

On the move

Informing transport health impact assessment in London

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AEA TECHNOLOGY ENVIRONMENT

On the move

This report has been developed by:

Paul Watkiss & Christian Brand, AEA Technology Environment
Fintan Hurley & Adele Pilkington, Institute of Occupation Medicine, Edinburgh
Jennifer Mindell & Mike Joffe, Department of Epidemiology & Public Health, Imperial College School of Medicine
Ross Anderson, St. George's Hospital Medical School, London

With additional co-ordination and editing support from:

Henry Abrahams, Transport for London
Clive Blair-Stevens, Department of Health & NHS Executive London
Eugenia Cronin, NHS Executive London
Hilary Samson-Barry, Greater London Authority & NHS Executive London

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Assessing how transport impacts on health in London

Transport can affect health in a range of both positive and negative ways. It can help people access services, reduce isolation and increase opportunities for work and social activities, all of which have the potential to improve health. However there is also potential for negative impacts through, for example, accidents and air pollution.

In London, 'Transport' has been identified as one of the four key priorities in the London Health Strategy, which aims to support efforts across the capital to improve health and reduce inequalities. In this context the NHS Executive in London was keen to commission work that would help inform understanding of the impacts of transport on health, and provide support to people developing policies, programmes and projects across London.

Increasingly health impact assessment is proving to be a valuable tool for policy makers and practitioners at all levels to assess the impacts of proposals on health. The work summarised in this document, along with the fuller report 'Informing Transport Health Impact Assessment', has therefore been designed to help contribute to and inform this process. Assessing comprehensively the impacts of transport on health is not easy and so the research has sought to describe what we are able to quantify and assess and at the same time highlight areas where the evidence is less clear and work is still required.

The research has looked for the first time at how transport in the widest sense – from walking and cycling, to lorry and car and bus traffic – affects the health of Londoners. As an initial study, it focuses on assessing and evaluating the more direct impacts of transport and health, where health is defined in its widest sense as a state of physical, mental and social well-being.

The direct health effects of transport included in the study are:

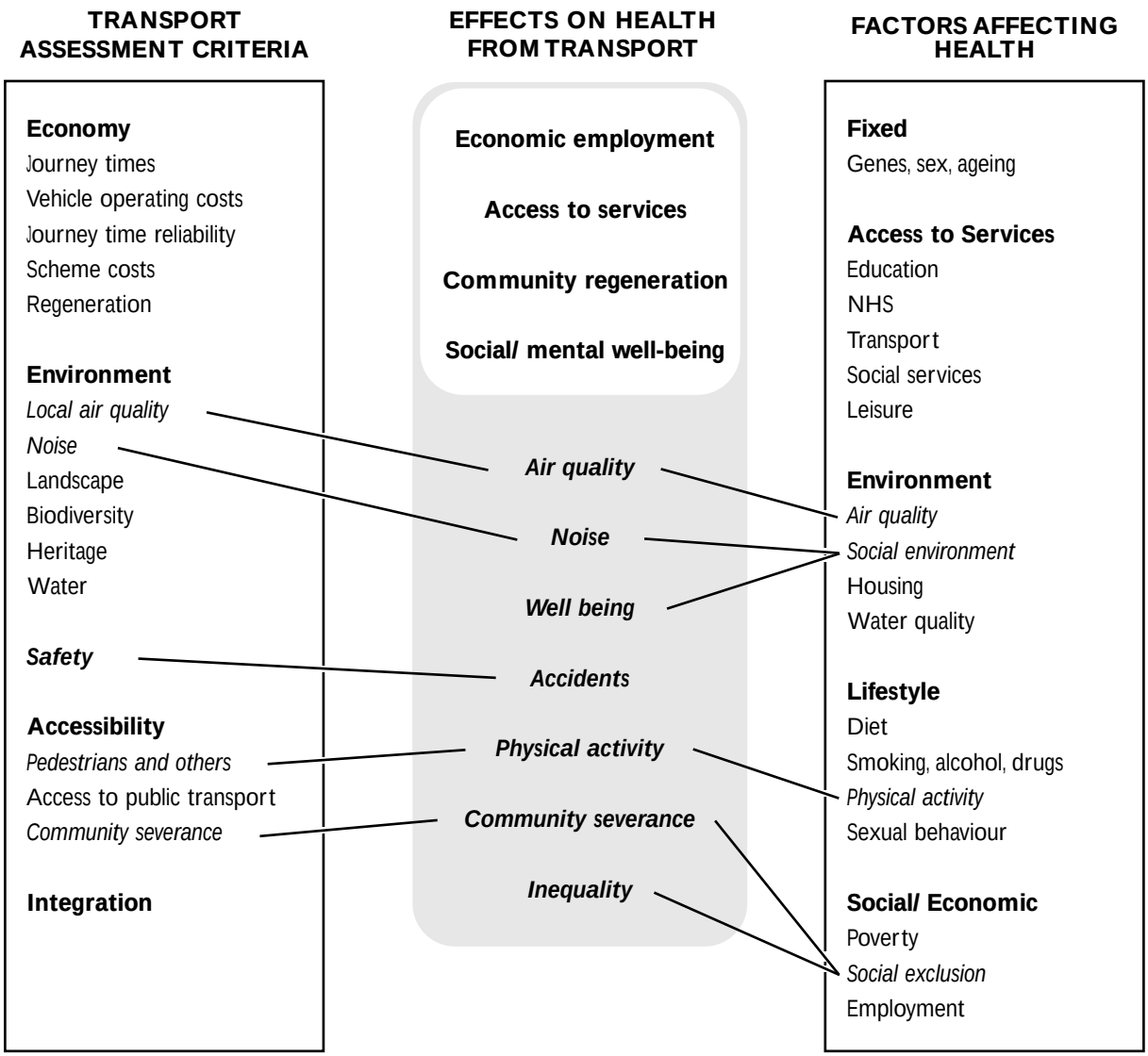
- Traffic accidents;
- Air-pollution related health effects from transport emissions;
- Noise-related health effects from transport activity;
- Health benefits from physical activity such as cycling and walking;
- Community severance, mental health and inequality effects.

The study has not assessed the substantial indirect benefits of transport, which include delivery of food to our shops and goods and services to the population, as well as moving people around the capital. Such benefits are clearly important and will need to form part of the equation when health impact assessment is applied to transport policy or practice.

Looked at in the widest context this study provides an important contribution to work aiming to minimise the ill effects and maximise the benefits of transport in London.

The study

The context of the current study with respect to HIA and transport appraisal is shown in the shaded area below.



It is important to stress that this research project is only a first step and further work is required to inform our collective understanding of factors impacting on health and their inter-relationships. This stage describes the evidence and discusses whether quantification is possible. To fit with the scoping goal of HIA, it has assessed the relative size of the health effects for different categories relating to transport in London, to provide some guidance on how important these effects are relative to each other. One of the key aims of this phase of the work was to identify impacts that can be quantified and those for which quantification is problematic. By doing so, we hoped to identify gaps in the knowledge base and highlight research priorities.

Within this first phase it is impossible to recommend one generic approach and a framework which is universally applicable for researchers and decision-makers in health assessment and in transport appraisal, and one that can be applied to detailed schemes and at the same time to London wide policies.

Future work will need to build on the information here by exploring the more difficult to assess and marginal effects on health arising from transport decisions.

Finally, as part of this study to identify evidence and potential frameworks, a number of organisations were consulted (e.g. Department of Health, Greater London Authority, Transport for London and the Department for Environment, Transport and the Regions). It is clear from this work that wider consultation continues to be important. This will need to involve both potential users of the information from this study, as well as a wider group of stakeholders to assess how to relate the relative effects from different categories of impact and against other criteria (both for health and for transport).

This summary report covers the following areas:

- Accidents
- Air pollution
- Noise
- Physical activity
- Community severance and other effects
- The relative effects of transport on health
- Research recommendations
- Quantification frameworks

The evaluation by effect category is presented below.

Accidents

The most obvious and one of the most significant effects of transport on health is traffic accidents.

The impacts of transport on health from accidents are obvious; the cause and effect chain is simple and immediate. The assessment of accidents is therefore easier than with other categories considered in this study. There are already established quantification methodologies for predicting transport accidents and casualties. These methods use historical accident data as a means of predicting future accident rates from new schemes or policies, adjusting for road type and speed, as these influence the numbers and severity of accidents.

The current levels of health impacts from road transport accidents in London are recorded and reported. It is worth noting that there are differences in the trends in transport statistics in London compared to the UK generally: accident rates in London remain relatively constant year on year, whilst rates in the rest of the country decline.

Finally, the distribution of accidents does impact on certain road-users and age groups disproportionately. The relative risk of serious injury or death by distance and by journey for pedestrians, cyclists and motor-cyclists is much higher than for other road users (indeed of the accident fatalities in London 1998, more than half were pedestrians). There are also links between transport choice (and accident rates) and both social class and vulnerable groups, particularly children.

Air pollution

Studies of pollution episodes (such as the London smog episodes of the 1950s) have shown that very high levels of ambient air pollution are associated with strong increases in adverse health effects. Recent studies also reveal smaller increases in adverse health effects at the current levels of ambient air pollution typically present in urban areas. These health effects include a range of endpoints, such as premature mortality (deaths brought forward), respiratory and cardio-vascular hospital admissions, and possibly exacerbation of asthma, respiratory symptoms and loss of lung function. The evidence for these effects is strongest for the pollutants PM10 , SO2 and ozone and the relationships are widely accepted as causal. Recent studies also suggest that long-term exposure to these pollutants, especially particles, may also damage health and that these effects may be substantially greater than the acute effects described above.

Transport is a major source of these atmospheric pollutants in urban areas and therefore can be assumed to have adverse health effects. Frameworks for quantifying the health impacts of transport-related air pollution do exist. The frameworks require a series of steps and involve additional analysis to that typically found in transport model outputs. Such approaches first quantify emissions from transport vehicles (taking into account that emissions vary with vehicle type, fuel type, technology and speed). They then proceed to assess the effects of these emissions on local air pollution concentrations, usually with the use of dispersion models. The pollution data is then combined with data on population to estimate the population weighted air pollution increase. The final step is to quantify health impacts with the use of exposure-response functions from epidemiological studies, which link ambient air quality to health endpoints. There is however debate on the exact exposure-response functions and health endpoints that should be included in any assessment framework.

For this study we have compared the results from three sets of exposure-response functions: from the Department of Health's COMEAP (Committee on the Medical Effects of Air Pollution) sub-group, from the EC's ExternE Project and from functions from specific London epidemiological research studies. We have combined the first two of these to provide a framework for quantification of health damages from transport-related air pollution in London. This uses COMEAP recommendations to quantify those effects for which there is the greatest confidence (least uncertainty) and ExternE recommendations to estimate additional health impacts where the evidence is strong but where quantification is more uncertain. Impacts have been classified into uncertainty bands, to reflect the different confidence levels attached to different health endpoints and quantification approaches. The approach is

applicable for looking at marginal changes resulting from transport decisions. We have used this approach to compare the potential importance of air pollution relative to other categories of impact. This analysis leads us to conclude that air pollution related health impacts from transport may be equivalent to, if not greater than transport accidents in London.

Noise

Noise is a major nuisance and is widely recognised as a dis-benefit affecting daily life. It may also lead to a number of health impacts through a variety of direct and indirect effects, although there is considerable debate on the reliability of the evidence. Transport is a major source of ambient noise levels and therefore may have important health impacts.

The evidence for noise impacts has been assessed, as discussed in recent major reviews. The conclusive impact of the health effects of noise is mostly limited to cases of hearing loss and tinnitus caused by long periods of (occupational) exposure. These effects are generally not important at the typical levels of noise arising from transport. A number of studies also point to potential physiological and psychological impacts from the noise levels associated with transport (from road, rail and aircraft), including speech interference, annoyance, sleep disturbance, educational performance, cardiovascular and physiological effects, and mental health effects.

There is general agreement that noise is a source of annoyance. There are, however, problems in interpreting the potential health impacts of both direct and indirect routes from noise stimulus to the annoyance effect. These problems arise because annoyance is related to the duration and the frequency components of sound and because annoyance relies on subjective measures and the sensitivity or susceptibility of individuals.

The remaining evidence for effects of environmental noise on health are strongest for sleep disturbance, ischaemic heart disease and performance by school children. It is stressed that much of the evidence in support of actual health effects other than annoyance and some indicators of sleep disturbance is quite weak. The data on other possible health consequences, such as low birth-weight and psychiatric disorders, are inconclusive.

Existing exposure-response relationships are confounded by a number of variables that serve to scatter data points around the cause-effect curves. The scientific evidence suggests a threshold below which no effects are expected to occur, although this cannot be considered definitive. As well as this uncertainty in relation to exposure-response functions, there are other major problems in developing noise and health quantification frameworks. These relate to subjectivity and individual responses to noise, as well as how well average noise levels (commonly used to predict noise amenity effects) actually relate to a metric which is relevant for health endpoints.

In summary, although it is possible to assess quantitatively the noise levels from transport, it is very difficult to evaluate quantitatively what the health consequences of these levels are. A qualitative approach is possible, though there remains considerable debate on the reliability of evidence relating to health effects.

Physical Activity

Physical activity has significant health benefits in reducing coronary heart disease and in reducing other health impacts such as diabetes, obesity, hypertension, cancer, osteoporosis and even depression. Transport (through the encouragement of cycling and walking) can therefore provide significant health benefits.

Health benefits are realised through 30 minutes of moderate activity on most, and preferably all, days of the week. Physical activity is recommended (rather than participation in organised sports or exercising) because most people can incorporate moderate physical activity into their daily routine – and it is in this respect that there is a link between transport and health.

There is quantification evidence relating physical activity to health endpoints. In theory this should allow the estimation of possible benefits for transport-related travel (such as cycling and walking). Inverse causal relationships exist between physical activity and all-cause mortality. These relationships may be significant (equivalent to the difference in mortality of non-smokers and smokers). There are also similar relationships for the risk of developing coronary heart disease, type 2 diabetes mellitus, cancer mortality (and specifically cancer of the colon) and hip fractures in elderly men and women.

There are also a number of other benefits from physical activity, for which good evidence exists but for which quantified estimates of benefits are not available. These include reduced long-term risk of osteoporosis, greater well-being and self-esteem, as well as benefits in reducing mild depression and mild anxiety. There may also be benefits in later life, including improvements in balance, co-ordination, mobility, strength and endurance, in the control of chronic disease, and in reducing weight especially for the obese, as well as general benefits in keeping people mobile.

It is likely these benefits would be realised through cycling to work. They may also be realised by walking to work, though this activity level may not reach the necessary level of intensity of activity for some groups (e.g. young adults). However, the greatest health benefits are gained by increasing activity levels in elderly, sedentary or obese individuals, and walking will have major benefits for such groups. The risks from cycling and walking (musculoskeletal injuries and accidents) are less significant than the benefits obtained.

Problems in providing reliable quantitative estimates relate to the lack of data on the linearity of functions and the presence or absence of thresholds. Moreover, the effects on modal shift and travel patterns in response to specific projects or policies are not well characterised. Finally, there are also important questions about how to assess background health status and activity levels.

Community Severance and Other Effects

As stated earlier in this report, this study explored the direct effects of transport on health. It did not set out to assess the significant benefits transport has on health (indirectly) through access to goods and services, and through economic and social development. These benefits are extremely important and must be included when looking at transport more generally.

There are, however, a number of other effects that arise directly from transport, which have not been covered in previous sections.

The first of these is community severance, which arises when roads bearing high levels of traffic cut through housing areas. The physical presence of the traffic, particularly heavy goods vehicles, as well as the risk of accidents, presents a barrier to the community, limiting or disrupting interpersonal networks and reducing social contact. There is evidence regarding likely health effects of community severance, though the effect is indirect. Studies indicate social contact may be inversely proportional to the volume of traffic. These social factors in turn may influence disease causation. Firstly, deleterious factors cause stress which increases susceptibility to disease. Secondly, social support may be restricted, which is believed to have a moderating effect in dealing with noxious stimuli.

There is evidence which indicates that social contact does result in lower all cause mortality. However, translating these studies into quantitative frameworks is extremely difficult because it is hard to isolate a link between transport activity and the degree of community severance that occurs. Some qualitative estimates are possible based on traffic volume, though it is stressed there is a high degree of site specificity with effects.

The possible inequality effects of other impacts (accidents, air pollution, noise and physical activity) have also been assessed. For all of these categories, disproportional effects have been identified for vulnerable groups. Of these the relationships between income/poverty and air pollution, and the fear/risk of vulnerable groups (cyclists, children) in terms of traffic accidents are highlighted as most important. For both of these quantification of effects may be possible.

Finally, a number of other categories of effects have been reviewed. These include transport access and social or economic exclusion and the potential stress and psychological effects caused by transport. For both of these we conclude that effects on health are likely to be low relative to other impact categories, and that at present, quantification is not possible.

The Relative Effects of Transport on Health

One of aims of this initial phase was to assess the relative importance of different health effects of transport in London, and to illustrate where evidence existed and where quantification could be undertaken. By doing so we have aimed to provide some feel for how important transport is with respect to health.

For accidents, statistics are available on the current health effects from transport in Greater London. The latest figures report that there were 45,547 road accident casualties in London in 1998. Of these, 226 were fatalities, 6,632 were serious and 38,689 were minor.

Comparing these against the effects of air pollution is interesting. Using the framework outlined here, we have estimated the current levels of air pollution related effects from all transport in London. We estimate 380 fatalities (deaths brought forward) and 350 respiratory hospital admissions per year occur in London from transport-related pollution (excluding ozone). Interestingly the number of fatalities is of a similar order of magnitude to the numbers of deaths in London from traffic accidents, though it is stressed there are important differences in the age and health-state of people affected by the two. Many of the deaths associated with pollution are probably in the elderly and the sick and the period of life lost may be small. The attribution of causality is also far more certain for accidents than for air pollution. In addition, there are also estimated to be an additional 815 cardio-vascular/cerebro-vascular hospital admissions and half a million minor respiratory symptoms from transport-related air pollution in London each year, though a slightly higher uncertainty rating is attached to these numbers. Air pollution in London is also thought to lead to changes in life expectancy (chronic mortality). We estimate that transport-related air pollution leads to the loss of around 34 thousand years of life per year, but note there is a higher uncertainty in this value than for the endpoints above. Finally, there are a number of other possible impacts that have been reported in US studies. The use of these estimates leads to additional health impacts from transport emissions in London including a small number of deaths (around 30 per year) from carcinogenic emissions, and a very large number (half a million) from respiratory symptoms. These effects are given the highest uncertainty rating.

Overall, these values indicate transport-related air pollution is as important (perhaps more so) than accidents with respect to the health of Londoners.

Moreover, the combined health impacts from accidents and transport-related air pollution are estimated here to be responsible for at least 1% of annual deaths in London. They are also responsible for thousands of serious health effects / injuries and tens of thousand (possibly hundreds of thousands) of minor health effects / injuries each year. However, these impacts should be evaluated against the significant benefit transport produces.

The study has also looked at the potential benefits from transport-related physical activity in London. Further work is needed to equate risks in equivalent terms to air pollution-related health effects and accidents. Nonetheless, initial calculations indicate the benefits of physical activity from the current numbers of people cycling or walking to work in London could be of a similar order to the dis-benefits from accidents or air pollution (i.e. in terms of the life expectancy gained per year for London). We highlight the derivation of more accurate versions of these numbers as one of the immediate research priorities following this study.

The relevant numbers of people affected by health impacts from noise and severance are harder to evaluate. Data on noise levels across London are not currently available. Nonetheless, it can be concluded that a very large number of people in London (> several hundred thousand) are exposed to noise levels above the WHO environmental guidelines, a threshold below which few people are seriously annoyed.

For both noise and community severance, potential health impacts occur as a secondary consequence of transport activity. Initial estimates might be possible, especially for noise, when applied for the evaluation of specific schemes or policies (rather than generically for London as for other categories).

Research Recommendations

There are a number of different categories of research recommendations that arise from a study such as this. The first centre on the primary research required to improve our understanding of the links between transport and health. Many of these are longer-term research priorities. The second concern the more immediate or short-term priorities. Even though an area can be investigated in detail with a research programme, in many cases some additional input is needed to the debate now, to help inform decision makers in the short term. Areas identified, by impact category are summarised below:

Accidents

The research recommendations from accidents are fewer than other parts of the study, as the methods of appraisal are widely accepted, and much research effort has been input into this area. Nonetheless there do remain questions about the relationships of certain key assumptions, for example the link between marginal changes in traffic volume and accident rate and severity. There are also health specific areas that warrant more research. It would be interesting to look at the effects of accidents on the NHS, both in terms of numbers (with a break down by impact type) and health costs. It would also be interesting to investigate how potentially important mental health effects (trauma) from injuries might be, as well as further studies into the fear of accidents affecting people's decision to walk or cycle more generally.

Air pollution

There is a great need for further research around air pollution. Any research recommendations here should be compared to other ongoing programmes though we highlight the issue of uncertainty analysis as a priority, as well as further work to improve the estimates of chronic effects. In addition we recommend the use of an approach to look at specific scheme and policy measures, particularly in the context of current legislation with respect to health-based local air quality standards (e.g. as part of the National Air Quality Strategy).

Noise

A number of research areas has been identified. In the area of primary health impact data research should include longitudinal field studies and natural experiments (e.g. changes in the siting of an airport) in preference to laboratory and cross-sectional studies. Appropriate study design should also consider impacts on vulnerable groups, confounding effects and effect modifiers. Studies should also take account of relevant socio-economic and political factors across different communities exposed to noise sources. Further research is required for studies that suggest that endocrine status, motivation and annoyance are affected by noise exposure in children. There is a need to establish whether these effects persist over time, or change in size, and a need to distinguish between the immediate and delayed effects of noise.

More work is needed on the appraisal of noise sources and the evaluation of mechanisms to relate to health impacts. There is also a need to improve the measurement of noise sensitivity and annoyance. A metric is required against which health effects can be assessed and measures standardised. As with air pollution, any research recommendations here should be compared to other programmes. There are however, some immediate areas that warrant research. These include a more detailed look at data sources in London to investigate noise levels. They also include the use of frameworks to look at specific policies or schemes. This would allow the evaluation of potential exposure response functions and would allow a first order calculation of the potential importance of noise (whilst accepting that confidence in estimates may be low) and

so enable an evaluation of how important an issue noise and health might be for transport.

Physical activity

The assessment of physical activity benefits comprises one of the most interesting aspects of the current study. This area is highlighted as warranting a focus for follow-on studies in general. We have highlighted the following specific areas:

- The need for a series of systematic reviews of primary studies to answer the question "to what extent can physically-active transport influence health and disease outcomes?" For cancers, this would entail updating existing meta-analyses.
- Specific work to achieve sensible activity-effect functions and relate these to frameworks. This includes derivation of baseline factors for future analytical frameworks.
- The derivation of specific numbers for London for the endpoints listed.
- The use of the numbers to look at specific policies, i.e. what benefits might you see with modal shift to cycling and walking. This could be extended to investigating policies to say how benefits can be maximised, whilst reducing the risk of detrimental effects.
- Considering the relative risks of exercise benefits against accident risk and air pollution exposure specifically for London, as well as comparing against other policies (e.g. stopping smoking). This could also be extended to look at the health benefits from displacing private car journeys – for example calculating the direct health benefits and the avoidance of impacts from air pollution, accidents, etc.
- The interaction of the promotion of exercise in the context of other dimensions of policy such as safety and public transport capacity, e.g. how much public transport capacity is taken up by trips that could equally be walking trips especially in London? Is there a risk that lower fares and improved services would actually encourage less physical activity? What additional benefits are there in targeting the elderly for whom benefits may be greater to keep them mobile?

Community severance, other effects and inequality

A number of research gaps have been identified:

- An agreed measuring tool to assess community severance and use of this tool to evaluate background levels of community severance and to be able to model the effects of transport proposals on community severance;
- Research to quantify the effects of community severance on a range of health outcomes, including both morbidity and well-being, especially with respect to transport severance.
- Further research into the health effects of access and comparison with wider benefits offered by transport.
- Further studies into the mental health effects from transport, with respect to annoyance, frustration and anxiety from delays and congestion, and from fear of accidents.
- Quantification of the size of inequality effects on other impact categories, especially associations between poverty and levels of air pollution / accident risk to vulnerable groups.

From our discussions with numerous people during the course of the project, the one dominant aspect raised has been the need to focus the project by looking at the quantification frameworks in relation to actual schemes or policies, i.e. looking at marginal changes in transport.

It is essential that the techniques be developed with the help of a few, well chosen, specific policy proposals. Until that is done the study here will only be a review of the existing knowledge of generic relationships – a valuable thing to have, but a long way from an operational evaluation framework or a useful tool for decision making.

This is particularly important for some effects, such as physical activity, which do not lend themselves to generic quantification. These effects tend to be highly site-specific, and so can only be put properly into context by looking at specific examples.

We believe there are three areas of marginal changes that are a priority for investigation:

- Assessment of health effects at the transport scheme level,
- Assessment of transport effects on health from London wide policies,
- Assessment of health effects from NHS decisions that have an impact on transport. This is important given the NHS is one of the largest employers in London and has a major impact on transport provision and activity levels.

During the course of our discussions, a number of possible areas of investigation have been identified. These include

- Congestion charging;
- Speed reduction policies;
- Home zones;
- Pricing and fare structures, including road pricing;
- New public transport links;
- New access roads for re-generation (stronger links to network, east-Thames river crossing);
- NHS related effects, from say hospital closure or for green transport plans.

Finally, we have not considered the very large health benefits that transport has within this study, i.e. the indirect effects of transport. We highlight this as a major omission, but one that lay outside of the original remit.

Quantification Frameworks

The evidence in the study shows that transport may have important health effects through all of the categories assessed. These are summarised in the table below.

+ = Beneficial effect – = Detrimental effect.

Endpoint	Accidents	Air pollution	Noise	Physical activity	Community severance
Physical injury	– – –			–	
Respiratory & cardio-vascular disease		– – –		+ + +	
Cancer		–		+ +	
Mental health/well being	–	–	– –	+	– –
Diabetes, obesity, osteoporosis				+ +	

Key, –/+ low, – –/++ medium, – – –/+++ high effect.

At present we conclude that it is not possible to quantify all the health impacts of transport with similar confidence. There is considerable uncertainty associated with many of the impacts we have addressed. This uncertainty is relevant to the effect itself (i.e. is it real?), as well as with respect to the reliability of quantification.

It is worth noting however that impacts from different transport modes do vary. These are summarised below. This has important consequences for choices over modes and policies.

+ = Beneficial effect – = Detrimental effect.

	Accidents	Air pollution	Noise	Physical activity	Community severance
Air transport	–	– –	– – –		
Road – motorised	– – –	– – –	– – –		– – –
Road – non-motorised	–			+ + +	
Rail	–	– –	– –		–
Underground	–	–	–		
River	–	–	–		

Key, –/+ low, – –/++ medium, – – –/+++ high effect.

A summary of the quantification framework for each impact category is presented below.

For those areas which have been more intensively studied, and for which more summary information exists, we have been able to summarise information from key review studies and provide quantification methods. For the more uncertain aspects underlying literature has been explored.

The table shows that there is still uncertainty over many areas. Moreover, people hold very different views about the causality for different effects and the area of transport and health remains a controversial one.

Category	Effect	Certainty of impact	Certainty and approach for quantification
Accidents	Injury	High	High Direct cause and effect based on historic rates.
Air Pollution	Respiratory and cardio vascular mortality and morbidity	Medium	Medium Quantification possible through 1 Assessment of effects of traffic on air quality 2 Assessment of health impacts with exposure-response functions Debate on which health endpoints and which functions should be used.
Noise	Indirect through annoyance and sleep disturbance to well-being, mental health and mortality	Low	Low. Quantification potentially possible through 1 Assessment of effects of traffic on noise levels 2 Assessment of health impacts with exposure-response functions Many endpoints are secondary and are difficult to quantify. Questions over functions and how they relate to noise specifically. Issues of perception, sensitivity of individuals, thresholds, non-linearity.
Physical activity	Cardio-vascular, diabetes, cancer, (beneficial)	Medium–High	Low Quantification potentially possible through 1 Assessment of benefits of physical activity 2 Assessment of background levels/confounders 3 Estimate changes in likely physical activity from transport policy or scheme Questions over linearity and threshold with functions. Some issues relating traffic activity to levels of effects.
Community Severance		Low	Low. Many endpoints are secondary and as such difficult to quantify, especially in relation to transport activity. Overall difficulty in linking traffic activity and levels of impact.

Overall, we conclude that it is possible to evaluate the health effects of accidents and air pollution, though stress that the uncertainty associated with the latter is higher and the consensus on effects lower. Frameworks exist for both categories to assess the marginal effects of transport, though the analysis for air pollution is complex. It is also likely that the health benefits of cycling and walking can be quantified, though further work is needed to provide quantification methods that fit conventional frameworks.

It is possible to assess quantitatively the noise levels from transport, though it is very difficult to evaluate quantitatively what the health consequences of these levels are. A qualitative approach could be undertaken, though there remains considerable debate around the reliability of evidence relating to health effects. Finally, the evidence and assessment methods for other direct effects from transport are less well characterised, though it may be possible to qualitatively assess the potential health effects of community severance.

Further information:

London's Health
developing a vision together

Information on the developing London Health Strategy is available through the London's Health website **www.londonshealth.gov.uk** and includes:

- London's Health - everybody's business - which explains the London Health Strategy priorities and provides summary of action underway in each, as well as introducing the new London Health Commission which is now helping to drive action across London.
- A Short Guide to Health Impact Assessment
- A Resource for Health Impact Assessment - providing a comprehensive review of health impact assessment approaches, providing a range of useful tools to support work and detailing a wide range of case-studies capturing the learning from practice across the country.

OUR HEALTHIER NATION

Information on the Government's health strategy *'Our Healthier Nation'* is available at **www.ohn.gov.uk** and includes access to the *OHN in Practice database* (OHNiP).

This document, along with a wide range of other papers,
is available on the London's Health website:
www.londonshealth.gov.uk