

POLICIES TO IMPROVE PUBLIC TRANSPORT IN LONDON

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INTRODUCTION

Public transport enjoyed a long period of dominance in London's transport market. The management structure has also tended to be monolithic. Thus bus services have been under a single management since the London General Omnibus Company (LGOC) bought out the last competitors in 1908. The Underground came together as a single enterprise in 1907 and in fact took over the LGOC in 1912.

The national surface railways which serve half the rail commuting to Central London including a special role in bringing in long distance commuters, and the intercity rail travel, were brought together into four companies serving different areas of London and the country in 1923.

After the War, all these operations were nationalised being brought within the British Transport Commission. Since then there has been some splitting down again, the British Rail (BR) operation remains as a unified nationalised industry. London Transport (LT) was passed to the control of the GLC in 1970 on the basis that it was a responsibility more appropriate to a regional planning authority than to Central Government. This reflected the view that public transport policy was closely involved with social, economic and land use planning and that the representatives of London were best placed to take decisions on this range of issues. In fact the intention of the 1969 Act was that some control of British Rail's London services would also pass to the Greater London Council in due course when British Rail's finances were brought into balance but this did not come to fruition.

In 1984, as part of the Government's policy of dismantling the metropolitan authorities, London Transport was effectively nationalised and the GLC's powers in the public transport sector were largely withdrawn. In line with Government policy both London Transport, now renamed London Regional Transport (LRT), and British Rail have been set tighter cash limits.

These changes in organisational structure are important in understanding the varying attitudes to establishing a detailed understanding of transport need.

The changing form of control has been reflected in a changing interpretation of transport needs and objectives. Thus as the elements of the transport system came under the same control there was a growing interest in the level of service and satisfaction provided by the combined operations. Similarly as the planning authorities with their wider socio-economic responsibilities became responsible for parts of the

transport system, there was increased interest in the socio-economic and land use implications of transport provision. The involvement of local directly elected planning authorities has also produced an increased awareness of public opinion in the area served.

Thus we have seen the market research develop from a simple description of usage of services to an exploration of attitudes of the users towards different aspects of the service and an examination of the wider implications of different aspects of the service. Finally we have also seen direct consultation of the public on specific issues and a recognition that the market is made up of many different groups and types of trip which often warrant separate investigation.

This paper looks back at the research that was undertaken in the period that the GLC had direct control of London Transport, limited powers to fund initiatives on British Rail and powers to fund initiatives for particular groups such as the disabled, elderly, young, etc.

The work is by no means exhaustive and in some cases the only really satisfactory research is that which can be undertaken both before and after changes have been initiated and the other studies must still lie in the future.

In the length of this paper it is only possible to touch on the major research studies and allude to some of the interesting but less central studies. However, all this work will be described in a fuller definitive form in a series of books covering GLC Transport Research to be published in Autumn 1986.

OVERALL DEMAND

There has always been a considerable investment in assessments of the total demand for public transport. Thus even in 1949 London Transport (1) undertook a survey of 2,695 households within 15 miles of Charing Cross - a point taken as the centre of London. These were followed by the London Transportation Study in 1962 and Greater London Transportation Studies in 1971 and 1981 which were on a much larger scale embracing 38,000 households in 1981 as well as cordon surveys and station surveys. These provide the traditional global figures and are primarily intended as a tool for analysis of strategic issues - the sample size and questionnaires - large though they are - are nevertheless too small for dealing with issues raised by particular areas or smaller groups.

By way of providing a context, the population of Inner London declined by 17.6% between 1971 and 1981, that of Outer London declined by 4.6% whilst that of the rest of the South East increased by roughly the same number which represented a 6.4% increase. In the decade the total number employed had dropped from 3.94m to 3.51m in Greater London. The proportion of the population who were under 16 fell from 22.3% to 19.8% and the percentage of Londoners who were pensionable rose from 16.4% to 18.0%. The proportion of households with a car available for their private use rose from 50.8% in 1971 to 57.4% in 1981. The difference between Inner and Outer London is of some particular interest:

<u>Table 1</u>	<u>% of Households having car available for private use</u>			
		<u>1962</u>	<u>1971</u>	<u>1981</u>
Inner London				
1 car)	28.2	32.5	35.7
more than 1 car)		5.4	8.7
Outer London				
1 car)	43.5	47.0	45.8
more than 1 car			11.8	19.7

The number of journeys by residents excluding walking and cycling had changed as follows:-

<u>Table 2</u>	<u>Total trips by residents/day (millions)</u>			
		<u>1962</u>	<u>1971</u>	<u>1981</u>
Private car		5.42	7.38	8.14
Underground		1.08	1.16	0.95
British Rail		0.76	0.85	0.64
Bus and Coach		3.95	2.98	2.27
Other		0.14	0.16	0.17
<u>Total</u>		<u>11.33</u>	<u>12.55</u>	<u>12.19</u>

A large amount of further tabulations are available in the official GLTS publication (2) and further references to these data are made in later sections.

Panel Surveys

The first important comment that has to be made on the overall data surveys is that their scale limits the frequency and also results in a relatively lengthy period for analysis. In a situation of relatively stable trends this may not be too much of a problem. However, when there are substantial changes in parameters, or aspects of the service such as fares or fuel costs quite substantial changes in travel take place in a matter of a year or two and the large scale survey not only becomes somewhat outdated but also because of its infrequency does not provide a quantified commentary on the effects of these changes. It was for this reason that LT and the GLC set up a London Panel of some 2,000 statistically representative residents whose trip-making has been surveyed at six monthly intervals - since 1982, a trial sample in one sector only having been initiated in 1981. The survey has allowed additional questions to be put to members on special issues such as access to hospitals. So rapid have been the changes in circumstances in London over recent years that we have on several occasions used a telephone survey of members of the Panel to get a very rapid response (e.g., within a week) to particular issues.

The Panel includes only Londoners over 16 and a reduced proportion of old age pensioners because the latter change their trip-making less as they enjoy free travel on bus and Underground and half-price travel on British Rail and are therefore not affected significantly by fares changes.

Some typical basic results flowing from the Panel are illustrated in Tables 3 and 4 giving trip-making by person characteristics, mode and purpose.

The trip rates per head that the % splits apply to in Spring 1985 were:-

Table 5

Bus	3.43	trips/week
Underground	2.20	" "
British Rail	0.82	" "
Car Driver	6.77	" "
Car Passenger	2.37	" "
Walk	4.03	" "
Other	0.98	" "
<u>Total</u>	<u>20.60</u>	<u>" "</u>

Or at a more detail level the responses on hospital access indicated that one-third of Londoners visited hospitals during an average six months and experienced a range of problems, e.g.:-

55% said public transport services were inconvenient for them
25% used public transport including 15% who experienced problems

Most dramatic of its uses has been the monitoring of the impact of fares changes. As a result of conflicts between GLC policy, legal judgements and government policy over recent years there have been a number of dramatic changes in fares - the key elements being:-

- i) October 1981 - London Transport fares were reduced by 32% overall and the bus fares were converted to a four-zone pattern [outer, inner and two central] and the Underground was put on a similar zonal basis in Central London only. Previously the only zonal basis had been as single bus outer-zone for Outer London.
- ii) March 1982 - following a final legal judgement that the GLC had behaved unlawfully in reducing fares - these were doubled to meet the broad requirements of the judgement. At the same time the two Central Area zones were combined into one.
- iii) May 1983 - following further legal opinions a package was adopted involving a 25% fares reduction, adoption of zonal fares for the Underground with the outer zone divided into three and the availability of a season ticket which was valid for both Underground and bus in the designated zones and a daily ticket valid for use after 10.00 am for bus and Underground throughout the system. The fares reduction avoided a fares increase for any significant group of users that would otherwise have occurred with fares simplification.
- iv) January 1985 - following rationalisation of London Transport in January 1985, fares were increased by 9% and a season ticket valid for both London Regional Transport and British Rail was available for two or more designated zones.
- v) These were substantial changes and the monitoring of the Panel allowed interpretation of the effects at six monthly intervals. Purely in research terms the rapid succession of changes has

TABLE 3 : Journeys by Working Age Adults in London, Spring 1985

PANEL	Trips per head per week							
	Bus	Under-ground	British Rail	Car Driver	Car Passenger	Walk ¹	Other ²	Total
<u>Sex</u>								
Male	2.98	2.87	1.06	8.27	1.50	3.09	1.15	20.92
Female	3.94	1.45	0.54	5.08	3.35	5.09	0.79	20.24
<u>Age</u>								
16-19 years	6.70	1.98	0.70	1.92	3.90	5.65	1.01	21.86
20-24 years	4.24	3.70	0.90	5.04	2.60	4.58	1.33	22.39
25-34 years	2.35	2.14	0.94	7.89	2.18	4.05	0.98	20.53
35-44 years	2.86	1.90	0.79	9.17	2.16	3.54	0.86	21.28
45-59/64 years	3.28	1.81	0.74	6.70	2.07	3.57	0.86	19.03
<u>Social Class</u>								
Employers/Managers	2.11	2.44	0.93	10.31	2.53	3.51	1.16	22.99
Other Non-manual Skilled manual	3.56	2.78	1.00	6.47	2.45	3.91	0.89	21.06
Unskilled manual	3.28	1.73	0.80	6.85	2.27	3.99	0.95	19.87
	4.71	1.25	0.40	3.87	2.20	4.88	1.04	18.35
<u>Working Class</u>								
Working full-time (Central Area)	3.77	5.86	2.10	5.16	1.45	3.56	1.11	23.01
Working full-time (Suburbs)	3.15	1.36	0.62	9.91	2.15	2.95	1.26	21.40
Working part-time ³	3.97	0.90	0.33	6.68	3.41	5.08	0.64	21.01
Housewife	2.08	0.37	0.25	5.34	3.33	6.08	0.54	17.99
Student	6.06	3.11	0.74	1.74	3.12	5.40	0.95	21.12
Unemployed	3.84	1.05	0.18	3.19	2.03	3.60	0.94	14.83
<u>All Respondents</u>								
	3.43	2.20	0.82	6.77	2.37	4.03	0.98	20.60

NOTES:

- 1 Includes only journeys of 10 minutes or more.
- 2 Includes journeys by motor cycle, pedal cycle, taxi, coach and unspecified modes.
- 3 Defined as 8 - 29 hours per week.

TABLE 4 : Journey Characteristics by Mode, Spring 1985 Working Age Adults,
% of Journeys

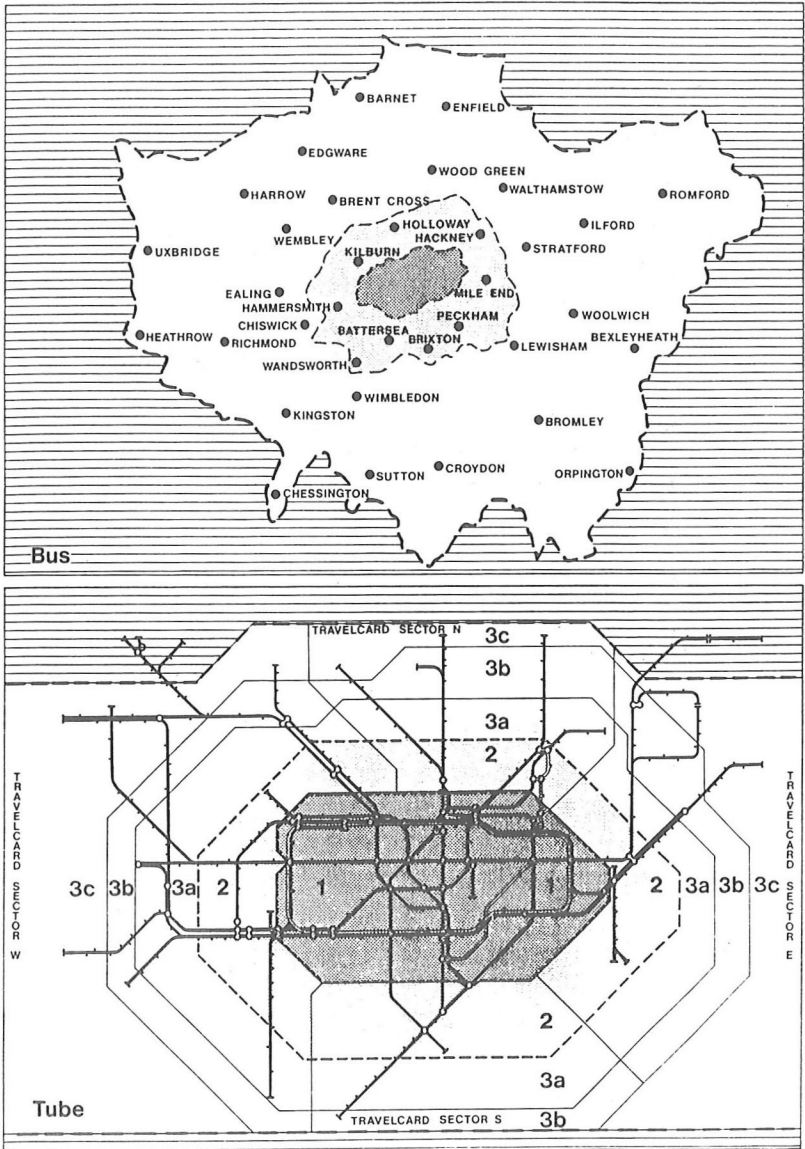
	Bus	Under-	British	Car	Car	Walk ¹	Other ²	Total
	ground	Rail	Car	Driver	Passenger			
<u>Purpose</u>								
Work/								
Education	51%	69%	71%	35%	19%	34%	45%	41%
Social	12%	8%	6%	16%	22%	8%	12%	13%
Entertainment	9%	8%	7%	13%	27%	14%	15%	13%
Shopping	19%	6%	6%	17%	17%	29%	11%	18%
Other	9%	9%	10%	19%	16%	16%	17%	15%
<u>Time of Day</u>								
Mon-Fri (AM Peak)	24%	31%	34%	18%	9%	18%	19%	20%
Mon-Fri (PM Peak)	23%	30%	32%	18%	12%	16%	17%	20%
Mon-Fri (Off Peak)	36%	27%	24%	39%	38%	45%	43%	38%
Weekends	17%	12%	11%	25%	41%	21%	21%	23%
<u>Origins and Destinations³</u>								
Central to Central	8%	17%	1%	1%	2%	11%	7%	6%
Inner to Inner	13%	3%	2%	7%	6%	18%	9%	10%
Outer to Outer	56%	13%	13%	65%	60%	65%	53%	55%
Central to Inner	11%	24%	7%	4%	4%	3%	9%	7%
Central to Outer	2%	36%	56%	3%	5%	-	6%	8%
Inner to Outer	10%	6%	7%	8%	8%	2%	8%	7%
Outside GLC	-	-	14%	10%	14%	1%	8%	6%
All Journeys	100%	100%	100%	100%	100%	100%	100%	100%

NOTES:

- 1 Includes only journeys of 10 minutes or more.
- 2 Includes journeys by motor cycle, pedal cycle, taxi, coach and unspecified modes.
- 3 Areas correspond to the LRT fare zones.

Travelcard Zones in London

Fig. 1



meant that it is not always possible to determine the development of the longer term effect of one change before it has been overtaken by the next. Some of the main impacts on trip-making and modal choice are set out below:-

TABLE 6 Trips per week by Working Age Adults

<u>Panel Time</u>	<u>Bus</u>	<u>Under ground</u>	<u>British Rail</u>	<u>Car Driver</u>	<u>Car Passenger</u>	<u>Walk</u>	<u>Other</u>	<u>Total</u>
Autumn 82	3.22	1.71	0.91	7.57	2.67	4.47	1.09	21.64
Autumn 83	3.54	1.97	0.84	6.69	2.32	4.03	1.25	20.64
Autumn 84	3.66	2.11	0.85	6.38	2.30	3.92	1.03	20.25
Spring 85	3.43	2.20	0.82	6.77	2.37	4.03	0.98	20.60

TABLE 7 % Comparative Changes in Travel by Each Mode by Age Group and Social Groups
Autumn 1982 to Autumn 1984

<u>Age</u>	<u>Bus</u>	<u>Under ground</u>	<u>British Rail</u>	<u>Car Driver</u>	<u>Car Passenger</u>	<u>Walk</u>	<u>Other</u>	<u>Total</u>
16-24	+ 8	+43	-10	-27	-32	-11	-18	- 9
25-34	+17	+16	- 8	-14	- 7	0	- 9	- 5
35-44	+ 4	+43	-22	- 7	- 5	+11	-10	- 3
<u>Social Group</u>								
AB(High)	+22	+ 4	- 8	-15	-29	-10	+40	- 9
C1	+12	+36	+20	-22	+ 4	- 7	- 8	- 3
C2	+13	+25	-25	- 8	-18	-14	0	- 5
DE(low)	+23	+25	-38	-15	+23	-23	-17	- 9

The process has obviously been quite complex. The May 1983 package which was the most positive innovation initially produced an effect double that expected from the 25% fares reduction and that impact has continued to grow up to the present. There was a growth in use of bus and Underground but also a shift from bus to Underground and a small shift away from British Rail, car and motorbike - though the latter two produced substantial benefits.

Clearly it could be desirable to undertake a more searching analysis possibly by identifying within subsets just how the changes in trips occurred and possibly undertaking a longitudinal analysis of changes in the trip making of individuals over the whole period and hopefully into the future.

The first subset analysis has been undertaken to some extent in the routine data analysis by producing tabulations for sub groups. The longitudinal analysis is proving more difficult - most significantly because it was not built in as an objective at the outset and because there is a relatively high turnover in the Panel ranging up to 50% so that in the Autumn 1985 Panel there are only some 200 who were in the 1983 Panel. This suggests that longitudinal analysis probably needs to be mounted as a separate operation even if it uses part of a Panel sample - even then it has to be recognised that there is a significant migration of population to and from London, a relatively high scale of turnover of employment, e.g. of the order of 25% p.a. and a substantial turnover of home location, all much accentuated by London's role as capital city and major employment centre. So it may not prove possible to achieve a satisfactory outcome to this work.

Mention has already been made of subsidiary issues which were examined and these have included:-

ways of improving bus and Underground services and ways in which services are perceived to have improved or deteriorated;

attitude to newsagent and travel agents as sales points for bus passes;

awareness of availability of special tickets;

attitudes to taxis and minicabs and ways in which they could be improved;

access to hospitals and possible improvements

attitudes to London Transport's management and its effectiveness in recognising local needs, adopting new roles and controlling services.

The Panel data has had many uses - both general and specific. One typical example is the use of the data to establish the scale of benefits from the May 1983 fares package which now are around three times the cost and the further use to establish that integration of British Rail and London Transport season tickets fares structures would produce a similar ratio of benefit to cost.

SPECIAL GROUP SURVEYS

These have sought to probe deeper into the needs and attitude of particular groups - partly to explain patterns of travel but more positively to identify ways of improving public transport.

Central Office Workers

This survey (3) involved 6,150 self-completion questionnaires and 556 interviews of office employees in Central London. Some typical results:

Home tenure: 75% lived in owner-occupied accommodation
12% lived in furnished or unfurnished lettings
9% rented from local authority

Journey to work:	51% had a total journey time under 1 hour 37% over 1 hour but under 1½ hours 12% over 1½ hours
Satisfaction with journey and job:	50% were satisfied with working in Central London and their journey 14% were dissatisfied with both 23% were satisfied with working in Central London but dissatisfied with their journey 6% were satisfied with their journey but not with working in Central London 7% offered no opinion
Planning to move job in next year or so	7% expected to move to jobs outside the Central Area 5% expected to move jobs within the Central Area 3% were giving up work 85% had no plans to change jobs
Planning to change home in next year	15% of owner-occupiers expected to change 15% of council tenants expected to change 53% of those in furnished letting expected to change 22% of those in unfurnished lettings expected to change
Planning change in home or job over next 12 months	71% planned no change 13% planned change in home only 9% planned change in workplace only 6% planned change in home and workplace

In deciding on their present home location - suitability, price of accommodation and nearness of friends and colleagues were most important - ease of commuting was referred to as a main reason by only 12%. A similar situation arose for those now looking to move or the reasons given for choice of particular location in which proximity to station, etc., was given as a main reason by 16%.

Only 5% of those who had moved within the last ten years (3/4 of sample) thought that transport was a main reason. Though travel cost was considered important it was a deciding factor for only 4%.

Inner London Town Centre Workers

The response to this questionnaire survey (4) was 440, i.e., 25%. It tended to be skewed towards the managerial, administrative, clerical, secretarial - with a low response for unskilled manual workers. In that sense it is perhaps best viewed in describing the role of suburban area employment in competition or comparison with Central Area office employment.

Home tenure	57% lived in owner-occupied accommodation 27% rented from the local authority 16% rented other property
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Distance from home to job 34% less than 2 miles
 33% less than 5 miles
 23% 5 to 10 miles

Satisfied with journey to work 59% were satisfied
 21% were dissatisfied
 11% were very dissatisfied
 8% offered no views
 80% said they did not intend changing modes

The level of satisfaction was higher for car-owners (66%) and lower for public transport (45%).

Changing home location 86% of respondents lived in the south-east sector of London and
 78% had previously lived in this sector.
 84% did not plan to move home within a year
 37% had not moved in the previous 10 years

Changing Job 68% were satisfied with Lewisham as a place to work
 12% were not satisfied
 82% stated they had no intention of changing jobs

Women's Survey

Women are very heavy users of public transport and it was felt appropriate to undertake a survey (5) of their special needs in two stages - the first was a series of discussion groups and the second was a series of 905 home interviews with women of 16 and over.

Of those interviewed 70% said they never drive a car whilst only 14% never used a bus. The percentage using particular modes of transport at least weekly and monthly is as follows:-

<u>Table 8</u>	<u>Weekly</u>	<u>Monthly</u>
Bus	52%	18%
Underground	20%	16%
British Rail	8%	11%
Car Driver	26%	2%
Car Passenger	57%	17%
Cycle	4%	2%
Walking	87%	6%
Taxi/Minicab	9%	15%

Mode of travel to work for the 48% of women in paid employment was:-

<u>Table 9</u>	
Car drivers	24%
Bus	21%
Walk	21%
British Rail	8%
Underground	13%
Car passenger	9%
Cycle	4%

Some 20% of women escort others at least once a week, including 14% who take children to school and 18% take people to the doctor or hospital. For these trips the modal split is:-

<u>Table 10:</u>	Car drivers	36%
	Car passengers	6%
	Bus	7%
	Walk	36%
	Mixed/other	15%

There was general evidence that women felt restricted in their travel. Some of the general views emerging were that fares did not really favour their type of use and that one person operation was particularly undesirable for women, reliability of bus services was very important and on the whole buses were not well designed for women's need, e.g., 80% thought more storage space was needed.

However, by far the most significant issue was the sense of feeling unsafe:-

Table 11 Feelings of safety by mode of travel during the day

	Very Safe	Fairly Safe	Neither Safe nor Unsafe	Not Very Safe	Very Unsafe	Don't Know
Buses	50%	39%	2%	2%	1%	6%
Underground	22%	36%	5%	12%	3%	22%
British Rail	21%	39%	6%	12%	5%	17%
Walking	34%	48%	5%	8%	2%	3%

Table 12 Feelings of safety by mode of travel at night, after dark

	Very Safe	Fairly Safe	Neither Safe nor Unsafe	Not Very Safe	Very Unsafe	Don't Know	Never Travel After Dark
Buses	9%	28%	5%	21%	14%	3%	20%
Underground	2%	14%	5%	25%	20%	10%	24%
British Rail	2%	14%	4%	28%	23%	6%	22%
Walking	2%	13%	5%	27%	29%	1%	22%

Possible improvements to the system were also the subject of the survey with the results set out below:-

Table 13

Possible Improvements to Public Transport in London

	A very good improvement	An improvement	Make no difference	Make things worse
Lighting at all bus stops	69%	24%	5%	-
Alarm systems on trains to talk to the driver	55%	27%	7%	9%
Taxis available at all stations in the evening	52%	35%	11%	1%
Space for shopping and pushchairs on buses	52%	36%	9%	2%
Closure of little-used passages in stations	49%	34%	10%	4%
Announcement of all stops on buses and trains	47%	34%	17%	1%
Shorter trains at night	43%	34%	16%	4%
Buses that are easier to get on and off	42%	36%	21%	-
Seating at all bus stops	42%	31%	21%	4%
Women Only carriages on trains	41%	21%	29%	8%
Consultations with women on station modernisation	32%	36%	27%	2%

Of the 63% who did not have a driving licence the reasons given were:-

"Too nervous/Haven't the confidence to cope with London's traffic"	23%
"Never felt the need/Not interested in learning to drive"	17%
"Can't afford to learn to drive/run a car"	17%
"Already learning/Waiting to take test"	12%
"No particular reason"	8%

TRANSPORT NEEDS OF THE DISABLED

There are over 300,000 Londoners who have difficulty in using public transport. The needs of this group had been neglected by transport planners partly because it was viewed as a welfare function which fell to the Borough councils rather than the Greater London Council. However, with the decision in 1982 to treat it as a public transport issue, three innovations were sponsored by the GLC for the disabled:-

- (i) dial-a-ride services - of which one pilot service had been funded for several years
- (ii) taxicard scheme service - giving low price use of taxis
- (iii) improvements to accessibility of bus and rail services.

The early pilot schemes have been closely monitored (6) for levels of use and customer satisfaction which has in turn allowed rapid development of London-wide services for (i) and (ii) and development of a programme for (iii). Early in 1985 a major survey was undertaken of members of the taxicard and dial-a-ride services.

There is also a major survey of general transport needs of the disabled being undertaken by the Greater London Association for the Disabled with 100% funding by the GLC - This survey goes much wider than the user-surveys referred to above.

The most striking factor that emerges from the research is the relatively low trip making by taxicard service and dial-a-ride but the very high value placed on such trips by users. It is a very different travel market where travel has a high 'cost' in that users have to make great personal efforts to travel and to achieve their objective. Trip making is therefore carefully considered and generally at a much lower level, i.e., 5.8 trips per week by all modes were recorded in one survey of taxicard holders.

The public services only provide part of most users' mobility but it is that part which can in many ways be more independent of family and friends.

The tripmaking by a sample of 486 out of the 50,000 or so members of the taxicard scheme is illustrated in the table below:-

Table 14 Split of Trips for Taxicard Holders

Taxicard scheme	12%
Dial-a-ride	10%
Other Taxi/Minicabs	8%
Social services	13%
Other Community Transport	3%
Bus/Train/Underground	12%
Private Car	25%
Walking (or wheelchair) all the way	12%
Other means	5%

The interesting speculation is whether increased transport facilities will lead to a steady growth in trip ratio per head. So far this has not been the case but it is too early to make a judgement since the taxicard scheme only went London-wide in June 1984 and the dial-a-ride service only became fully London-wide in late 1985.

There is clearly considerable potential for widening trip opportunities by ensuring that a wider range of objectives are accessible. There could also be scope for accommodating demands currently met by welfare, health and other services through expanded and integrated dial-a-ride and taxicard schemes. These are areas of further medium term development. In the short term monitoring has a major impact in improving the service - reliability emerging as the overriding priority as it is with public transport in general.

THE UNEMPLOYED

There are over 300,000 unemployed Londoners and they are a significant part of the transport market. In broad terms their non-work trip making is comparable with that of the community at large. There appear to be two problems - the first is whether job searching is constrained by public transport costs and whether the cost of travel in general is a particularly heavy burden for the unemployed. Household interviews suggest that special concessions would widen the job search for a small percentage of relatively highly motivated individuals.

In regards to the general burden of transport expenditure it seems incontrovertible that it represents a much heavier burden but this would also be true to low income groups. Welfare funding or general low fares at least off-peak appear to be the most practical approaches.

There is the further question of whether fares restrict the range within which a job will be taken. Our research so far (7) suggests that journey time is probably the more critical factor if public transport is to be used. If the journey is very inconvenient by public transport and car is the only practical option, then the cost of buying and running a car is a major inhibitor for those who do not have a car available.

The Impact of the Relative Levels of Service

A major current issue in London is whether provision of high frequency Underground-style rail services penetrating the Central Area has a substantial impact in increasing rail use and in attracting travellers from adjacent stations with less frequent surface services terminating at the perimeter of the Central Area. This interest arises because there is now an opportunity to convert some BR surface lines to Underground-style operations.

The present research suggests that the "high frequency" has a powerful attraction drawing a large proportion (e.g. 70%) of passengers away from adjacent stations. The frequency and penetration of the Central Area becomes increasingly important as one gets closer to the Central Area.

The improved service appears to have a limited effect in increasing use of rail for work trips to the Central Area but does appear to increase non-work trips by 20%.

The provision of a high frequency readily identified service for non Central Area trips also appears to increase the use of the rail by as much as three-fold - though flows remain relatively modest.

There was considerable research in the late 1960s and early 1970s primarily aimed at identifying public transport improvements that would reduce car use. This more recent work has related to other impacts.

Further Issues for Investigation

There are other areas of investigation that we would like to pursue - the special needs of ethnic minorities is one already in hand. The detailed examination of needs of different groups of workers and residents in varying locations is another. As will be clear for the

few results quoted in this paper there is also much scope for analysis of existing data and amplifying it with interviews and with pilot schemes to explore particular initiatives. Whether and how this will continue with the changed administrative patterns introduced in 1984-86 remains to be seen.

CONCLUSION

This paper has briefly touched on the form and results of a series of market studies of varying types. I have included some examples of quantitative results because I find these more tangible than generalisation. However, there is much more qualitative as well as quantitative material available in every case.

There have been some more general effects of the work which are perhaps worth noting in conclusion. The various surveys have proved mutually supportive - the large scale GLTS and Panel providing the overall data and the smaller special surveys painting in the detail and a qualitative understanding. The development of surveys which remain on line in that further issues can be put to the sample has proved very effective and I believe that the one-off survey is no longer a sensible proposition in many situations.

The surveys have helped bridge the gap between the human reality and the strategic transport survey which inevitably deals in large aggregates of trips and averages taken over a large population. Those of us who have been in transport planning for the last 25 years know just how much that gap has cost the profession in credibility and the public in financial, social and environmental terms.

The research has not only helped improve our understanding and effectiveness but will hopefully also help to produce a consensus view in the UK, at least on a core of transport policies and programmes for our cities in place of the political conflict which has characterised this area of transport policy.

It might seem that with the abolition of the regional planning authority for London and the nationalisation of London Regional Transport that a substantial part of the impetus for this work will be lost. However, I am hopeful that the sense of purpose of those who have been involved will keep the work alive though possibly in a more fragmented form. Access to the data and further analysis and interpretation of it will in any case continue through Urban Transport Advisers - London a consultancy set up for this purpose.

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