Public Perceptions of Rail Safety in Britain

Mr. John Cartledge

Wednesday, 08 June 2011 - 16:00

Location: Room 163, Skempton (Civil Eng.) Bldg, Imperial College London

Abstract
Travellers’ willingness to use a particular mode of transport is affected, inter alia, by their perception of their physical safety in the course of a journey. The perceived level of risk may bear little or no resemblance to the empirical evidence. Following a number of widely reported multi-fatality accidents on the mainline rail network in Britain in the late 1990s and early 2000s, several bodies commissioned studies of the public’s awareness of the relative level of risk associated with alternative forms of surface travel, the perceived nature of these risks, the sources of information used in forming these perceptions, and their priorities for remedial action. This talk will provide an overview of the quantitative and qualitative evidence which has emerged from these studies, as the basis for a discussion about the scale of the misperceptions revealed and the policy implications for safety managers in the rail industry.

Biography
John Cartledge is Safety Policy Adviser to both Passenger Focus and London TravelWatch, the official bodies representing rail and bus users in Britain. He has been actively involved with consumer advocacy in the public transport industry for more than 35 years. He has been an advocate at the official inquiries arising from most major railway accidents during that period, including the Kings Cross Underground station fire and the collisions at Clapham Junction, Cannon Street, Cowden, Southall, Ladbroke Grove, Potters Bar and Ufton Nerve. He represents passengers on high-level safety advisory bodies set up by the Office of Rail Regulation, the Rail Safety & Standards Board and the Parliamentary Advisory Council for Transport Safety. He is a graduate of Cambridge University and holds an honorary degree awarded by Plymouth University for his services to rail safety.
Public perceptions of rail safety
John Cartledge
Imperial College Centre for Transport Studies
8 June 2011
Traveller fatality risk for different modes relative to rail (per km):

- Railway: 1
- Bus / coach: 3
- Car: 32
- Pedestrian: 513
- Cycle: 401
- Motorcycle: 1473

Fatality risk per traveller kilometre as a multiple of rail

Passenger Focus putting passengers first
Total risk for different transport modes (per journey)

- **Rail**
  - Including trespassers: 54.9
  - Excluding trespassers: 23.4

- **Bus / coach**
  - Including trespassers: 3.3
  - Excluding trespassers: 33.3

- **Car**
  - 87.6

- Major injuries
  - Pedestrians and other transport users
  - Travellers using named mode

- Fatalities
  - Pedestrians and other transport users
  - Travellers using named mode
Rail passengers normalised FWI rate

- Mainline
- Tube

Passenger fatalities and weighted major injuries per billion journeys


Number of fatalities and injuries: 35, 30, 25, 20, 15, 10, 5, 0
Rail passenger risk by accident type

- Slips, trips, and falls
- On-board injuries
- Struck by train on station crossing
- Platform-train interface
- Contact with object or person
- Other passenger injury
- Assault and abuse
- Train accidents

FWI:
- 2001/02
- 2002/03
- 2003/04
- 2004/05
- 2005/06
- 2006/07
- 2007/08
- 2008/09
- 2009/10
The Ladbroke Grove Rail Inquiry

Part 1 Report
Recommendation 60:

‘comprehensive market research in regard to safety related measures should be carried out in order to take account of the views of informed passengers’
THE CfIT REPORT 2001:
Public Attitudes to Transport in England
Which one of these, if any, do you think is the safest form of transport in terms of travellers being least likely to be injured in an accident?

- Plane: 47%
- Car: 15%
- Bus: 13%
- Train: 7%
- Underground: 4%
- Bicycle: 2%
Public dialogue on train protection

Prepared by
People Science and Policy Ltd
for the Health and Safety Executive 2003
“There was a general assumption that the railways provide a safe means of transport

“Safety concerns that emerged spontaneously were usually linked to personal security

“Most participants did not spontaneously voice worries over the possibility of accidents

“The provision of a safe service was expected as part of the contract of buying a ticket”
Actual and perceived risk of injury by passenger type

Percentage risk

- Commuter
- Business
- Leisure
- Actual

Incidents:
- Pax train colliding with another train
- Pax train colliding with object on track
- Pax injured getting on or off a train
- Overcrowding on train or platform
- Trespass on track
- Release of flammable or toxic load
- Staff or employee risks
- Slips, trips and falls
- Derailment
- Fire
- Any other incident

Source: Thomas and Rhind 2004
Under/over estimation of journeys per fatality

Thomas and Rhind 2004
Most reported "incidents and accidents" were

- Derailment
- Collision
- Landslides
- Falling from carriage
- Injuries due to overcrowding
Relative safety of modes

**Aircraft**: Safe because of procedures, staff, maintenance, communication, training (low probability, low survivability, low individual control)

**Rail**: As safe as air but with more incidents occurring (low probability, high survivability, low individual control)

**Car**: Causes most fatalities but people feel safe as they are in control (high probability, medium survivability, high individual control)
“Media mentioned by many participants and play a vital role in perceptions

“Aviation and train accidents are viewed as more serious because of the perceived greater concentration of injuries and fatalities”
Mode considered to be safest in terms of accidents

- Bus: 45
- Train: 16
- Car: 22
- Motorcycle: 15
- Bicycle: 1
- Walking: 0
Mode considered to be least safe in terms of accidents

- Bus: 13
- Train: 2
- Car: 1
- Motorcycle: 4
- Bicycle: 9
- Walking: 70

Total: 70
Public Attitudes to Safety on the Railways

Rail Safety & Standards Board
Likelihood of being in an accident

<table>
<thead>
<tr>
<th>Mode</th>
<th>% Unsafe</th>
<th>% Safe</th>
<th>Net safe +/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train</td>
<td>6</td>
<td>81</td>
<td>+75</td>
</tr>
<tr>
<td>Buses</td>
<td>6</td>
<td>78</td>
<td>+72</td>
</tr>
<tr>
<td>Plane</td>
<td>8</td>
<td>76</td>
<td>+68</td>
</tr>
<tr>
<td>Car as a passenger</td>
<td>10</td>
<td>72</td>
<td>+62</td>
</tr>
<tr>
<td>Coaches</td>
<td>8</td>
<td>69</td>
<td>+61</td>
</tr>
<tr>
<td>Car driven by yourself</td>
<td>7</td>
<td>66</td>
<td>+59</td>
</tr>
</tbody>
</table>
Main risks associated with modes

- Train: 51%
- Bus/Coach: 45%
- Plane: 22%
- Car: 14%

Change:
- Driver/ Pilot error: +3 +1 +11 -11
- Vandalism: -6 -2 0 -1
- Delays due to accidents on line/road: +1 +2 0 0
- Poor maintenance: +2 +1 +4 -2
- Terrorism: +5 +1 +1 0
- Personal safety from other travellers: +3 +4 -1 +12

Passenger Focus: putting passengers first
Likely severity of accident

- **Car driven by yourself**
  - Almost certain to be fatal: 2%
  - Likely to be fatal: 6%
  - Likely to sustain a major injury: 19%
  - Likely to sustain a minor injury: 35%
  - Very small chance of minor injury: 12%
  - Don’t know/not stated: 25%

- **Car as a passenger**
  - Almost certain to be fatal: 2%
  - Likely to be fatal: 7%
  - Likely to sustain a major injury: 30%
  - Likely to sustain a minor injury: 40%
  - Very small chance of minor injury: 12%
  - Don’t know/not stated: 9%

- **Buses**
  - Almost certain to be fatal: 1%
  - Likely to be fatal: 6%
  - Likely to sustain a major injury: 21%
  - Likely to sustain a minor injury: 49%
  - Very small chance of minor injury: 16%
  - Don’t know/not stated: 7%

- **Coaches**
  - Almost certain to be fatal: 8%
  - Likely to be fatal: 1%
  - Likely to sustain a major injury: 31%
  - Likely to sustain a minor injury: 39%
  - Very small chance of minor injury: 13%
  - Don’t know/not stated: 8%

- **Trains**
  - Almost certain to be fatal: 5%
  - Likely to be fatal: 19%
  - Likely to sustain a major injury: 42%
  - Likely to sustain a minor injury: 18%
  - Very small chance of minor injury: 10%
  - Don’t know/not stated: 6%

- **Plane**
  - Almost certain to be fatal: 55%
  - Likely to be fatal: 24%
  - Likely to sustain a major injury: 7%
  - Likely to sustain a minor injury: 2%
  - Very small chance of minor injury: 5%
  - Don’t know/not stated: 6%
Effectiveness of industries in implementing safety measures

- **Motor Industry**: 15% Ineffective, 78% Effective
- **Bus Industry**: 22% Ineffective, 71% Effective
- **Coach Industry**: 19% Ineffective, 71% Effective
- **Rail Industry**: 26% Ineffective, 67% Effective
- **Air Travel Industry**: 6% Ineffective, 85% Effective
Expectation that annual train accident fatalities +/- 7

- Higher: 2006 (56%), 2005 (52%), 2003 (66%)
- Expected: 2006 (18%), 2005 (20%), 2003 (16%)
- Lower: 2006 (19%), 2005 (20%), 2003 (15%)
- Don't know / not stated: 2006 (7%), 2005 (8%), 2003 (2%)
Most significant contributor to rail accident risk

- Engineering/equipment failure: 39%
- Human error: 29%
- Lack of funding: 15%
- Poor management: 13%
- Other: 1%
- Don’t know: 3%
Most likely cause of rail accidents

- Defects with the track: 45% (2006) vs 41% (2005)
- Trains passing signals at danger: 18% (2006) vs 12% (2005)
- Trains colliding with vehicles at level crossings: 12% (2006) vs 16% (2005)
- Defects with the train: 6% (2006) vs 4% (2005)
- Health problems/fatigue of the driver: 3% (2006) vs 5% (2005)
- Fire: 1% (2006) vs 1% (2005)
Responsibility for rail safety

- Train Operators: Unprompted 28%, Prompted 37%
- Government: Unprompted 24%, Prompted 27%
- Network Rail/Railtrack: Unprompted 17%, Prompted 27%
- Dept. for Transport (DfT): Unprompted 8%, Prompted 35%
- Track/infrastructure contractors: Unprompted 5%, Prompted 23%
- Rail Safety & Standards Board: Unprompted 4%, Prompted 41%
- Health & Safety Executive: Unprompted 3%, Prompted 26%
- Strategic Rail Authority (SRA): Unprompted 1%, Prompted 12%
- Independent body (unspecified): Unprompted 1%, Prompted 3%
- Don't know/not stated: Unprompted 5%, Prompted 27%
Trust in the rail industry to deliver a safe system
Trust in rail industry elements to keep passengers safe

- **Train drivers**
  - 2006: 84%
  - 2005: 81%
  - 2003: 73%

- **The trains themselves**
  - 2006: 76%
  - 2005: 70%
  - 2003: 58%

- **The people running the railways**
  - 2006: 45%
  - 2005: 39%
  - 2003: 38%

- **Safety features e.g. inability to go past red lights**
  - 2006: 60%
  - 2005: 54%
  - 2003: 36%

- **Railway infrastructure e.g. tracks**
  - 2006: 53%
  - 2005: 46%
  - 2003: 35%

*Passengerfocus putting passengers first*
“Privatisation has increased rail accident risk”

- **2006**
  - % Disagree: 17%
  - % Agree: 53%
  - Net Agree: +36

- **2005**
  - % Disagree: 15%
  - % Agree: 58%
  - Net Agree: +43

- **2003**
  - % Disagree: 12%
  - % Agree: 66%
  - Net Agree: +54
Rail industry’s effectiveness in managing potential risks

- **Human error**
  - % Ineffective: 32%
  - % Effective: 55%
  - Net: +23

- **Engineering/equipment failure**
  - % Ineffective: 36%
  - % Effective: 53%
  - Net: +17

- **Miscommunication**
  - % Ineffective: 48%
  - % Effective: 36%
  - Net: -12
Performance of rail industry in responding to accidents

- Investigating the cause of the accident:
  - 2006: 15% Not well, 78% Well, Net performance +63
  - 2005: 20% Not well, 70% Well, Net performance +50
  - 2003: 22% Not well, 72% Well, Net performance +50

- Providing information about what has happened:
  - 2006: 29% Not well, 63% Well, Net performance +34
  - 2005: 30% Not well, 62% Well, Net performance +31
  - 2003: 37% Not well, 57% Well, Net performance +20

- Making improvements as a result of the accident:
  - 2006: 33% Not well, 57% Well, Net performance +24
  - 2005: 39% Not well, 51% Well, Net performance +12
  - 2003: 43% Not well, 48% Well, Net performance +5

- Providing information on actions taken following an accident:
  - 2006: 37% Not well, 52% Well, Net performance +15
Reasons for lack of confidence in rail industry’s ability to learn from accidents

- Same accidents are happening: 27%
- Accidents still happening: 20%
- Money is more important: 15%
- Have not learnt from previous incidents: 15%
- Lack of maintenance: 8%
- All talk, no action: 7%
- Infrastructure is poor: 6%
- Do not listen to employees or the public: 3%
- Put the blame on others: 3%
Rail industry’s willingness to listen to public opinion

- Only listens to public opinion when forced to do so by pressure groups: 58%
- Usually ignores public opinion: 20%
- The rail industry usually listens to public opinion when it makes decisions that affect the travelling public: 15%
- Don’t know / not stated: 6%
Rail industry’s willingness to act on public opinion

- The rail industry takes too little account of the opinions of the public: 59%
- The rail industry takes sufficient account of the public’s opinion when making decisions: 35%
- The rail industry takes too much account of the opinions of the public: 1%
- Don’t know / not stated: 6%
Confidence that necessary rail safety investment being made.
Sources of information about rail safety

- Radio/TV news programmes: 71% (green), 73% (yellow), 81% (red)
- National newspapers: 52% (green), 61% (yellow), 67% (red)
- Local newspapers: n/a
- Friends and family: 18% (green), 20% (yellow)
- At railways stations: 10% (green), 12% (yellow), 16% (red)
- Non-news TV/radio programmes: 15% (green), 18% (yellow), 22% (red)
- Website/internet: 8% (green), 11% (yellow), 12% (red)
- Rail operators: 7% (green), 7% (yellow), 6% (red)
- Organisations representing the industry: 4% (green), 7% (yellow), 8% (red)
Trust in sources of information about rail safety

<table>
<thead>
<tr>
<th>Source</th>
<th>% Distrust</th>
<th>% Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td>News programmes on television/radio</td>
<td>6%</td>
<td>83%</td>
</tr>
<tr>
<td>Friends and family</td>
<td>4%</td>
<td>76%</td>
</tr>
<tr>
<td>Newspapers/magazines</td>
<td>20%</td>
<td>60%</td>
</tr>
<tr>
<td>DfT</td>
<td>21%</td>
<td>55%</td>
</tr>
<tr>
<td>The railway industry</td>
<td>28%</td>
<td>48%</td>
</tr>
<tr>
<td>Local councils</td>
<td>26%</td>
<td>42%</td>
</tr>
<tr>
<td>The EU</td>
<td>26%</td>
<td>27%</td>
</tr>
<tr>
<td>Politicians in opposition</td>
<td>54%</td>
<td>20%</td>
</tr>
<tr>
<td>Government politicians</td>
<td>55%</td>
<td>22%</td>
</tr>
</tbody>
</table>
Priority for spending government money to reduce death rates

- **National Health Service**: 56% (Top Priority), 52% (Top Three Priorities)
- **Road Safety**: 17% (Top Priority), 19% (Top Three Priorities)
- **Medical Research**: 16% (Top Priority), 18% (Top Three Priorities)
- **Railway Safety**: 4% (Top Priority), 3% (Top Three Priorities)
- **Reducing Industrial Accidents**: 3% (Top Priority), 2% (Top Three Priorities)
- **Air Safety**: 1% (Top Priority), 1% (Top Three Priorities)
- **None of These**: 1% (Top Priority), 1% (Top Three Priorities)
- **Don't Know / Not Stated**: 3% (Top Priority), 2% (Top Three Priorities)
Ipsos MORI 2006

Priorities for improving rail travel

- Cleanliness: 2006 - 17, 2005 - 17, 2003 - 17
- Personal security while travelling: 2006 - 17, 2005 - 17, 2003 - 22

Passengerfocus
putting passengers first
Priorities for spending on rail improvements

- Extending the rail network: 30%
- Prevention of accidents whilst travelling by train: 18%
- Improving security at stations: 17%
- Reduce overcrowding on trains: 16%
- Punctuality and reliability of trains: 10%
- Increased frequency of trains: 9%

Priorities for spending to improve rail safety

- Reducing passenger deaths from train accidents: 66% in 2006 (63% in 2005)
- Improving personal security at stations: 52% in 2006 (60% in 2005)
- Reducing passenger slips, trips and falls on trains and at stations: 43% in 2006 (40% in 2005)
- Reducing deaths of railway staff: 22% in 2006 (17% in 2005)
- Reducing the number of deaths of trespassers: 22% in 2006 (19% in 2005)
- Reducing the number of suicides on the railways: 23% in 2006 (18% in 2005)
- The railway is safe enough, we should not spend more money on safety: 7% in 2006 (7% in 2005)
Priorities for investment to prevent accidents

A child being fatally injured whilst playing on the line
A train collision resulting in a passenger being fatally injured
A person being fatally injured due to an assault at a station
A car driver being fatally injured at a level crossing due to deliberately crossing when the barriers are lowered
Preventing a person committing suicide by jumping in front of a train
A train collision resulting in a train driver being fatally injured
A passenger being fatally injured whilst taking a shortcut across the railway
A late night reveller being fatally injured whilst taking a shortcut across the railway
All equally important

Top Priority
Top Three Priorities
33%
59%
19%
54%
14%
52%
7%
37%
5%
44%
5%
33%
3%
24%
1%
28%
10%
17%
Who should pay for eliminating risk on rail?

- Government: 46%
- Reduced profits of train operating companies: 42%
- Increased taxes: 7%
- Increased fares: 7%
- Other: 11%
- Don’t know / not stated: 10%
Priorities for Rail Improvements & Environmental Issues Research
Perceptions of safety on the railway

Although goes without saying that most important issue, often far from top of mind, even within context of major rail incident

Most feel fatalities on railway more likely to occur from trespassing than train / rail malfunction

Cannot keep determined trespassers/vandals out just with fencing

Thus, more education of offenders required
Perceptions of safety on the railway

However, some specific safety concerns highlighted

Overcrowding on trains, level crossings with no barriers, desire for more info on what to do in case of emergency

Not given huge amount of consideration despite research happening just after Virgin derailment

In fact, more reassurance than fear from this incident and perception that there has been much investment in safety recently
Reactions to statistics

Information on fatalities not felt to be interesting or meaningful in the context of rail travel being viewed as inherently safe.

Consistent reduction since 1950s and comparison of fatalities by mode broadly seen as expected.

Railway being 10% safer seen as meaningless target - implies rail is unsafe currently.

Many want target of 100% relating to safety, or zero tolerance - perception that government targets on safety therefore meaningless.
Thank you.