U.K. Drownings

by Ilan Kelman (ik227@cam.ac.uk)
The Martin Centre, University of Cambridge, 6 Chaucer Road, Cambridge, England, CB2 2EB

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During 9-15 April 1998, river flooding hit middle England, killing five people. During Autumn 2000, floods affected hundreds of locations throughout the U.K., inundating thousands of properties and severely disrupting transportation. These two events were a strong impetus towards bringing flooding onto the political agenda, particularly at the national level but also at the local level in many areas. Much of the U.K.'s national, regional, and local flood management policies have been developed and refined due to these two events.

While Scotland has taken a more comprehensive approach, these policies in England and Wales have tended to focus on the risk to property and reducing the economic costs of flooding. The risk to life from flooding is gaining prominence but is still often sidelined in order to tackle property and economic aspects.

At times, information provided on U.K. flood events downplays the risk to life. In their 31 October 2001 analysis of the Autumn 2000 floods, DEFRA (the Department for Environment, Food and Rural Affairs which is responsible for flood management policy in England) states "Fortunately there was no loss of life directly attributable to the flooding". The EA (Environment Agency) implements much of the flood management policy in England and Wales. Their report "Environment Action - Floods Special" in December 2000 differs from DEFRA's comments by stating that two people had died in the floods to that date, although no further details are provided.

The media reported at least four inland water drownings in England during the Autumn 2000 floods:

- A woman in her twenties drowned in the River Tavy at Tavistock near Dartmoor while on a canoe trip on 12 November 2000.
- A 28-year-old man was presumed drowned in a swollen tributary of the River Nene in Northampton after jumping in to save a woman's dog at the end of October.
- Also at the end of October, a suspected shoplifter was presumed drowned after being chased by security staff and falling into the swollen River Thame in Birmingham.
- BBC reported on 14 December 2000 that "An extensive search for a teenager who fell into a swollen river in Greater Manchester has failed to find any trace of him".

Directly attributing any of these drownings to the flooding or to the storms is a contention which can be neither defended easily nor refuted easily. While drownings clearly occurred during the Autumn 2000 floods, the number of drownings resulting from the Autumn 2000 floods is difficult to determine.

Additionally, two people died on 8 December 2000 in Devon when they drove off a bridge into a flooded river. Whether they were killed by drowning, the floods, the storms, bad driving, or bad luck is an open question. The storm systems during Autumn 2000 which caused the floods killed many more people due to falling trees, falling off boats into the sea, or vehicle crashes. Whether or not the storms pushed fatality rates above the normal background level for these causes is difficult to ascertain.

Perfectly categorizing, and playing statistical games with, people's deaths should not be the objective. The issue is the incorrect message that fatalities from these storm systems are not of concern. These

hazard events kill, by drowning and otherwise, as seen by the deaths which occurred. DEFRA's statement leads to complacency and misdirects policy. Instead, they should use any opportunity to educate the public about the dangers to health and life which occur during flood and storm events.

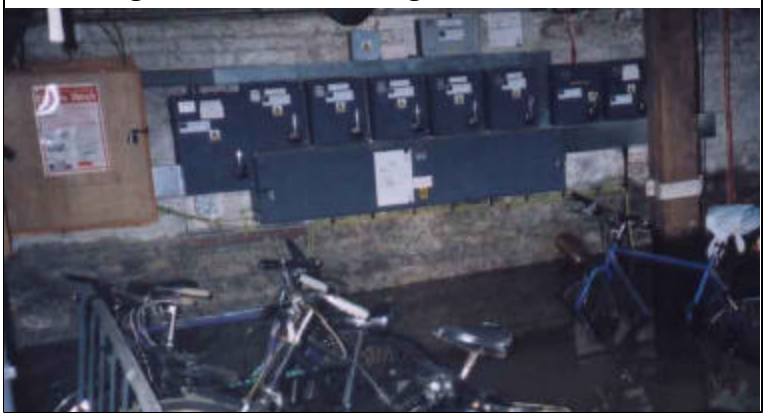
For example, in mid-October 2000, several people were rescued from the roofs of their cars near Uckfield in southeast England. One man in Uckfield was swept away by the current but was rescued. In October 2001, at least ten people were rescued from vehicles during the floods across eastern England. These anecdotes underscore the ignorance surrounding people's behavior in floods: you should never drive or walk through moving flood water, even shallow depths. The lack of vehicle and swiftwater-related drownings was due more to luck than to lack of danger from flood water (Figure 1).

Figure 1: Near Grantchester, Cambridgeshire in February 2001.

Other behavior observed during floods in England illustrates the dangers. Darwin College, built beside the River Cam in Cambridge, was inundated in February 2001 with water reaching the power mains for one building (Figure 2; note the level of the flood line). In order to shut down power, an employee waded through the water to reach the mains. As with those rescued from vehicles, this employee was lucky because electrocution is a major health hazard in floods. Three of the 22 deaths in Houston, Texas attributed to Tropical Storm Allison in June 2001 resulted from electrocution. Following the February 2001 floods, Darwin College reconfigured and raised the power mains only to witness a higher flood almost reach them in October 2001 (Figure 3; note the level of the flood line). This time, specialist help was brought in to shut down the power.

Figure 2: Darwin College in February 2001.

Figure 3: Darwin College in October 2001.



Another flood-related health concern relates to contact with contaminated flood water. The photographs in Figure 4 were taken in Yalding, Kent. While pumping out the affected property, the firefighters were being doused with sediment-laden water (Figure 4a). Waterfowl along the river suggest likely contamination from bird feces. Since many houses were

Figure 4a: Contaminated flood water in Yalding, Kent.

Figures 4b and 4c: Firefighter munching while pumping.

inundated, a strong possibility also exists of oil, paint, and other household substances in the water. One of the firefighters is eating in the midst of his pumping work while being soaked by the flood water (Figures 4b and 4c). All flood water should be assumed to be unfit for consumption.

Further evidence of water-related health concerns in the U.K. comes from RoSPA (the Royal Society for the Prevention of Accidents). RoSPA notes that the Home Office collected U.K. drowning statistics until 1981 and RoSPA started collecting their own data in 1983.

RoSPA reports 569 drownings in the U.K. in 1999, a similar figure to 1998, but reports 438 drownings in 2000 (see Table 1. Different sources give different numbers, varying by up to three for annual drowning figures. The numbers reported here should be taken as being approximate rather than exact.). The drop in 2000 is attributed to the relatively poor summer weather that year. RoSPA suggests that in

1998, 21 drownings were directly attributable to flooding whereas two drownings were directly attributable to flooding in 1999. RLSSUK (the Royal Life Saving Society UK) states that 2000 saw "45 people drowning as a result of floods or exceptionally high tides". RLSSUK also highlights attempted rescues as a factor in drowning in 2000: "15 people drowned while attempting to rescue someone else. In only a couple of instances did the original casualty also drown."

Table 1: Sample Data for the Number of U.K. Drownings (from RoSPA)

By Location	1999	2000	**Examples of Activities or Behavior**	1999	2000
Rivers and streams	248	199	Angling From Boat	14	10
Coastal	112	79	Angling From Land	10	8
Lakes and reservoirs	84	51	Fell in	81	51
Canals	43	44	Alcohol	78	79
Home baths	31	27	Swimming	45	34
Docks and Harbors	19	17	Boating	25	21
Garden Ponds	18	8	In Vehicles	14	15
Swimming Pools	14	13	Playing	11	8
Total	569	438	Sub aqua	7	13
			Canoeing	5	4
			Cycling	3	5

Table 1 yields questions to be resolved, such as whether any activity in which alcohol was involved is labeled as "Alcohol" rather than as any other category. Also, the "Fell in" category is ambiguous.

The death rate across the U.K. due to drowning is currently approximately 0.96 per 100,000 people whereas in 1983 this rate was 1.17. Drowning is reported as the third most common cause of accidental death amongst people younger than age 16 in the U.K.

A danger exists of becoming enamoured by numbers games, yet drowning statistics are useful because to save lives policy must be based on credible data. Data indicates who is drowning (for example, demographic data of the victims) along with how and why they are drowning (for example, data on the situation, environment, victim's actions, and others' actions such as calling emergency services and attempting rescue). To understand whether or not policies and actions are saving or taking lives, these data must be compared through time.

Despite the significant numbers of inland water drownings, no coordinated system exists for recording rescues and fatalities inland in the U.K. In comparison, a national database is maintained for sea and coastal incidents. For example, in 1998, 12,136 people were assisted during 10,193 rescue incidents. 286 fatalities occurred, a figure which includes non-drowning deaths such as cliff falls or physical trauma aboard vessels. In 2001, 16,487 people were assisted in 12,514 rescue incidents during which 284 people died. Analyses from this database help to identify locations and activities of highest risk thereby permitting rescue and education activities to be specifically targeted. This approach should be applied to inland water incidents, possibly funded by DEFRA.

Returning to drownings in floods, past events indicate the tolls which can occur in the U.K.:

- The 11-12 March 1864 Dale Dyke dam break disaster in Sheffield killed at least 240 people.
- The Lynmouth flood disaster on 15 August 1952 killed more than 30 people.

- The 31 January to 1 February 1953 storm surge killed more than 300 people on land in eastern England, mainly due to drowning, exposure, and physical trauma. More than 150 people died at sea around the U.K. during the accompanying storm.
- The 11 January 1978 storm surge killed at least 20 people in eastern England.

A North Sea storm surge comparable to the 1953 event could cause immense loss of life on land because the urban population of coastal, eastern England has grown rapidly during the past fifty years (for example, see Figure 5). Between 1951 and 1991, the U.K.'s population increased 12% while the population of many coastal areas in eastern England increased between 17% and 92%. This expansion continues. According to the U.K. government, the east coast English counties from Essex on the Thames Estuary to Humberside on the Humber Estuary are expected to gain 322,000 new households, 10% of England's projected need, between 2001 and 2021.

Figure 5: A recent development of bungalows with an ironic name sited just behind the sea defences near Trusthorpe between Maplethorpe and Skegness in eastern England.

When the next major east coast storm surge occurs or when the next dam or reservoir fails, dozens or hundreds of people could die unless they are warned in time and, as important, react appropriately to the warnings. Similarly, day-to-day water-related activities—such as swimming in dangerous areas, mixing alcohol and water sports, and instinctively jumping in to save someone at risk from drowning—threaten hundreds of lives each year. As with floods, education and awareness programs could ensure that these people are warned in time of the dangers and, as important, react appropriately to the warnings.

People's reactions to warnings, whether for a specific, extreme event or for general, day-to-day behavior, are partly based on how people perceive their vulnerability. Perception of vulnerability is linked to inaccurate messages, such as that no one died directly from a specific flood event. We have a responsibility to ensure that the power and danger of water are understood and communicated.