

Statistics of inland goods transport

A new monthly indicator of the volume of inland goods transport in Great Britain has been prepared and will be published regularly in the *Monthly Digest of Statistics*. This article describes the basis and construction of the index and briefly discusses its significance.

In the past there has been no comprehensive series of statistics measuring the volume of goods carried by road transport and as a result it has been impossible to give a complete measure of the volume of all inland goods traffic. Railway statistics are continuously compiled and frequently published. Reliable and up to date information about the volume of rail goods traffic is therefore readily available⁽¹⁾. The position is quite otherwise in respect of road transport.

Road transport

Until comparatively recently almost the only information available about goods transport by road consisted of fairly detailed analyses of the numbers of vehicles according, for example, to their unladen weight, but there was no information about the amount of work which the vehicles were performing.

There were two important reasons for this. The number of operators involved now substantially exceeds half a million and the task of collecting returns from all these operators and compiling statistics from the returns would be heavy and costly. Secondly, many operators do not maintain records of the kind needed to provide statistics.

It was decided to assemble information about the nature and volume of the work being performed by the goods vehicle fleet by means of sample enquiries.

The sample enquiries

Two sample enquiries have been made asking the operators of selected vehicles to give particulars of the work performed by these vehicles in stipulated weeks. These weeks were September 22nd to 28th, 1952, and April 21st to 27th, 1958.

In planning these enquiries it was necessary to balance the need for obtaining as much information as possible against the importance of securing a very high response rate. Many operators would have to keep special records for the period covered by the enquiry; the longer the period and the greater the amount of detail the greater their difficulties might be. It was decided to confine the enquiry to one week and only to ask for information that the operators could fairly easily supply from their own knowledge with perhaps the help of a few special records.

The vehicles to be included in the sample were stratified according to unladen weight and type of carrier's licence. The vehicles were selected from the Goods Vehicle Index in which there is one sheet for each vehicle with a carrier's licence. The numbers of vehicles to be selected in each category and the methods of selection to be used were

carefully devised to procure a well stratified sample and to ensure a properly random selection of vehicles within the strata⁽²⁾.

These enquiries gave a good deal of information about the work done by vehicles of the various licence and unladen weight categories, including mileages which the vehicles ran, the tonnages of goods carried and the ton mileages of work performed. It was also possible to examine statistically the special features of the work done by particular categories of vehicles, including those operated for hire and those run on the operators' own account. The information obtained in the enquiry made in 1958 was given in *The Transport of Goods by Road* published for the Ministry of Transport and Civil Aviation by Her Majesty's Stationery Office in July 1959. The main result, from the point of view of the present note, was the preparation of estimates of the total volume of road transport work during the weeks covered by the enquiries. In both 1952 and 1958 the weeks covered by the enquiries were chosen to be as free as possible from special seasonal influences and the total amount of work performed during the weeks was grossed up to provide estimates for the year. In 1958 special traffic counts were carried out during the week of the sample enquiry which made it possible to link the traffic in that week with the traffic in the month and in the whole year. The figures of traffic obtained from the sample were grossed up in the proportion which the counts in the sample week bore to those for the twelve months.

The sample enquiries, however, could not provide a current series because the cost of the work of selecting the sample, issuing, collecting and scrutinising the forms and extracting and collating the information is in practice too great to allow such enquiries to be undertaken frequently.

It was necessary to look for an alternative method of obtaining a current series.

Deriving a series from traffic counts

The numbers of vehicles passing particular points on the road system of the country have been counted at various times for many years. The original purpose was connected with the classification of roads for administrative and financial purposes but the counts were later used for general highway planning as a guide to the growth of traffic on the main roads. They are now used for interpreting the statistics of road accidents and casualties and for judging the efficacy of various road building and safety measures.

Counts are made at fifty points on the trunk and classified roads of Great Britain. Each of the four classes of road was subdivided between urban and rural areas. This gave eight strata. The number of points allocated to each stratum was calculated so as to minimise the standard error of the estimates of changes in vehicle mileage over the roads as a whole. It is believed that counts at these points give a good indication of changes in the volume of road traffic from one period to another.

(1) The volume of goods transported by other means, for example, canals, air, pipelines, is not large enough for variations in it to distort the picture presented by road and rail statistics.

(2) The sampling procedures are fully described in 'Outlines of the road goods transport industry', *Journal of the Royal Statistical Society, Series A, Vol. 117, Part 3, 1954*.

Since 1st January, 1958, a continuous series of manual counts of the number of vehicles passing these fifty points has been taken on Fridays, Saturdays, Sundays and public holidays. The changes in the numbers of vehicles passing the points on each category of road represent the changes in the vehicle miles run on that category of road. The count for each category of road is weighted by the total length of that category of road in Great Britain in order to arrive at the total vehicle miles run on all roads in Great Britain. Index numbers of changes in vehicle mileage travelled are published in the *Monthly Digest of Statistics*. Motor cars, motor cycles, buses and light and heavy goods vehicles are recorded separately. In this connection 'light' goods vehicles are mainly those not over 1½ tons unladen weight, and heavy goods vehicles are the remainder.

For the present purpose it is the series for goods vehicles which is important. This can be used as an indicator of changes in the ton-mileage performed by goods vehicles, so as to build up a continuous series of estimated changes in the volume of road goods transport.

To use the traffic counts for this purpose assumes that goods vehicle ton-mileage changes from one period to another in the same proportion as vehicle mileage⁽¹⁾. There are two main reasons for accepting this assumption.

A large proportion of the ton-mileage performed by road vehicles is on journeys on which a load is picked up at one place and is carried intact to a single point of delivery. It appears to be a feature of the greater part of this work that changes in the volume of traffic will be fully reflected in changes in vehicle miles. For example a reduction in the quantity of gravel to be carried to a building site will result in a smaller number of trips, not a smaller load for the vehicle on each trip.

The second major reason for believing that changes in vehicle mileage will closely reflect changes in ton-mileage is that an important feature of the operation of goods vehicles is flexibility: they rarely run to a timetable and if an adequate load is not forthcoming either a vehicle can be held until the load is made up or the run can be cancelled.

Hence it seems unlikely that variations in load factors will render changes in vehicle mileage a bad guide to changes in ton-mileage. It will be desirable, however, to make fresh sample enquiries fairly frequently to allow for long-term changes in the size and loading of vehicles and to rebase the series.

Statistics of inland goods transport

Using for road vehicles the methods outlined above it is now possible to prepare monthly estimates for inland transport. Taking the sample week as a benchmark and employing the changes in goods vehicle mileage derived from the counts as an indicator estimates were obtained of the total ton-mileage operated by road goods vehicles in each calendar month. Corresponding figures have been prepared for the railways with the aid of published statistics. Corrections have been made to eliminate the effects of differences in the number of days in the month, so that the series given in the table reflects changes in the levels of traffic in months of a standardized length.

Monthly index of inland goods transport

Monthly average 1958 = 100⁽¹⁾

		Road	Rail	Total
1958	January ..	88	111	98
	February ..	96	113	103
	March ..	103	113	107
	April ..	100	105	102
	May ..	107	101	105
	June ..	105	99	103
	July ..	96	86	92
	August ..	93	80	88
	September ..	102	93	98
	October ..	106	100	104
	November ..	107	103	106
	December ..	96	96	96
1959	January ..	90	102	95
	February ..	101	107	104
	March ..	100	95	98
	April ..	111	99	106
	May ..	108	92	101
	June ..	111	97	105
	July ..	111	84	100
	August ..	106	81	95
	September ..	112	97	106
	October ..	117	103	111
	November ..	118	105	112
	December ..	105	101	103

⁽¹⁾ The estimated total ton-mileage by road in 1958 was 23·1 thousand million and by rail 18·4 thousand million.

In interpreting and using the index of inland goods transport it is important to keep in mind its limitations. The method of calculating the volume of road goods transport is novel and it may not yet have been in use long enough for all the shortcomings to appear. The usefulness of the measure of transport activity will be greatly affected by its accuracy, and it will be necessary to have experience of the behaviour of the transport series over a period of time before deciding exactly how much weight it will bear in its present form.

This new index number is of obvious interest in connection with the development of the two forms of transport, making it possible to trace fluctuations in the total volume of traffic carried by each. But it is also of wider interest. The total volume of inland goods transport is a useful economic indicator because the volume of goods carried will reflect levels of activity in a wide range of industries and trades. It can be prepared quickly, and may give a valuable early indication of changes in the general level of economic activity: at present the index of inland goods transport can generally be calculated about the end of the third week of the month following the month to which it relates.

⁽¹⁾ A full discussion of these assumptions and the justification of them will be found in a paper entitled 'Statistics of the Transport of Goods by Road' read to the *Royal Statistical Society* on January 20th, 1960.

The chart shows that the index of inland goods transport and the index of industrial production appear to have moved closely together in the last two years. Nevertheless there are many reasons why the index of inland goods transport should differ from the index of industrial production and these should be borne in mind in interpreting the movements of the two series. The scope of the two differs since activities other than industrial production (such as agriculture and distribution) give rise to goods for transport. Changes in stocks at the different stages of the economic process will cause divergent movements of the

two indices. There is a suggestion in the figures that transport may fall less than production in the summer and rise rather less in the autumn. Apart from these basically short-term factors, structural alterations in the economy will cause the two indices to diverge in the long run. Moreover, as final output tends to become more highly finished and more expensive per unit of weight the transport index, which measures physical volume, will tend to rise more slowly than the index of production which measures net value added.

Ministry of Transport

MONTHLY INDICES OF INLAND GOODS TRANSPORT AND INDUSTRIAL PRODUCTION

Average for 1958 = 100

