2. Overview of other soft factor studies

In addition to an extensive literature reporting evidence on specific measures, which is discussed in Chapters 3-12, there have been seven previous studies which themselves reviewed national and international evidence in order to make estimates of the overall effect of a combination of soft measures on traffic levels in British conditions. These have been undertaken by NERA (1997, 2000), WS Atkins (1999), Halcrow Group (2001, 2002), SWTAR (2002), Transport for Quality of Life (2003), Steer Davies Gleave (2003) and Transport for London (2003).

2.1 NERA (1997, 2000)

Dodgson et al from NERA (National Economic Research Associates) produced a report for the RAC in 1997 entitled 'Motors or Modems'. This reviewed earlier studies, and carried out market research surveys, of teleworking, teleconferencing and 'teleservices' which included teleshopping, telebanking and information services such as the Internet. Although the title of the report referred to 'business travel', it included commuting, shopping trips and freight movement. Results of the surveys gave estimated effects on trip rates, which were then inserted in NERA's traffic model, somewhat similar to the Department for Transport's National Transport Model (NTM). They suggested that telecommunications would result in traffic flows 'below otherwise forecast' of 6.1% to 9.7% by 2007[1], and 9.2% to 16.2% by 2017. The assessments were revised in 2000, for the RAC Foundation and the Motorists' Forum. Revisions were apparently more optimistic for commuting, and less so for car business travel, though revision of the scenario dates makes direct comparison difficult.

We have seen no critique of these results. The suggestion of a large effect from telecommunications has also been made by others, as discussed in Chapters 10 to 12.

2.2 WS Atkins (1999)

The first overview commissioned by the DETR (Department of Environment, Transport and the Regions) was carried out by WS Atkins (1999), to assess the effect of the new transport agenda set out in the White Paper 'A New Deal for Transport' (DETR 1998). The phrase 'soft factors' had not yet come into use: the report used the phrase 'individual action' with much the same meaning, including workplace travel plans, school travel plans, publicity, teleworking, travel awareness and similar measures. The evidence base was slim, the local authority case studies mentioned mostly being local transport plan (LTP) targets rather than completed initiatives, and few references were cited[2].

[1] They describe this as giving a 41% to 69% 'reduction in congestion', which, in the context, probably means by comparison with free-flow conditions, and without any offsetting induced traffic.

[2] The local authority case studies were Bexhill & Hastings, Eastbourne, Swindon, Chester, Northumberland, Derbyshire, Norwich, Bristol, North Lincolnshire, Portsmouth, Hampshire and Cambridgeshire, and 'a particularly good example of current practice' being Nottingham. Most of the LTP targets were expressed in terms of uptake or awareness, but Swindon mentioned a 25% reduction

WS Atkins suggested that of the measures they reviewed, workplace and school travel plans, 'can be seen as the most tangible of the various forms of travel awareness and substitution measures' and the quantitative parts of their review used these as a proxy for all the other measures. The objective was to calculate a series of factors to be used for adjusting traffic forecasts, separately for each type of initiative not included in the DETR's (then) traffic forecasting model, and separately for different types of area. The calculations proceeded from assumptions for a credible target level, the proportion of trips in the peak, the proportion in scope, and three levels of intensity of the initiative.

The resulting factors were then applied to the proportion of trips in each time period that would be targeted by the schemes, for each of 11 National Road Traffic Forecast area types (London, conurbations, large towns, etc), or combinations. Under many of the assumptions being made at that time about the extent of implementation, the effects on traffic were expected to be invisibly small for most places and times: the maximum potential, with widespread application, at high intensity, was estimated as a reduction of traffic of 8.8% by 2010 for larger towns and cities, in the absence of any other measure such as intensified charging or improvements to alternatives. Aware that they had not taken account of a number of potential initiatives, WS Atkins suggested that the figure could conceivably be increased by wider initiatives especially aimed at short trips, but commented 'the empirical evidence for doing this successfully is extremely weak at the present time'.

An important part of the WS Atkins methodology was to combine these estimates with others which they called local action measures, meaning improvements to public transport and walking facilities, parking restraint, reallocation of road capacity, road user charging, highway and traffic control improvements, and land use policies. These were converted into generalised cost equivalents and modelled using a 'ready reckoner', intended to provide an aggregate approximation to reassignment, mode switching, redistribution and trip suppression/generation[3].

WS Atkins gave precedence to these local policies over individual action, arguing that they would have the potential to influence a larger number of people, and therefore only allowed for a net impact of individual measures in cases where the adjustment factor calculated or assumed was greater than that already achieved by the local policies. In other words, once a given proportion of the trips had been diverted from car by, say, road user charging, they were no longer available to be diverted by other measures. Table 2.1 summarises their 2010 estimates on maximum implementation.

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in car commuting by its own employees, Northumberland sought a 20% shift from car among participating employers, and Nottingham sought a 30% reduction in car trips to work and had 'already achieved 17% since 1996'.

[3] No details of the operation of the ready reckoner are included in the Final Report and Appendices of this project, beyond some statements that it is based on processing information from a number of other models which were assumed to be fit for purpose, with linear interpolation of their results. The implication is that it is a spreadsheet with a series of generalised cost elasticities and cross-elasticities. The authors comment 'the body of evidence on which the ready reckoner is founded does not reliably support the forecasting of traffic reductions beyond 25%', and they therefore imposed an upper threshold of 25% for the combined effect of all the local action policies.

Table 2.1: W S Atkins summary results

	Peak	Interpeak	Off-peak	Weekend
Local policy alone				
Larger urban (1-8)	-21% to –25%	-7% to –15%	-3% to –5%	-4% to –10%
Small urban/rural	-1% to –3%	-1% to –13%	-1%	-1% to –2%
Individual action alone				
Larger urban (1-8)	-9%	-4%	-4%	0
Small urban/rural	-2%	-1%	-1%	0

Because, in general, the calculated local policy impact is greater than the individual action impact, the former dominates and the combined figure given by WS Atkins is generally just the same as the local policy figure alone. However, the report notes that an alternative approach would be to assume that some motorists are sensitive to one sort of instrument and others to another, and in the extreme the effects would be combined to give a greater total. These figures are not estimated in their report, but a procedure is suggested to enable readers to calculate it themselves.

WS Atkins note that their approach is subject to a number of caveats and very tentative assumptions, due to the limited data then available. It is also likely that the calculations in the ready reckoner would have been informed by the generally rather low sensitivities to policy instruments that were used within DETR forecasts at the time, compared with the revised figures now used within NTM. It is therefore possible that a re-application of this technique, with updated elasticities, would show greater reductions in traffic.

The general approach encompasses many features that are desirable, including allowance for a number of different types of behavioural response, a relationship between intensity of implementation and impact (apparently including a relationship with expenditure levels, though details are not available), and scope for varying the treatment of synergy. Most important, it allows direct calculation of differential effects in different types of area, which all subsequent reviews have referred to but not as systematically or coherently calculated.

In summary, WS Atkins proposed that, by 2010, workplace travel plans and school travel plans would be capable of reducing peak traffic levels by roundly 2% for rural areas and small towns, and by up to 9% for larger towns and cities, though they suggest that this reduction, and more, could alternatively be achieved by intensive application of local authority policies on transport facilities and pricing. No national totals, or 24-hour totals, were produced. All figures cited were applied to specific types of area and specific times.

The study does not seem to be widely known, and we have not seen any published comments or criticisms of it.

2.3 Halcrow Group Ltd (2001, 2002)

Using a different form of presentation, most of the figures suggested by Halcrow (2001, 2002) relate to national totals, with few specific figures relating to types of road or times of day, and none comparable with the WS Atkins format. The focus of their discussion and conclusions relates to trunk roads. This is because the study was commissioned by Department of Transport, Local Government and the Regions (DLTR) to make an assessment of the impact of soft factors with special reference to the Multi-Modal Studies. This led to Halcrow primarily examining the potential impacts of vehicle traffic on trunk roads, with only passing comments on urban and local travel..

Halcrow's initial 2001 report was criticised by a number of commentators, notably James (2002) for the South West Round Table on Sustainable Development, following which a 2002 version, with small revisions, was produced by Halcrow at the request of DfT, and is used in this section.

Halcrow used a longer list of soft factors than WS Atkins, and by then had access to many more empirical results, although Bayliss (2004) reports that there were still major concerns, at the time, about the lack of empirical evidence on which to base conclusions. Results were most commonly expressed as an estimate of traffic reduction from policies implemented over the next 10-15 years, measured in national vehicle kilometres per year on all roads, but expressed as though calculated with traffic levels for the year 2000.

Our summary of the main conclusions of the Halcrow review is as follows, using their list of factors which includes some outside the scope of our work.

- **Negligible net effects on travel demand:** e-commerce, internet shopping, visitor travel plans, car clubs (except for a few inner city areas), improved public transport interchange; general public transport marketing; land-use policies, local sourcing of goods, oil supplies and new automotive technology.

- **Some net effect but not significant for multi-modal studies:** school travel plans (0.45 bn veh km); measures to increase walking and cycling (up to 3bn veh km, but Halcrow identified this estimate as unreliable).

- **Material effects on travel demand, and relevant to multi-modal studies:** teleworking (5bn veh km); video-conferencing (2.5bn veh km); workplace travel plans (3.25-5.25 bn veh km); public transport fares and ticketing (figure obscure); individualised marketing (2 bn veh km); bus quality partnerships (2bn veh km).

Halcrow translate their figures into percentage traffic reductions at the national level, which are consequently all rather small numbers. For example, the 0.45 billion vehicle kilometre reduction attributed to school travel plans is described as 0.1% of total road traffic, and the 3.25 to 5.25 billion vehicle kilometre reduction from workplace travel plans as 0.8% to 1.2% of total traffic volumes. Thus the potential effect of these two instruments is assessed as roundly 1% traffic reduction overall.

These are the two instruments which dominate the WS Atkins assessment discussed above. They do not give a total figure, but, inspection of their figures suggests that it must be in the order of 4%. Prima facie, the Halcrow assessment is of an effect approximately one quarter as big as the Atkins one, for the factors contained in both.

Halcrow concluded that the combined overall effect of soft measures will be too small to have much general importance, although allowing, in principle, for bigger effects in specific locations of interest. Their order of magnitude informed Departmental advice to the Multi-Modal Studies teams, who were guided towards a total potential effect of around 5%[4].

The report was widely noticed, and rather controversial. All of those who commented in any detail on it, including James (2002) below and three peer reviewers, concluded that it underestimated the potential:

- Goodwin (2002) suggested that Halcrow's results were likely to be subject to a methodological bias for three reasons: (a) their interpretation of the evidence had not allowed for the time period of build-up of behavioural response, and had therefore underestimated longer-term effects; (b) their calculations of traffic impact had only allowed for the effect of mode switch within a fixed trip matrix, and had therefore underestimated the results of changes in journey length; (c) there was inadequate treatment of synergy.
- Bonsall (2002) concludes that the Halcrow approach gives a 'low-side impression of the potential contribution that an appropriate combination of measures could have – particularly in the context of a determined effort to use all the currently available levers'.

- Headicar (2002) argues that the Halcrow approach is essentially based on a presumption that declared Government policy positions will not be implemented. He notes that this presumption might be true, but precludes effective assessment of the evidence on whether to do so.

Further discussion during our study with David Bayliss of Halcrow clarifies some of the difference between the Halcrow estimates and its critics, which had not been fully understood at the time (including by the present authors), and which closely relates to the distinction between high and low intensity implementation of soft factors defined in chapter 1. Bayliss (2004) reports that they were essentially answering the question 'what could reasonably be relied on to reduce demand for trunk transport capacity?', not 'what could soft measures achieve if their full potential was effectively achieved?', which was the focus of some other studies. Not surprisingly, this gives a lower answer. He also emphasises (as, indeed, did many of the interviewees from our case study areas as reported in chapters 3-12) that it is important not to expect too much from soft measures on their own, without supporting hard measures, as this

[4] This figure was implied, but not stated, in their report. Sloman (2003) calculated the figure from their conclusions, and in evidence to the House of Commons Select Committee on Transport (2003), Mr MacMillan for the DfT said that the Department thought it reasonable "to assume that soft measures could get you into a position where you had reduced travel overall by some five per cent" (p37 and evidence Q171). The Select Committee reported that specific studies had assumed between 1% and 10%, which is consistent with an assumption of 5% average overall.

might have the counter-productive effect of reducing the incentive to carry out the supporting measures which are, in fact, crucial to success.

The Halcrow estimates were therefore based on the policy presumption that – broadly speaking – no great increase in priority or government attention would be given to this area, which reflected their interpretation of stated policy at the time. This is approximately equivalent to the definition we have adopted for our low intensity scenario.

2.4 SWTAR (2002)

James (2002) produced a critique of the Halcrow figures, at the request of the South West Transport Activists' Round Table (SWTAR), who were concerned about its implications for the local multi modal study. In his critique, he made alternative suggestions about the potential impact of each soft factor in the Halcrow report, essentially using the same framework and presentation as Halcrow, but interpreting the evidence and potential differently. His assessments for impacts in 2015, as summarised by Sloman (2003) were as follows:

- Teleworking –3%
- Workplace travel plans –2.4%
- Public transport marketing and ticketing –2%
- Land use effects –2%
- School travel plans –1.3%
- Internet shopping –1.2%
- Videoconferencing –1.2%
- Cycling –1.2%
- Car clubs, public transport interchanges and information, bus quality partnerships and promotion of walking, less than -1% each.

This gives a total potential traffic reduction broadly in the range 15% to 20%, without adjusting the figures upwards for synergy or downwards for double counting. This, like WS Atkins, implies a figure of three to four times as large as Halcrow's total potential effect of up to 5%.

His figure was about the same as W S Atkins for the two measures common to both.

In the light of the clarification of the basis for Halcrow's calculations discussed above, it is interesting that James actually suggested that Halcrow's own forecast would have come to an 11% reduction if they had combined their figures in a different, but in James' view more defensible, way, relating to the treatment of some mathematical corrections, inclusion of some 'negligable' but not zero aspects, and land-use planning impacts. The use of these alternative calculations would reduce the underlying difference between the Halcrow and James figures, for reasons quite apart from the policy scenarios under consideration.

2.5 Transport for Quality of Life (2003)

A further review of evidence was carried out by Sloman (2003) of Transport for Quality of Life, funded by the Royal Commission for the Exhibition of 1851, and using a wider range of more recent empirical evidence than was used by the earlier studies. In her approach, no specific importance was attributed to the difference between 'soft' and other measures, and the main focus was on the potential impacts in 2010 of implementing a coherent package of many different types of local policy instruments, including measures to promote walking and cycling.

Sloman suggested the following range of impacts:

- **Bus quality partnerships**: average patronage increase 18% short term, 36% medium term, with assumed 33% switched from car.
- **Workplace travel plans**: average reduction in commuter cars of 14 per 100 staff
- **School travel plans**: decreases in car use of between 8% to 52% for individual schools (including two where no change took place, and one increase)
- **Individualised marketing and travel blending**: for urban areas, individualised marketing typically cuts car use by 7% to 14%.
- **Car clubs**: on average 1/3 of car club members give up a car on joining, and reduce their car use by 2/3.

Putting these results together with experience on walking and cycling increases, and some other measures, Tables 2.2 to 2.4 show a summary of her estimates of the effect of modest and more ambitious implementation of policies, at national level and for the West Midlands conurbation.

Note that the figures here are expressed as a percentage of car 'travel', which, in this context, refers to trips in most of the cases. WS Atkins and Halcrow both quote their results in terms of vehicle kilometres, though not calculated in the same way – Atkins intending to take account of changes in trip length, and Halcrow taking account in differences in average trip length for different purposes, but not changes in these brought about by the measures. Comparing the results therefore needs some care. Sloman's figures for travel *ought* to be comparable with Halcrow's for kilometres, since neither adjust for changes in journey length: her overall national figure of 5% for 'enlightened business as usual' is close to Halcrow's full effect figure. On the basis of the discussion above, her figures for travel plans and school travel plans seem rather less than those of WS Atkins, probably because the latter include some allowance for journey length changes.

Table 2.2 Reductions in national car travel demand under each scenario (%)

	'Enlightened business as usual'	**'Ambitious change'**
Better bus services	-0.5	**-0.9**
Light rail systems	-0.03	**-0.03**
Community rail partnerships	-0.1	**-0.3**
Workplace travel plans	-1.0	**-2.1**
Teleworking	-1.6	**-2.8**
School travel plans	-0.4	**-1.3**
Individual marketing	-0.8	**-1.6**
Car clubs	-0.02	**-0.04**
More cycling	-0.3	**-1.2**
More walking[5]	-0.1	**-0.2**
Total	-4.9	-10.5

Table 2.3 Reductions in car travel demand in the West Midlands metropolitan area (%)

	'Enlightened business as usual'	**'Ambitious change'**
Bus and tram improvements	- 2.3	**- 6.5**
Workplace travel plans	- 3.4	**- 6.9**
Teleworking	- 5.2	**- 9.4**
School travel plans	- 0.9	**- 2.8**
Individual marketing	- 2.7	**- 5.5**
More cycling	- 0.3	**- 1.2**
Car clubs	- 0.14	**- 0.3**
More walking	- 0.1	**- 0.2**
Total	- 15.1	- 32.8

[5] The estimate for "more walking" is a net figure, excluding impacts from school travel plans and individual marketing. If these are included, the total reduction in car travel demand arising from shift to walking is 0.7 per cent (enlightened business as usual) or 1.65 per cent (ambitious change).

Table 2.4 Ambitious change scenario: Effect on distance travelled as a car driver (per person per year), according to journey purpose

	Before		**Reduction in mileage in ambitious change scenario (as percentage of total car travel demand)**											After
	Car driver km per person per year	% of total car mileage	Bus quality partnerships	Light rail	Rail partnerships	Workplace travel plans	Teleworking	School travel plans	Individual marketing	Car clubs	More cycling	More walking	Total	**Car driver km per person per year**
Commuting	1450	25.6	0.3	0.01		2.1	2.8		0.2	0.01	0.4		5.82	**1120**
Visiting friends at home	864	15.2	0.1						0.3		0.1		0.50	**836**
Business	840	14.8							0.1	0.01	0.1		0.21	**828**
Shopping	686	12.1	0.3	0.01	0.1				0.3	0.01	0.2	0.1	1.02	**628**
Other escort	426	7.5							0.1				0.10	**421**
Personal business	406	7.1	0.1	0.01					0.2	0.01		0.1	0.42	**382**
Holiday / day trip	385	6.8			0.2				0.2				0.40	**362**
Sport / entertainment	307	5.4							0.1		0.1		0.20	**296**
Visiting friends elsewhere	145	2.6							0.1		0.2		0.30	**128**
Escort education	111	2.0						1.3					1.30	**37**
Education	42	0.7	0.1								0.1		0.20	**30**
Other	13	0.2											0.00	**13**
Total	**5674**	**100.0**	**0.9**	**0.03**	**0.3**	**2.1**	**2.8**	**1.3**	**1.6**	**0.04**	**1.2**	**0.2**	**10.47**	5080
								Car driver kilometres saved per person per year						594

In summary, Sloman's estimates, based on two scenarios about less or more intensive application, suggest that national car travel would reduce by 5% or 11% respectively. Applying such policies to the West Midlands conurbation, as an example of conditions in which considerably more than average effects should be obtainable, produced estimated reductions in car travel demand (before allowing for induced traffic effects) of 15% or 33% respectively. To enable comparison with the results of other studies, we have recalculated these figures expressing them as a percentage of all motorised traffic. The national estimate is a reduction of 4% or 8.5%, and the estimated effect in the West Midlands is to reduce motorised traffic by 12% or 26% under the two scenarios.

We are not aware of any written critique of these figures.

2.6 Steer Davies Gleave (2003)

An SDG study used much the same general background literature as the others and indeed cited Halcrow and Sloman among its sources. The application was much more focussed. The study was commissioned by a group of environmental agencies as a study of alternatives to a major proposed road expansion in Dorset, and the objective was to consider the combined effects of available soft (and other related) factors in very specific local conditions relevant to the proposed Weymouth Relief Road. Therefore the traffic levels and demand structure of particular roads and time periods were the base, and national totals irrelevant.

A long list of measures, both hard and soft, were included in the policy discussion, but estimates were only made for the effects of four factors, namely personalised travel planning, workplace and school travel plans, and bus quality partnerships, the first of these then being substantially discounted in order to avoid double-counting. Estimated total impacts ranged between 6% and 19% during peak hours, and it was assumed that measures could be realistically implemented within 2-3 years.

We are aware of continuing discussions in the region about the policy argument, but have not seen any detailed critique of the numbers.

2.7 Transport for London (2003)

Transport for London is currently developing its road strategy and initiated an internal review of the potential impact of soft factors. The sources used are much the same as the other studies (although including some additional references based on their own work in London), and expressing all the estimated results as a proportion of peak period traffic levels in Greater London. Results were quoted as ranges, in this case representing both an element of uncertainty in the figures, and also the effects of more or less energetic implementation, with no specified timescale. The combined effect was estimated as a potential of 8%-17% traffic reduction, with strong caveats about the problem that induced traffic would be particularly prone to erode these numbers given the level of congestion in London. The London-wide figure does not exactly correspond with 'best local', since it is itself an average within which there would be local variation.

2.8 Summary of the overview studies

Thus we have examples of more and less well documented, more and less controversial, and more and less comprehensive estimates of the impact of soft measures, using a range of definitions, assumptions and evidence. Table 2.5 compares the figures they suggested. Before taking account of the differences in definitions, approaches and policy assumptions, the picture is that Dodgson et al, WS Atkins, James, Sloman, SDG and TfL all come up with a range for the overall figures in which only the lower bounds are comparable with the Halcrow-based guideline figures. The two measures which were common to all except one of the studies are workplace and school travel plans, so estimates for these two are identified separately to ease comparison. The same pattern is shown of a wide range, bounded by the Halcrow study at the low end. We note also that the various estimates of the effects of individual components vary significantly between studies even when the estimated total is similar.

A substantial part of the apparent difference between Halcrow and the other studies derives from the assumptions about intensity of implementation, not from a different assessment of the inherent potential for change. This may be seen from the closeness of the lower bound of Sloman's figures, to Halcrow's, and from the upward revision of Halcrow suggested by James which would put their figure within the same range as the others.

At face value, taking the 17 upper and lower bounds given in these seven separate published estimates of the overall effect of differently defined packages of such measures, we observe a lowest figure of 4% of traffic and a highest of 20% overall, and up to about 30% for some specific urban locations (although the latter figure also includes also the effect of additional supporting hard measures). We can then separate out the results according to their (approximate) correspondence with the low and high intensity scenarios we are interested in, as defined in Chapter 1. The low intensity figures comprise Halcrow, the 'business as usual' scenario of Sloman, and the lower bound of some other studies, all suggesting a national figure of 4%-5%. The rest are more closely comparable with potential of a higher intensity scenario. These have a central range broadly suggesting 10% to 15% for national impact, and 15% to 20% for best local impact.

It is interesting to compare these figures with earlier research in a review published by Goodwin et al (1995), based on a quite different methodology considering the inherent characteristics of car trips rather than the policy effects of any specific initiatives. This concluded that some 20% of car trips were not locked in to car use, and could be reduced by reasonably accessible measures: seeking reductions greater than this would be possible, but increasingly difficult and so require greater effort or initiative. This conclusion is broadly consistent with the orders of magnitude of the studies reviewed.

Two measures, workplace and school travel plans, were common to six of the seven studies, the estimated effect ranging from the lowest figure of about 1% of traffic, to the highest in the best specific local circumstances of 9%. The central estimates for workplace and school travel plans, taking these studies together, were 3% of traffic nationally and 8% in the best local conditions.

Table 2.5 Summary of 'combined effect' literature results

Study	**NERA et al (1997)**	**WS Atkins (1999)**	**Halcrow (2001, 2002)**	**SWTAR (2002)**	**Transport for Quality of Life (2003)**	**Steer Davies Gleave (2003)**	**Transport for London (2003)**
Factors included	All telecommunications (telecommuting, teleshopping, teleconferencing, freight operations)	Workplace and school travel plans, improvements to public transport and walking facilities, public transport fares, parking restraint, reallocation of road capacity, road user charging, highway and traffic control improvements, land use policies.	Workplace and school travel plans, visitor travel plans, bus quality partnerships, improved public transport interchange, general public transport marketing, public transport fares and ticketing, individualised marketing, car clubs, teleworking, video-conferencing, home shopping, measures to increase walking and cycling, land-use policies, local sourcing of goods, oil supplies and new automotive technology.	Workplace and school travel plans, bus quality partnerships, public transport interchange, public transport marketing and ticketing, public transport information, car clubs, teleworking, videoconferencing, internet shopping, cycling, promotion of walking, land use effects.	Workplace and school travel plans, bus quality partnerships, local rail improvements, individual marketing, car clubs, teleworking, promotion of walking and cycling.	Workplace and school travel plans, bus quality partnerships. (Visitor travel plans, rail improvements, parking restraint considered but impacts not estimated. Individual travel planning estimated but largely discounted to avoid double counting.)	Workplace and school travel plans, individualised marketing, car clubs, car sharing, teleworking, videoconferencing, e-shopping, promoting cycling, promoting walking, travel awareness campaigns.
Maximum combined potential of all included measures							
National **Best Local**	**-6% to –16%** not estimated	-15% to -20% **-25% to -32%**	-5% not estimated	**-15% to –20%** not estimated	**-4% to -9%** **-12% to -26%**	not estimated **-15% to -19%**	**-8% to -17%** **London-wide**
Maximum potential of work and school travel plans only							
National **Best Local**	not estimated not estimated	-4% **-9%**	**-1%** not estimated	**-3.7%** not estimated	**-1% to -3%** **-3% to -8%**	not estimated -12% to -15%	**-2% to -4%** **London-wide**

Bold figures as stated explicitly in sources, others inferred. Sloman's figures as in source but recalculated as % of total traffic.

Apart from the policy context, the biggest apparent differences between the studies arise from presentation. Figures expressed as a percentage of total national traffic inevitably appear small, and those expressed as a percentage of traffic in specific contexts, e.g. urban peak periods, are substantially higher. The national total calculations will have merit for certain purposes, notably calculation of carbon dioxide emissions, but for nearly all policies aimed at transport objectives such as congestion, mobility, social inclusion, local air quality or other environmental impacts, revenue generation, cost minimisation and economic impacts, it is the effects in a specific context that are more useful.

From this point of view, the form of analysis reported by WS Atkins, SDG, TfL and Sloman's local application, seem likely to be more useful than the form used by Halcrow, James, and Sloman's national application. In chapters 13 and 14, as far as possible, we therefore report results in both national and context-specific formats.

2.9 Conclusion

As a conclusion to this chapter, we note that there are a range of different estimates that have been given in earlier studies, the differences being related to issues of measurement and definition; differences in assessment of the realistic pace of future policy initiatives and market developments; differences between 'expected' and 'potential' outcomes; and differences in the range of measures included in the studies.

The lowest estimates of effect that have been given are, to all material purposes, close to zero. Such figures tend to emerge when it is assumed that there will be little momentum in such policies, when the impacts of specific factors are averaged over 24 hour, national traffic flows, and/or when caveats are made about induced traffic. At the other extreme, the highest figures suggested have approached car use reductions of up to a third, these being discussed as a result of the simultaneous application of many different consistent initiatives (including, it should be emphasised, supporting 'hard' measures), and expressed as a proportion of the traffic levels in a specific locality, by journey purpose and by time of day.

Given these differences, and the sharpness of the debate which has surrounded them, there is in fact a surprisingly consistent underlying picture that emerges from the various studies, and which we judge to express the measure of professional consensus that exists from those who have carried out the earlier studies. This suggests that at the lower intensity application, and/or without support from complementary hard measures, there is scope for soft measures to reduce traffic levels, but not very much: perhaps 4% or 5% at the national level, with a range around this according to local circumstances. With higher intensity application (and emphasising the importance of supportive hard measures either by assumption or explicitly) there is an estimated potential for soft factor interventions to reduce traffic levels by 10% to 15% as a national average, and 15% to 20% in favourable local conditions. And there are some estimates that, in very specific circumstances, figures higher than this are not impossible.

These figures act as useful hypotheses, or tests, against which our own estimates can be compared.

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Peter Bonsall	University of Leeds
Peter Headicar	Oxford Brookes University

2.11 References

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