

RAILWAY SAFETY : WHAT DOES SOCIETY EXPECT ?

John Cartledge

**Safety Policy Adviser
Passenger Focus**

(Britain)

For those of you who are not familiar with the policy-making structures of the rail industry in Britain, it may be helpful for me to begin with a word or two about Passenger Focus, the organisation under whose auspices I am here today. It's been in existence for more than 50 years under various names, latterly as the "Rail Passengers Council" until it was recently rebranded in an effort to make it sound less pompous and more approachable. It's one of a family of official consumer bodies set up by Parliament to champion the interests of the users of the various state-regulated industries, which include energy supply, telecommunications, water, air transport and the postal service, as well as railways.

Passenger Focus has a number of roles. It investigates rail users' grievances when complainants have been unable to get acceptable answers from train companies direct. It is consulted by the industry on the whole range of matters which affect its passengers – times, fares, reliability, station amenities, vehicle design, ticketing, information, etc. It monitors service quality and highlights shortcomings in operators' performance. And it represents the users in consultations with the government, parliamentary committees, local authorities, regulatory agencies, the European Union, and any other bodies whose activities affect their interests.

It has no formal duties regarding safety, but it is actively interested in safety issues when and to the extent that these are of concern to passengers. That means that Passenger Focus has participated in official inquiries into serious accidents, and that it serves on the various safety advisory groups which bring together the rail companies, the trade unions, the manufacturers, the regulator and the government to help shape the industry's strategy in this sphere. We are strictly a lay body, not railway professionals, or safety experts. It will probably be painfully evident from the rest of my remarks that this is the case, so please be forbearing. But what I'd like to take this opportunity of doing is to raise some questions which are currently occupying the minds of safety policy makers in and around the British railway industry, in order to discover whether (and, if so, with what success) similar problems are being addressed by their counterparts elsewhere.

In order to do so, it is necessary to begin by outlining the body of safety laws within which the industry and its regulators operate. This is a mixture of rail-specific and general legislation. The industry-specific legislation tends to be highly prescriptive, and to lay down exact technical requirements. Some of it is venerable, having been enacted in the century before last. A law which makes it mandatory to have block signalling, the interlocking of signals with points, and continuous brakes on passenger trains, is an example of this. Other parts are very recent. Laws which require there to be automatic systems which intervene if trains pass signals set at danger, and centralised locking of doors on passenger trains, have only come into effect in the present century. But the number of such prescriptive laws is few, and given the rapid pace of technological change, it is impossible for detailed legislation to be enacted fast enough to keep pace with new developments in railway equipment and operations.

So, for the most part, the industry must set and update its own technical standards, and justify these to its safety regulator. It does so within the framework of public law which applies

equally to all industries. Such legislation has by its nature to be couched in general terms, setting goals rather than specifying the means by which they are to be achieved. The overarching duty which the law imposes on all employers is that of conducting their businesses in such a way that risk (whether to employees, clients or the public at large) is reduced to a level which is “as low as reasonably practicable”. This is commonly referred to as the ALARP principle, and it is enforced through the criminal courts. Penalties for failing to comply can be severe. After a recent high-speed derailment in which four people died as a result of a failure to replace a piece of track known to be suffering from metal fatigue, the rail infrastructure operator was fined £3.5 million (pounds sterling), and the company to which it had contracted the track maintenance function was fined £7.5 million (plus several hundred thousand pounds’ worth of legal costs). Directors of both companies also faced criminal charges, and although in the event they were acquitted, this experience – not to mention the reputational damage suffered by both organisations – will undoubtedly have helped to concentrate the minds of all railway managers on the importance of being able to demonstrate that they are discharging their safety obligations fully.

The challenge that safety decision-makers therefore face is that of deciding what risk control measures (whether technical or procedural) will, in any given set of circumstances, satisfy this ALARP test. Clearly, the phrase does not mean that the railway must be run in a manner which is totally risk-free, because this would only be possible if no trains ever moved – a course of action which would have the perverse consequence of displacing passengers onto other modes of travel, all of which would expose them to greater risk than they face in the course of rail journeys. So what is meant by “reasonable” and what is meant by “practicable”? Fortunately, there have been some legal rulings which have helped to clarify the position. In essence, the courts have said that a balance must be struck between the safety benefits of any particular measure and the costs of providing it, and that the test of reasonable practicability is set by whether or not these costs are disproportionate to the benefits which the measure in question will deliver.

This is a rational economic judgement, because safety – however important – is only one of many desirable outcomes which rail operators must seek to deliver. Like everything else, safety has an opportunity cost, because resources devoted to improvements in this field are thereby pre-empted and become unavailable for investment instead in greater frequency, higher reliability, improved comfort, or any other competing commercial objective (unless, as is happily sometimes the case, a development which delivers greater safety also delivers other benefits too). But in order to make such a judgement, it is necessary to be able to quantify the costs and the benefits – which means, in practice, to price them.

On the cost side of the equation, this is – or ought to be – a relatively uncontentious exercise. A mature industry should have established methods for calculating the resource costs of introducing new equipment, with higher performance characteristics, and/or of improving working practices and procedures. The greater intellectual and technical challenges therefore lie in calculating the benefits in order to determine whether or not they are sufficient to justify incurring the costs. Some of the benefits of improved safety accrue directly from avoiding disruption to the network, damage to equipment, mobilisation of the emergency services, and (perhaps) the medical expenses incurred in caring for the victims of accidents. But since railways are already the safest form of land transport, the law of diminishing returns applies. Further marginal increments in their safety performance can often only be achieved at ever-greater unit cost, and it is often difficult to justify incurring this purely on the basis of these directly measurable benefits (i.e. the accident costs avoided). Most of the benefit of risk-reduction comes in the form of casualties prevented, and to quantify this it is necessary to place a monetary value on the fatalities and injuries which would otherwise be caused.

This is a two-part process. The first part involves estimating the scale of the risk in question. Techniques of quantified risk assessment have advanced rapidly in the rail industry in the past decade. In Britain, at least, there is a well-developed model which identifies all of the hazardous events to which railway operations may give rise, and uses a combination of the statistical record and expert judgement to assess the probability of their occurrence and the likely scale of their consequences. Currently, the model predicts the annual fatality rate (excluding suicides, which are numerous but non-accidental) to be

Passengers	11	15%
Workforce	5	9%
General public	55	77%
Total	71	100%

[RSSB, 2006]

It is noteworthy that more than three-quarters of all of the fatalities are suffered by people who are neither travelling nor working on the railway. Most are trespassers, but some are motorists - or pedestrians - misusing level crossings. Passenger fatalities occur mainly at stations, not on trains, while workforce fatalities are mostly suffered on or near the track.

But (happily) most casualties are not fatal. To take proper account of the total quantum of risk, such a model must also incorporate injuries. This presents a number of problems. Not all injuries sustained on the railway are necessarily reported to (or recorded by) the industry, e.g. some of those suffered by trespassers, or by passengers who are the victims of assault. Some are psychological rather than physical, (i.e. shock or trauma) and harder to identify and classify. Some injuries result in permanent damage while others are only temporarily disabling. Nevertheless, enough is known about the injury toll to make it possible to include an estimate of it in the model. Currently, injuries are categorised as either major or minor, and one fatality is equated to ten of the former and 200 of the latter. These ratios are necessarily arbitrary, and work is under way to refine them, but this does not affect the underlying principle that fatal and non-fatal injuries can be combined to give a single measure of risk. Using these weighting factors, the model shows the current annual risk profile (measured in “fatalities and weighted injuries”, or FWIs) to be

Passengers	78	39%
Workforce	61	31%
General public	61	31%
Total	200	100%

[RSSB, 2006]

Using this measure, total railway risk can be seen to be much more evenly divided between the three categories of victim than risk of death alone. The passengers’ share is inflated by the large number of slips, trips and falls which they suffer on platforms and stairs, in which alcohol often plays a contributory part. The workforce share is inflated by the usual range of minor industrial injuries and (regrettably) by the assaults to which some staff, such as ticket inspectors, are vulnerable.

Once the distribution, scale and cause of casualties (FWIs) is known, the second part of the process of quantifying the benefit side of the equation comes into play. This entails placing a monetary value on the reduction in their number which would be secured from any measure taken to mitigate a particular risk. Cold-blooded though this approach may appear to some, there is no alternative if the industry’s resources are to be utilised in such a way as to maximise the return – in the form of enhanced safety – accruing from such expenditure. So it is necessary to arrive at a benchmark value for each FWI which can be averted. There are a number of sources from which such figures can be sought. For example, insurance policies contain scales of compensation paid for various types of personal injury. Or courts award “damages” to victims of accidents caused by the negligence of other people. But neither of these is wholly satisfactory for this purpose. Insurance payouts are capped according to the scale of premium charged, and court awards are usually designed to compensate survivors for the economic loss arising from an injury – so that more is likely to be paid where the victim is a young person in work with several dependants than where he/she is a retired elderly person with none.

Instead, the appraisal of investment in transport safety improvements is nowadays based on a “value of preventing a fatality (or weighted injuries)” (VPF) derived from research into

people's "willingness to pay" (WTP). There is a substantial body of literature describing the methodology employed, and it is not necessary to rehearse the details here. In essence, it involves asking a large sample of respondents how much extra they would be prepared individually to pay for safety measures offering a small reduction in risk (e.g. eliminating a one-in-a-million chance of being killed in the course of a journey). Aggregating the answers over large groups of people makes it possible to arrive at a mean VPF. The British government's transport ministry publishes such a value for use by highway authorities in calculating the benefit of road safety projects, and revises it periodically. The current figure is about £1.4 million. [*Department for Transport, 2005*]

Assuming – in the absence of evidence to the contrary – that the VPF for the railway is the same as that for the roads, it becomes possible to decide whether or not a particular safety improvement offers acceptable value for money. A scheme which offers the realistic prospect of reducing the FWI toll by ten at a cost of less than 10 x £1.4million, i.e. £14 million, will clearly be justified. Given the inevitable element of uncertainty about such predictions, and the consequent desirability of incorporating a margin of error (of, say, +50%) on the side of enhanced safety, a scheme offering the same level of safety improvement at a cost of up to (say) £21 million may win approval. But if the cost per FWI averted is two or more times the VPF, then it is likely to represent poor value for money.

Provided that the scale of a particular risk and the costs of averting it have been properly assessed, then a decision not to proceed with a particular control measure on the grounds that the safety benefits could only be achieved at disproportionate cost becomes tenable and legitimate. If an accident subsequently occurs, which this measure (if implemented) might have averted, the railway operator has a perfectly valid legal defence against any charge of having failed in its duty to control the risk at a level which is ALARP. Of course, over time the risk profile is likely to change, as are the costs of possible preventative measures. So safety management is a dynamic process, and it is necessary periodically to revisit the options and the costs in order to ensure that their relativities have not changed sufficiently for a different conclusion to emerge.

All of this is likely to be familiar intellectual territory for rail safety experts such as yourselves, and I am grateful for your tolerance in allowing me to trudge across ground over which many of you speed effortlessly in the course of your professional lives. My excuse for wearying you with this is that unfortunately the process is not as simple as I have so far described it, and it has been necessary to paint the background scenery in order to explain the problem. In Britain, at least, railways are not just another industry. About half their total income is derived from the state rather than directly from their users, and the government takes a close interest in their affairs. Indeed, virtually all passenger trains are run by companies which have won time-limited operating franchises issued by the Department for Transport, and all aspects of railway policy and performance (including safety) are subjected to constant parliamentary (and media) scrutiny. This may be irritating to railway managers, but it is a fact of life with which they are compelled to cope.

The rail industry must therefore take due account in its decision-making of political susceptibilities, which are informed by the concept of "societal concern". A definition of this has been offered by the Health and Safety Executive, a public agency which oversees and enforces occupational health and safety legislation. Societal concerns, it says in its policy statement on *Reducing risks, protecting people* are

"the risks or threats from hazards which impact on society and which, if realised, could have adverse repercussions for the institutions responsible for putting in place the provisions and arrangements for protecting people, e.g. parliament or the government of the day. This type of concern is often associated with hazards that give rise to risks which, were they to materialise, could provoke a socio-political response, e.g. risk of events causing widespread or large-scale detriment or the occurrence of multiple fatalities in a single event. Typical examples relate to nuclear power generation, railway travel, or the genetic modification of organisms."

[*HSE, 2001*]

It may come as a surprise to some railway professionals to be told that the potential political fallout from railway accidents is comparable to that which might arise from a leak of radiation from a nuclear power station or the escape from a laboratory of organisms which are capable of causing genetic damage to the human species. But it has certainly been the case in Britain in recent years that when multiple-fatality accidents have occurred on the railway (fortunately a rare event), they have excited political and media interest far in excess of that aroused by the continuous toll of death and injury on the roads.

This preoccupation is not a peculiarity unique to our political class. The European Union has recently promulgated a directive on rail safety setting out requirements for (inter alia) accident reporting and investigation, and the safety authorisation of operators, which will be binding upon all of its member states. The directive requires that

“Member states shall ensure that railway safety is generally maintained and, where reasonably practicable, continuously improved ... giving priority to the prevention of serious accidents.”

[European Union, 2004]

The term “reasonably practicable” is one which, for the reasons I have sought to explain, will have a familiar ring to the British railway industry.

The implication of this preoccupation with major accidents seems to be that it is somehow more important to seek to prevent (say) ten fatalities occurring in a single event than the same total of fatalities in ten separate events. Why this should be so is not explained, but if there is this bias in public policy objectives it has significant implications for the railways because the accident profile of different transport modes is quite distinctive.

In the 35-year period up to 2001, there were 178,226 people killed in road accidents in Britain, compared with 270 in train accidents. *[Evans, 2003]* Of course, the volume of traffic by road was greater, and the figure includes pedestrians, but when normalised against distance travelled, the roads were several times more dangerous. By any objective measure, it is road safety which should give rise to the greatest “societal concern”. However, of these fatalities, 85% of those which occurred on the roads were in single-fatality events, whereas on the railway this was true of only 13% of deaths. Fatal train accidents are far fewer than those on the roads, but when they do occur, they are generally larger in scale. It is because they are less commonplace that they are more newsworthy – which in turn excites a political reaction.

This phenomenon was well described some years ago in a paper by the then Director of Road and Vehicle Safety at the Department for Transport :

“There is a far higher awareness of accidents on public transport than on private transport, and an imperfect appreciation by individuals of the relative risks from other situations. Where people place themselves in the care of operators, they expect a higher standard than they are prepared to accept for situations in which they regard themselves as having personal control. Public concern stemming from recent major disasters ... and associated public inquiries held to establish cause, have generated large scale demands for investment and other measures with considerable cost implications.

“Catastrophes hold a particular grip on public imagination, totally out of proportion to the risks involved ... Today people no longer believe in fate, or the wrath of God, but want to know the human errors involved. They want to apportion blame ... beyond the individual to the liability of an employer or an institution ... who ought to have foreseen and prevented the errors. And they want to be compensated in financial terms for pain, grief and suffering as well as economic loss.”

[Bridgeman, c1989]

Just as most people in this audience would immediately recognise a list consisting of Verdun, Ypres, Vimy Ridge, Passchendaele, the Somme, Jutland and Gallipoli as being major battles of the First World War, so many people in Britain would probably recognise a list consisting of Southall, Ladbroke Grove, Hatfield, Potters Bar, Great Heck and Ufton Nervet as being the locations of all of the multi-fatality accidents that have occurred on Britain's railways in the past decade. The fact that the total death toll in all of these railway accidents was less than the toll on Britain's roads each week merely helps to illustrate the double standards which seem to be in force. It is a compliment to the railways that their superior safety record makes lapses from it, when – exceptionally – they do occur, the more remarkable and therefore the more likely to attract comment. But it is a backhanded compliment, because such comments are likely to be critical, and to be accompanied by calls for remedial action. Such action will have a cost – and if the railways are expected to bear it, they will be placed at a commercial disadvantage relative to their competitors. Is this just? And if they are already meeting the ALARP test set by law, what obligation are they under to heed such calls and take such action?

This inconsistency in the level of importance ascribed to safety lapses by different modes was nicely illustrated by two items which I found in heavyweight (i.e. non-tabloid) newspapers.

One read

“Four people died in an accident that closed a section of the M25 [motorway] yesterday... A lorry collided with a Volkswagen car, police said. The lorry driver suffered chest injuries and was taken to hospital... The M25 was closed at junction six anticlockwise, causing long tailbacks. Crash investigators carried out checks on the vehicles involved and examined the road surface for damage.”

[*The Guardian*, 2006]

You will note that the effects of this accident on traffic flow, and the make of the car involved, seem to be almost as newsworthy as the fact that four people lost their lives. The other news story read, in part,

“The televised adventures of Thomas the Tank Engine feature too many crashes and could be leaving children terrified of going on a train, a psychologist said yesterday. The little engine and his steam-driven friends ... have been entertaining children on television for almost 20 years. But according to ... a psychology lecturer at Exeter University, the sheer volume of accidents in the TV programmes could have an adverse effect on young minds.

“The Independent Television Commission's expert on how children react to programmes said *Thomas the Tank Engine* is aimed at a pre-school audience who tend to be more likely to see the programme as reality. They haven't learnt to disconnect what they see around them from what they see on television...”

[*The Times*, 2003]

You may think that as it is highly improbable that these children will often encounter steam engines in their lives (unless world oil depletion results in a reversion to the technology of Watt, Trevithick and Stephenson), they are unlikely actually to relate the adventures of a collection of anthropomorphic locomotives to their own journey experiences. But the main point I'm trying to convey is the relative seriousness with which these two stories were perceived to deserve to be treated. The first occupied seven column centimetres on page 10 of the paper. The second was given 51 column centimetres (including a picture of the fictional engine in question) on page 1. What subconscious factors caused the editors to deem the second story to merit seven times as much space as the first, and ten times more prominence? What does this say about the relative level of interest by their readers in road and rail safety?

If it is true that large-scale accidents arouse more societal concern than small ones, you might imagine that when they occur, they would have the detectable consequence of deterring

fearful passengers from travelling by rail. But – unlike terrorist bomb attacks, and concerns about personal security, i.e. the risk of becoming the victim of crime in the course of a journey – there is no hard evidence of any such effect. Equally, you might imagine that a higher level of aversion to such events would be reflected in a greater willingness to pay for their prevention. But, again, the evidence does not support this. When asked whether a given sum of money should be spent on preventing (say) five fatalities in one accident or ten fatalities in five accidents, members of the public invariably opt for the latter.

Until recently, the rail industry used a “multi-fatality multiplier” to allow for these scale effects in its cost:benefit appraisal of safety improvement schemes. But it has now been actively discouraged from doing so by the Treasury (i.e. the finance ministry), because there is nothing to show that this reflects the revealed preferences of its users. [*HM Treasury, 1996*] What the public seem to be saying is that they wish to see such accidents prevented or at least reduced, and that they expect the industry to do so, but that they are not willing to pay more, either through fares or through taxes, to achieve this result. But how else they believe such improvements should be funded is an unanswered question. In a recent paper on *Societal Risks* commissioned by the Health and Safety Executive, two academics alluded tactfully to another factor which may help to explain the industry’s preoccupation with this issue.

”There is very little evidence for differential risk aversion by the public where this is based on numbers of fatalities. However, there is a hint ... that elected officials, senior administrators and risk managers may be averse to major accidents... Whether this is attributable to enlightened self interest or to a professional assessment of the wider consequences of such events for society is less easy to discern.”

[*Ball and Floyd, 1998*]

The scale of the outcome of an accident is not the only characteristic which may complicate the application of the willingness-to-pay approach in its simple form. Recent research commissioned by the industry’s safety and standards board has shown that there are a number of other factors which can influence the public’s perception of the seriousness of lapses in the railways’ safety performance, and thus society’s judgement of the competence of the industry’s leaders. These include

- The “dread” effect. People are more afraid of some accidents than of others, even though the outcome is the same – e.g. of being burned alive in a train fire than of being killed outright in a collision of which they have no forewarning.
- The “likelihood” effect. This applies to events which they perceive to have a higher probability of occurring, either to themselves directly or in general.
- The “equity” effect. This relates to the perception that some effects are inherently unfair, e.g. the accidental death of very young people rather than very old ones.
- The “helplessness” effect. There appears to be greater aversion to events over which the victims perceive themselves to have no control, which is typically the case in a train accident. Car drivers are willing to take greater risks because they believe that they are capable of taking avoiding action, even though this is frequently an illusion.
- The “culpability” effect. Some accidents are seen as being wholly random and unpreventable while others are regarded as foreseeable. When the latter occur, blame is ascribed to those who are held to be responsible.
- The “mistrust” effect. This stems from an inherent lack of confidence in the integrity and competence of the industry’s leaders, leading to a belief that they cannot be trusted to ensure the safety of their passengers. This mistrust is placed entirely on senior managers, while the professionalism of (e.g.) train drivers is held in the highest regard.

[*Wolff, 2002, Risk Solutions, 2006*]

None of these effects is amenable to easy quantification – but if the industry is to be responsive to societal concern, it cannot disregard them, and it must find some way of taking them systematically into account in prioritising its safety programmes and objectives. This may lead it into situations in which it has to make difficult judgements of a quasi-moral nature. As already indicated, a large proportion of risk to the public is faced by trespassers, who have no legitimate (or at least no legal) right to be on railway premises. And a large proportion of risk to passengers is faced by those with what is delicately referred to as “impaired competence” – i.e. they are under the influence of alcohol or other drugs. There is little or no public concern at their fate. Does this entitle the railway to be indifferent to it too?

Whether it deserves it or not, the rail industry’s safety performance is demonstrably an issue of public interest and, in some quarters, of public disquiet. But the evidence suggests that most members of the public have at best a sketchy understanding of the industry’s true safety performance. For example, a survey in 2003 revealed that passengers believed that the most frequent “incidents and accidents” occurring on the system were derailments, collisions, landslides, falls from carriages, and injuries due to overcrowding. [*Rhind and Thomas, 2003*] In fact, these are all infrequent and together account for less than one twentieth of the risk on the railway. Instances of the last two categories are virtually nonexistent. In another recent survey, when people were asked to name the mode of transport in which they believed that travellers are least likely to be injured in an accident, more than twice as many nominated cars as nominated trains, even though the opposite is true by a wide margin. [*CfIT, 2001*] And when a motor insurance company asked drivers whether they felt safer in cars or in trains, cars won by a similar two-to-one margin. [*Green Flag, 2006*]. So the rail industry clearly has a major task before it, if it is to win the public’s hearts and minds, or simply the public’s serious attention to the facts.

Does this matter? I think it does – because, as a passenger, I have a personal stake in the industry’s success. The following quotation comes from evidence given by the chair of the National Consumer Council (Deirdre Hutton) to a public inquiry into safety regulation and assurance in the rail industry, following a very serious collision seven years ago :

“Public perception is a crucial factor in the acceptability or otherwise of regulatory systems. In the UK now there have been a number of examples where the public have ceased to trust the system in place and what is obvious is that public displeasure, which is often slow to gather pace, can have serious consequences and is powerful enough to drive change.

“Two areas, food and financial services, illustrate the power of public perception in bringing about change when trust has been lost.

[This is a reference to the outbreak of “mad cow disease” and to false claims made by firms selling personal pension plans.]

“The key factors were common to both areas and included

- a series of problems which critically affected the public
- an industry which saw itself as having somewhat disconnected parts but which the public saw as a whole
- conflicts of interest
- a lack of transparency in the decision making process
- a lack of accountability and feedback to the public
- a fundamental failure to understand or establish the levels of safety which the public required. “

[*Hutton, 2000*]

Every one of these characteristics can – or could until recently - plausibly be held to be shared by the rail industry too. What action did Ms Hutton recommend?

“The approach of the regulator has to be underpinned by a general compact with the public about the level of safety which is required and of risk which is acceptable. This will not remain static and will change over time or in the light of experience. It would be important to remember that the public do not approach statistics in the same way as scientists or economists : the 1 in 100,000 is potentially a brother or child or parent.

“This kind of discussion can only be held in language that the public might use in everyday life... This also suggests that the regulator must on a continuing basis have an easy and effective method of ensuring that the voice of the public in putting their case is heard every bit as clearly as the various voices of the industry.”

[Hutton, 2000]

Ms Hutton’s remarks were directed at the industry’s safety regulator. But I believe that they are no less relevant to the industry’s decision-makers themselves. It should not simply be left to a regulator to impose standards or set targets. A regulator can ask questions, give guidance and – when necessary – apply sanctions, but ultimately only the railway can take ownership of these problems and deliver solutions to them. A mature, self-confident and competently managed industry should be capable of doing so, and of demonstrating that it has appropriate systems in place for this purpose. It cannot ignore the concern about its performance which is evident in society at large, and it must find effective means of engaging in a dialogue with its users and the wider public about its safety record and its strategy for improvement. The danger it faces, if it fails to do this successfully, is that political demands may be made of it which do not properly reflect the true pattern of risk, and that it will incur opportunity costs which prevent it from delivering either the most cost-effective quantum of safety, or other service enhancements which rank higher amongst its users’ priorities, or both.

My purpose in coming here is to learn, not to lecture. Britain’s railway industry – and its interlocutors, such as Passenger Focus - cannot be alone in grappling with these difficult managerial challenges. So, please tell me, how are they handled around the world? What guidance can you offer us in seeking solutions? How do we develop this dialogue? Who should our debating partners be? Which media should we be using? How should we be framing the questions? What is society entitled to expect of us? Does society really know? If it does, are its expectations credible and deliverable? If it does not, how can we help it to come to a coherent understanding of the options and the arguments? What, in a nutshell, does the test of “reasonable practicability” really mean – and how can we tell when we’ve passed it?

JC 20.9.06

References

- Ball and Floyd, 1998 : "Societal Risks", David J Ball and Peter J Floyd for the Health & Safety Executive
- Bridgeman, c1989 : "Three million dead and injured", June Bridgeman, paper for seminar on bus and coach safety
- CfIT, 2001 : "Public Attitudes to Transport in England 2001", Commission for Integrated Transport
- Department for Transport, 2005 : "Highway Economics Note No 1, 2004"
- European Union, 2004 : "Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways"
- Evans, 2003 : "Transport fatal accidents and FN-curves : 1967-2001", Andrew W Evans for the Health & Safety Executive
- Green Flag, 2006 : "Drivers dupe themselves into feeling safest at the wheel but are terrified as passengers", Green Flag Motoring Assistance press release 22.5.06
- HM Treasury, 1996 : "The Setting of Safety Standards - a report by an interdepartmental group and external advisers"
- HSE, 2001 : "Reducing Risks, Protecting People", Health & Safety Executive
- Hutton, 2000 : "Ladbroke Grove Rail Inquiry Part 2", witness statement by Deirdre Hutton for Health & Safety Commission
- Rhind and Thomas, 2003 : "Passenger Surveys", Daniel Rhind and Lauren Thomas, Cranfield University
- Risk Solutions, 2006 : "Modelling Societal Concerns", Risk Solutions for the Rail Safety & Standards Board
- RSSB, 2006 : "Profile of safety risk on the GB mainline railway, Issue 5", Rail Safety & Standards Board
- The Guardian, 2006 : "Four killed as lorry and car collide on M25", The Guardian, 9.8.06
- The Times, 2003 : "Thomas the crash engine leaves children fearful", The Times, 11.3.03
- Wolff, 2002 : "Railway Safety and the Ethics of the Tolerability of Risk", Jonathan Wolff for Railway Safety