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### Smarter Choices and Telecoms – the Evidence

The material in this paper is taken from: Cairns S, Sloman L, Newson C, Anable J, Kirkbride A and Goodwin P (2004) *Smarter Choices – Changing the way we travel*. Department for Transport, London.

#### I. Introduction

In May 2004, a research report entitled ‘Smarter Choices’ was published in conjunction with the new White Paper on the ‘The Future of Transport’. The study looked at ten transport measures, including telework, teleconferencing and home shopping. The study suggested that, within ten years, and within a supportive context, a ‘high-intensity scenario’ of implementing these measures could reduce national traffic levels by 11%, with greater effects in certain circumstances, including, for example, a 21% reduction in urban peak traffic.

This paper concentrates on telework and teleconferencing. Taken together, these represented about 37% of the potential national traffic reduction identified. The study also showed that telework and teleconferencing were often associated with other benefits, including financial savings for employers and a better work–life balance for employees. Hence, increasing their use could have a range of positive effects.

Some critics have argued that encouraging organisations to adopt telework or teleconferencing leads to more dispersed lifestyles and business activities, thereby increasing travel not reducing it. Whilst this is logically possible, current evidence does not support this. Moreover, a key issue is the context in which these activities are encouraged. For example, the effect of promoting them in a context where road and air travel are priced to reflect environmental impacts is likely to be significantly different to the effect of promoting them in a context of an expansion of cheap, long-distance travel.

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The Smarter Choices research suggests that, where employers are encouraged to promote telework or teleconferencing as part of a package with explicit objectives to reduce travel, significant traffic reductions can be achieved.

## 2. Telework

Telework – where people work away from their workplace (for example, at home, or in satellite offices nearer their home) – has received a considerable amount of attention. The literature is strongly influenced by theoretical papers outlining all possible behavioural responses that people could make as a result of teleworking. While such papers are useful in setting a framework of effects to consider, it is important to distinguish between hypothetical effects and actual observed behaviour change. The Smarter Choices study was able to identify 16 studies of actual teleworker behaviour (from the UK, US, Denmark, Germany and the Netherlands). Recently, SUSTEL, a major European project about telework, has also reported.

### 2.1 Travel Impacts of Telework

Studies have typically focused on three types of travel impacts, which could offset any reductions in commuter travel. These include:

- ‘Rebound effects’ – i.e. new travel by the teleworker, because they are unable to make journeys that they previously undertook on the way to or from work, or because they have more time or new patterns of activity;
- Increased travel by other household members – because a car is released by the teleworker; and
- Changes in home location – where more travel is generated because telework encourages people to live in more remote locations.

The available evidence suggests that, even though some of these effects occur, the *net* effect of teleworking is to reduce travel.

#### 2.1.1 Rebound Effects

This is the issue which has received the greatest attention and where the evidence is most conclusive. All of the studies assessed showed that, whilst there often was a rebound effect, and it could be significant, the *net* effect of teleworking was a reduction in travel. Table 1 gives some of the evidence.

#### 2.1.2 Travel by Other Household Members

In studies which looked at this issue, any offsetting travel generated by other household members was not sufficient to outweigh the net reduction in overall travel, and, in several cases, the travel of all household members reduced, as households started to lead more localised lives.



“... significant traffic reductions can be achieved.”





	Mean reduction in weekly commuting travel (kms)	Mean additional weekly travel (kms)	Net change in weekly travel per teleworker (kms)
Anon. public organisation (Denmark)	-105	+77	-28
Continental (Germany)	-283	+53	-230
Emilia Romagna regional authority (Italy)	-242	+33	-209
Dutch subsidiary of Oracle (Netherlands)	-98	+42	-48
BT (UK)	-253	+60	-193
BAA (UK)	-61	+15	-46

Table 1: Average changes in travel per teleworker (SUSTEL data)

### 2.1.3 Changes in Home Location

This was the least well researched area of travel impacts. However, two studies which directly addressed this issue (from the USA and Denmark) did not find a strong effect – instead, those who had started teleworking and subsequently moved were equally likely to have moved closer to work or further away.

Looking more broadly, some studies have shown that teleworkers typically have longer journeys to work. However, it is unclear whether teleworking has caused them to increase their journey lengths, whether they have become teleworkers as a result of living further from work, or whether the effects are the result of an underlying cause such as income. It is also impossible to observe reductions in travel due to telework at the aggregate level, since, over time, travel to work distances have also been affected by changes in house prices; people changing job more frequently; two-earner households choosing to live in ‘compromise’ locations; and general changes to the transport context (including real reductions in petrol prices and increases in public transport fares).

### 2.1.4 Summary

The factors described in section 2.1.3 highlight the importance of the overall transport context to decisions about home location and its links with other activities. However, specific surveys of teleworkers suggest that starting to telework is not a key influence on choosing an unsustainable home location. Meanwhile, stud-

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ies of teleworkers typically *do* show significant net reductions in travel. Consequently, the current balance of evidence is that public promotion of telework, in an appropriate context (for example, as part of workplace travel planning), should help to reduce traffic.

### 2.2 Scale of Teleworking

The Smarter Choices study assumed that, within ten years, telework could replace 12% of commuting trips (which could mean about 30% of the workforce teleworking for three days per week; more people teleworking less frequently; or less people teleworking more frequently). Current data sources suggest that the typical frequency of teleworking is one–three days per week.

According to the National Labour Force Survey, in 2001, 7% of the workforce were working from home at least one day per week using telephone and computer, and the figure had risen by 13% per annum since 1997. There must be limits to this growth, since there are many occupations, ranging from hairdressing to brick-laying, where telework is not an option. However, analysis of the same survey showed that 64% of the workforce were in occupations where at least 5% were already teleworking, implying that there should be considerable scope for further expansion. This is reinforced by other findings – for example, a study of Cambridgeshire County Council suggested that the majority of staff could feasibly work from home at least one day per week.

### 3. Teleconferencing

Although linked to telework, teleconferencing is a different activity, providing an alternative for business travel rather than for commuting. It has a number of different forms. It is often used to mean ‘videoconferencing’, where people talk to each other via television screens. However, there is also audioconferencing (i.e. phone calls involving at least three people), and web conferencing (involving communication via web cam and computer). The evidence about teleconferencing is considerably more sparse than the evidence about telework, although there is some.

#### 3.1 Travel Impacts of Teleconferencing

Three studies asked those using teleconferencing whether it had reduced their business travel. 45–90% of users said that it had. Perhaps more significantly, four studies have reported on reductions of 10–30% in overall company business travel as a result of introducing teleconferencing services. One interesting result was from a survey of 1,139 Canadian business travellers. Of those, 228 had been involved in a videoconference in the previous year, and 45% said that it had replaced an air trip. This is significant given that some calculations suggest aviation now accounts for a third of the average UK citizen’s CO<sub>2</sub> emissions, such that reducing the need to fly seems particularly important for sustainability.



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Some critics have expressed concern that reduced business travel for one purpose may simply be replaced by new business travel for another, and that techniques like videoconferencing promote more remote business contacts. The counter arguments are largely the same as those for telework. First, the existing data show that net reductions in overall business travel can be achieved. Second, the greater globalisation of businesses is occurring anyway, and is driven by factors such as travel costs, labour costs and global markets as much as (if not far more than) the growth of telecommunications. In these circumstances, a proper pricing framework of transport (including airfares with internalised environmental costs) is particularly critical. Meanwhile, promoting teleconferencing as ‘a real alternative to flying’ could help to make that pricing framework more palatable.

It should also be noted that no one is suggesting that teleconferencing could replace all face-to-face meetings – replacing 10–30% would still represent a significant reduction in travel.

### 3.2 Scale of Teleconferencing

The Smarter Choices study assumed that, within ten years, teleconferencing could replace 18% of business trips. This was relatively conservative, given 14 other studies which have estimated, variously, that teleconferencing could replace between 15 and 50% of business trips.

In terms of the type of trip affected, the assumption is often that teleconferencing should be reserved for the most important, and longest distance meetings. However, initial promotion should perhaps concentrate on encouraging teleconferencing for smaller-scale, less important meetings, where participants will be less concerned if there is a technical problem. So far, teleconferencing seems to have been particularly effectively promoted for *internal* meetings within big organisations, where participants are spread over several sites.

The evidence also highlights that the existence of teleconferencing technology does NOT mean it is necessarily used. For example, many people have the facility to make a three-way telephone conversation but do not know how to do so.

### 4. Public Promotion of Telework and Teleconferencing

Although telework and teleconferencing will grow naturally anyway, there is also scope for public promotion of both. Given the potential traffic benefits, this should be seriously considered.

First, local authorities could lead by example, undertaking pilot projects using their own staff. For example, they could try briefing all staff on how to make three-way telephone conversations, give out crib sheets of information on how to do so, and

highlight that it is the organisation's policy that three-way phone calls are to replace meetings involving physical travel between sites where feasible. Another option, adopted by some county councils, has been to set up telecentres (i.e. satellite offices), or to reserve a few desks in district offices, to enable staff to work closer to home for one or two days a week.

Second, telework and teleconferencing could be promoted to other organisations, via the workplace travel planning framework (which helps to ensure that reducing travel is an explicit objective). Measures could include grants or tax breaks for employers that establish tele-initiatives; promotion of the benefits of such initiatives; information about the nature of such initiatives (for example, that teleworking doesn't have to mean full-time home working – even one-day per week can still reduce traffic); and practical advice about introducing initiatives, including both technical advice and, perhaps more importantly, advice about the managerial and cultural issues associated with encouraging telework or teleconferencing.

Third, there is a broader issue about whether employers should be made more explicitly responsible for the travel of their employees. For example, Spain is considering introducing a law which requires all organisations with more than 200 employees to have a workplace travel plan. If nothing else, the Government could encourage organisations to be more aware of the travel associated with their activities. For example, companies could be required to report on key indicators, such as the amount of business travel undertaken each year.

Finally, parallel traffic restraint measures will clearly be critical: for encouraging organisations to consider alternatives to physical travel; for ensuring that travel costs remain a consideration in business planning; and to make sure that any benefits from introducing telework or teleconferencing are 'locked in' – i.e. that any freed up road space does not just fill up with other cars.

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