

Appendix 1

Usage, Rail and road compared

In the following and for the avoidance of doubt the term “a track” means a track containing two rails suitable for one train.

Rail. In 2005/6 Network Rail carried 43.2 billion passenger-km and 23.5 billion tonne-km. The route length was 15,810 km representing approximately 32,000 km of track. Dividing the passenger and tonne-km by track length yields productivity indices of 1.35 million passenger-km per km and 0.73 million tonne-km per km. Adding the two provides a combined productivity index of 2.08.

The strategic road network carries 32% of all road traffic which reduces to 62% of goods traffic and 30% of non-goods traffic. Table 1.1 of the TSGB provides a total of 726 billion passenger-km by car, light van and bus on all roads. Hence, if passenger-km on strategic network is proportional to the non-goods traffic there were $726 \times 0.3 = 218$ billion passenger-km on that network. Similarly there were 163 billion tonne-km of freight by all roads. Hence the strategic network carried 101 billion tonne-km. Adding passenger-km and Tonne-km as though they were one item yields 319 item-km. Dividing by lane length, (50,000-55,000)km, yields productivity indices of (4.0 to 4.36) million passengers-km per km, (1.84 to 2.02) million Tonne-km per km or, if freight and passengers are added as one item, (5.84 to 6.38) million item-km per km.

Dividing the productivity indices for the strategic road network by those for rail shows that strategic roads are 2.5 to 3 times as productive per km of lane as is rail per km of track.

Separately from that, if the tonne-km by rail are divided by 15 to represent equivalent lorry-km and if passenger km are divided by 20 to represent equivalent express coach-km and if the sum of the two is divided by track length and by the 365 days in the year then we then obtain a network-wide equivalent daily vehicle flow. The calculation yields 320 vehicles per day per track – a flow so trivial it would be unnoticed on a motor road.

London’s rail commuters.

In the 3 hours 7 ma to 10 am 473,000 passengers enter central London by surface rail in 2005. Hence probably less than 250,000 do so in the peak hour. There are at least 25 pairs of tracks serving the centre. Hence the peak hour passenger flow per track averages 10,000 passengers. All those would find seats to spare in 150 75-seat coaches, sufficient to fill one seventh of the capacity of one lane of a motor road here set to 1,000 express coaches per hour. The width require by that lane is the same as require by a train.

Casualty rates

In the following casualty rates are casualties per billion passenger-km.

The railway lobby concentrates publicity on deaths to passengers in train accidents. In contrast we added the deaths in the categories set out below for the period 1995 to 2005 and divided by passenger-km after reducing the casualty totals total by 5% because death by rail is defined as death within a year whereas death by road is death within 30 days. The results follow:

- (a) Train accidents, falling from trains board and alight, by the doors, falling from platforms and crossing the lines at stations provided a combined death rate 0.317 of which 0.143 were in train accidents.
- (b) Adding the categories, electrocuted, barrows and falling over packages, steps and escalators yielded **0.358**.
- (c) Adding for people on railway business, postal workers and staff yielded **0.571**.
- (d) Adding for level crossings yielded **0.766**.
- (e) Adding for trespassers but not suicides yielded **4.11**.

Further, we found that the cash value of deaths to passengers in train accidents amounted to 10% of the cash value to passengers **killed and seriously injured** in the categories at (a) above, and to 5% of the value when categories at (b) are added and to only 1.5% of the value of all KSI casualties where trespasses predominate.

For express coaches on motorways and trunk roads we carried out a like calculation. That yielded an all in death rate for passengers plus drivers of **0.24**.

For the motorway and Trunk road network we divided the deaths in 2002 by an estimate of passenger-km made by multiplying the vehicle flows by vehicle occupancy. That yielded **2.65** for all fatal casualties or **2.04** if pedestrians, cyclists and people on motorbikes are excluded (classes of people that would not be found on a converted rail network).

Comment. The comparisons with rail are telling.