

**A Literature Review of Emergency and Non-Emergency
Events**

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Executive Summary

NFPA 101, Life Safety Code®, contains information that is useful not only in fire related emergencies but also in non-fire emergencies and non-emergency situations. To better clarify the application of NFPA 101 to non-fire emergency and non-emergency situations, multiple applicable scenarios have been identified and summarized in this document. These incidents and documents were gathered to provide background information for the Technical Committees for NFPA 101 (and other documents), for the evaluation of the potential for non-fire-emergencies and non-emergency scenarios which include some form of individual and crowd dynamics.

Acknowledgements

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Note: This document was revised in October 2012. Specifically, the number of casualties that occurred at the Electric Daisy Carnival (incident number 25 on pages 12 and 28) was modified from 19 deaths to no death based on further clarifying information.

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A Literature Review of Emergency and Non-Emergency Events

Minkyu Lee

Background

NFPA 101, *Life Safety Code*[®], is well known for its application and use in protecting people from fire and fire-related emergencies. However, it also contains provisions that make it an essential document for addressing non-fire emergency and non-emergency situations, even though the extent of the document's non-emergency use is unclear. Specifically, the Code addresses "other considerations that, while important in fire conditions, provide an ongoing benefit in other conditions of use, including non-fire emergencies" (NFPA 101, section 1.1.5, 2012 edition).

There is a range of non-fire related scenarios to which the document can be applied in a more obvious and concise manner, such as crowd crush, crowd craze, weather evacuation, "crowd proof" behavior, or unintended action. While not necessarily fire-related, they still involve conditions that could evolve into a life-threatening circumstance. Well-established tools such as the Life Safety Evaluation (LSE) concept contained in NFPA 101 are available to address fire as well as non-fire and non-emergency events and could possibly be applied to non-assembly buildings. Also an additional effort to raise awareness of the LSE, even for assembly occupancies is another goal of the project.

To better clarify the application of NFPA 101 to non-fire emergency and non-emergency situations, a literature review has been undertaken to identify the extent of these types of scenarios by providing a comprehensive list of incidents. The information includes events where a seemingly positive or constructive outcome is desired, but a triggering event along the way causes an unintended dangerous consequence to emerge.

Literature Review Process

Each event was assigned a unique identifying number as it was located. To assess the most current incidents, events are sorted by date. These events are on-going and thus the information summarized herein includes those that occurred prior to 31 May 2012.

To provide further appropriate information about each incident, a number of different articles are summarized and used as sources. To provide as much useful information as possible, a number of factors are considered and compared.

For each event, a summary, date, source of summary, location of incident (or event type), country of incident, initiating event, influencing factor, casualty outcome, and number of fatalities for each incident are listed in the appendix. Initiating event refers to a specific event or action that initiated the incident. Influencing factors refers to the factors that directly influenced or caused casualties. Casualty outcome refers to what the primary casualty outcomes from the incident were (such as asphyxia, falling, or electrocution).

To make this literature review more useful to those interested in locating documents by topic such as influencing factor, location, country, date, or number of fatalities, all are listed under category addressed within Table 3. Because not all locations and influencing factors can be listed, location of incident (or event type) is divided into six categories and influencing factor category is divided into three sections with eight subcategories in total. Specifically, the location of incident is further divided into sporting event, concert (including festivals), club, indoor mall, religious event, school, and other. Influencing factor is divided into occupant behavior, design/operation, and others. Occupant behavior is divided into crowd craze, crowd crush, and violence. Design/Operation is divided into egress (inefficiency) and crowd management (ineffective). Others category is divided into unintended action, and act of God. Table 1 and 2 below give the definition and description of each of these terms and provide examples of each influencing factor and location of event.

Table 1: Location of incident definition and examples

Term	Description	Example
Sporting Event	Any type of incident that occurred in a sports venue	Baseball stadium, Soccer stadium, etc
Concert	Any type of incident that occurred in a concert venue or festival location	Music festival, Band concert, etc
Club	Any type of incident that occurred in a club	Clubs
Mall	Any type of incident that occurred in a mall or store	Mall, Local store, Grocery store, etc
Religious event	Any type of incident that occurred in a ceremony or event related to religion	Religious ritual, Religious pilgrimage, Funeral, etc
School	Any type of incident that occurred in a school	School, Educational institution
Other	Any type of incident that occurred in a place not described in the above categories	Parade, Subway, etc

Table 2: Influencing factor definition and examples

Term	Definition	Source
Crowd Craze	Competitive scramble to attain some intensely desired or valued objective. The	Fruin, "Crowd Dynamics and Auditorium Management," Auditorium News, website: http://www.iaamweb.org/cvms/IAAMCrowdDyn .

	<p>value could be real or perceived.</p> <p>Example: People leaning or rushing forward to catch a ball in a baseball stadium.</p>	doc, cited: May, 1984.
Crowd Crush	<p>The pressure occurring in a high density crowd from both vertical stacking and horizontal stacking.</p> <p>Example: People gathering in one place getting compressive asphyxiation due to the high density of the crowd.</p>	Author defined
Violence	<p>Behavior involving physical force intended to hurt, damage, or kill someone.</p> <p>Example: A riot in a soccer stadium.</p>	Oxford Dictionary
Egress (Inefficiency)	<p>A means of egress is a continuous and unobstructed way of exit travel from any point in a building or structure to a public way and consists of three separate and distinct parts: (a) the exit access, (b) the exit, and (c) the exit discharge.</p> <p>Example: People trying to flee the scene, but exit is closed.</p>	NFPA 101, <i>Life Safety Code</i> ®
Crowd Management (Ineffective)	<p>Crowd Management is the systematic planning for and the supervision of the orderly movement and assembly of people. Crowd Management involves the assessment of time, space, energy and information related to the physical confines, human behavioral characteristic of the occupants, and the quantity and skill of personnel assigned, along with the implementation of the plan.</p>	<p>IAVM official definition (pending), “Glossary of Industry Terms,” website: https://www.iavm.org/shop/List.asp?CatID=2</p>

	<p>Note: Use of “Crowd management (inefficiency)” assumes that crowd management existed in the first place, and they failed to act or take appropriate action.</p> <p>Example: Closing down an exit or entrance during a disaster.</p>	
Unintended Action	<p>Unintended: Not planned or meant</p> <p>Incident: A thing done; an act</p> <p>Example: A person falling down the stairs</p>	Oxford Dictionary
Act of God	<p>An act of God is a natural catastrophe which no one can prevent such as an earthquake, a tidal wave, a volcanic eruption, a hurricane or a tornado. An act of God is generally considered an act attributable to nature without human interference. The state of the atmosphere at a place and time as regards heat, dryness, sunshine, wind, rain, etc.</p> <p>Example: Thunderstorm or any type of natural weather-related disaster</p>	http://definitions.uslegal.com/a/act-of-God

Documents and news articles related to the topic or described in the incidents are also listed in this document for readers who would like to seek different perspectives or look further into any event. These documents do not necessarily describe all incidents and are not rated by their importance or separated by subject. They are listed with the name of article, the source, a brief description of the article, and the date of publishing. Success stories that prevented casualties are also included in the paper. They are incident number 4, 8, and 18.

Summary and Observation

This report provides categorized data about incidents related to non-fire associated life threatening situations that the codes govern to some degree. Gathering the majority of important or high profile incidents related to the topic was attempted, and it is acknowledged that the interpretation of some data involves a subjective element. Due to the limitation of gathering incidents only through major news sources and incident reports, some information was gathered through non-American local news sources or other sources from outside the United States.

Other incidents or documents can also provide useful general information related to these issues. For example, one article described the way that installing a screen door in a subway station dramatically decreases the amount of incidents due to crowded subways. This was not listed because it was not significantly related to crowd crush or other topics covered by this document. Decisions regarding which incidents to list were necessarily made from a somewhat subjective perspective, so incidents that others may be aware of and that are not listed here also serve as useful sources.

From the review process, it was observed that crowd crush incidents are divided into four different categories. These are positive seeking, negative avoiding, violent seeking, and unknown. Seeking behavior refers to attempt or desire to obtain a certain thing. Avoiding behavior refers to keeping away from a certain thing. The categories are:

- **Positive seeking crowd crush** occurs when people are trying to achieve a specific positive goal. Positive seeking crowd crush is observed when crowd crush coincides with crowd craze.
- **Negative avoiding crowd crush** occurs when people are trying to avoid or escape from a negative result or event. Almost all crowd crush incidents without crowd craze were observed to be negative avoiding crowd crush. Exceptions were observed from only two incidents which triggers for the crowd crush were unknown.
- **Violent seeking crowd crush** occurs when people are trying to pick a fight. Violence seeking crowd crush is observed when crowd crush occurs in conjunction with violence. Violence seeking crowd crush usually occurs along with negative avoiding behaviors.
- **Unknown crowd crush** is when the triggers for crowd crush were unidentifiable. Unknown crowd crush occurred in only two incidents, the “Pope Funeral Crowd Crush” (incident reference 2) and “Yucui Middle School Crowd Crush in China” (incident reference 27).

Overall, this literature review is designed to provide information on a variety of incidents and documents that provide background information for the Technical Committees for NFPA 101 (and other documents), for the evaluation of the potential for non-fire-emergencies and non-emergency scenarios which include some form of individual and crowd dynamics.

Literature Review Tables

Table 3: Criteria for Document Ranking

#	Name	Date (MM/DD/YY)	Country (State, City)	Location or Event Type							Influencing factor							Casualties Very Large (VL) > 100, 100 > Large(L) > 50, 50 > Medium (M) > 10, 10 > Small(S) > 0, None (N), Not Specified (NS)	
											Occupant Behavior			Design/Operation		Others			
				Sporting Event	Concert	Club	Mall	Religious Event	School	Other	Crowd Craze	Crowd Crush	Violence	Egress (Inefficiency)	Crowd Management (Ineffective)	Unintended action	Act of God	Deaths	Injuries
1	Hajj Religious Ceremony Crowd Crush	Yearly	Saudi Arabia					●				●	●					VL (200+)	NS
2	Pope Funeral Crowd Crush	03/19/2012	Egypt					●					●					S (3)	L (50+)
3	Philippine Mall Earthquake Crowd Crush	03/16/2012	Philippine				●						●			●		N	M (45)
4	Officers Shuts Mall Over Shoe Showdown	02/24/2012	United States Florida				●					●						N	N
5	Football Rivalry Event Riot in Egypt	02/02/2012	Egypt	●									●	●				L (74)	VL (900+)
6	University of Johannesburg Crowd Crush	01/10/2012	South Africa						●			●	●					S (1)	M (17)
7	Atif Aslam's Concert Crowd Crush in Lahore Pakistan	1/09/2012	Pakistan Lahore		●							●	●		●			S (3)	NS
8	Air Jordan Crowd Gather	12/23/2011	United States Virginia				●					●						N	N

#	Name	Date (MM/DD/YY)	Country (State, City)	Location or Event Type							Influencing factor							Casualties Very Large (VL) > 100, 100 > Large (L) > 50, 50 > Medium (M) > 10, 10 > Small (S) > 0, None (N), Not Specified (NS)	
											Occupant Behavior			Design/Operation		Others			
				Sporting Event	Concert	Club	Mall	Religious Event	School	Other	Crowd Craze	Crowd Crush	Violence	Egress (Inefficiency)	Crowd Management (Ineffective)	Unintended action	Act of God	Deaths	Injuries
9	Indonesia Football Game Crowd Crush	11/21/2011	Indonesia Jakarta	●								●	●					S (2)	S (8)
10	India Ganges River Crowd Crush	11/08/2011	India					●				●	●					M (16)	L (50)
11	Concert Fence Tragedy in Korea	10/1/2011	South Korea							●						●		S (1)	N
12	Pukkelpop Stage Collapse by Storm	08/18/2011	Belgium		●												●	S (5)	L (50)
13	Indiana State Fair Stage Collapse	08/13/2011	United States Indiana							●				●		●		S (7)	M (40)
14	FESPAM Music Festival Crowd Crush	07/10/2011	Congo		●							●	●					S (7)	M (30)
15	Mr. Stone falls while catching a ball	07/07/2011	United States Texas	●								●				●		S (1)	N
16	Bamako Crowd Crush in Prophet Birthday	02/22/2011	Mali Bamako					●				●	●					M (36)	NS
17	Harcourt Nigerian President Rally Crowd Crush	2/12/2011	Nigeria							●		●	●		●			M (11)	M (29)
18	Korean Famous Band Stopped Concert	1/27/2011	South Korea		●							●						N	N
19	Crowd Crush in a Night Club in Budapest	1/16/2011	Hungary			●							●					S (3)	NS

#	Name	Date (MM/DD/YY)	Country (State, City)	Location or Event Type							Influencing factor							Casualties Very Large (VL) > 100, Large(L) > 50, 50 > Medium (M) > 10, 10 > Small(S) > 0, None (N), Not Specified (NS)	
											Occupant Behavior			Design/Operation		Others			
				Sporting Event	Concert	Club	Mall	Religious Event	School	Other	Crowd Craze	Crowd Crush	Violence	Egress (Inefficiency)	Crowd Management (Ineffective)	Unintended action	Act of God	Deaths	Injuries
20	Saharimala Crowd Crush	1/14/2011	India					●		●						●		VL (100+)	S (14)
21	Xinjiang School Crowd Crush	11/29/2010	China						●			●						N	M (41)
22	Water Festival Crowd Crush	11/22/2010	Cambodia		●							●	●					VL (300+)	VL (300+)
23	Crowd Crush in Football Game in Kenya	10/23/2010	Kenya	●								●	●					S (7)	NS
24	Love Parade Crowd Crush	07/24/2010	German							●		●	●					M (19)	VL (100+)
25	Electric Daisy Carnival Rush	06/14/2010	United States Los Angeles							●		●	●					N	VL (226)
26	North Korea versus Nigeria World cup Crowd Crush	06/06/2010	North Korea	●								●	●					N	M (15)
27	Yucaji Middle School Crowd Crush in China	12/08/2009	China						●				●					S (8)	M (13)
28	Alberta Stage Collapse	08/02/2009	Canada		●												●	S (1)	M (15)
29	Mawazine Concert Crowd Crush	05/24/2009	Morocco		●							●	●					M (11)	M (30)

#	Name	Date (MM/DD/YY)	Country (State, City)	Location or Event Type							Influencing factor							Casualties Very Large (VL) > 100, 100 > Large(L) > 50, 50 > Medium (M) > 10, 10 > Small(S) > 0, None (N), Not Specified (NS)	
											Occupant Behavior			Design/Operation		Others			
				Sporting Event	Concert	Club	Mall	Religious Event	School	Other	Crowd Craze	Crowd Crush	Violence	Egress (Inefficiency)	Crowd Management (Ineffective)	Unintended action	Act of God	Deaths	Injuries
30	Free Korean Pop Concert Crowd Crush	02/11/2009	South Korea		●							●	●					M (11)	L (72)
31	Wal-mart worker died from Crowd Crush	11/28/2008	United States New York				●					●	●					S (1)	N
32	Mexico City Nightclub Crowd Crush	06/20/2008	Mexico			●							●					M (12)	NS
33	Indonesia Punk Rock Concert Crowd Crush	02/09/2008	Indonesia		●							●	●					M (43)	NS
34	Liberia Overcrowded Stadium Crowd Crush	06/01/2008	Liberia	●								●	●					N	S (8)
35	China Cooking Oil Crowd Crush	11/09/2007	China				●					●	●					S (3)	M (30)
36	PhilSports Stadium Crowd Crush	02/04/2006	Philippines	●								●	●					L (73)	VL (300+)
37	Food Relief Crowd Crush	12/18/2005	India								●	●	●					M (45)	M (30)
38	Bridge Crowd Crush in Baghdad	08/31/2005	Baghdad								●	●	●					VL (1000+)	NS
39	School Music Festival Crowd Crush in Korea	06/04/2004	South Korea		●				●			●	●					N	M (13)

#	Name	Date (MM/DD/YY)	Country (State, City)	Location or Event Type							Influencing factor								Casualties Very Large (VL) > 100, 100 > Large(L) > 50, 50 > Medium (M) > 10, 10 > Small(S) > 0, None (N), Not Specified (NS)	
											Occupant Behavior			Design/Operation			Others			
				Sporting Event	Concert	Club	Mall	Religious Event	School	Other	Crowd Craze	Crowd Crush	Violence	Egress (Inefficiency)	Crowd Management (Ineffective)	Unintended action	Act of God	Deaths	Injuries	
40	The Station Nightclub Fire	02/20/2003	United States Rhode Island			●							●	●				VL (100)	VL (230+)	
41	E2 Nightclub Fire	02/17/2003	United States Chicago			●							●	●				M (21)	L (57)	
42	Akashi Pedestrian Bridge Crowd Crush	07/21/2001	Japan							●	●	●						M (11)	VL (247)	
43	Ghana Soccer Crowd Crush	04/29/2001	Ghana	●									●	●				VL (120)	NS	
44	Congo Soccer Riot and Crowd Crush	04/29/2001	Congo	●									●	●				S (7)	L (51)	
45	Johannesburg Soccer Crowd Crush in South Africa	04/11/2001	South Africa Johannesburg	●							●	●			●			M (43)	NS	
46	Boy Band Mall Visit Crowd Crush	03/18/2001	Indonesia				●			●	●							S (4)	NS	
47	Zimbabwe World Cup Qualifier Crowd Crush	07/09/2000	Zimbabwe	●											●			M (13)	NS	
48	Roskilde Festival Crowd Crush	06/03/2000	Denmark		●						●	●						S (8)	M (26)	
49	Liberia versus Chad Soccer Crowd Crush	04/23/2000	Liberia	●							●	●						S (3)	NS	

#	Name	Date (MM/DD/YY)	Country (State, City)	Location or Event Type							Influencing factor							Casualties Very Large (VL) > 100, 100 > Large (L) > 50, 50 > Medium (M) > 10, 10 > Small (S) > 0, None (N), Not Specified (NS)	
											Occupant Behavior			Design/Operation		Others			
				Sporting Event	Concert	Club	Mall	Religious Event	School	Other	Crowd Craze	Crowd Crush	Violence	Egress (Inefficiency)	Crowd Management (Ineffective)	Unintended action	Act of God	Deaths	Injuries
50	Subway Crowd Crush in Belarus	05/30/1999	Belarus								●	●	●				●	L (54)	VL (100+)
51	Guatemala Soccer Game Crowd Crush	10/16/1996	Guatemala	●								●	●			●		L (79)	M (25)
52	Zambia World Cup Qualifier Crowd Crush	06/16/1996	Zambia	●								●	●					S (9)	L (78)
53	New Kids on the Block Concert Stamped in Korea	02/18/1992	South Korea		●							●	●					S (1)	M (30)
54	Orkney Soccer Riot in South Africa	02/18/1992	South Africa	●								●	●	●				M (40)	L (50)
55	England Sheffield Crowd Crush	04/15/1989	England Sheffield	●								●	●					L (95)	L (50)
56	Nepal Katmandu Storm Crowd Crush	03/12/1988	Nepal Katmandu	●								●	●	●		●		L (93)	NS
57	Heysel Stadium Disaster	05/29/1985	Belgium Brussels	●								●	●	●				M (39)	VL (100+)
58	Luzhniki Disaster	10/20/1982	Russia	●								●	●	●	●			L (66)	NS
59	The Who Concert Crowd Crush	12/03/1979	United States Ohio Cincinnati		●							●	●					M (11)	NS

#	Name	Date (MM/DD/YY)	Country (State, City)	Location or Event Type							Influencing factor							Casualties Very Large (VL) > 100, 100 > Large (L) > 50, 50 > Medium (M) > 10, 10 > Small (S) > 0, None (N), Not Specified (NS)	
											Occupant Behavior			Design/Operation		Others			
				Sporting Event	Concert	Club	Mall	Religious Event	School	Other	Crowd Craze	Crowd Crush	Violence	Egress (Inefficiency)	Crowd Management (Ineffective)	Unintended action	Act of God	Deaths	Injuries
60	Ibrox Disaster	01/02/1982	Scotland	●								●				●		L (66)	VL (100+)
61	Peru Soccer Riot	05/24/1964	Peru	●								●	●					VL (318)	VL (500+)

Literature Review

1. Hajj Religious Ceremony Crowd Crush, Yearly, Over 200 deaths yearly (87, 90, 94, 97, 04, 06)

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Saudi Arabia	Religious Event	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: Every year, millions of Muslim pilgrims go to Hajj. One of the main events of this time is the Stone Ritual. The Stone Ritual involves throwing stones at the three pillars. In order to throw the rocks at the targets, people jump over crowds and try to get as close as possible to the pillars. These behaviors commonly lead to crowd crush. In 2004, 251 pilgrims were killed from a crowd crush. In 2006, 345 pilgrims were killed.

Primary Source of Summary:

- 1) BBC, “Hundreds killed in Hajj stampede,” British Broadcasting Corporation, website: http://news.bbc.co.uk/2/hi/middle_east/4606002.stm, cited: January 12, 2006

Secondary Source of Summary:

- 1) The New York Times, “Hajj stampede kills 345,” The New York times, website: <http://www.nytimes.com/2006/01/12/world/africa/12iht-saudi.html>, cited: January 12, 2006

Related:

- 1) Johansson et al, “From Crowd Dynamics to Crowd Safety: A Video-Based Analysis,” Advances in Complex Systems, website: <http://arxiv.org/pdf/0810.4590v1.pdf>, cited: October, 2008

2. Pope Funeral Crowd Crush, 03/19/2012, 3 deaths and 50+ injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Egypt	Religious Event	Not specified	Crowd Crush	Asphyxiation and/or Trampled

Summary: At the funeral of Coptic Pope Shenouda in Egypt, more than 10,000 people gathered for the prayer. Everyone was seated on their chairs during the prayer, but a large crowd movement started suddenly and killed 3 people.

Source of Summary:

- 1) Tovrov, “Egypt: Three Dead After Vigil For Coptic Christian Pope,” International Business Time, website: <http://www.ibtimes.com/articles/316171/20120319/coptic-christians-egypt-pope-shenouda-iii.htm>, cited: March 19, 2012

3. Philippine Mall Earthquake Crowd Crush, 03/16/2012, 45 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Philippine	Mall	Earthquake	Crowd Crush, Act of God	Asphyxiation and/or Trampled

Summary: At the mall in Surigao City, Philippine, approximately 3000 people were inside shopping. Suddenly, an earthquake with a magnitude of 5.9 hit the mall. The people inside the mall rushed toward the exits. In this process, a crowd crush occurred that injured 45 people.

Source of Summary:

- 1) AFP News “Panic Leaves 45 Injured in Philippine quake,” Yahoo News Philippines, website: <http://ph.news.yahoo.com/panic-leaves-45-injured-philippine-quake-005540011.html>, cited: March 17, 2012

4. Officers Close Mall Over Shoe Showdown, 02/24/2012, Crowd Disbands (No Casualties)

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
United States Florida	Mall (Sales)	Not specified	Crowd Craze	None

Summary: Crowds were gathered around a mall in Florida near midnight for a new shoe release. Because too many people were gathered at the mall, police officers equipped with riot gear went over to the mall and announced the cancellation of the shoe release. After this incident, shoe release events at other malls were also canceled due to safety concerns.

Source of Summary:

- 1) WESH “Officers Surround Mall Over Shoe Showdown,” WESH, website: <http://www.wesh.com/r/30531042/detail.html>, cited: February 23, 2012

5. Football Rivalry Event Riot in Egypt, 02/02/2012, 79 deaths and 900+ injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Egypt Cairo	Sporting Event	Not specified	Crowd Crush, Violence	Asphyxiation and/or Trampled, Violence

Summary: After a football game in Egypt, a fight erupted as fans from the rival teams rushed toward each other with weapons such as chairs, rocks, and knives. Seventy-nine people died and more than 900 people were injured from violence and asphyxiation as the crowd tried to escape the violence.

Primary Source of Summary:

- 1) Fahmy and Lee, “Anger flares in Egypt after 79 die in riot,” Cable News Network, website: http://articles.cnn.com/2012-02-02/africa/world_africa_egypt-soccer-deaths_1_soccer-violence-suez-canal-soccer-riot?s=PM:AFRICA, cited: February 02, 2012

Secondary Source of Summary:

- 1) Michael and Batrawy, “Egypt Soccer Riot: Death toll Climbs as Police Set Off Tear Gas,” Huffington Post, website: http://www.huffingtonpost.com/2012/02/03/egypt-soccer-riot-death-toll_1252074.html, cited: February 03, 2012

Related:

- 1) Fahim and Sheikh, “75 Charged in Deaths at Soccer Riot in Egypt,” The New York Times, website: <http://www.nytimes.com/2012/03/16/world/middleeast/75-charged-in-deaths-at-soccer-riot-in-egypt.html>, cited: March 16, 2012

6. University of Johannesburg Crowd Crush, 01/10/2012, 1 death and 17 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
South Africa	School	A woman jumped over a fence	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled, Fall

Summary: In South Africa, people gathered to enroll in the University of Johannesburg. Members of the crowd were hoping to secure slots in the university for their friends and relatives. Instead of waiting for the long line to shorten, one woman jumped over the fence using a police van. As a result, other people started rushing toward the gate and jumping over the fence. This resulted in several injuries and a crowd crush that killed one person.

Primary Source of Summary:

- 1) Eastwood, “South Africa: One dead in stampede for university places,” Cable News Network, website: <http://edition.cnn.com/2012/01/10/world/africa/south-africa-stampede/index.html>, cited: January 10, 2012

Secondary Source of Summary:

- 1) BBC, “Johannesburg university stampede kills one,” British Broadcasting Corporation, website: <http://www.bbc.co.uk/news/world-africa-16482147>, cited: January 10, 2012

7. Atif Aslam’s Concert Crowd Crush in Lahore Pakistan, 1/09/2012, 3 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Pakistan Lahore	Concert	Security forces pushed back the crowd	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: At a concert in Pakistan many people were enjoying a show put on by one of Pakistan’s most famous pop singers, Atif Aslam. After the concert, part of the crowd tried to get an autograph from the singer. However, security forces pushed them back. In this process, people pushed back and a crowd crush occurred. This resulted in the deaths of 3 people.

Source of Summary:

- 1) Press Trust of India, “Three killed in stampede at Atif Aslam’s Concert in Lahore,” NDTV, website: <http://www.ndtv.com/article/world/three-killed-in-stampede-at-atif-aslam-s-concert-in-lahore-165279>, cited: January 10, 2012

8. Air Jordan Crowd Gather, 12/23/2011, No Casualties

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
United States Virginia	Mall (Sales)	None	Crowd Craze	None

Summary: In Loudoun County, more than 250 people gathered in a parking lot at the Dulles Town Center Mall for the release of the new Air Jordan shoes. An authority issued tickets and was able to control the crowd. At Annapolis Mall, more than 400 people gathered for the Air Jordan release. Police were present, and security asked the customers to remain in their cars until the mall opened. Many of them refused; however, it was possible to maintain control of the crowd with the police being in sight.

Source of Summary:

- 1) M.N, “Air Jordans attract crowds, police at area malls,” The Washington Post, website: http://www.washingtonpost.com/blogs/crime-scene/post/air-jordans-attract-crowds-police-at-annapolis-mall/2011/12/23/gIQAliGnDP_blog.html, cited: December 23, 2011

9. Indonesia Football Game Crowd Crush, 11/21/2011, 2 deaths and 8 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Indonesia Jakarta	Sporting Event (Football)	Second half of the game was started	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: In Jakarta, Indonesia, the final football match of Southeast Asian Games was held. When the second half started, a crowd of fans tried to get into the stadium. This resulted in a crowd crush that killed two football fans.

Source of Summary:

- 1) Quiano, “2 killed in football stampede in Indonesia,” Cable News Network, website: <http://www.cnn.com/2011/11/22/world/asia/indonesia-football-stampede/index.html?iref=allsearch>, cited: November 22, 2011

10. India Ganges River Crowd Crush, 11/08/2011, 16 deaths and 50 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
India	Religious Event	Someone in the crowd tripped and fell	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: A crowd crush occurred during a religious ceremony at the Ganges River in India that killed 16 people. The exact causes of crowd crush are unknown, but it appears that when someone in the crowd tripped or fell, others kept pushing forward from behind, likely crushing the person to death.

Source of Summary:

- 1) Fox News, “Official: 16 Hindus die in Stampede in India,” Fox News, website: <http://www.foxnews.com/world/2011/11/08/official-6-hindus-die-in-stampede-in-india/>, cited: November 08, 2011

11. Concert Fence Tragedy in Korea, 10/01/2011, 1 death

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
South Korea	Other	None	Unintended Action	Fall

Summary: In Seongnam, Korea, a company installed a one meter fence at a subway entrance because of a concert. The subway entrance was not very close to the concert venue, and the fence was installed without any notification. One of the civilians, who routinely used the subway entrance to cross the street, tried to go over the fence and fell

to his death. The reason the civilians did not want to follow the detour was because it took more time to get to their destinations.

Source of Summary:

- 1) Seong, “‘조용필 콘서트’ 때문에 ... 80 대 시민 억울한 죽음,” Korea Joongang Daily, website: http://article.joinsmsn.com/news/article/article.asp?total_id=6766511&ctg=1200, cited: November 28, 2011

12. Pukkelpop stage collapse by storm, 08/18/2011, 5 deaths and 50 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Belgium	Concert (Festival)	Stage Collapse	Act of God (Storm)	Fall, Crushed, Asphyxiation

Summary: In the middle of the Belgium Music Festival, a storm struck the stage, causing it to collapse. The incident resulted in 5 death and more than 50 injuries.

Source of Summary:

- 1) CNN, “Belgium music festival canceled after stage collapse kills 5,” Cable News Network, website: http://articles.cnn.com/2011-08-19/world/belgium.storms_1_festival-organizer-festival-website-stage-collapse?_s=PM:WORLD, cited: August 19, 2011

13. Indiana State Fair Stage Collapse, 08/13/2011, 7 deaths and 40 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
United States Indiana	Other (Fair)	Stage Collapse	Crowd Management (Ineffective) Act of God (Storm)	Fall, Crushed, Asphyxiation

Summary: In the middle of the Indiana State Fair, a storm and sudden strong wind blew through and toppled scaffolding, which resulted in a stage collapsing. The primary source of people’s injuries was not specified, but the event resulted in the deaths of 7 people with more than 40 others injured.

Source of Summary:

- 1) CNN, “Sugarland Says Indiana stage collapse was an accident,” Cable News Network, website: <http://articles.cnn.com/2012-02->

[21/entertainment/showbiz_indiana-stage-collapse_1_country-duo-sugarland-stage-collapse-documents?_s=PM:SHOWBIZ](http://www.thorntontomasetti.com/news/spotlight/199), cited: February 21, 2012

Related:

- 1) Thornton Tomasetti, “Indiana State Fair Commission Investigation Report,” Thornton Tomasetti, website: <http://www.thorntontomasetti.com/news/spotlight/199>, cited: April 12, 2012

14. FESPAM Music Festival Crowd Crush, 07/10/2011, 7 deaths and 30 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Congo	Concert (Festival)	Artist entered the venue	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: At the FESPAM music festival in Congo, a crowd crush occurred when security failed to control the crowd when artists entered the venue. This resulted in 7 deaths and 30 injuries. The festival was also canceled due to this incident.

Source of Summary:

- 1) ABC News, “Music Festival Stampede Kills 7,” American Broadcasting Corporation, website: <http://www.abc.net.au/news/2011-07-11/music-festival-stampede-kills-7/2789652>, cited: July 11, 2011

15. Mr. Stone falls while catching a ball, 07/07/2011, 1 death

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
United States Texas	Sporting Event (Baseball)	Ball was tossed to the crowd	Crowd Craze, Unintended action	Fall

Summary: At a Texas Rangers baseball game, Mr. Stone, a man in the stands, leaned over the rail from his seat to catch a ball tossed at him by a star baseball player. After he caught the ball, he lost his balance and fell over the rail. This incident resulted in Mr. Stone’s death.

Primary Source of Summary:

- 1) Stephan Hawkins, “Rangers Fan Dies After Falling Out Of Stands During Game,” Hunffington Post, website: http://www.huffingtonpost.com/2011/07/07/rangers-fan-dies_n_892943.html, cited: July 8, 2011

Secondary Source of Summary:

- 1) BBC, “Texas Rangers baseball fan dies in plunge from seat,” British Broadcasting Corporation, website: <http://www.bbc.co.uk/news/world-us-canada-14084162>, cited: July 8, 2011

16. Bamako Crowd Crush in Prophet Birthday, 02/22/2011, 36 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Mali	Religious Event	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: In Mali, Bamako, a crowd crush occurred during the birthday ceremony for the Prophet Muhammad. Many Muslims wanted to get blessed and kept moving forward, which caused a crowd crush. From the incident, 36 people died.

Source of Summary:

- 1) BBC, “Mali stampede in Bamako 'kills dozens',” British Broadcasting Corporation, website: <http://www.bbc.co.uk/news/world-africa-12532724>, cited: February 22, 2011

17. Harcourt Nigerian President Rally Crowd Crush, 02/12/2011, 11 deaths and 29 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Nigeria	Other (Politics)	Police fired a gun	Crowd Craze, Crowd Crush, Crowd Management (Ineffective)	Asphyxiation and/or Trampled

Summary: In Port Harcourt, Nigeria, a crowd was gathered to cheer for President Jonathan. Some politicians tossed mock cash into the air and part of the crowd scrambled to retrieve it. Police fired a gun to control the crowd; however, the gunshot led to a crowd crush. From this incident, 11 people died and 29 people were injured.

Source of Summary:

- 1) Nigerian Tribune, “The Port Harcourt Stampede,” Nigerian Tribune, website: <http://www.tribune.com.ng/index.php/editorial/17930-the-port-harcourt-stampede>, cited: February 23, 2011

18. Korean Band Stopped Concert, 01/27/2011, No Casualties

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
South Korea	Concert	None	Crowd Craze	None

Summary: In Korea, a large number of people tried to enter the concert of the band 'Beast'. As security decided that this could result in a crowd crush, the concert was delayed for 90 minutes to calm crowds.

Source of Summary:

- 1) Park, “비스트 콘서트 90 분간 중단 “한꺼번에 몰린 팬들... 압사 사고 위험 방지”, IBTEN, website: <http://kr.ibtimes.com/article/news/20110127/6402767.htm>, cited: January 27, 2011

19. Crowd Crush in a night club in Budapest, 1/16/2011, 3 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Hungary	Club	Someone shouted “Knifing”	Crowd Crush	Asphyxiation and/or Trampled

Summary: In a nightclub in Hungary’s capital, people were enjoying the music and dancing when, suddenly, the music stopped and someone shouted, “Knifing.” A crowd crush occurred from people rushing toward the exit. However, there was no evidence of a stabbing. Three people died from the incident.

Source of Summary:

- 1) CNN, “Report: 3 killed in stampede at night club in Hungary,” Cable News Network, website: http://articles.cnn.com/2011-01-17/world/hungary.stampede_1_mti-night-club-stampede?s=PM:WORLD, cited: January 17, 2011

20. Sabarimala Crowd Crush, 1/14/2011, 104 deaths and 40 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
India	Religious Event, Other	Vehicle Overturned	Crowd Crush, Unintended action	Asphyxiation and/or Trampled, Crushed

Summary: Crowds, including pilgrims from Sabarimala, were waiting for a bus when a jeep suddenly crashed into the crowds and caused a crowd crush. As a result, 104 people were killed, and over 40 people were injured.

Source of Summary:

- 1) PTI, “104 killed in Sabarimala stampede 50 injured,” The Times of India, website: http://articles.timesofindia.indiatimes.com/2011-01-15/india/28352194_1_sabarimala-stampede-pulmedu-vandiperiyar , cited: January 15, 2011

Related:

- 1) TNN, “Sabarimala stampede report says warnings ignored,” The Times of India, website: http://articles.timesofindia.indiatimes.com/2011-01-20/india/28354304_1_sabarimala-stampede-pulmedu-sabarimala-tragedy, cited: January 20, 2011

21. Xinjiang School Crowd Crush, 1/14/2011, 41 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
China	School	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled, Fall

Summary: In a primary school in China, students rushed toward the playground outside to enjoy noontime break. This crowd crush injured 41 students.

Source of Summary:

- 1) China Daily, “41 students injured in Xinjiang school stampede,” People’s Daily Online, website: <http://english.people.com.cn/90001/90776/90882/7215126.html>, cited: November 30, 2010

22. Water Festival Crowd Crush, 11/22/2010, 339 deaths and 329 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Cambodia	Concert (Festival)	Police fired water canon	Crowd Craze, Crowd Crush, Egress (Inefficiency), Crowd Management (Ineffective),	Asphyxiation and/or Trampled, Fall, Drowned, Electrocutted

Summary: During an annual water festival in Cambodia, in which about 4 million people participated, part of the crowd was caught on the middle of a bridge for several hours. To control the crowd and move the people forward, police fired water cannon, which caused panic and a crowd crush. The victims had no choice but to be crushed by the crowd or pushed from the bridge. From the incident, 339 people died.

Source of Summary:

- 1) CNN, “Cambodian minister: 339 dead in stampede,” Cable News Network, website: <http://news.blogs.cnn.com/2010/11/22/more-than-100-killed-in-cambodia-festival-stampede/>, cited: November 22, 2010

Related:

- 2) Mydans, “Stampede in Cambodia Leaves Hundreds Dead,” The New York Times, website: http://www.nytimes.com/2010/11/23/world/asia/23cambodia.html?_r=2, cited: November 22, 2010

23. Crowd Crush in Football Game in Kenya, 10/23/2010, 7 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Kenya	Sporting Event (Soccer)	Not specified	Crowd Craze, Crowd Crush,	Asphyxiation and/or Trampled

Summary: At a Kenya football stadium, people gathered around to watch Kenya’s most popular football team. The stadium was not full, but because the fans were forcing their way into the stadium, the gate was broken. Access was limited, the crowd got agitated, and forced its way in. This resulted in a crowd crush that killed 7 people.

Source of Summary:

- 1) Associated Press, “Kenya Red Cross: 7 die from stampede,” ESPN, website: http://espn.go.com/sports/soccer/news/_/id/5718429/stampede-kenya-soccer-match-leaves-7-dead, cited: October 23, 2010

24. Love Parade Crowd Crush, 07/24/2010, 19 deaths and 100+ injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Germany	Other (Parade)	Not specified	Crowd Craze, Crowd Crush,	Asphyxiation and/or Trampled

Summary: More than one million people attended the Love Parade festival in Germany. Because the parade was overcrowded, the police stopped letting people in. However, crowds kept entered from different places and built up pressure among the crowds. This resulted in a crowd crush that killed 19 people.

Source of Summary:

- 1) BBC, “Stampede at German Love Parade festival kills 19,” British Broadcasting Corporation, website: <http://www.bbc.co.uk/news/world-europe-10751899>, cited: July 25, 2010

Related:

- 1) Jolievdk, “Love Parade Duisburg, July 24, Multi-perspective-Video,” YouTube, website: <http://www.youtube.com/watch?v=up95bUU3L0M>, cited: July 14, 2011

25. Electric Daisy Carnival Rush, 06/14/2010, 226 Injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
United States Los Angeles	Others (Carnival)	A person climbed up the fence	Crowd Craze, Crowd Crush,	Asphyxiation and/or Trampled, Fall

Summary: Around 18,500 people attended the Electric Daisy Carnival in Los Angeles, and people had to wait outside of the carnival for their turn to enter. The entrance became overcrowded because too many people were trying to enter at the same time and some became stuck due to the pressure of the crowd. At one point, one person climbed up the fence because he or she was tired of waiting and did not want to pay the 75 dollars required for entrance. This triggered more and more people to climb up the fence and hop over it. More than 200 people were injured from the crowd pressure and falls.

Source of Summary:

- 1) Associated Press, “Electric Daisy Carnival: More than 100 Hospitalized During LA Festival,” Huffington Post, website: http://www.huffingtonpost.com/2010/06/28/electric-daisy-carnival-m_n_627717.html, cited: June 28, 2010

26. North Korea versus Nigeria World cup Crowd Crush, 06/06/2010, 15 Injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
South Africa Tembisa	Sporting Event (Football)	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: People gathered outside a stadium before a game between Nigeria and North Korea. Tickets were given out for free outside of the stadium. In order to get free tickets, people rushed for the booth and 15 people, including one officer, were seriously injured.

Source of Summary:

- 1) Associated Press, “World Cup fans injured in stampede,” ESPN, website: http://soccer.net.espn.go.com/world-cup/story/_/id/5257202/ce/us/fans-nigeria-north-korea-warm-stampede-gates-game?cc=5901&ver=us, cited: June 7, 2010

27. Yucai Middle School Crowd Crush in China, 12/08/2009, 8 deaths and 13 Injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
China	School	Not specified	Crowd Crush, Egress (Inefficiency)	Asphyxiation and/or Trampled, Fall

Summary: In a middle school in China, 52 classes, which totaled approximately 2,000 to 2,500 children, simultaneously tried to exit down a single, narrow stairwell. It is unknown what triggered the event, but the crowd crush killed eight children.

Source of Summary:

- 1) Moore, “Eight children killed in Chinese school stampede,” The Telegraph, website: <http://www.telegraph.co.uk/news/worldnews/asia/china/6757458/Eight-children-killed-in-Chinese-school-stampede.html>, cited: December 08, 2009

28. Alberta Stage Collapse, 08/02/2009, 1 deaths and 15 Injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Canada	Concert (Festival)	Stage Collapse	Act of God (storm)	Fall, Crushed, Asphyxiation

Summary: In the middle of an outdoor music festival in Canada, a storm struck a stage, causing it to collapse. Before the stage collapsed, people were evacuating due to the act of God. This incident resulted in one death and 15 injuries.

Source of Summary:

- 1) CNN, “1 killed, 15 hurt in Alberta stage collapse,” Cable News Network, website: http://articles.cnn.com/2009-08-02/world/canada.stage.collapse_1_collapse-billy-currington-big-valley-jamboree?_s=PM:WORLD, cited: August 02, 2009

29. Mawazine Concert Crowd Crush, 05/24/2009, 11 deaths and 30 Injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Morocco	Concert	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: At a music concert in Morocco, 70,000 people were enjoying a show put on by one of Morocco’s famous pop singers. Toward the end of the concert, part of the

crowd tried leave in a hurry. In this process, people rushed toward the wall where they could exit easily and crushed 11 people to death from the pressure of the crowd.

Source of Summary:

- 1) AFP, “11 killed in stampede at Mawazine music festival,” news.com.au, website: <http://www.news.com.au/entertainment/music/killed-in-stampede-at-mawazine-music-festival/story-e6frfn09-1225715429376>, cited: May 24, 2009

30. Free Korean Pop Concert Crowd Crush, 02/11/2009, 11 deaths and 72 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
South Korea	Concert	Gates opened	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: In Sangju, Korea, over 20,000 people were waiting to enter a stadium for a concert. When one of the gates opened, people forced the crowd in from behind. This crowd crush killed 11 people.

Source of Summary:

- 1) CBS, “S. Korea Concert Stampede Kills 11,” CBSNEWS, website: <http://www.cbsnews.com/stories/2005/10/03/world/main898280.shtml?tag=currentVideoInfo;videoMetaInfo>, cited: February 11, 2009

31. Wal-Mart worker died from Crowd Crush, 11/28/2008, 1 death

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
United States New York	Mall (Sales)	Door broke down	Crowd Craze, Crowd Crush	Trampled

Summary: At one of Wal-Mart’s 5 a.m. openings for Black Tuesday, which offers many special discounts on items, more than 2,000 people were gathered, and no police officers were in sight. Tension had risen within the crowd, and customers blindly rushed into the building when the time neared for doors to open. They broke down the door, and in the process, they knocked a worker to the ground and trampled him to death.

Primary Source of Summary:

- 1) McFadden, “Wal-Mart Employee Trampled to Death,” The New York Times, website: http://www.nytimes.com/2008/11/29/business/29walmart.html?_r=2&pagewanted=all, website: November 28, 2008

Secondary Source of Summary:

- 1) Fox, "Wal-Mart Worker Dies When Shoppers Break Down Doors," FoxNews.com, website: <http://www.foxnews.com/story/0,2933,458744,00.html>, cited: November 28, 2008

Related:

- 1) AP, "Wal-Mart fights \$7,000 fine in Black Friday death," USATODAY, website: <http://www.usatoday.com/money/industries/retail/2010-07-07-wal-mart-black-fr>, cited: July 8, 2010
- 2) OSHRC, "OCCUPATIONAL SAFETY AND HEALTH REVIEW COMMISSION" OSHRC, website: http://www.oshrc.gov/decisions/alj_pending/09-1013.pdf, cited: April 5, 2011

32. Mexico City Nightclub Crowd Crush, 06/20/2008, 12 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Mexico	Club	Police showed up	Crowd Crush, Crowd Management (Ineffective)	Asphyxiation and/or Trampled

Summary: In a nightclub in Mexico, over 500 youths, which was more than the club's capacity, were in the club to celebrate the end of the school year. However, when police showed up to arrest them for alcohol and drug violations, the people rushed toward exits, causing a crowd crush. This incident killed 12 people.

Source of Summary:

- 1) Associated Press, "12 dead in Mexico City nightclub stampede," USATODAY, website: http://www.usatoday.com/news/world/2008-06-21-mexicostampede_N.htm, cited: June 21, 2008

33. Indonesia Punk Rock Concert Crowd Crush, 02/09/2008, 43 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Indonesia	Concert	Not specified	Crowd Craze, Crowd Crush, Crowd Management (Ineffective)	Asphyxiation and/or Trampled

Summary: In Indonesia, concert tickets of famous punk rock band were oversold. A large number of people pushed from the back in order to enter the venue, resulting in a crowd crush that killed 43 people.

Source of Summary:

- 1) SkyNEWS, “Teens Killed In Punk Concert Crush,” SkyNEWSHD, website: <http://news.sky.com/home/world-news/article/1304818>, cited: February 10, 2008

34. Liberia Overcrowded Stadium Crowd Crush, 06/01/2008, 8 Injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Liberia	Sporting Event (Baseball)	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: During the World Cup qualifier game between Liberia and Gambia, a crowd crush occurred due to overcrowded stadium. This incident resulted in 8 suffocated people.

Source of Summary:

- 1) AP, “Medic remove a soccer fan following a stampede at a World Cup qualifying match between Liberia and Gambia in Monrovia, Liberia,” Sulekha.com, website: http://newshopper.sulekha.com/medics-remove-a-soccer-fan-following-a-stampede-at-a-world-cup-qualifying-match-between-liberia-and-gambia-in-monrovia-liberia_photo_28490.htm, cited: June 01, 2008

35. China Cooking Oil Crowd Crush, 11/09/2007, 3 deaths and 30 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
China	Mall (Sales)	Store opened	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: At a market in China, a crowd gathered to buy discounted cooking oil and waited hours for the store to open. The crowd then burst through the doors, resulting in a crowd crush that caused three deaths and more than 30 injuries.

Source of Summary:

- 1) BBC, “Three die in China sale stampede,” British Broadcasting Corporation, website: <http://news.bbc.co.uk/2/hi/asia-pacific/7088718.stm>, cited: November 10, 2007

36. PhilSports Stadium Crowd Crush, 02/04/2006, 73 deaths and 300+ injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Philippine	Sporting Event (Stadium), Other	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: To participate in the first anniversary episode of a famous TV show in the Philippines, over 30,000 people gathered in a stadium. Attracted by prizes from the show, and desperate to attend the event, crowds blindly rushed into the gate before the door was opened. It is unknown what triggered this event, but it resulted in a crowd crush that killed 73 people.

Source of Summary:

- 1) BBC, “Manila stadium stampede kills 73,” British Broadcasting Corporation, website: <http://news.bbc.co.uk/2/hi/asia-pacific/4680040.stm> , cited: February 04, 2006

Related:

- 1) Quibilan, “SC Dismisses Abs-CBN Plea Against ‘Wowowee’ Stampede Probe,” The Asian Journal Blog, website: <http://asianjournal.wordpress.com/2008/01/29/sc-dismisses-abs-cbn-plea-against-wowowee-stampede-probe/>, cited: January 28, 2008

37. Food Relief Crowd Crush, 12/18/2005, 45 deaths and 30 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
India	Other	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: In Chennai, India, the government prepared food relief for regions experiencing heavy rains. The rumor spread that Sunday was the last day for the distribution of food coupons. This rumor triggered a crowd of people to rush to the school where the coupons were being distributed. In this process, a crowd crush occurred that killed 45 people.

Source of Summary:

- 1) PTI, “Manila 45 killed in Chennai flood relief camp stampede,” The Times of India, website: http://articles.timesofindia.indiatimes.com/2005-12-18/india/27861655_1_stampede-food-coupons-chennai, cited: December 18, 2005

38. Bridge Crowd Crush in Baghdad , 08/31/2005, 1000+ deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Baghdad	Other (Bridge)	Not specified	Crowd Crush, Violence	Asphyxiation and/or Trampled, Fall

Summary: Incident occurred on a bridge over a river in Baghdad when millions of Shias marched to a shrine for a religious festival. As the pilgrims from Baghdad headed toward the shrine, rumors about suicide bombers spread between the pilgrims. Also, prior to the

rumors, mortar rounds were fired into the crowd, killing seven people. As a result, people started to rush toward the bridge, which resulted in a crowd crush. Also, the pressure of the crowd caused the iron railing to fall away, causing hundreds of people to fall into the water. As a result, nearly 1,000 people died.

Primary Source of Summary:

- 1) BCC, “Iraq stampede deaths near 1,000,” British Broadcasting Corporation, website: http://news.bbc.co.uk/2/hi/middle_east/4199618.stm, cited: August 31, 2005

Secondary Source of Summary:

- 2) Worth, “950 Die in Stampede on Baghdad Bridge,” The New York Times, website: <http://www.nytimes.com/2005/09/01/international/middleeast/01iraq.html?pagewanted=all>, cited: September 1, 2005

39. School Music Festival Crowd Crush in Korea, 06/04/2004, 13 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
South Korea	School, Concert	School announced schedule change	Crowd Craze, Crowd Crush, Crowd Management (Ineffective)	Asphyxiation and/or Trampled

Summary: In Korea, a large number of people tried to enter a school music festival in Chung-Ju University at once since the school announced the scheduled 8 pm concert was changed to 7 pm. This resulted in crowd crush injuring 13 people.

Source of Summary:

- 1) Kim, “청주대 개교기념 음악공연장서 13명 부상,” CBINEWS, website: <http://www.cbinews.co.kr/news/articleView.html?idxno=9093#>, cited: June 04, 2004

40. The Station Nightclub Fire, 02/20/2003, 100 deaths and 230 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
United States Rhode Island	Club	Fire ignited	Crowd Crush, Egress (Inefficiency), Crowd Management (Ineffective)	Asphyxiation and/or Trampled, Burn

Summary: In a club on Rhode Island, a fire was ignited by pyrotechnic gerbs on the stage. Initially, club staff members were evacuating people and they felt that the situation was under control. However, this was not the case and fire engulfed the entire nightclub.

People tried to rush to the main door (the primary exit) to escape the fire. Many of the survivors, and one of the officers described how a crowd crush occurred, but there is no evidence to prove a crowd crush. This incident resulted in 100 deaths and 230 people being injured.

Source of Summary:

- 1) CNN, “At least 96 killed in nightclub inferno,” Cable News Network, website: http://articles.cnn.com/2003-02-21/us/deadly.nightclub.fire_1_attorney-general-patrick-lynch-nightclub-stampede-rhode-island-nightclub?s=PM:US, cited January 21, 2003

Related:

- 1) Grosshandler et al., “The Report of the Technical Investigation of The Station Nightclub Fire,” NIST, website: http://www.nist.gov/customcf/get_pdf.cfm?pub_id=1009898, cited: June, 2005

41. E2 Nightclub, 02/17/2003, 21 deaths and 57 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
United States Chicago	Club	A security guard used pepper spray	Crowd Crush, Violence, Egress (Inefficiency) Crowd Management (Ineffective),	Asphyxiation and/or Trampled

Summary: In a nightclub in Chicago, a fight broke out. A security guard used pepper spray in order to break up the fight. However, people started vomiting and were unaware of the source of the smell. According to a witness from the club, many people thought that the club had been hit with poison gas in a terrorist attack. This led to an immediate rush toward the exits. The only obvious exit consisted of narrow doors that opened inward, which was a code violation. This rush, combined with the code violation, resulted in crowd crush leading to the death of 21 people and injury for 57 people.

Source of Summary:

- 1) Grosshandler et al., “Three Report of the Technical Investigation of The Station Nightclub Fire: Appendices,” NIST, website: http://www.nist.gov/customcf/get_pdf.cfm?pub_id=100989, cited: June, 2005

42. Akashi Pedestrian Bridge Crowd Crush, 07/21/2001, 11 deaths and 247 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
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Japan	Other (Enclosed Bridge)	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled
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Summary: In order to attend a firework show in Akashi in Japan, crowds tried to pass through a partially enclosed bridge, which led to the area where the fireworks were going to be set off. Unfortunately, 11 people died and 247 people were injured as a result of being crushed by the crowd.

Source of Summary:

- 1) The Japan Times, "Sentences stand for four in fatal Akashi crush," The Japan Times, website: <http://www.japantimes.co.jp/text/nn20070407a6.html>, cited: April 07, 2007

43. Ghana Soccer Crowd Crush, 04/29/2001, 120 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Ghana	Sporting Event (Stadium)	Police fired tear gas into the crowd	Crowd Crush, Violence, Crowd Management (Ineffective)	Asphyxiation and/or Trampled,

Summary: At a packed soccer match between two of Ghana's leading teams, Accra's Hearts of Oak was leading Assante Kotoko 2-1 with five minutes left in the game when Assante supporters began throwing bottles and chairs onto the field. Police then fired tear gas into the crowd, creating a crowd crush in the stands that killed 120 people.

Source of Summary:

- 1) CNN, "National tragedy," Cable News Network, website: http://sportsillustrated.cnn.com/soccer/news/2001/05/09/ghana_stampede/, cited: May 09, 2001

44. Congo Soccer Riot and Crowd Crush, 04/29/2001, 7 deaths and 51 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Congo	Sporting Event (Stadium)	Police fired tear gas to crowds	Crowd Crush, Violence, Crowd Management (Ineffective)	Asphyxiation and/or Trampled, Violence

Summary: In the middle of a game between two of Congo's top soccer teams, riot broke out when one of the players scored and the opposing team started throwing bottles. Police

fired tear gas to calm crowds. However this resulted in a stampede. Seven people were killed and 51 injured as a result of the riot and crowd crush.

Source of Summary:

- 1) CNN, “Congo stadium riot kills at least seven,” Cable News Network, website: http://sportsillustrated.cnn.com/soccer/news/2001/04/29/congo_deaths_ap/, cited: April 29, 2001

45. Johannesburg Soccer Crowd Crush in South Africa, 04/11/2001, 43 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
South Africa Johannesburg	Sporting Event (Stadium)	Not specified	Crowd Craze, Crowd Crush, Crowd Management (Ineffective)	Asphyxiation and/or Trampled

Summary: In Johannesburg, South Africa, soccer game tickets were oversold. A large number of people rushed for the entry at once, resulting in a crowd crush that killed 43 people.

Source of Summary:

- 1) abcNEWS, “43 Dead in S. Africa Soccer Stampede,” abcNEWS, website: <http://abcnews.go.com/International/story?id=81243&page=1>, cited: May 09, 2001

46. Boy Band Mall Visit Crowd Crush, 03/18/2001, 4 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
England	Mall Other (Celebrity greeting)	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: A1, which is famous boy band in England, scheduled an appearance at a mall record store, broadcast on live television. The crowd of 1,500 in the Taman Angrek shopping center became agitated and people began rushing for the store. The four girls were crushed to death after falling during the crowd crush.

Source of Summary:

- 1) BBC, “A1 ‘devastated’ after stampede death,” British Broadcasting Corporation, website: <http://news.bbc.co.uk/2/hi/entertainment/1229130.stm>, cited: March 19, 2001

47. Zimbabwe World Cup Qualifier Crowd Crush, 07/09/2000, 13 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Zimbabwe	Sporting Event (Stadium)	Police fired tear gas to crowds	Crowd Crush, Crowd Management (Ineffective)	Asphyxiation and/or Trampled

Summary: During the World Cup qualifier game between South Africa and Zimbabwe, police fired tear gas to calm crowds. This resulted in a crowd crush in which 13 people were killed.

Source of Summary:

- 1) CNN, "Overreaction," Cable News Network, website: http://sportsillustrated.cnn.com/soccer/world/news/2000/07/10/zimbabwe_deaths_ap/, cited: March 19, 2001

48. Roskilde Festival Crowd Crush, 06/03/2000, 8 deaths and 26 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Denmark	Concert (Festival)	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: During a performance by the American rock group Pearl Jam at Europe's largest music festival in Denmark, the back of the crowd kept pressing forward toward the front of the stage. Some people slipped and fell, and they were trampled to death as the crowd surged forward. Eight people died from this incident.

Source of Summary:

- 1) BBC, "Fatal crush at rock festival," British Broadcasting Corporation, website: <http://news.bbc.co.uk/2/hi/europe/814116.stm>, cited: March 19, 2001

49. Liberia versus Chad Soccer Crowd Crush, 04/23/2000, 3 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Liberia	Sporting Event (Stadium)	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: During the World Cup qualifier game between Liberia and Chad, a crowd crush occurred when fans forced their way into an overcrowded stadium. This incident resulted in 3 deaths.

Source of Summary:

- 1) AP, "Major Stadium Disasters," Cable News Network, website:
http://sportsillustrated.cnn.com/soccer/world/news/2000/07/09/stadium_disasters_ap/,
 cited: May 09, 2001

50. Subway Crowd Crush in Belarus, 05/30/1999, 54 deaths and 100+ injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Belarus	Other (Subway)	Thunderstorm	Crowd Craze, Crowd Crush, Act of God (storm)	Asphyxiation and/or Trampled

Summary: In Belarus, while young people were gathered to attend a concert, a sudden thunderstorm caused many people to rush into the Nyamiha metro station for cover. Blindly moving forward, the crowd caused a crowd crush killing of 54 people.

Source of Summary:

- 1) BBC, "World: Europe Belarus stampede kills 54," British Broadcasting Corporation, website: <http://news.bbc.co.uk/2/hi/europe/356828.stm>, cited: May 31, 1999

51. Guatemala Soccer Game Crowd Crush, 10/16/1996, 79 deaths and 25 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Guatemala	Sporting Event (Stadium)	Not specified	Crowd Craze, Crowd Crush, Crowd Management (Ineffective)	Asphyxiation and/or Trampled

Summary: Tickets were oversold by 10,000 for a soccer game between Guatemala and Costa Rica in a Guatemalan stadium. Fans without seat reservations were desperate to get a seat before the game started. A crowd crush occurred, killing 79 people and injuring 25 others.

Source of Summary:

- 1) Darling, "79 in Guatemala Die in Stampede at Soccer Game," LA Times, website:
http://articles.latimes.com/1996-10-17/news/mn-54838_1_soccer-field, cited: October
 17, 1996

52. Zambia World Cup Qualifier Crowd Crush, 06/16/1996, 9 deaths and 78 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Zambia	Sporting Event (Stadium)	Not specified	Crowd Crush, Egress (Inefficiency), Crowd	Asphyxiation and/or Trampled

			Management (Ineffective)	
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Summary: Lusaka, Zambia: Nine soccer fans were crushed to death and 78 others were injured during a crowd crush. Crowd crush occurred due to a rumor about a bomb that was located in the stadium and exits were closed by stadium staff.

Source of Summary:

- 1) AP, "Soccer stampede in Zambia kills 15," Sun Journal, website:
<http://news.google.com/newspapers?nid=1914&dat=19960617&id=NdYgAAAIBA J&sjid=-2oFAAAAIBAJ&pg=3588,2545918>, cited: June 17, 1996

53. New Kids on the Block Concert Stamped in Korea, 02/18/1992, 1 deaths and 30 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
South Korea	Concert	Not specified	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: At a concert in Korea many people were enjoying a show put on by New Kids on the Block. During the concert, part of the crowd tried to get closer to the stage to see the singers. In this process, people were pushed forward from the crowd forces. This resulted in killing 1 person and injuring 30.

Source of Summary:

- 1) AP, "Fans stampede at New Kids concert," Sun Journal, website:
<http://news.google.com/newspapers?nid=1914&dat=19920219&id=AwsgAAAIBA J&sjid=eGUFAAAAIBAJ&pg=2778,3857478>, cited: February 19, 1992

54. Orkney Soccer Riot in South Africa, 02/18/1992, 40 deaths and 50 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
South Africa	Sporting Event (Stadium)	Not specified	Crowd Craze, Crowd Crush, Violence	Asphyxiation and/or Trampled, Violence

Summary: During a soccer game between the Orlando Pirates and the Kaizer Chiefs, two popular soccer teams from Soweto, objections to a referee's decision set off the melee between fans. Seats were not separated by team loyalty, which resulted in a riot and crowd crush, killing 40 people and injuring 50.

Source of Summary:

- 1) Wren, “40 Are Killed and 50 Injured as Fans Riot at a South Africa Soccer Match,” The New York Times, website: <http://www.nytimes.com/1991/01/14/world/40-are-killed-and-50-injured-as-fans-riot-at-a-south-african-soccer-match.html>, cited: January 14, 1991

55. England Sheffield Crowd Crush, 04/15/1989, 95 deaths and 50 injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
England, Sheffield	Sporting Event (Stadium)	Police opened gates	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: In Sheffield, England, 95 people were crushed to death at an England FA Cup game between Liverpool and Nottingham Forest. This incident occurred when police opened gates to alleviate crowding outside of the stadium. The resulting rush of people caused a crowd crush.

Source of Summary:

- 1) Taylor, “Hillsborough Stadium disaster Inquiry report, website: <http://www.southyorks.police.uk/sites/default/files/foi/significantpublicinterest/interim%20report%20hillsborough.zip>, cited: August, 1989
- 2) Taylor, “Hillsborough Stadium disaster Inquiry final report, website: <http://www.southyorks.police.uk/sites/default/files/foi/significantpublicinterest/hillsborough%20stadium%20disaster%20final%20report.zip>, cited: January, 1990

56. Nepal Katmandu Storm Crowd Crush, 03/12/1988, 93 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Nepal Katmandu	Sporting Event (Stadium)	Storm	Crowd Crush, Egress (Inefficiency), Crowd Management (Ineffective), Act of God (storm)	Asphyxiation and/or Trampled

Summary: In the middle of a football game in Katmandu, Nepal, a sudden hail storm made people rush towards the only opened stadium exit, causing a crowd crush. Ninety-three people were killed.

Source of Summary:

- 1) AP, “93 dies as soccer fans stampede exits in Katmandu stadium,” News Journal, website:

<http://news.google.com/newspapers?nid=1901&dat=19880313&id=OwwqAAAIBAJ&sjid=K9MEAAAIBAJ&pg=1304,8102868>, cited: March 13, 1988

57. Heysel Stadium Disaster, 05/29/1985, 39 deaths and 100+ injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Belgium Brussels	Sporting Event (Stadium)	Not specified	Crowd Crush, Violence	Asphyxiation and/or Trampled, Violence, Crushed

Summary: In Brussels, Belgium, 39 people were killed at the European championship. During the game, the atmosphere became violent and people rushed toward each other. The violence caused walls to collapse, and people were crushed. People tried to escape, resulting in a crowd crush that killed 39 people.

Source of Summary:

- 1) BBC, “The Heysel disaster,” British Broadcasting Corporation, website:

http://news.bbc.co.uk/2/hi/uk_news/768380.stm, cited: May 29, 2000

58. Luzhniki Disaster, 10/20/1982, 66 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Russia	Sporting Event (Stadium)	Not specified	Crowd Craze, Crowd Crush, Egress (Inefficiency), Crowd Management (Ineffective)	Asphyxiation and/or Trampled

Summary: During a soccer game in Russia, people were trying to leave the stadium because the game was almost over. However, only one exit was open due to a security check. All of the fans gathered and attempted to leave through this single exit. This resulted in a crush that killed more than 66 people.

Source of Summary:

- 1) Wilson, “After England, more tears fall on Moscow’s plastic pitch,” The Guardian, website: http://news.bbc.co.uk/2/hi/uk_news/768380.stm, cited: October 22, 2007

59. The Who Concert Crowd Crush, 12/03/1979, 11 deaths

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
United States Ohio Cincinnati	Concert	Sound check performed	Crowd Craze, Crowd Crush	Asphyxiation and/or Trampled

Summary: At a 1979 The Who concert, people were waiting outside in the cold. When the band performed a sound check, the crowd thought that the concert was beginning. The better seats were available on a first-come, first serve basis. When sound check was performed on the stage, the crowd rushed to the closed gate in order to get better seats since they thought concert was starting. During this process, 11 people died from crowd crush.

Source of Summary:

- 1) Grosshandler et al., “Three Report of the Technical Investigation of The Station Nightclub Fire: Appendices,” NIST, website:
http://www.nist.gov/customcf/get_pdf.cfm?pub_id=100989, cited: June, 2005

Related:

- 1) Wertheimer, “The Who Rock Concert Tragedy: When rock Concert Crowd Management Came of Age,” Engineering for Crowd Safety, website: not available, cited: 1993

60. Ibrox Disaster, 01/02/1971, 66 deaths and 100+ injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Scotland	Sporting Event (Stadium)	A child fell down	Crowd Crush, Unintended action	Asphyxiation and/or Trampled, Fall

Summary: During the soccer game in Scotland, people were trying to leave the stadium because the game was over. While people were leaving, possibly a child accidentally fell and caused a massive chain reaction of falling people. This resulted in a crowd crush that killed 66 people.

Related:

- 1) BBC, “1971: Disaster at Ibrox,” British Broadcasting Corporation, website:
http://news.bbc.co.uk/onthisday/hi/witness/january/2/newsid_3368000/3368963.stm, cited: January 02, 2005
- 2) BBC, “The Ibrox Disaster,” British Broadcasting Corporation, website:
<http://www.bbc.co.uk/programmes/b00x53wd>, cited: December 29, 2010

61. Peru Soccer Riot, 05/24/1964, 318 deaths and 500+ injuries

Country	Event Type	Initiating Event	Influencing factor	Casualty Outcome
Peru	Sporting Event (Stadium)	Not specified	Crowd Crush, Violence	Asphyxiation and/or Trampled, Violence

Summary: The fierce South American rivalry unfortunately moved from the football pitch into the stands when Argentina beat Peru in Lima in an Olympic qualifying match. The crowd became incensed when the referee disallowed a Peruvian goal two minutes from time, sparking outrage amongst the fans in the National Stadium. Their protests soon turned into a full-blown riot and 318 people were killed in the ensuing violence, with more than 500 major injuries.

Source of Summary:

- 1) BBC, "Football's worst tragedies," British Broadcasting Corporation, website: <http://news.bbc.co.uk/sport2/hi/football/1273347.stm> cited: April 12, 2001

Annex A: Articles related to Topic

1. Solomon, "Safe Gathering," NFPA Journal, website: <http://www.highbeam.com/doc/1P3-2470682201.html>, cited: September 1, 2011
2. Cochrane, "Festival boss reassures fans after Pukkelpop tragedy," British Broadcasting Corporation, website: <http://www.bbc.co.uk/newsbeat/14660366>, cited: August 25, 2011
3. Kemp et al, "A review of the management of crowd safety at outdoor street/special events," Health and Safety Executive, website: http://www.cheese-rolling.co.uk/health_and_safety/2009_hse_review_on_safety_at_outdoor_events_rr790.pdf, cited: 2010
4. CNN, "S.Korea Fights Subway Suicides," Cable news network, website: <http://www.cbsnews.com/stories/2004/06/18/world/main624735.shtml>, cited: February 11, 2009
5. OSHA, "Crowd Management Safety Guidelines for Retailers," OSHA, website: http://www.osha.gov/OshDoc/data_General_Facts/Crowd_Control.html, cited: 2008
6. Lee and Hughes, "Prediction of human crowd pressures," Accident Analysis and Prevention, website: <http://www.sciencedirect.com/science/article/pii/S000145750600008X>, cited: June, 2006
7. Lee and Hughes, "Exploring Trampling and Crushing in a Crowd." Journal of Transportation Engineering, website: http://ascelibrary.org/teo/resource/1/jtpedi/v131/i8/p575_s1?isAuthorized=no, cited: May, 2004
8. HSE, "Managing crowds safely," Health and Safety Executive, website: <http://www.hse.gov.uk/pubns/indg142.htm>, cited: August 13, 1998