1971 TRANS-PENNINE TRAFFIC FLOWS

1. Introduction

1.1 In Spring 1970, the Study commissioned O & D traffic surveys by all modes passing through a trans-Pennine screenline, which stretched from Skipton in the north to Woodhead in the south. In 1971, it was decided to follow up this work by looking at the changes (if any) in such flows between the two years.

1.2 There were two reasons for doing this:

(i) It is useful to monitor annual flows on these roads in order to get an interim indication of traffic flows on the M.62 as parts of such become open to traffic and also to see how this new link has affected flows on the older trans-Pennine routes.

(ii) Knowledge of changes in the overall level of traffic on trans-Pennine roads between any two years is also useful since it may be used to give a measure (albeit crude) of overall traffic growth to be used in the assignment process.

1.3 Because of the cost and effort involved a full manual count was out of the question and therefore it was decided to undertake an automatic count along the 1970 screenline. This was carried out in Spring 1971 on the eleven roads surveyed in 1970 plus the short section of M.62 open between Windy Hill on the Lancashire border and Outlane near Huddersfield.

1.4 In the time between the O & D surveys and 1971 counts, two sections of the M.62 have been opened to traffic.

(i) The link between the M.1 and the A.650 (to Bradford) at Gildersome.

(ii) The Yorkshire trans-Pennine section between Outlane and Windy Hill.

The former of these, however, should not have had much effect on travel patterns across our screenline, although it may have resulted in small reduction in congestion from the end of the M.1 into Leeds.

When traffic counts are taken in 1972, the Lancashire section of the M.62 between Windy Hill and Whitefield will have opened and this should result in more pronounced changes in traffic flows between the two counties. Also, if the counts were to be repeated in Spring 1973, a further addition to the network should be the M.62 section between Gildersome and Outlane, scheduled for completion in Autumn 1972 and resulting in an almost complete motorway between Leeds and Manchester. Once again, this new link should result in further pronounced changes in the nature and volumes of traffic on trans-Pennine routes.

1.5 It was intended to look at person flows in 1971 by all modes as had been the case in 1970. The bus operators who use the trans-Pennine roads were asked if they could provide volumetric information on passengers crossing the screenline from their normal ticket records. Unfortunately, not even crude flows could be easily obtained by them, and since the expense of obtaining this would have required almost the same expense and effort as the 1970 O & D survey, this information is not available.

Similarly, no passenger count information is available for British Rail. Data is available from the October count of the regular biennial census, but it has not yet been determined whether this can be used as a comparison.

Although a full count by all modes would have been useful, this deficiency of public transport data is not too great since private cars carried about 90% of all trans-Pennine passenger flows in the 1970 survey. Also, in Spring 1971 there were no scheduled bus services running on the M.62 although private coaches and local sight-seeing tours were using the motorway. This does not mean to say that bus operators have no plans for running services on the M.62, and it could well be that when more sections are open to traffic, there could be important inter-modal changes which would have to be monitored in subsequent years.

2. Fieldwork Details.

2.1 Equipment for the road counts was obtained from three sources:

(i) The Centre for Transport Studies lent various items from its stores including two Streeter-Amet counters, batteries, counter tubes and allied equipment, traffic cones and road signs. The Centre's Land Rover was also lent to the Study for this work. A technician also assisted in maintaining batteries and equipment as necessary.

(ii) Four Streeter Amet counters and five batteries were hired from an outside firm. Miscellaneous items of tubing, nails, end-plates etc. were purchased from the same firm.

(iii) One Streeter-Amet counter was lent by the Department of Town Planning, Leeds Polytechnic.

2.2 Where possible, the schedule for the counts was such that the timing for the 1971 counts was in the same 4 day period as the 1970 O & D survey. The only exception to this was the count on the A.672, which was taken in the same week as the count on the M.62. No counts were taken in the period of the Bank Holiday weekend. In order to look at traffic flows over the whole period of the counts, a continuous count was undertaken on the A.62. A timetable of roads and counter locations is shown in Appendix 1.

2.3 Prior to the counts being taken, the usual precautions were taken.

(i) The University agreed to indemnify the road owning authority (West Riding County Council) against any claims which might have arisen due to the presence of tubes etc. on the road.

(ii) The local police were also informed of the Study's intentions to undertake the counts.

(iii) Members of the Study team were covered against accident on the Standard University Insurance Policy.

2.4 As no other source of labour was available, the work had to be done by members of the Study team, with other occasional assistance.

(i) The laying of traffic counting tubes can at times be rather precarious. Road signs have to be erected and traffic cones laid out while the tubes are nailed into the road. On almost all roads, this work was undertaken early on Sunday mornings, as the danger and disruption to traffic is minimised at this time. The tube was secured to the roadside and the counter added later.

In selecting the locations for the tubes, the usual principles were adopted:

(a) The site had to be such that overtaking vehicles were not likley to have an adverse effect on counter readings.

(b) As near as possible, the site should be such that heavy vehicles are not braking at the time of crossing the tube, since this can lead to tube damage.

(c) Suitable road signs must be available so that equipment can be secured to them.

(ii) In most cases, counters were attached to tubes on the Wednesday prior to the four day counting period.

(iii) The counters were then collected on the Monday after the end of the four day counting period, and the batteries recharged in the interim period.

(iv) Regular visits were made (usually Saturday) to the A.62 so that batteries could be replaced and the tubes checked for damage.

The time taken in the week by this work was rather longer than anticipated, partly due to the time involved in getting to the counter points from Leeds; often a round trip of about 100 miles was necessary.

2.5 With one or two exceptions, reliable data is available for the periods mentioned in Appendix 1. The vagaries of operating the counting machines are almost limitless - counters can fail and correct themselves for no obvious reason, or more common, the tube can be damaged by vehicular, human or even animal activity. This latter problem was not helped by the fact that the road surface on some of the roads was uneven through being subjected to bad winter weather. In the main, however, the data which has been collected seems quite reasonable, bearing in mind the general reliability of such data. Any suspect figures have been omitted from the appendices.

3. Observations.

For the two years, hourly count data is available for each road. This information has been summarised for the four day recording periods in Appendix 2. For the A.62 Appendix 3 shows the continuous count figures. The 1970 figures for the A.635 and A.6024 have been obtained from classified count information. The commercial loadings of vehicles of more than 3 axles, however, is only in the order of 5% and 1% respectively.

3.1 Although comparisons between the two years are really the main objective of such an exercise at this period of time, such comparisons may be difficult for a number of reasons:

(i) In both years, there are gaps in the data record due to failings in the counting equipment as mentioned in Section 2. For certain roads, where complete or near complete figures are available, certain tentative comparisons can be made using this data. Appendices 2 and 3, however, only include data which seems fairly reliable.

(ii) Any comparison between the two years must by necessity (excluding the A.62) assume that the four day period under observation is typical of traffic volumes along any particular road in the corridor. By taking the volumetric count in the same four day period in both years, one source of possible variation has been avoided. There is, however, the general trend over the survey period to be considered. Analysis of the A.62 returns later in this section may throw some light on this trend.

(iii) Weather conditions could be responsible for some of the differences between the two years. Given the high proportion of leisure trips on some of the roads because of the surrounding scenery, variations in weather could have a substantial effect on the level of these trips.

(iv) The figures in Appendices 2 and 3 are all for a count of (Axles/2) Thus, a straight year by year comparison assumes that there has been no change in the proportion of each class of vehicle using any particular road. A change in the volume of commercial traffic, for example, would affect the(Axles/2) count rather more markedly than an equal change in the volume of private car traffic.

3.2 In spite of the problems mentioned in 3.1 above, there are some interesting observations which emerge from a comparison of the two sets of data.

(i) As expected, the switch in traffic volumes due to the opening of the M.62 has obviously had much more of an effect on the roads near to it, i.e. A.640, A.672 and A.58 and to a lesser extent, the A.646 and the A.62. This effect is shown in the table below:

	1971 flow	1970 flow	Index 1971/70
A.640	6315	15,928	39.6
A.672	8198	11,925	68.7
A.58	13919	16,681*	83.4
A.646 (West Only)	15304	18,221	83.9

* includes estimate for Thursday west flow.

A similar index for the A.62 is shown in Appendix 3. Where comparison is possible, the same index as above is as follows for the A.62 only.

	Average 1971/1970 Index for A.62
Thursday	97.48
Friday	100.51
Saturday	85.96
Sunday	85.29
Other Weekdays	97.54
All days	94.92

Therefore, it would appear that the A.640 has lost most of all roads both proportionately and volumetrically. Since this road runs between Outlane and Denshaw, and hence between the same two points as the newly opened section of the M.62, the figures would appear to state the obvious. The A.672 too has lost about one-third of its 1970 traffic flow, although it does not follow as closely the line of the M.62 as the A.640.

(ii) The roads to the north and south of the M.62 corridor, however, have not had such an experience. On the A.59 and A.65, there would appear to have been slight increases in traffic volumes, due to the general annual increase expected on these roads in spite of the M.62. The position is less clear with regard to the A.629. This road carries a tremendous volume of traffic. The difference between the two years is due almost entirely to the Sunday of the recording period. In 1971, it rained very

of leisure trips to be made on the day. The general expectation here ought to be no different to the experience of the A.59 and the A.65.

For the three southern most roads, inadequacies in the data are rather more pronounced than elsewhere. For 1970, the classified count figures have been used to fill in one major gap in the data. On the basis of data available, however, the picture is about the same as on the northern-most roads, i.e. there would appear to have been a general increase in traffic levels following the established pattern of all roads.

For these roads, excluding the A.629, and using as much data as is available, traffic levels would appear to have increased by about 6.3% on average between 1970 and 1971 - a figure which would appear to be in keeping with national levels.

(iii) Over the four-day period, the volume on the M.62 was in the region of 25,000 units. This volume is somewhat higher than one might have anticipated, but of much more interest is the fact that western flows are considerably in excess of eastern flows on the Motorway. This could be expected, since on the A.58, A.672, A.640 and the A.62 the position is reversed i.e. east flows on these roads are greater than the westerly flows. Over the immediate M.62 corridor, however, this effect evens out to give almost equal flows in both directions. With only a small section of Motorway open, there would appear to be two good reasons for this phenomenon.

(a) On the Lancashire side of the Pennines, the trans-Pennine routes are geographically closer together than on the Yorkshire side.

(b) Pleasure journeys made by people specifically with the intention of 'viewing' the M.62 scenery could result in this distortion of M.62 flows, i.e. more one way journeys are being made with return trips on non-M.62 roads.

For the M.62 corridor, the overall rate of traffic increase from 1970 to 1971 is about 6.4%, this being similar to the experiences of roads to the north and to the south of the M.62.

(iv) In 1970, continuous counts were taken on both the A.58 and the A.62. These showed no abnormal variation between different weeks or between the same days in different consecutive weeks. A similar survey of the A.62 was made this year, since if there was a general upward trend to be detected, it would affect any inter-road comparisons which were to be made. For 1971, western traffic flows on the A.62 are monitored on the graph, Appendix 4. These were used since eastern flow data is missing for the period 3rd May - 10th May. The graph shows a reasonably regular traffic flow over the period, with no general trend discernable, as was the case in 1970.

4. Conclusions.

The comparisons between 1970 and 1971 are interesting, and in general, would appear to be as expected. In subsequent years, with more sections of the M.62 open to traffic, there should be even greater changes to be monitored. To undertake the same fieldwork in subsequent years will, however, involve more effort and time, since more counters will have to be set up to measure trans-Pennine flows. There could, also, be rather more appreciable changes in the structure of traffic using trans-Pennine roads, and therefore, some classified counts ought to be included in the work. Similarly, as inter-modal changes are more likely in subsequent years, a full count by all modes should be seriously considered.

Timetable for road traffic counts and counter location — Appendix I

ROAD & POINT NO.'s		DATES OF COUNT (inclusive)	COUNTER LOCATION
A59	1 & 2	April 22 - 25th	1 mile east of Skipton near Overdale Trailer Park
A65	3 & 4	April 22 - 25th	1 mile east of Skipton at lay-by entrance
A629	5 & 6	May 13 - 16th	At Cross Hills near Junction public house
A646	7 & 8	May 13 - 16th	1 mile west of Hebden Bridge at lay-by near Heptonstall turnround
A58	9 & 10	May 20 - 23rd	2 miles west of Ripponden near Baitings Reservoir
A672	11 & 12	June 3 - 6th	West - on dual carriageway between M62 exit and entry East - at end of dual carriageway stretch past M62 entry
M62	-	June 3 - 6th	At entry and exit to Motorway at Windy Hill
A640	13 & 14	June 3 - 6th	1 mile west of disused filling station on Buckstones Moor
A62	15 & 16	Continuous Count*	1 mile west of Marsden near entry to Standedge cutting
A635	17 & 18	May 29 - June 2nd	2 miles west of Holmfirth near Ford public house
A6024	19 & 20	May 6th - 9th	Near Yorkshire/Cheshire boundary at Holme Moss T.V. station
A628	21 & 22	May 6th - 9th	Near Flouch Inn west of junction with A616

* For west direction, data available April 25th - 2nd June

For east direction, as above, but excluding May 5th - 10th

Automatic Counts 1970 and 1971 (excluding A62)

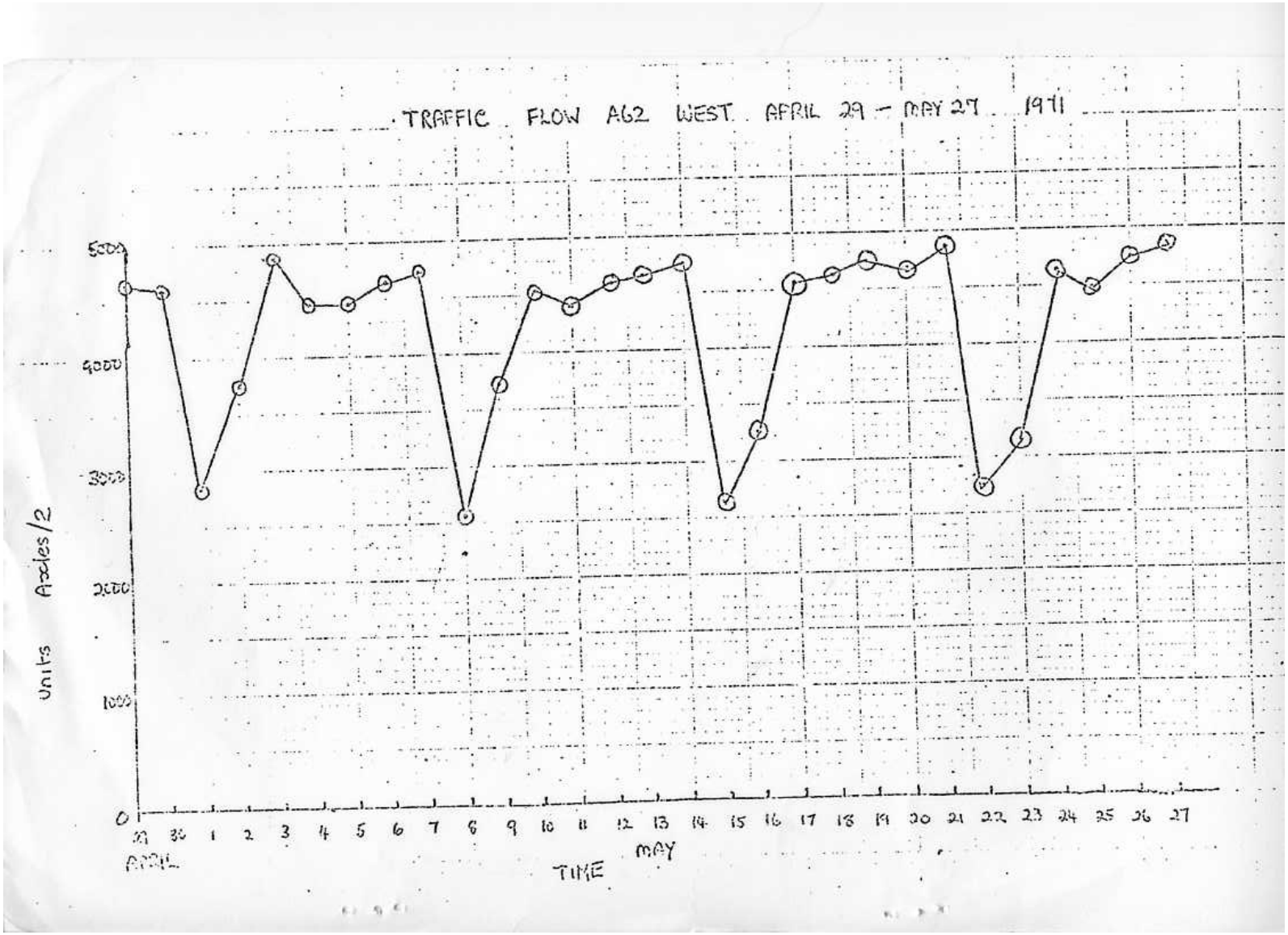
Appendix 2

Road	Direction	1971 Automatic Count (24 hrs) Thurs	Fri	Sat	Sun	TOTAL	1970 Automatic Count (24 hrs) Thurs	Fri	Sat	Sun	TOTAL
A59	West	1,769	1,761	1,179	1,831	6,540	n.a.	n.a.	n.a.	n.a.	
	East	n.a.	n.a.	1,405	2,516	(3,921)	n.a.	2,174	1,569	1,952	(3,511)
A65	West	7,048*	6,441*	2,869	3,911		1,941	2,036	1,935	n.a.	
	East			2,559	3,577	(6,136)	n.a.	2,701	2,372	3,492	(5,864)
A629	West	7,530	7,935	8,080	7,254	30,799	7,504	7,973	9,052	8,370	32,899
	East	7,775	7,691	7,654	5,631	28,751	7,341	8,043	9,946	10,002	35,332
A646	West	4,164	4,025	3,480	3,635	15,304	4,433	4,481	4,484	4,823	18,221
	East	n.a.	n.a.	n.a.	n.a.		4,172	4,142	4,077	4,550	16,941
A58	West	2,046	2,225	1,625	1,372	(5,222)	n.a.	2,529	2,091	2,364	(6,984)
	East	2,372	2,512	1,943	1,870	8,603	2,928	3,038	2,470	2,888	11,324
A672	West	-	-	-	-	4,049	1,319	1,372	1,493	1,730	5,914
	East	1,144	1,118	1,126	761	4,149	1,380	1,473	1,427	1,731	6,011
M62	West	4,625	4,245	2,950	3,711	15,531					
	East	2,402	2,288	1,833	2,565	9,148					
A640	West	1,362*	1,489*	1,301*	2,163*	2,410	2,254	2,129	1,506	1,957	7,846
	East					3,905	2,284	2,280	1,631	1,887	8,082
A635‡	West	1,303	1,342	n.a.	n.a.		991	1,056	832	1,574	4,453
	East	1,245	1,319	1,033	n.a.		1,018	1,125	904	1,676	4,723
A6024‡	West	1,060*	1,042*	1,100*	860*	4,062*	539	511	405	525	1,980
	East						575	556	386	516	1,973
A628	West	n.a.	n.a.	n.a.	n.a.		3,737	3,633	1,993	2,332	11,695
	East	3,413	3,646	n.a.	2,938	(10,097)	3,892	4,309	2,539	2,714	13,354

n.a. - not available due to counter deficiency
* - two-way flow
( ) - denotes sub-total due to missing data
‡ - No 1970 automatic count data available for these roads
Figures shown are from 16 hour classified count

Automatic Counts on A52 1970 and 1971 — Appendix E

Day and Date	1971 West	1971 East	1971 Total	1970 Total	Ratio 1971/1970
Thurs 29th April	4678	5341	10,019	10,077	99.42
Fri 30th "	4629	5005	9,634	9,473	101.70
Sat 1st May	2829	3410	6,239	6,463	96.53
Sun 2nd "	3750	4239	7,989	8,946	89.30
Mon 3rd "	4879	n.a.		n.a.	
Tues 4th "	4461	n.a.		n.a.	
Weds 5th "	4463	n.a.		n.a.	
Thurs 6th "	4639	n.a.		n.a.	
Fri 7th "	4712	n.a.		11,268	
Sat 8th "	2558	n.a.		6,389	
Sun 9th "	3726	n.a.		7,091	
Mon 10th "	4513	n.a.		10,277	
Tues 11th "	4404	5531	9,935	10,184	97.56
Weds 12th "	4603	5494	10,097	10,801	93.48
Thurs 13th "	4670	6788	11,458	11,769	97.36
Fri 14th "	4740	7257	11,997	12,078	99.33
Sat 15th "	2626	3077	5,703	7,565	75.39
Sun 16th "	3273	3694	6,967	8,572	81.27
Mon 17th "	4569	5342	9,911	10,111	98.02
Tues 18th "	4618	5649	10,267	10,086	101.79
Weds 19th "	4722	5712	10,434	10,700	97.51
Thurs 20th "	4669	5764	10,433	10,887	95.83
Fri 21st "	4890	6127	11,017	n.a.	
Sat 22nd "	2790	3535	6,325	n.a.	
Sun 23rd "	3151	3297	6,448	n.a.	
Mon 24th "	4629	5258	9,887	n.a.	
Tues 25th "	4480	5298	9,778	n.a.	
Weds 26th "	4752	5671	10,423	10,758	96.89
Thurs 27th "	4846	5618	10,464	10,751	97.33


TRAFFIC FLOW A62 WEST APRIL 29 – MAY 27 1971
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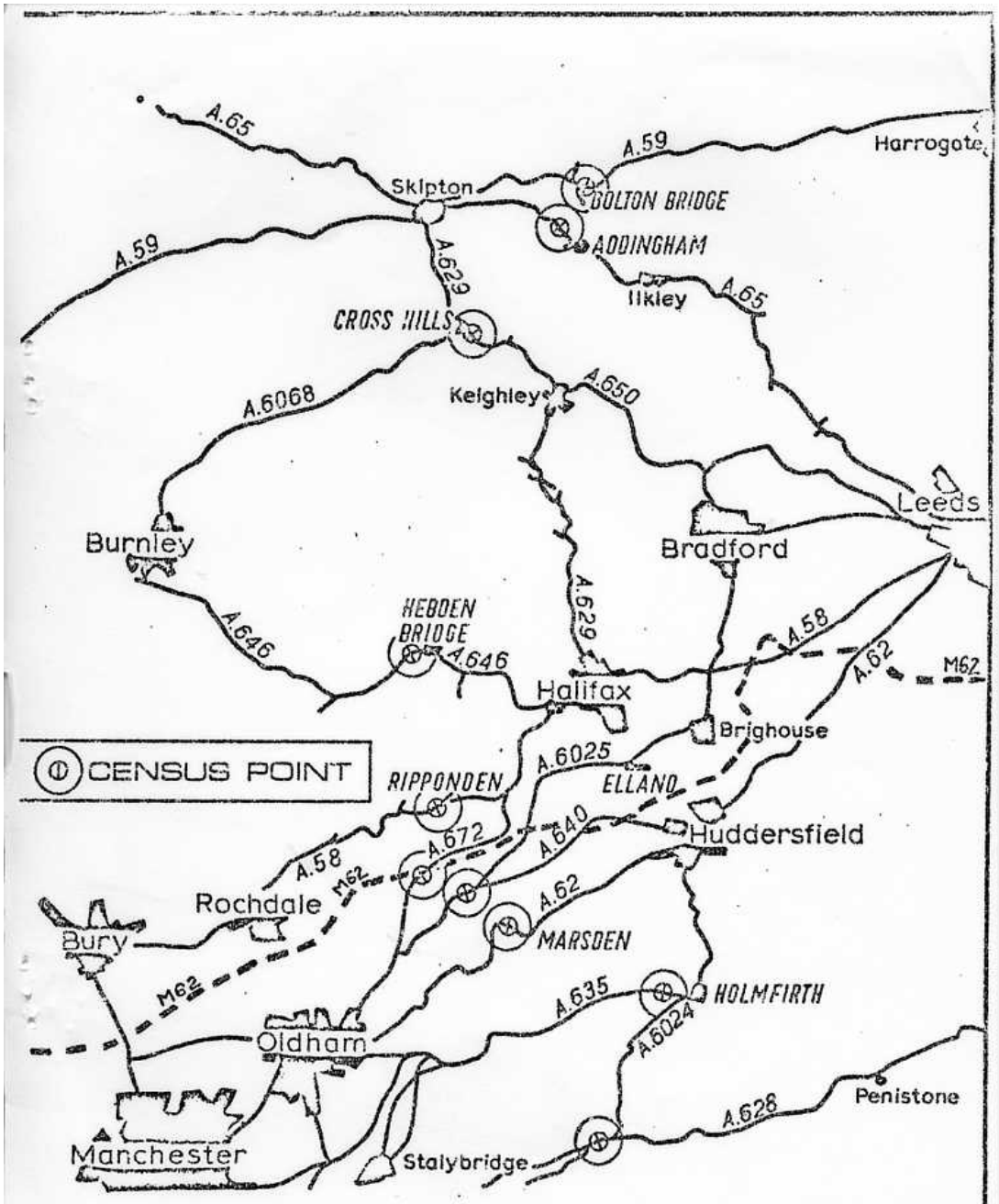

M62 ECONOMIC IMPACT STUDY