

The tabulation in this update extends the previous by the addition of rows 5, 5(a) and 5(b) and by longer period data for the road casualties, as noted in the tabulation.

The Railway lobby has succeeded in imbedding in the minds of the public and politicians that rail is overwhelmingly safe compared with road. E.g. Sir Robert Horton said in Railtrack's annual report of 198/9 that rail is "27 times as safe as road in terms of fatalities and serious injuries" and in the Transport Committee's report, The Future of the Railway (House of Commons) we read "the figures comparing road and rail fatalities are telling ... The SRA points out that on average more road users die in accidents each day than rail passengers in a year". We point out that those statements exaggerate rail safety by a factor of 18 or by 1,700% by ignoring usage and by further amounts by selective reporting. In reality the rail safety myth has no basis as illustrated below.

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There are two constituencies, namely (a) casualties to passengers and (b) total, or system-wide, casualties i.e. including pedestrians for roads and trespassers (but not suicides) for rail. Headline data follows where the casualty rates are per **billion** passenger-km and where the casualty cost rates are pounds per **million** passenger-km at the 2001 price base. Greater detail is tabulated. Even greater detail is available by request. All the data should be read in conjunction with the notes following the headlines.

Headlines – see also the tabulation.

1. The death rate to rail passengers in the envelope bounded by the ticket barriers is 0.397, double the corresponding rate, 0.198, suffered by passengers in buses and coaches on non-urban roads. If the envelopes of interest are drawn more tightly so as to be bounded by boarding and alighting then the death rates are 0.264 for rail and 0.164 for bus and coach. This headline is subject to the caveat at note (m)
2. System-wide, including trespassers but not suicides, the death rate by rail is 3.94, more than double that on the motorway network, namely 1.69.
3. The death rate to passengers in cars is 2.8 (all roads)
4. The death rate on motorways and non-built up A-roads is 5.2. If pedestrians, cyclist and motorcyclists are excluded then the death rate is 3.75, suggesting that if road vehicles enjoyed a segregated network as do trains the death rate by road would be less than the death rate of 3.94 for the national rail system.
5. The Killed and Seriously Injured casualty cost rate suffered by passengers by rail is £1,970, 3 times as high as for passengers plus drivers in buses and coaches on non-urban roads, namely £668. These values exclude the costs from falling down steps and escalators. If such falls are include then, subject to the caveat at note (f), the rail casualty costs per billion passenger-km to passengers nearly doubles, rising to £3,570. However, there is no comparable data for people travelling by bus and coach although, intuitively stairs and escalators are relatively rare in bus stations or at other set down points.
6. Most rail safety publicity ignores all casualties except deaths to passengers in Train Accidents. E.g. excluded are deaths from falling out of trains, boarding and alighting etc. However, casualty costs attributable to passengers killed in train accidents amount to only 11% of the Killed or Seriously Injured costs suffered by passengers in the envelope bounded by the ticket barriers and 3% of all rail KSI casualty costs. These percentages ignore the casualty costs from falling down escalators and stairs or from slipping on packages or being hit by barrows. If those classes of accident are included the 11% falls to 6% and the 3% falls to 2.5%. Indeed if the casualty costs associated with the category "serious" are robust, see note (f), then the casualty costs attributable to Killed and Seriously injured from falling down steps and escalators are nearly 8 times the casualty costs from the category Killed in a Train Accident.

Notes:

- (a) Data for roads are from the year 1996-2001 except for pedestrians.
- (b) Data for rail and for bus and coaches on non-urban roads are from the years 1996-2002, except that fatalities and serious injuries to people killed in train accidents have been reduced in the light of the long run average back to 1982.
- (c) Casualty rates are the casualties for the period divided by the passenger-km. The data sources are the DfT publications (a) Transport Statistics Great Britain, (b) Road Casualties Great Britain – augmented by special request to the DfT for deaths to coach passengers on non-urban road and (c) the annual railway safety reports.
- (d) Casualty costs are at the 2001 price base. The unit values are those used by the DfT in evaluating road schemes, the HEN 2 values. That provides £1,194,240 for a fatality, £134,190 for a seriously injured casualty and £10,350 for a slightly injured casualty.
- (e) A fatality by road means dead within 30 days. A fatality by rail means dead within one year. For that reason deaths by rail were reduced by 5% and that 5% added to the category Seriously Injured. However, a DfT source has suggested the 5% should be 1% at most. If so the reported numbers are biased in favour of rail.
- (f) We have assumed in calculations that the casualty costs of a seriously injured casualty by road, meaning spent the night in hospital or more broadly at the discretion of the police, is the same as the casualty cost of a “passenger injury” by rail defined as taken to hospital from the scene of the accident. **However, we warn** that the data cost data should be treated with caution since (a) typically over 70%, of rail (KSI) casualty costs are attributed to “passenger injury” category and (b) the severity profile, and hence the unit cost, for types of accident, e.g. falling down steps or off platforms, may differ markedly from the severity profile of serious road casualties.
- (g) For rail staff, serious casualties have been estimated by reference to the ratios of passenger deaths to passenger injuries (That is because the definitions for non-fatal injuries to rail staff do not correspond in any sensible way to the definitions for the serious and slightly injured by road).
- (h) Passenger rail casualties included in the above were those from the following classes of accident. Train Accidents: Falling from trains: Boarding and alighting: Struck by doors: Falling off platforms and hit by a train: Falling from platforms and not hit by a train: Crossing the lines. **Excluded**, except as stated, were passengers injured in the accident categories: “other”: from barrows and falling over packages: falling down steps and escalators: other slips and falls and non-movement miscellaneous. The grounds for the exclusions were that equivalent casualties on the road network would not form part of the data recorded as road (traffic) accidents. However, in so far as steps and escalators are much more common on railway stations than on the road network those particular casualties should perhaps have been included. They would add considerably to the costs of passenger injuries but little to death rates.
- (i) Staff (rail) casualties include injured in the following categories: Train Accidents: Boarding and alighting, contact with the track side. Excluded are: While on board: Miscellaneous: Shunting: Work about the Track: and Other. Again, the grounds for exclusion were that such incidents on the roads would not form part of the road traffic accident data set.
- (j) Excluded from (rail) trespassers are those injured falling from bridges and in the category “other”. The reasoning is that people injured in that way on the roads will not be classed as road traffic casualties so that they will not form part of the database.
- (k) Bus/coach casualties are from the categories: While on board: Board and Alight: and prior to boarding or after alighting.
- (l) A bus or coach passenger is classed as a pedestrian with regard to the road traffic accident statistics before boarding or after alighting. Additionally, there is no national data about injuries in bus and coach stations. Hence, for comparative purposes some assumptions had to be made to estimate the casualties to passengers within a time period corresponding

to that required to leave a railway station. The approach was to set the numbers to one thousandth of those injured as pedestrians as a whole. Intuitively that seems conservative - is it likely that more than one in one thousandth of the total time for which pedestrians are exposed to traffic is attributable to the 5 minutes before boarding or after alighting from a bus or coach subsequently driving on non-urban roads?

- (m) Death rates to coach passengers depended on estimating passenger-km. That depended on multiplying the vehicle-km by an occupancy. The value 16 was selected. That compares with the national average of 9 for all buses and coaches and with 25 for the typical occupancy claimed for coaches leaving Victoria Coach station in London.

Tabulation: Summary casualty rates and costs

Note: Data are for 1996 to 2001 for roads, for the period 1996-2002 for bus and rail and for 2001 only for peds/cy/mc.	Rate per billion pass-km				Cost £1,000 per bn pass-km 2001 base				
	Fatal	Serious	Slight	KSI	Fatal	Serious	Slight	KSI	ALL
(1) Built up A roads	6.04	91.83	735.63	97.87	7213	12323	7614	19536	27150
(2) Non-built up A-roads;	7.37	49.93	246.91	57.3	8802	6700	2556	15502	18057
(2)(a) Peds cyclists and Motor cyclists on (2)	2.25	11.1	13.35	13.35	2687	1490	138	4177	4315
(2)(b) Non-built up A-roads minus (2)a	5.12	38.83	233.56	43.95	6115	5210	2418	11325	13742
(3) Motorways;	1.69	12.37	115.36	14.06	2018	1660	7614	3678	11292
(4) All roads	5.31	61.63	422.52	66.94	6341	8270	4373	14612	18985
(4)(a) Peds cyclists and Motor cyclists 2001	2.19	24.65	96.57	26.84	2615	3308	999	5923	6923
(4)(b) All roads excluding (4)(a)	3.12	36.98	325.95	40.1	3726	4962	3374	8689	12062
(5) M'way and non-built up A-roads	5.2	35.59	196.74	40.79	6210	4776	2036	10986	13022
(5)(a) Peds, cyclists and Motor cyclists on Motorways and non-built up A-roads 2001	1.45	6.93	12.14	8.38	1732	930	126	2662	2787
(5)(b) M'way and non-built up A-roads minus (5)(a)	3.75	28.66	184.6	32.41	4478	3846	1911	8324	10235
(6) Buses and coach passengers on non-urban roads including as pedestrians	0.198	2.363	25.42	2.561	236	317	263	554	817
(7) Bus and coach passengers plus drivers	0.24	2.836	29.01	3.076	287	381	300	668	968
(8) Rail - passengers only (between the ticket barriers)	0.397	11.15	24.89	11.55	474	1496	258	1970	2228
(9) Rail passengers + staff, people on biz, postal workers	0.428	12.19	26.46	12.62	511	1636	274	2147	2421
(10) All rail including trespassers, and people at level crossing	3.94	13.75	27.31	17.69	4705	1845	283	6550	6833
(11) Escalators and stairs Rail Passengers	0.026	11.7	117	11.73	31	1570	1211	1601	2812
(12) Barrows and packages Rail Passengers	0.004	1.08	10.83	1.08	5	145	112	150	262

Note: this data differs from the previous version by:

- (a) Casualty rates for road now cover the period 1996-2001 although, for the time being, the pedestrian, cyclist and motor cyclist data is for 2001 only (the effect of the latter is to overestimate the rates in rows 4(b) and 5(b).
- (b) The addition of rows 5, 5(a) and 5(b).

The data for roads cannot at present be extended beyond 2001 because the DfT has replaced the previous road categories of "Built up" and "Non-Built up", which were actually speed limit related, by Rural and Urban, which are population related – roads in settlement of less than 10,000 population being categorised as rural despite the speed limits.