- What do they expect to see and do
- Will they be inside in 5 minutes or will they queue for hours
- At a fireworks show – what do they expect?



R.A.M.P.

- Like the DIM-ICE model, this makes you examine your event in terms of:
- **Routes** (how do they get in/out)
- **Areas** (what space available for different activities)
- **Movement** (how are people going to move)
- **People** (who will come, what will they do)

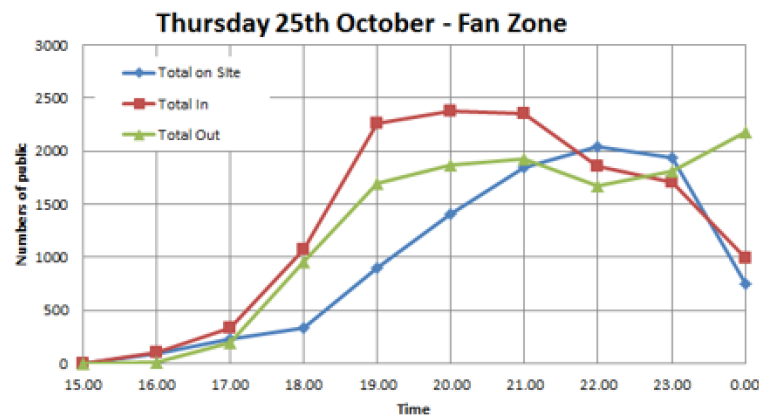
Risk Mapping

- Simple activity of drawing on a map at different times
- Colour it Red/Amber/Green to show your risk levels
- Do this for the phases of the event
- You now have a tool to show *where* the issues may be at *what time*

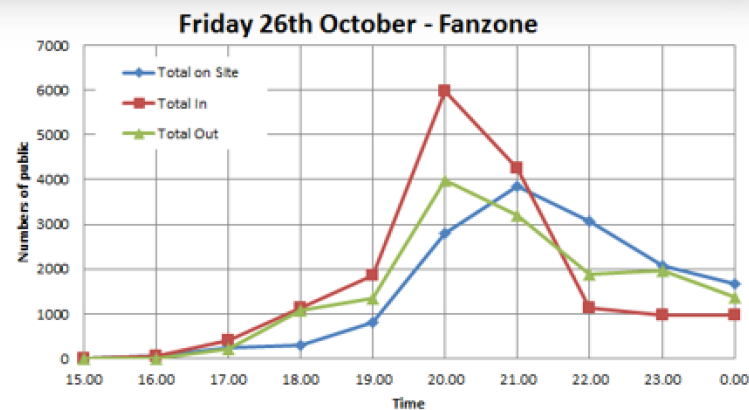
Arrival and Departure Profile

- Maps the **RATE** of arrival/departure
- People behave very differently at various event types:
 - Family event
 - Concert
 - Football
- Allows planning for staff, transport and information

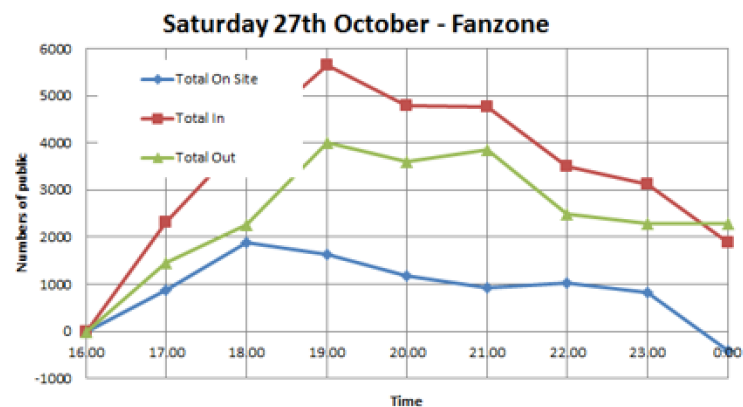
Time	Number In	Number out	Total On Site
15.00	0	0	0
16.00	102	10	92
17.00	332	198	226
18.00	1073	963	336
19.00	2256	1693	899
20.00	2381	1867	1413
21.00	2358	1924	1847
22.00	1860	1669	2038
23.00	1707	1808	1937
0.00	988	2176	749



Time	Number In	Number out	Total On Site
15.00	0	0	0
16.00	61	10	51
17.00	411	209	253
18.00	1122	1080	295
19.00	1866	1348	813
20.00	5985	3998	2800
21.00	4243	3198	3845
22.00	1121	1886	3080
23.00	978	1975	2083
0.00	970	1375	1678



Time	Number In	Number out	Total On Site
16.00	0	0	0
17.00	2325	1451	874
18.00	4140	2260	1880
19.00	5645	4011	1634
20.00	4775	3595	1180
21.00	4759	3843	916
22.00	3498	2481	1017
23.00	3125	2295	830
0.00	1876	2286	-410



Incident Avoidance & Response



Prevention is Best

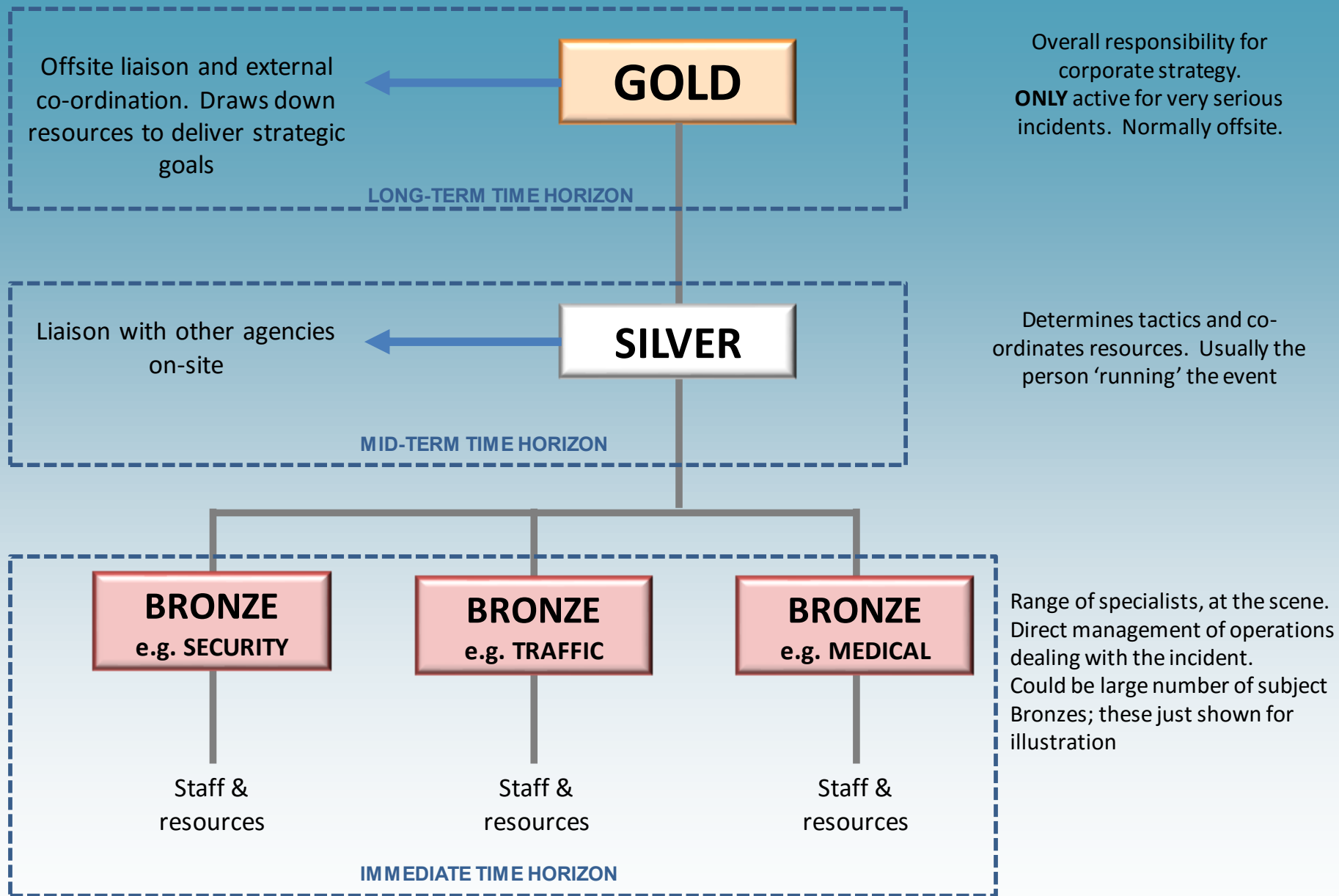
- Read the ESA Event Safety Guide
- Ensure your Risk Assessments are suitable and sufficient
- Check “as built” meets the promises made
- Retain your critical faculty
- For larger shows – engage a specialist

Flexible Incident Response

- Do not seek to plan for every specific risk
- Have a structure that can adapt to **any** incident
- Plan early and practice
- Public communications is a critical tool for:
 - Immediate response to danger
 - Handling the aftermath
 - Medium-term recovery

Command Structure

- Three tiers of Bronze, Silver, Gold
- Bronze is the **operational** person - subject specific and on the ground
- Silver implements **tactical** response and co-ordinates resources
- Gold makes **strategic** decisions and longer-term response



In summary

- Safety is necessary for every event
- Keep things balanced, and proportional
- Good risk management means detail and dirty shoes
- Have someone with authority to say “No”
- 4 C’s (Command, Control, Comms, Co-operation)
- Always be prepared to listen and learn

**Stay Safe
Have Fun
Make Money!**



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