Transport *for* London

Development of Transport Strategy

Walking and Cycling Monitoring Project

Results of Research

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1 *Introduction*

1.1 About this Paper

1.1.1 This paper reports the findings and conclusions from a short project commissioned by Transport *for* London to provide an input to the process of defining appropriate monitoring data for walking and cycling in London.

1.1.2 The project leader attended three seminars organised by T*f*L. The work also included a review of practice in other countries, the results of which are set out in a separate report.

1.1.3 The main work was carried out by Tim Pharoah as consultant to Llewelyn-Davies.

1.2 Context of Data Collection in London

1.2.1 The key objective of the overall T*f*L project (to which this paper contributes) is to develop the framework for monitoring walking and cycling in London.

1.2.2 The range and extent of possible data for walking and cycling is very wide indeed. It is therefore necessary to be very selective.

Criteria for selection could include:

- Congruence with monitoring requirements
- Consistency with other data at national and local level
- Appropriateness to T*f*L powers and responsibilities
- Cost
- Timescale for introduction
- Suitability for annual updating
- Proven validity of technique (e.g. video technology)
- Innovative potential

1.2.3 This list was set out in the original Llewelyn-Davies paper for T*f*L and we have not discovered any other reason to modify it. We therefore suggest that the methods of data collection proposed are checked against these criteria, perhaps using a simple matrix.

2 Data Planning Opportunities

2.1 Data Compatibility

2.1.1 TfL should attempt to ensure compatibility with other data.

2.1.2 "Upward" compatibility should be sought with national data, and NTS in particular. This compatibility should be in terms of basic definitions, such as a trip and trip stage, and mode definitions. However, the London data that is sought should be at a much greater level of detail and accuracy than provided by NTS at the metropolitan level. Therefore we consider that the achievement of appropriate data for T*f*L should take precedence over NTS compatibility if any conflict of interest arises.

2.1.3 An example is the definition of a walk trip. The incompatibility between LATS 1991and NTS due to different walk trip length thresholds is a salutary lesson in how not to do it. The NTS has a 50 yard threshold distance below which walk trips are not recorded, whereas the 2001 LATS has no threshold.

2.1.4 Compatibility of 2001 LATS with both NTS and 1991 Greater London Transport Survey can be achieved by ensuring that walk trip lengths are recorded in such a way as to allow separation of data for under 50 yards, over 50 and under 200 yards, and over 200 yards. ***This requires immediate action.***

Table 1.1 Walk Thresholds in Different Surveys

Survey	Walk Trip Threshold
1981 Greater London Transport Survey	No threshold
1991 London Area Travel Survey	200 yards
2001 London Area Travel Survey	No threshold
National Travel Survey 1975 ongoing	50 yards

2.1.5 T*f*L should also take account of data initiatives by DTLR (e.g. the proposed research into data requirements for Transport Assessments) and adjust methods if necessary.

2.1.6 "Lateral" compatibility between different London data sets should be addressed, especially those directly related to transport.

2.1.7 "Downward" compatibility with local data collected by the Boroughs and others should be achieved mainly by providing survey and analysis protocols which other bodies can adopt. This should include, for example, trip definitions, and mode, purpose and trip length bandings and definitions. Also important is the adoption of standard procedures in terms of temporal calibration (e.g. definition of peak period, use of 7 day rather than 5 day averages, survey dates appropriate for different purposes).

2.2 Need for Experimentation

2.2.1 Given the current scarcity of data on walking and cycling, T*f*L should be willing to experiment by piloting new techniques to meet monitoring needs that are not well met by data in the established or conventional data sets.

2.2.2 In the short term, new techniques should not be adopted within mainstream monitoring procedures, but should be the subject of pilot or experimental surveys. These should be researched and analysed for their usefulness in scheme, trend or other monitoring. Subsequently it may be appropriate to incorporate successful techniques in the mainstream monitoring survey programme.

2.2.3 Examples of aspects where experimentation may be valuable include:

- Measures of attitudes and levels of satisfaction, e.g. building on Red Route monitoring experience;
- Measures of recreational walking;
- Measures of person intensity in streets and public realm, as opposed to flows (this gives very different picture of pedestrian activity and its relative importance);
- Measures of people's use of public space for "exchange" and social purposes rather than travel, as pioneered by Jan Gehl in Copenhagen;
- Measures of safety and risk exposure rather than accidents, perhaps building on the "conflict analysis" techniques pioneered by the Dutch so-called "Doctor" technique.

2.3 Data must be "Fit for Purpose"

2.3.1 The data collected should be "fit for purpose". The following purposes are potentially important.

1. **Trend analysis** (for policy formulation and analysis, including allocation of funds between competing transport heads).

2. **Accessibility analysis** (for land use planning, Travel Assessments, transport planning). This includes destination analysis, e.g. travel to town centres or in connection with specific types of activity such as schools and leisure facilities.

3. **Scheme promotion and monitoring** (e.g. area wide initiatives, mode specific schemes, regeneration-led and other non-transport schemes). Measuring the success of individual schemes such as World Squares (in relation to their targets and objectives).

4 **Assessing the value of generic types of infrastructure** or other forms of intervention (e.g. Zebra versus Pelican crossings, walking buses versus school patrols).

5 **Judging the effectiveness of London-wide initiatives** such as the London Cycle Network or Red Routes, or the innovative "all-ways" pedestrian crossing phases at signalised junctions.

6 **Assessing public satisfaction**, e.g. on quality and adequacy of facilities, and on street safety.

2.4 Data Adequacy

2.4.1 The data on walking and cycling for all of these purposes is currently inadequate.

2.4.2 High level data depends at present on surveys that are too infrequent (LATS), or with too small a sample (NTS in London), or with too little focus on walking and cycling (such as the London Residents Transport Survey). Frequent, accurate and consistent data on all trips by all modes is not currently available in London. For T*f*L wider purposes of trend analysis and policy formulation at the London level, better data will now be important to lend objectivity to the policy of encouraging more walking and cycling to meet health objectives, and to reduce congestion and pollution.

2.4.3 The traditional 10 year survey cycle (GLTS, LATS) was linked to long term forecasting for the planning of major infrastructure. It is not well suited to the modern approach of responding to problems and trends and planning incremental as well as major change. A more frequent cycle of surveys, preferably on a rolling basis is therefore called for. It is interesting to note that other cities also are moving in this direction.

2.4.4 To meet political demands for frequent data updates on the progress of strategies, measures of "outputs" such as kilometres of cycle paths constructed, or pedestrian phases provided at signalled junctions can be important. Reliance on high level periodic travel surveys to provide clear evidence of "outcomes" of policies is probably inappropriate, since it will always be difficult to disentangle the effects of the policy from other external factors. The annual Red Route monitoring reports include such output measures and this should be continued and extended to include all pedestrian and cycle provisions.

2.4.5 In terms of locally specific data, probably the most prominent existing data relate to monitoring road accidents (under items 3 and 4 above). Data relating to risk and danger rather than accidents are, however, totally inadequate. People as pedestrians and cyclists recognise that intimidation and danger is commonplace on virtually every trip, yet accidents, thankfully, are comparatively rare and represent only the tip of a very nasty iceberg.

2.4.6 At both London and local level, encouraging activity in public spaces as a measure of urban regeneration success will be important, as will measuring levels of public satisfaction. New techniques may be required to monitor the "non-transport" aspects of such policies, since success may not depend on changes in transport mode, but in the way spaces are used.

2.5 Accessibility Planning Opportunities

2.5.1 Walking and cycling monitoring, while distinct, forms a part of accessibility planning in the wider sense. It will be tied closely to targets and objectives for increasing modal share, and thus cannot be separated conceptually from consideration of other passenger modes. Given that both trips rates and travel time budgets (per capita) are stable over time, for a given population an increased use of one mode will be at the expense of a decrease in the use of other modes. Of course, absolute levels of use can increase in response to increasing population or increasing visitor numbers, both of which are forecast for London.

2.5.2 Transport Assessments[1] will provide a major push towards accessibility planning, and over time will provide a valuable source of data on the mode split of different types of land use and destination. It is vital that the methods employed in producing and monitoring Transport Assessments are consistent across London. As and when DTLR guidance is published, this should help.

2.5.3 Transport Assessments are likely to mean an increasing number of planning permissions tied to mode split targets. This opens the possibility of building a database that shows not only accessibility according to development type but also that is capable of predicting trip rate, mode split and other travel characteristics of land use. T*f*L should aim to collate TA monitoring data from the boroughs.

[1] PPG13 2001 requires Transport Assessments to be submitted as part of planning applications for major developments.

3 Separation and Clarity Issues

3.1 Separate High Level and Local Data

3.1.1 The concept of combining or adapting data collected in particular localities or locations in order to inform London-wide data and trends has some appeal. However, the methodological problems of assessing the representativeness of local data, and of producing grossing up factors can be daunting. In our view there is no substitute for a properly organised and appropriately resourced London-wide household survey of travel patterns.

3.1.2 Local and scheme-specific data can be carried out in ways that are consistent with the high level data but they should not be relied on to provide the high level data. Consistency of approach between the two levels will be useful for comparison, and to provide "overlays" to the high level data containing greater detail. Just as local data should not be squeezed intio the high level role, so the high levela data should not be squeezed to provide levels of detail and insight that can realistically only be resourced for much smaller areas.

3.2 Walking and Cycling are Two Separate Modes

3.2.1 Walking and cycling have different characteristics and should be considered separately in terms of data collection. A consensus on this point appears to have reached in the project seminars.

3.2.2 Walking activity is significantly different from travel by other modes and poses the greater challenge for data collection.

3.2.3 Distinctive features of walking include:

- Unlike cycling, walking allows for easy and frequent stops to be made en-route. Indeed for social and exchange pedestrian activity, stopping can be the main purpose of the activity (e.g. window shopping, chatting, sitting).
- Walking is unique in having a strict distance threshold, and is extremely sensitive to micro variations in distance,
- Walking is a part of almost all trips by other modes,
- Walking is associated with a range of "non-transport" activities such as window shopping, social interaction and recreation. Work undertaken for the London Planning Advisory Committee by MTRU thus identified four categories of walking activity (Access, Access sub-mode, Exchange, Recreation),
- Walking is particularly sensitive to environmental quality, including climate and perceptions of safety. MTRU for LPAC identified the "5 Cs" audit classification of

network quality, now incorporated into Government advice. This provides a starting point in terms of measuring the quality of walking conditions.

3.2.4 Cycling raises different issues, e.g. due to the relative scarcity of cycling in London, but in terms of measurement may be closer to travel by car or bus than to walking. For example cycle trip lengths are similar to bus trips. Cycling is basically a vehicular mode of travel, used primarily for travel from A to B Cycling and walking do have important common characteristics, however. These include health benefits, vulnerability in traffic conflicts, sensitivity to topography and weather, and total environmental sustainability. These similarities are important in terms of policy to influence mode choice, but they are less important in terms of provision for these modes. Cycles should be regarded as vehicles and kept to their own paths and lanes, or on the carriageway. They should not be mixed with pedestrian traffic except in carefully planned situations where the speeds and motivation of walkers and cyclists are similar.

3.2.5 In order to improve our understanding of cycling activity in London, larger household samples may help, but coverage is also important, since some areas may have much greater propensity to cycle than others, associated for example with ethnic and socio-economic variables. Also important is the need to "capture" cycle movement more effectively in traffic surveys. A review should be undertaken of all existing cordons and screenlines to assess where modifications and additions would provide a significant improvement in cycle data.

3.2.6 Both walk and cycle data can be valuable within overall surveys of travel to destinations. Workplace and school destination travel has been highlighted, but other destinations should be added, notable town and district centres, rail and bus stations, and health, leisure and retail facilities.

Table 1.2 Possible Data Types for Walking

Data type	Possible Monitoring Application	Survey
"High level" data		
	To relate pedestrian and travel data to other data sets; to assess background factors influencing walking trends	Household and visitor interviews; surveys other than transport (especially census)
Pedestrian trip rates	Monitor mode split and pedestrian trip rate targets (area level)	Household interview surveys, travel diaries; visitor interviews
Pedestrian kilometres travelled	Monitor walking activity and average trip length – e.g. for health objectives	Household interview surveys, travel diaries, visitor interviews
Attitudes	Transport provision satisfaction Quality of life indicators	Household and visitor interviews
Profile data	Target monitoring e.g. for walking as main mode, sub mode, recreation, social-exchange	Household and visitor interviews
Facilities data	Auditing facilities and quality; Monitoring output targets	Street surveys, street databases, GIS
Location or scheme specific data		
Trip rates and kilometres	Monitor mode split and other trends, and promote schemes at destinations; accessibility planning and Transport Assessments	Destination counts and interviews (stations, workplaces, schools, etc.)
Area profile	Benchmark of area and development types for promoting walking; accessibility planning and Transport Assessments	Area surveys and counts; use of surveys other than transport
Pedestrian time budgets	Time spent in public realm, to monitor safety, regeneration and "animation" objectives	Intercept and follow, h/h or destination interview, video surveillance
Pedestrian flow	Local volume and mode split targets Adequacy of footway capacity Scheme promotion	Street traffic counts (numbers)
People density (persons per m^2 by time)	Perceived and actual safety Regeneration objectives 24 hour economy objectives	Street counts (numbers and time)
Type of activity	Scheme promotion and monitoring	Street counts and interviews
Type of person	Social inclusion Safe routes projects	Street counts Interviews
Attitudes	Fear of crime Neighbourhood satisfaction Transport provision satisfaction	Interviews
Facilities data	Auditing facilities and quality; Monitoring output targets	Street surveys, street databases, GIS

4 Aspects for Further Research

4.1 Travel Time Budgets

4.1.1 Mode split data are seen as crucial because of the relative stability of trip rates over time (at around 3 trips per person per day). This means that in increase in the share of one mode is accompanied by a similar decrease in the share of other modes. In the same way, the time devoted to travel is also relatively stable over time (at about an hour per person per day). Consideration should therefore be given to collecting individual and household level data on travel time budgets.

4.1.2 The rationale for this is that travel time budgets place time savings into better perspective than traditional concepts of the value of time savings (in COBA etc.). For example, encouraging more walking and cycling means people travelling more by slower modes – that is they may spend more time travelling, not less. In addition, if people spend more time in streets and public places (because they are places where people want to be) that is a benefit, not a cost as would be counted in a conventional cost benefit analysis.

4.1.3 It is suggested that such travel budget surveys could be developed to give a much broader picture of life in London, for example with the 24 hour day allocated to categories of activity:

- Time spent at home
- Time spent at non-home locations (work, shop, school, leisure etc)
- Time spent in transit and in public realm (with sub-allocations to mode)

4.2 Walking as an Important Part of Urban Regeneration

4.2.1 Walking and cycling are important pre-requisites for successful urban regeneration and “urban renaissance”. Measures could be developed that focus on this particular issue. The use of “Space Syntax” to analyse pedestrian movement in the "World Squares" project is a prominent example. This could be extended to other places where major change is planned, such as Vauxhall Cross.

4.3 Benchmarking of Data

4.3.1 Benchmarking of data can be a valuable analytical tool. Retail and other commercial planning has for many years employed the use of spatial benchmarking to identify customer and labour markets. An example is the ACORN classification database, which links certain census variables to urban morphological archetypes. Some boroughs have already used GIS to analyse census data for particular purposes. It is suggested here that associating travel patterns and behaviour with land use, density, social and

economic characteristics can be valuable. It should be borne in mind that traditional travel survey zones are defined from a traffic generation perspective, and often have a poor fit with other urban spatial characteristics.

4.4 "Whole Journey" Evaluation

4.4.1 "Whole journey" evaluation is now accepted good practice, given that mode choice is influenced by the "weakest link". For example, greater understanding is needed of the role of walk and cycle trip stages in the choice of public transport relative to the car. Route audits can be developed for walking and cycling as main mode and as part of trips by other modes.

4.5 Catchment Distances

4.5.1 Conventions on catchment distances have developed based on very little evidence (e.g. 600 metre catchment for urban rail, and 400 metre catchment for bus). Factors that influence such catchments could be explored through more detailed data. For example, research in Barcelona found considerable variation in walking speed between different types of pedestrian, while Austrian research suggests that tolerated walking distances vary according to trip purpose and regularity.

4.6 Barrier and Severance Effects

4.6.1 Barrier and severance effects can be monitored, for example by local interviews to establish origins and destinations of walk and cycle movements. This would be particularly useful to establish the benefits when barriers are reduced or removed (e.g. when the millenium footbridge finally opens to the public).

4.7 Walking and to an extent Cycling Characteristics

4.7.1 Recognising that there are different types of pedestrians and cyclists can have an important impact on policy and infrastructure design. Questions might include:

- What proportion of people walk and cycle in the company of others?
- What are the implications for footway and cycleway widths?
- What role does walking and cycling play in "goods distribution"?
- Could local food-stores reduce trips to large superstores?
- How do trips vary when people are encumbered (e.g. with children, trolleys, heavy bags) or have mobility difficulties?

- How will the changing age profile of the London population affect trip making and mode choice?

4.8 Social Variables

4.8.1 Walking and cycling are known to vary according to a range of social variables (age, gender, ethnic group, social group). This could be important for targets and expectations, for example a target increase in one area may be unrealistic in another.

4.9 Data from non-TfL Sources

4.9.1 Data acquired for other purposes should be harnessed for T*f*L use. Examples are video capture data from security cameras, and data collected by retail and other private sector companies. An important and growing source of data will be that collected by private developers and their agents for the purpose of preparing Transport Assessments. Commercial Databases such as TRICS are known to be willing to pay for multi-mode data on a site basis. TfL should ensure that all such data are put to good use.

Annex

Transport *for* London
Pedestrian and Cycle Monitoring Project

Note on practice in other cities/countries

1 Tim Pharoah, consultant to Llewelyn-Davies

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1 Introduction

The T*f*L Pedestrian and Cycle Monitoring project involved a brief review of practice in other countries with regard to the collection of pedestrian data. Information on cycle data was not specifically asked for, but in some cases was combined with responses regarding pedestrian data.

The method employed was to send a standard enquiry letter and form to a range of contacts. Many of these had responded to an earlier "outreach" exercise undertaken for the London Planning Advisory Committee in 1996. 2

The table at the end of this document provides a list of the places contacted and a brief statement on the responses received.

Information and conclusions drawn from this work are reported in the following paragraphs.

2 The results were summarised in MTRU for LPAC, 1996, "Putting London Back on its Feet", summary and technical reports.

2 Types of Data and their Purposes

2.1 Grouping and Classification

A useful classification is provided by the US Bureau of Transportation Statistics report on pedestrian and cycle data3:

1. Usage, trip and user characteristics
2. User (and non-user) preferences
3. Facilities data
4. Crash and safety data
5. Secondary data – the impact of design, policies and programmes on demand and safety

Table 1 Quality of existing data in the USA and priorities for its improvement

US Pedestrian and Cycle Data Assessment of Data Priorities		
5 Type of Data and Description	**Quality of existing data**	**Priority for better data**
Usage, trip, and user characteristics		
• Number of bicyclists and pedestrians by facility or geographic area	Poor	High
• User and trip characteristics by geographic area or facility	Fair	Medium/High
User preferences		
• Relative preferences for facility design characteristics and other supporting factors	Fair	Medium
Facilities data		
• Characteristics relating to quality for bicycle or pedestrian travel	Fair	Medium
Crash and safety data		
• Specific bicycle- and pedestrian-relevant crash variables	Fair	Medium/High
• Data regarding crashes that do not involve a motor vehicle	Fair	Medium
Secondary data		
• Safety and demand impacts of design features	Fair	High
• Safety and demand impacts of policies, programs	Fair	Medium

3 Source: Bureau of Transportation Statistics, 2000, "Bicycle and Pedestrian Data: Sources, Needs and Gaps", US Department of Transportation, Washington DC.

Source: Bureau of Transportation Statistics, 2000, "Bicycle and Pedestrian Data: Sources, Needs and Gaps", US Department of Transportation, Washington DC.

In other countries a distinction is commonly drawn between "high level" data such as revealed in periodic census and travel surveys, and data that is collected for more specific purposes at the local level.

2.2 Cycle and Pedestrian Data

There appears to be a consensus (at least by default) that pedestrian data should feature in the overall travel mode split, and that walking and cycling should not be lumped together for data collection purposes.

"The fact that both modes are non-motorised does not make them similar in other respects."

The issue of pedestrian trip definition has not been explored, but Portland is concerned about some aspects, notably trip chaining, which is a complicating feature of trips on foot. (Ben Plowden of the GB Pedestrians Association argues that the ability and pleasure of stopping is a characteristic of walking that is not shared with cycling.)

2.3 Data Quality

Poor quality data on pedestrian activity is recognised as a hindrance to policy formulation. In some places the desire to promote walking has led explicitly to the improvement of pedestrian data as a means of increasing political awareness of the issues (e.g. Portland and Zürich). The issue of under-reporting of walk trips, especially short walk trips, is well recognised.

More generally, data accuracy is tackled through the quality of the survey process. The sample sizes in some countries (e.g. Germany, Netherlands, Switzerland) are very much higher than is usual practice in Britain.

Greater frequency of surveys is also an emerging trend, with annual rolling surveys becoming more common, in preference to or addition to large scale surveys every 10 years.

2.4 Linking Local to Global Data

There are varying views as to the relationship between high and low level data. In some places (e.g. Zürich and Portland) it is argued that local counts and interviews are not useful in developing city-wide data,

mainly because of methodological difficulties. In Perth, local area data apparently are combined to provide higher level data.

3 Monitoring

3.1 Monitoring Trends and Strategies

High level data is regarded in all the places contacted as important in terms of monitoring travel trends and the success of strategic policies. In some cases there are demands for more frequent surveys to allow regular policy reviews and audits. For example Barcelona now undertakes surveys that allows mode split to be monitored year on year – thus an increase in pedestrian mode share 1999-2000 of 35% to 36% was recorded.

3.2 Monitoring Individual Scheme Success

No such consensus was found on whether or how pedestrian count data can be used to judge the success of individual schemes. Zürich explicitly relies on "unstructured sensing" though public and media reaction, rather than count data. (The assessment of generic infrastructure is carried out at federal level rather than by the cities, although London of course is in terms of scale and resources more akin to Switzerland than to Zürich.) On the other hand Copenhagen has been influenced in its expansion of pedestrian spaces by the statistical information collected over many years by Jan Gehl and his team at the architecture department of the University. Perth (Western Australia) also carries out counts to judge the success of schemes such as school travel plans.

4 Interesting Features of Practice in Other Countries

1 *Non-transport pedestrian activity*

In Copenhagen, Jan Gehl has developed measures of activity in public spaces that can be related to the character of the spaces, frontages and routes. For Copenhagen these measurements have been repeated periodically so that increases in activity over time can be correlated with changes in the provision of pedestrian space. These methods have been applied in the centre of other cities including Perth and Melbourne.

2

3 *The Fussfon*

The public can be harnessed as a data collection resource. In Zürich a special city telephone number can be called to report on problems or dissatisfactions with the walking infrastructure. This "Fussfon" acts as a barometer of public satisfaction but also provides data on where problems are, and this is used in planning and prioritising investment in footway improvements.

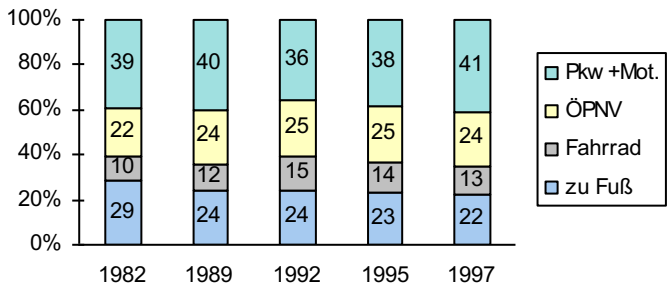
"Travel Smart" individualised marketing (TSIM)

The approach here is to bring travel awareness to a more specific and targeted level. Intervention at destination level, working with the individuals involved is intensive, but can have a direct impact on policy implementation.

4 *Microcensus attitude questions*

In Switzerland, the national micro census asks questions on attitudes to and satisfaction with specific aspects of transport infrastructure and policies. Currently public transport subsidy and roadbuilding figure prominently in the questions asked. In Barcelona, too, attitude questions produce interesting results, e.g. three quarters of the population regard themselves as pedestrians rather than drivers, and this proportion has increased over the last 5 years.

The table below shows places invited to comment and responses received.

Contact place/person	6 *Information provided in response*
Denmark, Copenhagen City Council; and Jan Gehl	• Although Copenhagen has created many new pedestrian areas, the city Traffic and Environment Plan (1997) does not include any mention of walking as a means of travel. "Special Street Spaces" are to be redeveloped to make the city a more attractive place to be in." • Jan Gehl has developed methods of quantifying aspects of pedestrian activity and quality other than flow. These include measures of activity, but also measures of aspects that promote or provide for that activity. E.g. pedestrian density per m2, number of seats per 1000 m2. And rating of frontages and environmental quality from a pedestrian perspective.
Germany, Wuppertal Institut fur Klima und Umwelt, Rudolph Peterson	Points to periodic comprehensive h/h interview surveys in many cities on consistent basis (often undertaken by Socialdata, Munich) providing good mode split data.
Germany: **Berlin and Brandenburg** C. Holz-Rau	Household and travel diary surveys allow monitoring of trips rates and mode split. Data are used significantly for the planning of public transport routes and networks. Local and scheme specific data are collected, but are not used to inform general level data for the whole area.
Germany **Münich** Referat für Stadtplanung, und Bauordnung Friedrich Koppen, Stefanie Wolf	The city's Transport Development Plan (VEP) approved in 1999 and including measures to boost walking and cycling can be found at: http://www.muenchen.de/plan/vep/index_vep.html • The most imported pedestrian data called KontiMuc were collected in 1991, sample size 4,000 households. This included a travel diary for all household members over 6 years of age, for a specific nominated day for that household. The next survey of this kind is planned at the end of 2001. • Data are available to show the trend in overall mode split of all trips: (Pkw+Mot = Private motorised traffic; ÖPNV = Public transport; Fahrrad = Bicycle; zu Fuβ = on foot)  The colour blue is for pedestrians, and a decline is apparent. There are mode split targets; walking is expected to remain around 22-24%.

	• In addition, local counts are carried out. These are used to monitor the effectiveness of policies or schemes • Data for specific areas or schemes are used to inform general level data for the whole city.
Netherlands, CBS, Heerlen (Central Bureau of Statistics)	Dutch National Travel Survey (annual) has undergone significant change:4 • Shift to telephone survey in 1984 • Declining subsequent response rate (down to under 35%) due to increasing non-listed telephone numbers and increasing reluctance to respond • Sample size increased in 1995 from 10,000 to 60,000 households • Adoption of new method in 1999 – "New Kontiv Design" (by Socialdata of Münich) • Resulted in large increase in response rates - over 70% now possible • New design run in parallel with old method for one year to derive correction factors for earlier data • Based on "researchers adapting to respondents, not the other way round". Questionnaire simplicity, answers in respondents' own words etc. • "Satellite" surveys (mostly my telephone) of items of particular interest (e.g. public transport, children under 6 years) rather than burdening whole sample with large and complex questionnaire.
Spain **Barcelona**	• Annual surveys (new) to reveal mode split trend, pedestrian share up 1% 1999-2000 • Research has been undertaken into walking speed of different types of pedestrians. This found an average speed of 1.45 metres per second, but a range 1.16 to 1.58 m/s depending on age and sex, and a total range of footway users of 0.50 – 3.13 m/s (including roller skaters and people who are encumbered in various ways) • Mode split data relates to working days (walking 36% in 2000) • 74% of Barcelonians consider themselves pedestrians rather than drivers
Switzerland **Zürich** Annette Spoerri, Traffic Planning Unit	Two types of regular pedestrian data are collected: 1. Street counts of pedestrian flow (and other traffic) at four Sihl bridges (access to the inner city), every two years 2. "Microcensus traffic", which provides general information on many traffic aspects, not just in Zürich but throughout the country. The Swiss Microcensus every 5 years includes data from household interviews and travel diaries on: • Trip rates • Kilometres travelled • Usual mode of travel to work, shop, weekend leisure • Flows (geocoded) • Type of person, • Ownership of vehicles, travelcards, parking availability • Attitudes and transport provision satisfaction e.g. - Is the road network good? - Is expansion of the road network unnecessary? - Should there be cheaper public transport? - Should public transport subsidy be higher or lower?

4 Henk van Evert, Ger Moritz, "The New Dutch Travel Survey", Paper for the 9th International Association for Travel Behaviour Conference, Gold Coast, Queensland, Australia, 2 –7 July 2000

	- Should public transport be reduced on non-profit routes? - Should motor vehicle be reduced in residential quarters? - Should drivers pay for their own cars? Data are also collected (and tailored) for specific planning purposes including: • Particular localities • Particular events and destinations, e.g. - Transport mode to Z00, temporary exhibition etc. - Transport mode to public transport stops • Impact of pedestrianisation on local trade Other city departments collect pedestrian data, notably: • City-owned public transport operator (VBZ) annual survey of access to public transport and satisfaction levels • Municipal Urban Planning Unit (FstE) regular surveys on attitudes about urban environment, neighbourhood, crime, safety, perception etc. • Municipal traffic Police annual accident statistics. Studies of perceptions of safety in different parts of the city. Major transport study in 1992 (by Socialdata, Münich) included behaviour, perception and potentials. A repeat would be useful 10 years on. As far as footway adequacy is concerned, the city's transport department provides a special phone number for people who wish to comment on walking conditions. The so-called "Fussfon", run by a commissioned traffic engineering office serves as a kind of barometer of satisfaction, as well as indicating where improvements are required. The data are used to monitor trends (in mode split etc) and to "put future planning projects in concrete terms". Data are seldom used to monitor directly the effectiveness of specific implemented planning projects (before and after studies) because of cost and other difficulties. Instead newspaper and public reactions ("unstructured sensing") are more important in gauging success. Generic types of infrastructure are evaluated in national studies, not by the city.
UITP Brussels (Union Internationale Transports Publique)	"Millennium Cities Database for Sustainable Transport" with comparable transport data including all trip mode split for 100 cities world-wide. 65 variables in total. Available on CDRom at 1000 Euros or 500 Euros for UITP members. (Worthwhile for T*f*L)
USA **General** Association of Pedestrian and Bicycle professionals, Washington DC. Andy Clarke	Surveys • US Census, as with UK, provides journey to work data every 10 years. • 1995 Nationwide Personal Transportation Survey, which covers trips of all kinds, US equivalent of the GB National Travel Survey. (5.4 percent of trips were by walking compared to 29% in GB the same year). Survey repeated every 5 years. http://www-cta.ornl.gov/npts/1995/Doc/trends_report.pdf • 1995 survey of why people walk showed much greater emphasis for recreation and

	exercise than for transport • Other surveys of attitudes to promoting walking, safety etc. Reports • Bureau of Transportation Statistics report (2000)5 on pedestrian and cycle data. This report identifies Sources of data, requirements and gaps in data. Recommendations are made for improving the quantity and quality of data. - Includes a table showing all the sources of pedestrian and cycle data in the USA (main national sources shown above) - A national geographic database allows analysis via GIS of all streets in the US (connectivity, route density etc) - Refers to many related topics such as accident statistics, national health interview survey, crash helmet use, behavioural risk factors in recreational walking etc. - A call for "better trip data including origin-destination data at a greater level of temporal and spatial detail; trip chaining; and multiple modes. - Identified types of pedestrian and cycle data and prioritised need for better data. This table is reproduced in full in the main section of this document. • A workshop in Washington DC in 1996 reviewed data and identified the following needs (inter alia): - Data collection-comparability across jurisdictions - Supply side information needed, also GIS. - ITE trip generation model needs bicycle/pedestrian input. - A quick response tool is needed that would allow one to evaluate projects in a simple way. At the same time, non-motorised modes need to be included in established motor vehicle models, as well as TRANSIMS. At a minimum, there is a need to store and manage existing data in a GIS and build from there. Inventorying the existing non-motorised facilities is a first step in this direction. - Expand the use of stated preference and real preference surveys to enhance existing data. When doing surveys, ask people how safe they would feel walking or bicycling on a particular facility. - Incorporate updated bicycle and pedestrian techniques in the Highway Capacity Manual (HCM). It should reflect person capacity, not just vehicle capacity. (There are situations where a lower vehicle LOS is preferred because of higher person capacity and reduced crash rates.) - Use aerial photography to do bicycle/pedestrian counts. - Need to develop data bases identifying sidewalks or bicycle paths. - Relationship between land-use information and bicycle/pedestrian use; bicycle/pedestrian trip generation rates by land-use type. - Some way of measuring network connectivity.
USA, Portland Metro,	• Pedestrian data are regarded as very important. Household surveys are considered the only way to really get into mode choice models. There are no counts, videos etc. • HH surveys regarded as most suitable for trip rates, kilometres walked and walk purpose.

5 Bureau of Transportation Statistics, 2000, "Bicycle and Pedestrian Data: Sources, Needs and Gaps", US Department of Transportation, Washington DC.

Keith Lawton	Street counts not regarded as useful for high level monitoring due to sampling heterogeneity • Activity based travel diary helps to reduce "censoring of unimportant walk trips". (i.e. politically important) • Need HH survey with environment attributes attached (GIS etc.) – post survey process. This is important for allocation of funds between budget head, and for making the case for non-transport investment to promote walking. • Street counts useful for capacity and quality issues • Stated Preference to get attitudes and to judge importance, including perceptions of safety and street quality • Attitude surveys regarded as important for monitoring the value of generic measures (crossings etc), rather than just relying on flow and accident counts. • Pedestrianisation "has not been a great success in the USA" • Cultural and legal differences, and attitudes to them via Stated Preference E.g. in LA drivers must yield to pedestrians (enforced), but in Washington "you take your life in your own hands". • Data are *not* used to monitor the effectiveness of schemes. • Data for specific areas or schemes are *not* used to inform general level data for the whole city. "Street interviews will only get a sub-set – sampling is difficult (heterogeneity)". • Use "area profiling" or benchmarking to associate pedestrian activity with density, mix of land use, topography, social and demographic characteristics, etc.

Western Australia, Perth Dept. of Transport, Yvonne Harrison	Perth has undertaken five pedestrian data surveys/series: 1. "Travel Smart" individualised marketing (TSIM) • Partial travel data in a series of suburbs – allows mode split • Travel diary surveys – random sample across 7 days • 70-85% response rate • Used to monitor TSIM and policies of Metropolitan Transport Strategy (see http://www.transport.wa.gov.au/metro/index.html) • Results for several areas gradually being combined 2. Perth Travel Survey • Metro-wide continuous travel survey planned (previously 10 yearly) • Allows mode split monitoring • Household survey based on travel diary • Used to monitor Metropolitan Transport Strategy (see above) 3. Specific school sites • Travel data at specific school sites • "Reveal survey" – students take home, parents complete for "usual" trip patterns • Used to develop action plans to improve school travel. Identifies barriers and opportunities 4. Travelsmart to school • Data for school participating in the programme • Related to school travel in a particular week • Travel diary for school trips for the period before, during and after the programme is run for the school • Used to evaluate the school programme, and determine awards and prizes 5. Potentials for walking • Surveys No 1998 to March 2000 • Residents of 5 local authority areas • Method: - Situational approach mail-back household survey (New KONTIV® Design; *see Netherlands entry above*); travel diary. Random sample of all residents for travel behaviour survey (Response rate:77-82%). - In-depth interviews (with interactive measurement) randomly selected from households in the behaviour survey (Response rate: 76 %). • Survey identified the reasons for mode choice of the residents in specific areas, to determine the potential for reduction of car use and increase in public transport, cycling and walking. Will influence the programs/policies that are implemented. • Results for the 5 areas are being combined/compared.

Below is reproduced the standard letter and tables sent to the various contacts:

Tim Pharoah
Email xxxxxxxxx

Dear

Data on pedestrian movement – Transport for London

Transport for London (T*f*L), the body set up last year to plan and manage transport in London, is aiming to improve data on walking activity in London. This will include both "high level" data relating to general levels of walking in the overall transport mix, and "specific level" data for particular schemes, localities etc.

I have been commissioned to research this issue on behalf of T*f*L. I am reviewing ***methods*** of collecting data on pedestrian activity (flows, trip rates, mode share, street activity levels etc) that are employed in other cities and countries, and wondered if you could help.

Answers, however brief, to the following questions would be very helpful to our efforts.

1. Are pedestrian data collected in your area/city?

2. Do these data allow walking to be included in the overall mode split of all trips?

3. How are data collected? (e.g. household surveys, counts, video analysis)

4. Are the data used to monitor the effectiveness of policies or schemes?

5. Are data for specific areas or schemes (e.g. local counts) used to inform general level data for the whole city?

Attached are two tables showing possibilities that are being considered in the London context. Comments in the right hand columns would be helpful.

Your response would be gratefully received. If you would like to see the outcome of this work, I will be happy to send it to you in due course by email. As the timescale for this investigation is short, a quick reply would be much appreciated.

Thanking you in anticipation,

Yours sincerely

Llewelyn-Davies

Tim Pharoah,
Consultant to Llewelyn-Davies, working for Transport for London

6.1 Tables accompanying standard letter

6.2 Possible data types for walking

Data type	**Possible Monitoring Application**	7 Survey	8 Comment
8.1.1 Pedestrian trip rates	Monitor mode split targets (area level), or trip rate targets	Household interview surveys, travel diaries	
8.1.2 Pedestrian kilometres travelled	Monitor walking activity and average trip length – e.g. for health objectives	Household interview surveys, travel diaries, street interviews	
8.1.3 Pedestrian flow	Volume and mode split targets Adequacy of footway capacity	Street counts (numbers)	
People density (persons per m^2 by time)	Perceived and actual safety Regeneration objectives 24 hour economy objectives	Street counts (numbers and time)	
8.1.4 Type of activity	ITP target monitoring e.g. for walking as main mode, sub mode, recreation	Street counts Interviews (Household/Street)	
Type of person	Social inclusion Safe routes projects	Street counts Interviews	
Area profile	Benchmark of area and development types for promoting walking	Area surveys and counts	
Attitudes	Fear of crime Neighbourhood satisfaction Transport provision satisfaction	Interviews	

Purposes of monitoring pedestrian movement, such as deciding on the:

Purpose	*Comment*
Allocation of investment between different modes of transport.	
Value of generic types of infrastructure or other forms of intervention (e.g. Zebra versus Pelican crossings).	
Success of individual schemes (in relation to their targets and objectives) such as widening footways, pedestrianising a shopping street, or creating a new public space.	
Effectiveness of area-wide initiatives such as the creation of strategic walking routes or area-wide traffic calming.	
Safety or accident prevention qualities of particular schemes or measures	
Assessment of public satisfaction, e.g. on street safety or quality.	

Tim Pharoah for Llewelyn-Davies
6th July 2001