

Facts sheet 2 Casualty rates, rail and road compared

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Summary

This note contains casualty data for the national rail network and for the comparable Motorway and **rural** trunk road system, here called the strategic road network. Casualty rates are for the decade ending December 2007 except that when considering express coaches and buses, here referred to as coaches. For these vehicles the available data is for the period to 2005.

The variability in the deaths per year **to passengers** is so great as to make comparisons between **rail and coaches** meaningless. For example, in the 10 years to 2007 there were 23 fatalities to passengers in coaches and buses on trunk roads and motorways, but in 1995 there were 26 such deaths. Similarly with rail, of the 51 fatalities to passengers in train accidents 39 were in the two years 1999 to 2000.

In parallel with that, the differences in definition for non-fatal casualties, “Serious injury” for road and “passenger injury” for rail, mean that comparisons between those injuries are almost pointless.

Against that background, the only comparisons that can be relied upon are the system-wide death rates as set out below.

Rail	Killed per Bn Pass-km
All people including trespassers but not suicides or suspected suicides	2.316
As above plus suspected suicides	3.312
As above plus suspected suicides and suicides	6.049
Strategic Roads – (England only)	
All casualties	2.164
All casualties excluding pedestrians, cyclists and motor cyclists	1.615
Car occupants only	1.864

The data are the averages for the 10 years 1998-2007. The rail data excludes those deaths that, if on the road network would not be classed as road traffic accidents, except that falling from platforms, boarding and alighting, killed by the doors and electrocuted are included on the grounds that those deaths could not occur on the roads, being hazards particular to rail.

The data excludes suicides and suspected suicides by road. However, these are unlikely to inflate the deaths on the strategic road network by more than 2%.

The inclusion of suicides and suspected suicides must be contentious in that it could be argued that those people would otherwise have found some other method. However, there is little doubt that offering an obvious and easy option increases the risk of such actions. In any event the data suggests that if road traffic occupied segregated rights of way as do the railways then the death rate by rail would be nearly 50% above the rate for the rubber tyred option (2.3 compared with 1.6)..

Definitions and some comment

The definition of a death by road is dead within 30 days. For rail the definition is death within one year. The difference is not significant since those who survive for 30 days usually survive for one year.

In the tabulations associated with this note a “passenger injury” by rail is referred to as though it were a serious injury. However, the definition of a seriously injured casualty by road is one where the injury person is treated as an in-patient, or, if not, when the injury is a fracture etc. In contrast a “passenger injury” by rail is one where the person is sufficiently injured to be taken to hospital from the scene of the accident. These definitions are incompatible since, for example, a high proportion of those taken to hospital from the scene of an accident may be discharged without becoming in-patients. For that reason, although road and rail non-fatal casualties appear under the heading “serious”, it may be inappropriate to compare the data.

Additionally (a) the DfT say in the annual road safety reports that they believe serious casualties by road are under reported (b) hospital policy varies over time so that today people are discharged who would previously have been treated as in-patients so altering the number who might otherwise be deemed to be seriously injured.

Discussion

There are two categories of people that can be considered, namely:

- (a) Passengers plus staff etc. onboard trains or at stations. Casualties to these people should be compared with those to people in the comparable mode of transport by road, namely the express coach operating on the strategic road network plus those killed shortly before boarding or after alighting.
- (b) All those people injured by the systems. For rail that should include trespassers but not suicides. Those casualties may reasonably be compared with those to all people using the strategic road system with the caveat that trunk roads are open to pedestrians and cyclists and to people on motorbikes; classes of people seldom met with on railway alignments.

As previously the variation in the yearly deaths to **passengers** in trains and coaches is large. For example, the deaths each year in train accidents containing more than 5 deaths back to 1915 provide an average 14 per year, **see table 12**. In comparison the passenger deaths per year for the decade to Dec 2007 averaged five per year but the range in that decade was from 0 to 29, **see Table A6**. Similarly for coaches on the strategic road network; in the decade to 1998 to 2007 there were 24 deaths but in the single year 1995 there were 26 deaths, **see Table A10**. Hence, although numbers available in the tabulations can be compared robust conclusions can scarcely be drawn.

The problem of data variability largely vanishes when system-wide data is considered. Deaths in all classes of accident by rail are included except those which, if occurring on the roads, would not be classed as a traffic accident (e.g. falling down stairs). The exception to that rule is that rail deaths, such as by electrocution, or falling off platforms, that are unique to rail are included.

If the difference in definitions are discounted then the killed and seriously injured, KSI, casualties per billion passenger-km to rail passengers and staff, whilst in the envelope bounded by the ticket barriers, amount to 9.0 compared with 2.9 for coaches on the strategic road network, **see Table 1**. However the apparent advantage of the coach would vanish if 75% of the rail passengers taken to hospital were not treated as in-patients and hence did not meet the definition of a seriously injured road casualty.

(On a matter of detail, the value for coaches includes an allowance for passengers injured shortly before or after boarding or alighting. That allowance is one thousandth of the pedestrian casualties arising on the entire UK road network. That allowance amounts to about 25% of those injured while on board or when boarding or alighting, i.e. to 20% of totals).

Railway industry presentations

The railway industry represents rail as uniquely safe compared with road. For example, in paragraph 186 of the House of Commons' Transport Committee's report on the Future of the Railway, published in April 2004 we read 'The SRA (Strategic Rail Authority) points out that "On average more road users die each day in accidents than rail passengers in a year"'. However:

- The comparison ignores usage. Hence, since there were 18 times as many passenger-miles by road than by rail, the comparison exaggerated in favour of rail by a multiplier of 18.
- The comparison is between the system-wide deaths on the entire road system, including pedestrians, cyclist and people on motorbikes, with rail passengers, probably those killed in so called Train Accidents. That introduces a further massive exaggeration in favour of rail.

The consequence is to create an entirely false impression.

Furthermore deaths to passengers in train accidents are trivial compared with rail safety as a whole. To illustrate, **Table 5** shows that in the decade to 2007 the cost of these deaths amounted to 4.6% of the cost of all fatalities, including trespassers but not suicides or suspected suicides, and to 1.5% of the cost of all deaths plus serious injuries, again excluding suicides and suspected suicides (supposing we can value the non-fatal rail casualties at the same rate as serious road casualties).

Against that background we say that the railway lobby's presentations mislead politicians and the public on a mammoth scale.

Suicides by road

Office of National Statistics data suggests that 164 people committed suicide in England and Wales in 2008 by jumping or lying in front of a moving object. Only eight committed suicide by crashing a road vehicle. We have from the ORR that circa 100 people killed themselves by jumping in front of a train. Hence of the 164 who jumped in front of a moving object only about 60 could have been on the roads. Of those perhaps 5 to 10% would have sought out a motorway or trunk road. After all such roads are generally remote from where people live and account for less than 5 % of the network. Hence there may have been 3 or 6 suicides on the strategic road network compared with a total of circa 430 road traffic deaths per year for that network in the decade to 2007, see table A3.