

B

Questions Expert Judgement

The goal of this study is to get insight into future growth in heavy traffic using the method of Structured Expert Judgement. The questions are about both growth in mean truck weight, as well as about growth in traffic flow. These growth figures will then be used to estimate whether current bridge load models will still perform adequately under future traffic scenarios. There are calibration questions, and two target questions to be answered. You are asked to provide your estimates for 5th, 50th and 95th percentile.

B.1. Calibration questions

B.1.1. Change in traffic flow

The following questions are based on the traffic counts on all motorways (M-roads) in the UK, from 2000 to 2020.

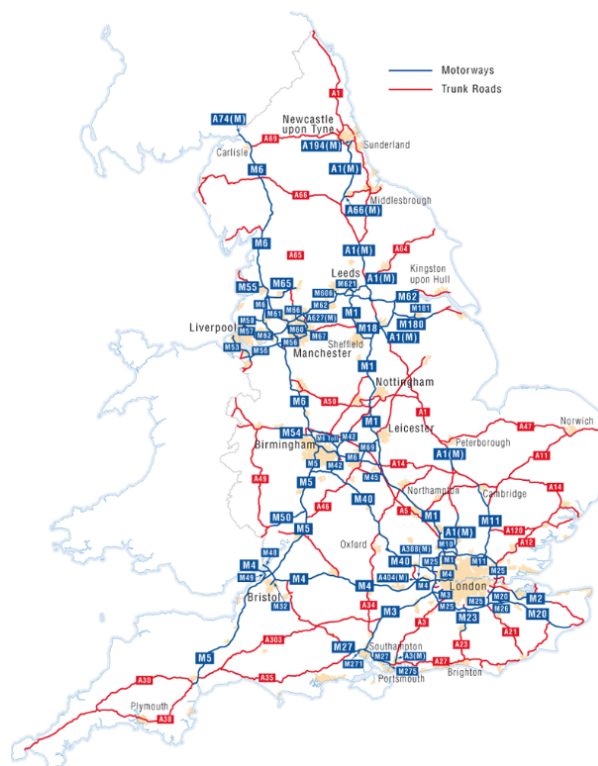


Figure B.1: Map of major roads in the UK. Motorways (M-roads) are in blue, figure from UK Infrastructure Act 2015

For the following categories of trucks, can you give your 5th, 50th and 95th percentiles estimates for mean yearly change in number of trucks from 2000-2020 in percentages? Negative percentages mean a decline in the number of trucks, positive percentages mean a growth in the number of trucks.

1. 2-rigid axle truck: 5th percentile 50th percentile 95th percentile
2. 3-rigid axle truck: 5th percentile 50th percentile 95th percentile
3. 4- or more rigid axle truck: 5th percentile 50th percentile 95th percentile
4. 3- or 4-articulated axle truck: 5th percentile 50th percentile 95th percentile
5. 5-articulated axle truck: 5th percentile 50th percentile 95th percentile
6. 6-articulated axle truck: 5th percentile 50th percentile 95th percentile

B.1.2. Truck weights

The following questions are based on the weight of trucks in a Weight-in-Motion study done in April 2013 at the WIM station RW12 on the A12, Netherlands.



Figure B.2: Locations of the WIM stations in the Netherlands.
(Kuiper & Nibourg, 2013)

For the following categories of trucks, can you give your 5th, 50th and 95th percentile estimates for average truck weight? The maximum allowed axle load for a single axle is 10 tonnes if the axle is not driven, and 11,5 tonnes if the axle is driven. For dual or triple-axle bogies, the maximum load is less per axle than if the axles had been individual.

7. 2-axle truck: 5th percentile 50th percentile 95th percentile
8. 3-axle truck: 5th percentile 50th percentile 95th percentile
9. 4-axle truck: 5th percentile 50th percentile 95th percentile
10. 5-axle truck: 5th percentile 50th percentile 95th percentile
11. 6-axle truck: 5th percentile 50th percentile 95th percentile
12. 7-axle truck: 5th percentile 50th percentile 95th percentile

B.2. Target questions

In this section, you are asked to answer two questions pertaining to future flow and load growth on the UK M-roads. The UK currently still adheres to EU guidelines concerning vehicle weights, as does the Netherlands.

For the UK M-roads, can you give your estimation for mean yearly change in number of trucks for the following truck types, for the period 2020-2050, in percentages?

13. 2-axle truck: 5th percentile 50th percentile 95th percentile
14. 3-axle truck: 5th percentile 50th percentile 95th percentile
15. 4-axle truck: 5th percentile 50th percentile 95th percentile
16. 5-axle truck: 5th percentile 50th percentile 95th percentile
17. 6-axle truck: 5th percentile 50th percentile 95th percentile
18. 7-axle truck: 5th percentile 50th percentile 95th percentile

For the UK M-roads, can you give your estimation for mean yearly change in number of trucks for the following truck types, for the period 2050-2100, in percentages?

19. 2-axle truck: 5th percentile 50th percentile 95th percentile
20. 3-axle truck: 5th percentile 50th percentile 95th percentile
21. 4-axle truck: 5th percentile 50th percentile 95th percentile
22. 5-axle truck: 5th percentile 50th percentile 95th percentile
23. 6-axle truck: 5th percentile 50th percentile 95th percentile
24. 7-axle truck: 5th percentile 50th percentile 95th percentile