

# Broadband –

the role for communications  
in beating congestion



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# Broadband: the role for communications in beating congestion

The UK suffers from the worst traffic congestion in Europe. But replacing just one in 10 of our journeys could change all that.

Introduction by  
**Paul Reynolds**  
Chief Executive,  
BT Wholesale



With nearly 60 million of us crowded together on this tiny island, and all of us busier and more mobile than at any time in our history, this level of congestion isn't all that surprising.

The figures bear this out. The M6, just to take one example, was designed to cope with 72,000 cars a day. Last year, it reached traffic levels of 160,000 vehicles a day. Mileage driven in the UK has almost doubled since 1979 and looks set to grow by about two percent per year for the foreseeable future.

This is not news to most people. The RAC reveals that eight out of 10 of us expect congestion to get worse. Life continues to speed up. More and more of us are getting in our cars more often because we need to go to work, pick up the kids from school, go shopping or visit the doctor.

More than 17 million people in the UK use their car to travel to work and back every day. More worryingly, car ownership in the UK has scope to grow. Today, 38 percent of us own a car. In France, this figure is almost 50 percent and it is even higher in both Italy and Germany.

And as congestion gets worse, so do the social and economic issues it creates. The RAC estimates that traffic congestion can add up to four months every year to the working lives of commuters in London and the South East. Some people in the South East, where congestion is particularly bad, also spend up to a third of their net salary on the cost of commuting.

Congestion costs cash. As this report shows, the employers' group, the CBI, estimates that traffic problems are costing 'UK plc' £20 billion a year. Indeed, Digby Jones, the CBI's Director General, believes that congestion is the biggest issue facing UK businesses today.

So how do we tackle this problem? We need to start with the Government's current proposals. There is welcome new investment being channelled into areas such as road widening and other

infrastructure projects, though this commitment is well below the £200 billion the CBI estimates is needed to solve the problem.

Then there are traffic management initiatives that range from reorganising the rail industry, to opening motorway hard shoulders during rush hour, and the introduction of tolls on new roads. The possibility of high occupancy vehicle lanes is also being debated.

Additionally, the Government has what it calls 'planning ahead' targets which include ensuring that the road network is maintained and that environmental targets are met.

But these initiatives, welcome as they are, address only the symptoms of traffic congestion.

## Too many journeys

The cause of congestion is pretty straightforward. We are making too many journeys. The only effective way to tackle this is to make fewer, or enable people to travel at times when traffic is less of a problem. Travel substitution is part of the answer.

So what has all this got to do with BT? And why are we talking about it now?

BT is a key business in the UK and transport needs to work for us and our employees, too. With over 30,000 vehicles we have one of the largest private vehicle fleets in the UK. Congestion, and congestion costs, have a tangible impact on us.

As one of the nation's largest employers with more than 90,000 employees, we have a duty to manage our environmental impact and to help our people maintain a healthy work-life balance.

BT is also at the heart of enabling Broadband Britain, which is delivering tangible social, environmental and congestion-beating benefits today by allowing people to shop, to work and to communicate from home. We believe that broadband can make an even greater contribution in the future.

The good news is that around 4.5 million people already have broadband connections in the UK today and BT Wholesale is making more than 150,000 new broadband connections every month.\* The broadband-enabled generation is already finding that it is convenient, time saving and fun to cut out many journeys – and it doesn't sacrifice personal or professional productivity, indeed, the opposite can be true.

By the middle of 2005, BT will have enabled a further 1,000 exchanges, making broadband available to more than 99 percent of people in the UK. The rollout of broadband represents a significant investment by BT which offers the vast majority of people in the UK genuinely viable and more creative ways of organising their professional and personal lives.

## Saving 14.5 billion miles

Congestion affects us all and we all have a contribution to make in easing the problems it creates for society and our economic competitiveness.

Whether you are an employer, an employee, a student, a shopper, a parent or commuter, look closely at the number of journeys you take, when you take them and find a way of reducing this by 10 percent.

The net effect on the congestion problem in the UK will be significant – a saving equivalent to 14.5 billion miles per year. It would equate to about three years growth in car traffic – a major contribution to the issue.

And increased broadband take-up would enable that with ease. Today, people can telework or maybe work from home a few days a week, choosing the time they want to meet up with

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colleagues or using web and video conferencing instead. And broadband allows this to happen. Currently only 7.5 percent of UK employees work flexibly, which is half the level already achieved in Finland, Sweden and the Netherlands. It is also around 50 percent of the number of BT employees in the UK who work flexibly, most of them taking advantage of broadband connections in their homes.

Broadband technology has also enabled a range of other possibilities: online activities such as banking and shopping, downloading media, telemedicine, e-learning, multi-player games and other forms of entertainment.

BT is not suggesting that people stay home propped up at their computer forever more. We know that there are times when virtual meetings or virtual shopping are just not enough. Some journeys are unavoidable.

But the advantages of our proposal greatly outweigh the disadvantages of having to rethink and readjust our lives just a little. We can have less congestion, less pollution and hopefully more time to spend with our families, with our friends, in our communities and out of the car.

Broadband can help create a better society for the 21st century, a society that is more mobile, more competitive and more successful.

This report brings together a broad range of research on the impact congestion is having on the UK. It also captures the views of the CBI, the RAC Foundation and academia.

Congestion across the UK is a real and increasing problem for all of us. And all of us, not just Government, have a responsibility to play our part in finding a better way.

**Substituting physical travel with remote activities, such as working from home, shopping online or downloading software over the internet, will only work if people can do this without sacrificing productivity.**



\* as at summer 2004

# Travelling the broadband highway

**Today's businesses place a high value on time. The take-up of just-in-time and e-business techniques for online ordering and inventory management underlines how important saving time is to efficiency and productivity. In the modern economy, transport systems need to support business efficiency by providing access to markets, enhancing labour mobility, enabling economies of scale and stimulating competition. A reliable, speedy and affordable transport system is critical to business performance.**

**Digby Jones**  
Director General, CBI



But unfortunately in the UK we are far from this ideal. Road congestion is a particularly significant problem. Congestion presents a real threat to business performance and investment in the UK. Estimates for the economic impact of congestion vary, but all indicate that the UK is paying a high price. The CBI's own figures suggest the cost of congestion to the economy could be as high as £20 billion per year.

In recent decades, there have been major changes in the way businesses use transport, partly as a way of dealing with the impacts of congestion. UK businesses have adopted information and communications technologies (ICTs) to improve efficiency and drive down costs in the distribution chain to offset the high cost of moving freight on our roads. But there is still further scope to continue to innovate and improve technologies to manage the use of transport for people, as well as freight.

Given increasing congestion, these efforts are often needed merely to 'stand still'. But technology, and in particular applications based on

high-bandwidth communications networks, could also contribute to tackling some of the UK's transport problems. Increasingly sophisticated ICTs can reduce the physical need for travel, as well as providing flexibility for travel times and enabling businesses to relocate to less congested areas. This focus is likely to be increasingly important given the new Transport White Paper's emphasis on complementary measures to manage travel demand. But there is much work still to be done to understand more fully the potential and implications of such measures.

Some effects are already clear. Increased bandwidth means that sending and receiving e-mails, accessibility to and downloading from the internet is becoming faster, making communications for a range of businesses more effective with increased productivity. Large companies have been using the internet to connect branch offices and remote workers together through Virtual Private Networks (VPNs) for a number of years. Broadband is now making VPNs affordable to small businesses, enabling

employees to have secure access to company networks. Employees can work effectively from any location with all the connectivity advantages of being in a central office. Broadband can also be used by businesses to implement other advanced solutions, such as intranets and Voice over Internet Protocol (VoIP).

Broadband, both fixed line and wireless, is central to creating mobile and teleworking opportunities by enabling workers to access files or connect to the corporate network at any time from home or other remote locations. The widespread availability of broadband, in particular asymmetric digital subscriber line (ADSL) has been a key driver of increased remote working and its impact on commuting.

## Video conferencing

The need to travel can also be reduced with the growth of video conferencing and multimedia networking, which can become more cost effective with a flat-rate broadband connection. The use of broadband for remote working can also significantly increase business flexibility, which could enable businesses to adapt to the needs of their employees, customers and suppliers and adjust resources according to market conditions.

Teleworking and flexible working could help to reduce traffic, particularly at peak times, thereby freeing up road space for freight and commercial vehicles. It could also spread the movement of traffic from highly congested areas to less heavily congested locations. The research to date has largely focused on the benefits of teleworking for employees, rather than the wider potential business benefits. Further research on these wider impacts would help to build the business case – something the CBI's e-business group is working on with our members.

## Increased productivity

Evidence already shows that a company which successfully employs these methods of working can increase employee productivity, creativity and motivation, and eventually reduce property and occupancy overheads. The CBI is working with industry to identify the public policies needed to support creative and flexible corporate structures and establish how businesses can organise work processes and supply chains to optimise their development.

Conversely, the use of e-business to improve logistics, reduce supply chain costs and track goods globally may actually increase the demand for the movement of goods and services. However, to ensure that transport constraints do not stifle this growth, technology solutions to the UK's congestion problems must be wholeheartedly embraced. The Highways Agency is already implementing pilot schemes for active traffic management and further innovation could deliver tangible benefits for road users.

Electronic methods for monitoring and regulating traffic flows are likely to become more commonplace in the UK, particularly with the likely extension of congestion charging.

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Straightforward and quick payment methods will be crucial in ensuring that the cost to business, particularly for vital freight and delivery journeys, is not increased as a result of time-consuming payment administration. Innovative electronic payments systems will be vital for the efficient management of charging if road pricing is rolled out.

Broadband is also essential for the provision of value-added services such as remote sensing. In a number of service industries, many potential advantages have been discovered for high bandwidth applications that can help value-add through connection to public networks, for example using electronic tags on retail goods to facilitate remote charging and ease of purchase. The networking of monitoring and information services within the public communications network can grow this important area, with potential benefits for logistics operators and efficient use of our infrastructure.

Such technologies could be used to improve other aspects of the transport experience. Increasingly, through the use of ubiquitous embedded networking in the road system, not only could a car's components and performance be monitored, measured and communicated via sensors embedded in roads, but routing, weather, speed and traffic charging information could also be provided interactively between drivers and service providers.

The application of such technologies to deal with issues is not a pipe dream and has already

been achieved overseas in some of the UK's international competitors.

For example, the use of technology to relieve congestion is well established in Singapore, where a strong pro-business approach and modern infrastructure contributes to its high levels of economic competitiveness. Like the UK, it is a country challenged for space, yet its transport system is highly efficient. Road congestion is managed through the use of an electronic road pricing (ERP) system.

An ERP system monitors and regulates traffic into highly congested areas through the use of a smart card, complete with an in-built cash balance for every vehicle. When a vehicle drives under electronic monitors, wireless sensors charge the card according to whether it is peak (highly congested) or off-peak time. Wireless communications determine a vehicle's position from Global Positioning Systems (GPS) satellites and transmit information by the Global System for Mobile (GSM) communications to a financial transaction clearance company.

### International comparisons

Singapore, Japan and the US also use intelligent vehicle community systems – a car-sharing network with an on-demand vehicle usage system – aimed at reducing high traffic density. Users have a radio frequency identity (RFID) card and personal PIN number to unlock the ignition and drive away with a rental car, which they are then billed for on time and mileage.

Intelligent Transport Systems (ITS) are thus being engineered and implemented across the globe to improve transport performance. Although some ITS applications have been around for decades, increasingly advanced applications are being developed.

In Australia, many of the systems and products have been developed within the framework provided by the national strategy for ITS – e-transport – and this has ensured essential integration and interoperability across modes of transport and information platforms. Australia's transport sector uses multiple wireless broadband and mobile technologies. New cars, trucks and trains incorporate mobile telephony, electronic toll collection, collision avoidance radar and GPS. Content is widely defined to include traveller information, navigation and data updates, remote surveillance video and logistics management information.

Advanced in-vehicle navigation systems allow access of information on traffic congestion anywhere in the country, high precision forecasts of traffic congestion and a calculation of the quickest routes in all circumstances. This enables commercial and freight vehicles not only to deliver on time, but at a lower cost.

In addition, technological advancements in vehicle safety have the potential to reduce congestion by preventing or minimising the effects of traffic accidents. ITS use wireless technology to assist lane and distance keeping, as well as to warn the driver and provide brake assistance if a collision is likely, by comparing the distance and relative speed of the vehicles.

### Advanced traffic control systems

Another important aspect is the potential of ITS to make public transport more efficient and attractive. Advanced traffic control systems can ensure quicker travel times, through co-ordinating traffic signals to minimise delays and detecting and managing incidents on the highway network. Electronic payment systems save time and improve journey flexibility and can generally make the travel experience more user-friendly.

Utility or grid computing can also contribute to managing the complexities of such an integrated transport system. This technology enables the pooling of computer and data resources to solve complex problems. By linking various machines and resources, grid computing can quickly process and solve large-scale problems that are beyond the existing capabilities of an organisation. For

transport organisations, linking e-business systems with ITS could in the future significantly reduce journey times.

The challenge we face with transport in the UK is thus wider than just simply containing congestion per se. The transport system we have is not managed to international best-practice standards. A number of ITS applications have begun to be implemented in the UK, but sustained investment will be vital to secure long-term benefits. The Government must continue to promote the use of ITS, for example through the Department for Transport's ITS Assist Project, which encourages the use of ITS in local transport policy objectives. If the UK is to keep up with – if not pull ahead of – our smartest and most nimble international competitors, then the Government needs to establish a clear framework for the role that technology can play in improving the UK's transport system.

### Working with industry

The CBI is working with industry to address the policy and regulatory reforms needed from the Government to support the competitive development of advanced business applications and services.

The UK must be ambitious – we cannot afford to continue to lag behind our European and international competitors on transport. If we are to realise the Government's aim to make the UK the best place in the world for business, we need a genuinely world-class transport system. The UK has the capacity to be a leader in innovation and the adoption of new technologies for the development of high value services. We need to harness this ability and use these technologies to help reduce the need for unnecessary travel and to facilitate efficient, speedy and effortless journeys. At the same time, of course, the Government must place a high priority on the continual enhancement of the infrastructure for IT, telecommunications and transportation.

The UK has the capacity to be a leader in innovation and the adoption of new technologies for the development of high value services. We need to harness this ability and use these technologies to help reduce the need for unnecessary travel and to facilitate efficient, speedy and effortless journeys.



The use of technology to relieve congestion is well established in Singapore, where a strong pro-business approach and modern infrastructure contributes to its high levels of economic competitiveness.

If each employee could work from home just one day per week we would see a twenty percent cut in traffic, equivalent to removing the school run.



## Motors or modems

The RAC Foundation argues that we should sometimes let broadband take the strain rather than the car or train.

Edmund King  
Executive Director,  
RAC Foundation



Some workers in the South East of England add four months a year to their working lives just travelling to their jobs and spend a third of their net salary on funding the commute.

The RAC Foundation and the Telework Association, in a joint campaign to alert commuters to the real costs of travel to work, published these figures. The RAC Foundation believes that employees and employers should consider the alternatives to a long and costly daily journey – like working from home for all, or part, of the week. This could also significantly impact on traffic congestion.\*

### Affordable broadband

The RAC Foundation feels that improved telecommunications technology and affordable broadband pricing means that many more motorists could cut back on some journeys by substituting their motor for a modem.

Research\*\* contained in an RAC Foundation report, *Motoring Towards 2050 – An Independent Inquiry*, also suggests that nearly 50 percent of drivers are sympathetic to the idea of working from home and think that over half of the working population will do so by 2050.

The Foundation has called on Government to show the same level of commitment to the concept as other national administrations – like the US. Government should carry out more research,

offer more tax-based incentives to businesses and employees who telework, and appoint expert advisors to help industry implement schemes.

The Foundation has highlighted the example of a married manager living in Didcot, Oxfordshire, who drives to the station, spends two hours every day travelling to central London and back by rail and an hour on the tube (i.e. 15 hours commute per week in addition to his standard working week of 43 hours) earning a gross salary of £26,000. A calculation of his 'true' hourly pay rate, which takes into account the time and money spent on travelling makes startling reading.

The Didcot manager is left with £20,500 after tax, spends £4,000 per year on rail costs, £2,500 a year on the second family car which was bought specially for his journey to the station and £500 on car parking. He is then left with around £13,500 p.a. take home pay – or just under £5.00 an hour when his actual 58 hour week is factored in.

His employer might look at a scheme which allows him to work at least part of his week from home – increasing his productivity and efficiency, saving him money and improving his morale by allowing him to spend more time with his family.

Research from the Telework Association suggests that other benefits to employers can include savings on office space and greater flexibility from home-based staff.

But workers and their bosses are not the only

ones to benefit from teleworking. An RAC Foundation study, *Motors or Modems*, showed that teleworking could significantly impact on congestion – potentially cutting the worst commuter traffic by up to ten percent within five years.

*Motoring Towards 2050*, which looks at the future of motoring, re-enforces these findings – suggesting that as well as reducing traffic congestion and improving the efficiency and quality of life for workers, teleworking can also increase workforce catchment areas, improve rural employment and promote all-inclusive working.

### Utilising technology

Many people spend large chunks of their working week stuck in traffic jams, or on crowded trains and buses while commuting to their employment. If we can follow the example of other countries that have utilised technology to much greater effect than the UK, we can reduce car dependency, significantly reduce traffic congestion and improve lives.

If each employee could work from home just one day per week we would see a twenty percent cut in traffic, equivalent to removing the school run. Today's technology is better and cheaper so more employees have the chance to work some of the time from home.

While we appreciate that essential workers like nurses, teachers and police officers will probably never have the choice of working from home, at least by removing some of the congestion it might make their journey a bit easier. The e-highway has a vital role to play in curbing congestion chaos on the real highway. Let broadband take the strain rather than the car or train.

When we considered the role that technology has to play in leisure and essential shopping we felt it important to consider that the act of going to shops can be undertaken for reasons other than simply to obtain goods. Even so, with the rapid growth in internet shopping the RAC Foundation estimates that car shopping travel will be reduced by ten percent by 2010.

But the actual process of leaving home and going shopping can often be an end in itself, part of a process of social interaction which can not be replicated or replaced by internet or digital TV activity.

It may well be that this becomes the main reason for travelling to shops, as a form of entertainment – many large shopping centres already include restaurants and cinemas, and larger bookshops often have café areas within them.

So shopping for what might be called 'everyday' items, such as food and household goods, could come to be conducted more or less totally through e-commerce, while going out to shops becomes even more of a means of social interaction. This, in turn, would have an effect on traffic levels, perhaps counteracting to some extent the reduction in journeys made for everyday items.

\* NERA/RAC Foundation (May 2000) *Motors and Modems Re-visited*.

\*\* 49 percent of a sample of 523 drivers across the UK questioned in March 2002 by NOP Automotive for the RAC Foundation report "Motoring Towards 2050 – An Independent Inquiry", said that over half of the population would work from home by 2050.

### The RAC Foundation *Motors and Modems* fact file

- Within five years teleworking and technology could achieve:
  - A cut in commuter traffic by up to 10 percent.
  - Video and audio conferencing could cut business travel by up to three percent.
  - Use of information technology could cut lorry journeys by up to 16 percent.
  - Teleshopping could reduce car trips to the shops by five percent.
- Within 10 years, teleworking and technology could achieve a:
  - Fifteen percent reduction in commuter traffic.
  - Five percent reduction in business travel.
  - Eighteen percent reduction in heavy goods vehicle journeys.
  - Ten percent reduction in car shopping.
- The benefits to the economy in reduced congestion costs would be up to £1.9 billion by 2010.
- A survey of 43 BT home workers estimated that the average annual miles saved per employee, from home to office, mostly by car, was 3,149.
- The USA, often seen as the role model in the take-up of technology, is reaping the benefits to the economy, environment and workforce from teleporting (either from home or a remote location). This is being backed by innovative US legislation which recognises that teleworking requires one third of the energy consumed in commuting to work and that it can boost employee productivity by up to 20 percent.
- Some agencies predict that there will be another 10 percent of car commuting workers involved in some sort of teleworking by 2015. Of these two percent would be full time, four percent half time and the rest quarter time – which could save six billion vehicle kilometres per year.

### The RAC Foundation has called for:

- The Government to fund publicity measures to highlight the advantages of teleworking to both employers and employees.
- Leading by example, the Government could develop and encourage home working by its own employees.
- More research into the present extent of teleworking and potential future benefits.
- Development of smart card ticketing so that transport suppliers can offer more flexible tickets, for example, three-day season tickets, to encourage teleworking.
- Tax incentives and a clarification in legislation to allow easier home working.

# The transport impacts of broadband

UK transport policy has traditionally focused on ‘hard factors’ such as building roads or investing in new buses and trains. However, the expense and frequent controversy associated with these options is focusing attention on ‘soft factors’.



Professor Peter James  
(above) and Dr. Peter  
Hopkinson<sup>1</sup> (below)



A recent analysis defined soft factors as measures which “seek to give better information and opportunities, aimed at helping people to choose to reduce their car use while enhancing the attractiveness of alternatives. They are fairly new as part of mainstream transport policy, mostly relatively uncontroversial, and often popular. They include:

They include:

- Workplace and school travel plans.
- Personalised travel planning, travel awareness campaigns, and public transport information and marketing.
- Car clubs and car sharing schemes.
- Teleworking, teleconferencing and home shopping.”<sup>2</sup>

The report estimated the potential impact of these soft factors on car usage over the next decade. It concluded that in a ‘low intensity’ scenario – some modest growth from today’s level of activity – they might cut traffic by two to three percent overall, and

by four percent at peak times. But in a ‘high intensity’ scenario – much more widespread application of current good practice in the different areas – soft factors could reduce national traffic levels by 11 percent overall, and by 17 percent at peak times. In both scenarios, the greatest impact would be in urban areas.

The report also found that “every £1 spent on well-designed soft measures could bring about £10 of benefit in reduced congestion alone, more in the most congested conditions, and with further potential gains from environmental improvements and other effects, provided that the tendency of induced traffic to erode such benefits is controlled. There are also opportunities for private business expenditure on some soft measures, which can result in offsetting cost savings.” It concluded that soft factors should be given higher priority in UK transport planning.

## Broadband – a major role

Broadband seems likely to play a major role in achieving the potential of many of these soft factors.

One important contribution is as an enabler of teleworking, which is one of the main contributors to the forecast reductions in traffic. SUSTEL, a major European research project on teleworking in which BT was a partner, found that slow connection speeds were a major frustration for many current teleworkers in all the five countries it

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<sup>2</sup> Cairns S, Sloman L, Newson C, Anable J, Kirkbride A & Goodwin P, Smarter Choices – Changing the Way We Travel, Department for Transport, London, 2004. Downloadable from the ‘Sustainable Travel’ section of www.dft.gov.uk.

<sup>3</sup> SUSTEL, Is Teleworking Sustainable? – An Analysis of its Economic, Environmental and Social Impacts, UK Centre for Economic and Environmental Development, Peterborough, 2004. Downloadable from www.sustel.org.

...soft factors could reduce national traffic levels by 11 percent overall, and by 17 percent at peak times.



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Travelling less = more time at home = balance of home/work priorities = less stress = better performance.

examined.<sup>3</sup> Many felt that they could work more effectively, and that their employers could gain greater benefit, if they could move from dial-up to broadband. Broadband enables existing internet-related activities to be done more quickly and conveniently. It also encourages greater usage of – reflected increased familiarity with, and confidence in – organisational intranets. This is an important enabler of mobile forms of teleworking, and is also an important means of ensuring that teleworking does not increase paper consumption through multiple printing of documents. Broadband also makes activities requiring frequent and secure access to files held at a central location more feasible.

Almost all studies of teleworking report a considerable reduction in commuting travel and the SUSTEL surveys are no exception. However, the project also went on to examine the complex issue of whether these commute savings are offset by ‘rebound’ effects such as:

- Non-work travel previously undertaken as part of commuting trips.
- Use of the cars which become available for other purposes when people do not commute.
- Travel for work purposes other than commuting.
- Changes in residence to more distant locations because daily commuting is not required.

It found that these impacts were significant and, in the UK, offset the commute savings by around 25 percent in the short-medium term and possibly somewhat more in the longer term. However, it is clear that the transport effects are still very positive. And in the medium term, the scale of these rebound effects could be reduced by measures such as road pricing.

The SUSTEL study also highlighted the fact that there are different forms of teleworking, with different business and personal impacts. Traditional teleworking involves people retaining an office but working at home more. However, the fastest growing form of telework is mobile, in which staff give up permanent office space and work from a variety of locations such as employer hot desks, home or while on the road. This can increase the scale of economic benefit by greatly reducing property costs – by up to 90 percent per worker – improving work performance and reducing absenteeism and recruitment costs. Most of the mobile workers which SUSTEL surveyed also felt that it provided better work-life balance and quality of life, although it can be a stressful way of working and is clearly not for everyone. These win-win advantages were summed up in the comment of one survey respondent that “Travelling less = more time at home = balance of home/work priorities = less stress = better performance.”

One longer-term impact of mobile working is giving employers greater flexibility over office locations. If the result is relocation of offices away from sites with good public transport access the transport effects will be negative, but the opposite can also occur.

This was the case with one of SUSTEL's Dutch case studies, on Integraal Kancer centrum Midden Nederland (IKMN). When the lease on its previous office ran out IKMN used it as a spur to redesign its working practices, with teleworking as an important component. This reduced its office space requirements by almost half, making it feasible to take new premises near the centre of Utrecht. The office's excellent bus and train connections make it much easier for staff to travel by public transport both for commuting and in-work journeys.

This point is important because a large proportion – sometimes a majority for large city employers – of telework-related travel reductions can be in rail travel rather than car. Teleworking (and other soft factors) could therefore influence the use – and therefore economics – of public transport. However, this seems unlikely at present or foreseeable levels. Public transport is already very over-crowded at the peak periods when soft factors would have the greatest impact.

This over-crowding and associated unreliability – and the equal frustrations of road congestion – means that teleworkers benefit not only from time savings but also reduced stress. They and others can maximise these benefits by greater use of conferencing. Broadband enables this in three main ways. Voice over internet services can reduce the costs of voice conferencing and thereby make

it more widely accessible. Broadband – especially high speed versions – makes videoconferencing both technically feasible and affordable for remote workers. Broadband also enables web conferencing, in which users access a shared web space where they can share documents or write comments, often as an accompaniment to voice or video conferencing.

### Broadband-enabled conferencing

Although there is little detailed research on the impacts of broadband-enabled conferencing per se, it is likely that it will replicate – and probably strengthen – the benefits of existing voice conferencing. A survey of BT conferencing users confirmed the findings of previous researchers that, on balance, this creates significant business, personal and transport benefits.<sup>4</sup>

Most respondents felt that conferencing was benefiting their work. Thirty eight percent believed that conferencing has considerably increased, and 44 percent that it has slightly increased, their work performance. Forty four percent of respondents also stated that conferencing has enabled them to work when they were prevented from reaching another work location. The main reasons for this were to do with use of time – either better control of it, or avoiding time spent travelling. Seventy one percent of respondents stated that their last conference call had definitely or probably replaced a meeting while only five percent stated that it generated an additional meeting.

- The avoided meetings are reducing transport and associated costs:
- 26 percent of respondents stated that their last call had saved at least £100.
  - Their answers suggest that their last conference call avoided travel of at least 91-100 miles for car users (who represented 45 percent of avoided trips) and 94 miles for train users.
  - 46 percent of the avoided trips would have been undertaken entirely within a period of congestion, thereby freeing up road space and seats on public transport.
  - Around a third of replaced meetings would have been in London (reflecting the fact that 44 percent of respondents had their main working base in London or South East England) thereby helping deal with the Capital's congestion problems.
  - By a very conservative estimate each conference call is saving a minimum 22.05 kg of CO<sub>2</sub> and all conferencing calls are saving at least 20,060 tonnes of CO<sub>2</sub>.

The research confirms the views of several studies that there is probably the potential to reduce business travel by at least 15 percent from current levels if conferencing was more widely used.<sup>5</sup>

Home shopping currently accounts for four to eight percent of UK retail sales and is forecast to at least double by 2010. Most of this growth will come from online sales, ordered not only from PCs but also interactive digital TVs and mobile phones. Several studies have suggested that these online sales result, on balance, in less transport by customers.<sup>6</sup> A survey by NOP for BT, for instance, found that 78 percent of respondents had saved at least one journey through the use of online shopping, with an average net transport reduction of 7.1 miles per person.<sup>7</sup> Research and experiments also suggest that the impacts on distribution transport can also be positive, if the systems are optimised for online sales, for example, by reducing the amount of redelivery of items to homes because customers are out.

Although online home shopping can be accomplished through dial-up, broadband greatly enhances its convenience and feasibility for customers, for example, in surfing through online catalogues. It also impacts on the efficiency and effectiveness of the distribution system, in particular by making it easier to constantly update and exchange information about stocks and deliveries between different companies (and between them and customers). An experiment in Nottingham has shown how this can help to reduce transport impacts. Royal Mail worked with the City Council to designate a local drop-off point – the neighbourhood post office – for alternative delivery of parcels when people were not at home. This reduced both the amount of failed deliveries, and the distance which customers travelled to pick them up, and also increased customer volume at the post office. In future, it is easy to imagine online systems in which people are able to check local delivery status online and make changes to delivery points at short notice.

### Easier real-time access

The ability of broadband to enable greater exchange and collation of information about systems, and to allow cheaper and easier real-time access to it by users will also be important in the development of other soft factors. Organisations such as Liftshare already provide online broking services to enable car sharing, which are likely to be more widely used in a broadband world. In the case of public



Although online home shopping can be accomplished through dial-up, broadband greatly enhances its convenience and feasibility for customers, for example, in surfing through online catalogues.

transport, up to date online information about bus or rail delays, and road congestion, is already proving helpful to many. In future, it is likely not only to be more widely used but also to be more integrated, both between modes and also other data such as costs (both fares and also of road pricing schemes). It is not too fanciful to imagine a future 'journey assistant' which assesses conditions and prices on all transport modes for a given route, and then gives advice on the fastest – and cheapest – means of travel.

It is clear that soft factors could make a significant contribution to the Government's goals of minimising car usage and resulting emissions, and of reducing the problems and costs of transport congestion. It is also clear that, if this contribution is to be achieved, broadband will be a major element, both by allowing activities currently accomplished by dial-up to be done more cheaply and conveniently, and by creating completely new opportunities. Of course, broadband itself has broader effects – such as energy consumption in the telecommunications infrastructure, or influencing access to shopping or work opportunities – which have to be taken into account when calculating its overall impacts. Nonetheless, it is reasonable to assume that this calculation will show that greater use of broadband can produce very significant net benefits for UK transport.

<sup>4</sup> Hopkinson P, James P & Maruyama T, Conferencing at BT – results of a survey on its economic, environmental and social impacts. Report by SustainIT, UK CEED, Peterborough, 2003. Downloadable from [www.sustainit.org](http://www.sustainit.org). Other teleconferencing research is summarised in Cairns et al, Smarter Choices – Changing the Way We Travel.

<sup>5</sup> Summarised in Cairns et al, Smarter Choices – Changing the Way We Travel.

<sup>6</sup> Summarised in Cairns et al, Smarter Choices – Changing the Way We Travel.

<sup>7</sup> Geraghty C (2004) How the internet can help ease traffic congestion. Presentation at 'Alternative Approaches to Congestion' conference convened by BT, 26/1/04.

38 percent believed that conferencing has considerably increased, and 44 percent that it has slightly increased, their work performance.





## Bringing home the benefits of broadband

**BT was one of the first and most successful companies to pioneer teleworking to support its employees' work-life balance. But the initiative is bringing home countless benefits for the company too – including improving its green credentials.**

During the late 1980s, BT recognised that the majority of people, in years to come, would work not with physical objects, but with information. It also recognised how low-cost IT hardware and high-speed data communication links into the home would have the potential to improve the working lives of thousands of people – including its own employees.

### 9,000 teleworking employees

Today, the company has more than 9,000 full or partial teleworking employees. These are people who do their normal desk job from home, fully supported by company equipment such as a personal computer, telephone, broadband connection, office furniture and storage.

Part of the success of this policy at BT has been the ability to retain the valuable skills of its workforce. If employees can work anywhere, there is less need to make geographical moves when the employee takes on a new job. But it has also delivered many other commercial benefits, including the time and resources saved by reducing the number of journeys employees have

to make just to get into work or attend meetings. Having broadband in their home office means BT employees have always-on access to the internet, e-mail and conferencing tools, connecting them completely and flexibly to their world of work.

Mark Taylor is head of employee relations at BT Wholesale, and has seen BT introduce a number of flexible working policies to encourage and support employees' work-life balance. He occasionally works from home for the company himself, thus avoiding the daily commute to a central London office. He said: "Flexible working initiatives in the company have had a positive impact on thousands of employees' working lives, along with increased productivity, efficiency and environmental benefit adding to BT's green credentials. It's also helped to significantly reduce operational overheads, particularly in terms of London office accommodation. Work is no longer somewhere we go, but something we do. And now that broadband has arrived, it's making a much bigger difference in keeping home workers connected, and still feeling a part of the BT community."

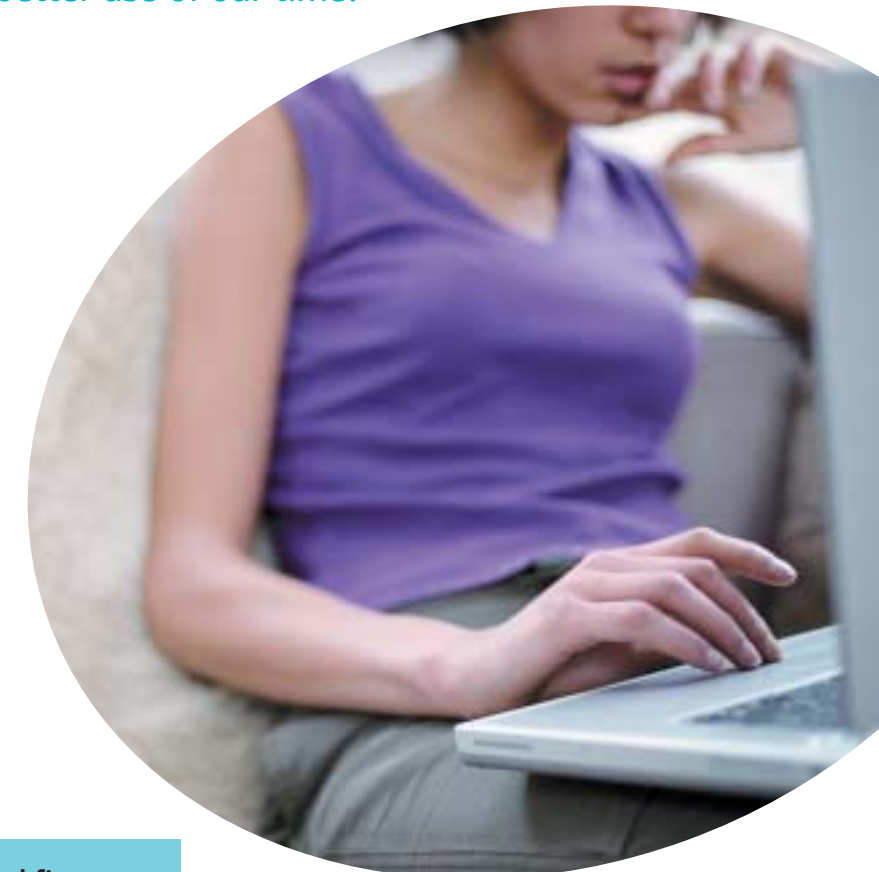
Back in 1991, when BT's teleworking initiative had just got underway, one early evaluation carried out by its research and development labs suggested several benefits, including a significant reduction in company overheads. But it was also noted that flexible working could open doors to people who had found it hard to get a job, simply because of the difficulty involved in actually getting to work. Furthermore, and just as importantly, the evaluation pointed to the reduced environmental impact a flexible working policy could bring, from employees' avoiding rush hour commuter traffic and fewer journeys made by BT's own fleet of vans and cars.

This is backed-up by subsequent data, suggesting that since 1998, there has been a 15 percent reduction in BT car and van fleet miles travelled, contributing to a 32 percent reduction in CO<sub>2</sub> emissions since 1992. Just two contributing factors that saw BT ranked as top telecommunications company in the Dow Jones Sustainability Index for the fourth year running in 2004/5.

### Better use of our time

Mark added: "For employees like myself, who are used to working in big cities, working from home for all or part of the week, and to more flexible hours, means we can make much better use of our time. The combination of this, and using technology like broadband to keep us working closely with our colleagues, means that BT and its employees aren't adding to the problem of travel congestion, especially during peak times for commuters. Instead, we're part of the solution."

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### Reducing those miles – BT's flexible facts and figures

- Around 10 percent of BT employees are registered as home based teleworkers, and more than 60 percent have secure, remote office access, allowing them to work flexibly. The UK average for flexibly working employees is 7.5 percent.
- Since 1998 BT's commercial and company car fleet size has been reduced by 17.2 percent, resulting in a combined mileage reduction of some 69 million miles – that is a 15 percent reduction in distance travelled.
- Since 1993, BT has reduced its London-based desk spaces from 10,000 to 3,000.

## All in a day's work

I live in Paris and often work from home, but I also have access to a desk in central London. 20 years ago that just wouldn't have been possible. Back then, I'd have been very out of touch and my home fax and phone bills would have been horrific!

Like many of BT's home workers, I also use a service that allows me to choose where I want my calls delivered when I'm away from home.



Michael Blackburn

Now, part of this problem is resolved by a BT broadband voice trial I'm involved in. Basically, I have a small adapter that fits between my phone and my router/ADSL modem in France. This converts my analogue voice calls to digital. They are then carried, using internet protocol (IP) down my broadband connection, over the public internet, to Birmingham. From there, they're routed over the UK Public Switched Telephone Network (PSTN) to whoever I'm calling. It works in reverse too, so I have a Birmingham number that rings through to my flat in Paris! I make all my calls this way and it costs less than making international calls.

### One number

Like many of BT's home workers, I also use a service that allows me to choose where I want my calls delivered when I'm away from home. This means I just have to give people one number where they can contact me, whether I'm out and about using my mobile, sitting at my desk in London or by my broadband voice phone in Paris. One of the benefits is that if you call me on my mobile and I'm not available or it's engaged, your call will go through to an answering service and I have that set up to send me voice messages as email. So I get an email with a WAV (sound) file as an attachment and I can play the message back at lower cost on my PC.

The other advantage is, you know those irritating times when someone leaves a number on your voicemail and you don't quite get the number

Overall, I find I can work very efficiently and cost-effectively at home. And while you do need to go to some meetings – I don't think you can do without them completely – I can do an awful lot by email and phone. I rarely feel out of touch and I think I get the best of both worlds.

and you have to listen to the whole message over and over again? Well using a media player, you can just go back to the part of the message when they give you the number and play that bit over.

### Broadband connection

On the data side, I use the broadband connection and Secure Internet Access (SIA) a service that is being piloted across BT for homeworking. What it means is that, when I am in Paris, I can create a virtual private network over the public internet and the result is exactly like being on the Local Area Network (LAN) in the office. I log on in the morning and can be online all day. So if the CEO is doing a webcast, for example, I can watch it from my flat in Paris. It's just like being in the office really. I am also beginning to explore areas of data conferencing – for example, BT has a conferencing service called MeetMe where you can share a whiteboard or a presentation online while you are having a voice conference call. I think that could be very useful.

Overall, I find I can work very efficiently and cost-effectively at home. And while you do need to go to some meetings – I don't think you can do without them completely – I can do an awful lot by email and phone. I rarely feel out of touch and I think I get the best of both worlds. Some things are better done face-to-face and going to the office gives me the variety I need.

### Roaming charges

The one area that is still a slight problem is when I'm on the move, though I think emerging technologies like WiMax might start to solve this over the next year or so. Wireless services like this would give me the option of using, for example, the Eurostar as my office, keeping me connected to BT's network while I travel.

The main hiccup right now is the cost of international roaming charges when you use your mobile phone away from your home country – in my case, that's the UK. But soon I'll be taking part in a trial of a prototype service that would solve

I just have to give people one number where they can contact me, whether I'm out and about using my mobile, sitting at my desk in London or by my broadband voice phone in Paris.

that problem. It would mean that when I use my mobile to make calls at home, instead of linking up to one of the mobile services in Paris, my calls would go to a Bluetooth base station in my flat and from there over my broadband connection and the internet just like my data connection. Essentially bypassing the mobile network completely for receiving and sending calls.

It may sound complicated, but once things are set up, it's just a question of monitoring the costs and these have gone down considerably in the last few years. And from a personal point of view, it's more than worth it. Basically, the technology allows me to live in France – my partner is French – and if I didn't work in both places, I simply wouldn't see him as much as I do.



# Driving into a congestion crisis

Traffic congestion has a direct or indirect impact on all regions of the UK. While the more densely populated areas, such as London and the South East, Birmingham and the Midlands, and the Manchester-Leeds corridor appear to suffer most, all regions, including those with fewer practical congestion issues, share in the economic cost.

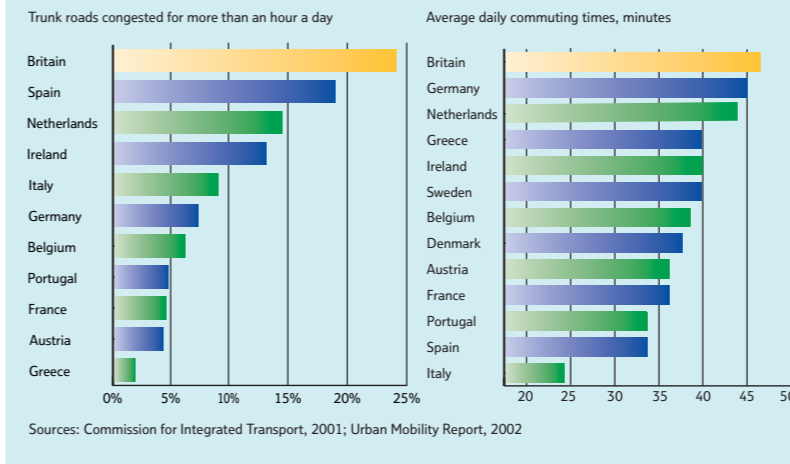


## National picture

The UK is the third most densely populated country in Europe, after the Netherlands and Belgium. England alone, which accounts for 53 percent of the land mass of the United Kingdom but 83 percent of the population, surpasses Belgium in population density and has an average of 378 people in every square kilometre of land (Source: Worldatlas.com, 2004). Research by the Commission for Integrated Transport points out that Britain already has the worst congestion and the longest commuting times in Western Europe.

The Confederation of British Industry (CBI) believes that in addition to the actual cost burden that congestion levies on British businesses, it also undermines the UK's overall economic and industrial competitiveness. More difficult to quantify, but just as important, are the associated environmental and social costs.

## Britain leads in congestion



Traffic growth has been relentless in the UK and is still growing at an average of about two percent per year.

At the heart of the congestion issue lie the increasing number of vehicles in use and the number of journeys and mileage we undertake – for personal and professional purposes.

According to Trafficmaster, the traffic management technology company, 26 million vehicles spent the equivalent of 1.4 million working days in congestion-related jams in 2002, an increase of 42 percent over the previous five years.

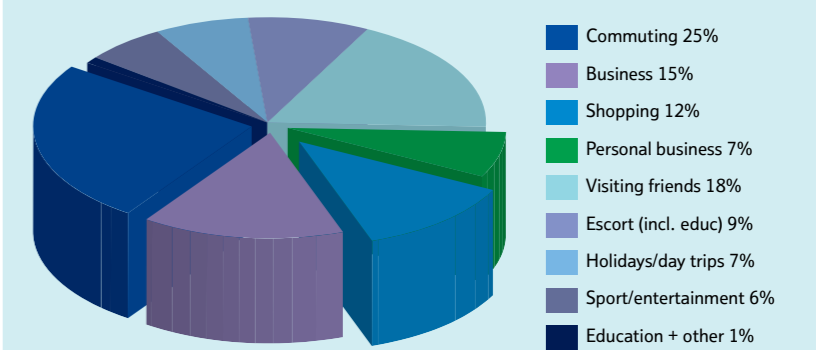
We in the UK collectively travel over 300 billion miles every year. Eighty percent of the miles are in cars and taxis and almost three-fifths (59 percent) of these miles are accounted for by a combination of commuting (25 percent) business mileage (15 percent) shopping trips (12 percent) and personal business (seven percent).

More than 70 percent of the UK working population who travel to work, or around 16 million people, usually commute by car. This average time spent travelling to and from work each week equates to more than four hours, or about 10 percent of the average working week.

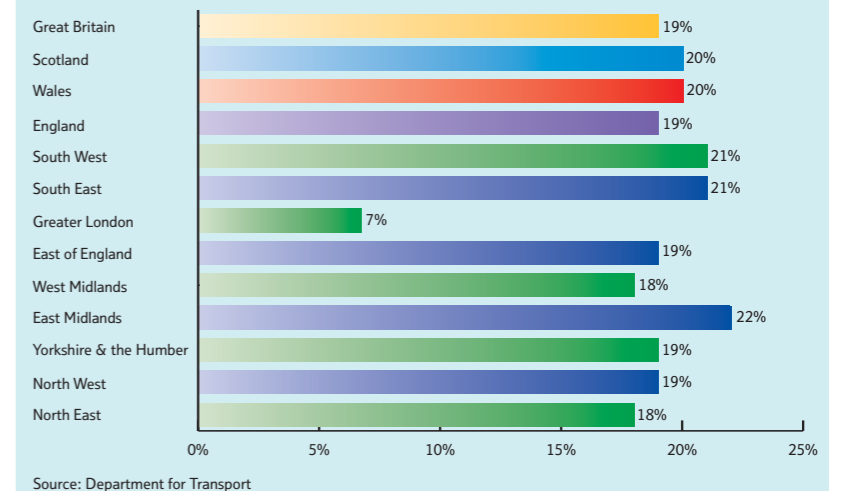
Traffic growth has been relentless in the UK and is still growing at an average of about two percent per year. According to Department for Transport projections, traffic levels in the UK in 2005 will have doubled from the levels experienced in 1979. Much of this growth has occurred in the last ten years.

RAC Foundation research (looking at the period between 1991 and 2031) projects that car ownership in the UK will grow twice as fast as the number of households and almost five times as fast as the population. This is plausible as UK car ownership lags well behind that of the other major European economies – France, Germany and Italy.

## Percentage of miles driven in cars, vans & taxis, 1999 to 2001



## Vehicle mileage growth, 1993 to 2003



All of this adds up to a mounting problem which needs to be addressed. The findings of Government transport studies into regional travel patterns suggest that no conceivable level of infrastructure construction would be able to satisfy projected growth (*Economist*, October 10 2002).

**Seeking congestion solutions**

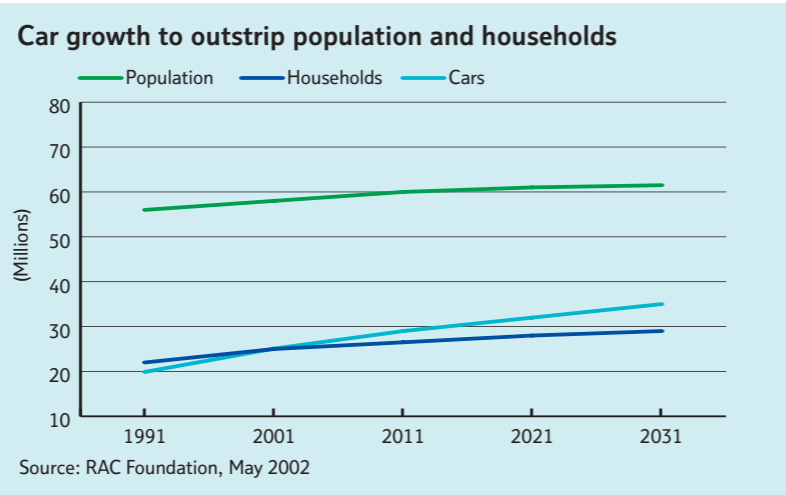
Research suggests that there is a disproportionately positive impact on congestion when the number of miles undertaken is reduced. Congestion is a multiple of extra miles. A recent study of urban traffic patterns found that when three percent more commuters work in their community on a given day, traffic delays to the urban centre are cut by 10 percent. (Source: reported in *The Washington Post*, October 27 2003).

BT believes that a six percent reduction in car and taxi mileage is a realistic target to substitute with broadband communications technology.

Achieving this target would represent a saving equivalent to more than 14.5 billion miles per year, equal to about three years growth in car and taxi traffic at current rates.

Twenty-five percent of miles driven are commuting miles. Achieving a 10 percent reduction in this area will require a commitment by employers to support and encourage appropriate flexible and remote working.

Research carried out by NOP in 2003 found that among internet users who travel to work every weekday, 23 percent would like to have the option of working from home but that the proportion of employers prepared to allow them to do so was lower, at 13 percent. BT estimates that commuting mileage could be reduced by 10 percent if those people who do not currently work from home but would like to were permitted to do so by their employers.



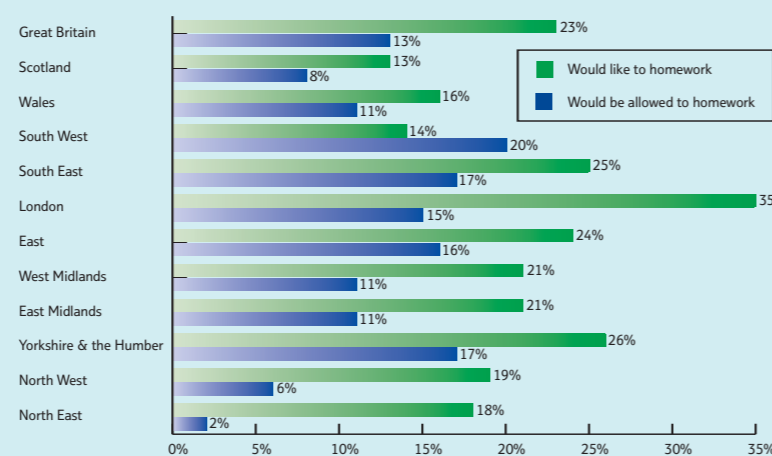
Business mileage accounts for 15 percent of the total and BT also believes that 10 percent of this could be eliminated by conferencing (audio, video and web). Estimates from conferencing service providers show that only about two percent of UK businesses (40,000 out of 1.9 million) actively purchase phone conferencing for use across their businesses as a regular alternative to travelling. So there is plenty of scope for growth.

Turning to shopping, which accounts for 12 percent of car and taxi mileage, the projected growth of e-commerce shows the potential to deliver a 10 percent reduction in this area. NOP research shows that in December 2003, 22.4 million adults used the internet and 10.4 million of them made a personal purchase.

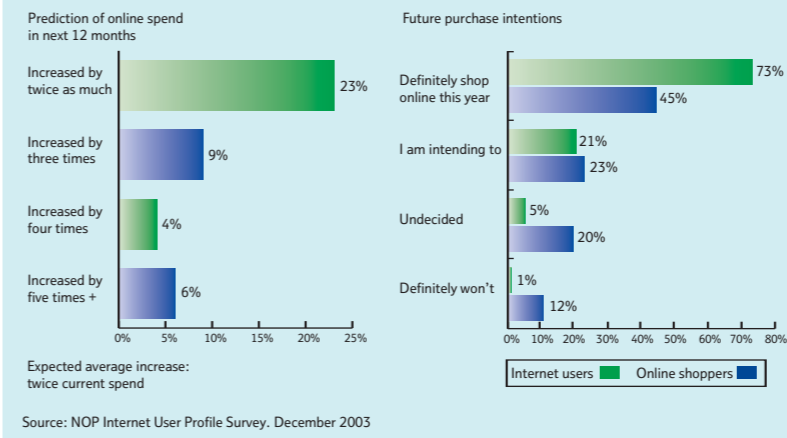
The same study showed that on average, an online purchase saved a journey of 9.1 miles by car, 7.1 after the impact of substitutional journeys i.e. journeys made in place of trips saved.

BT estimates that commuting mileage could be reduced by 10 percent if those people who do not currently work from home but would like to were permitted to do so by their employers.

**Potential for additional homeworking**



**Online shopping intentions**



Among all internet users, more than two-thirds will either definitely (45 percent) or probably (23 percent) buy online this year, 20 percent have yet to make up their minds. Satisfaction with online shopping is extremely high (4.5 out of 5) among those who have shopped online and purchases are predicted to double this year.

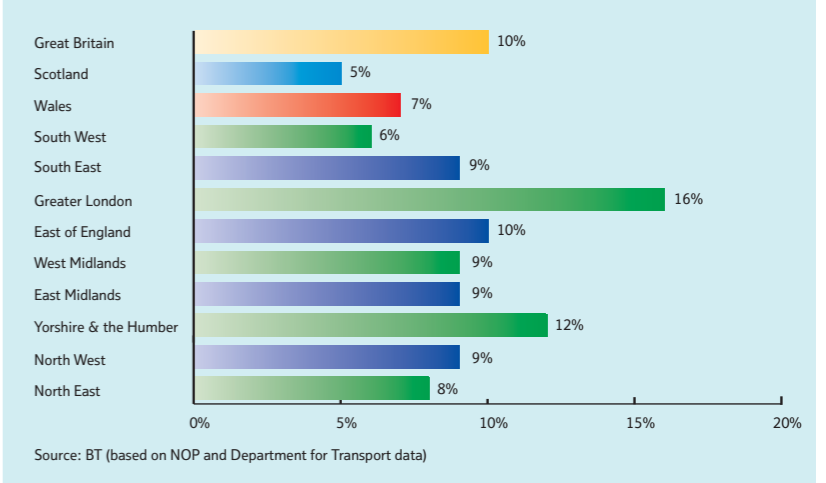
Finally, it is plausible to assume that broadband facilitated travel substitution could reduce car usage for personal business by 10 percent. Teleworking and online shopping have already been addressed but many of the other car trips could also be impacted by activities such as online banking, distance learning, telemedicine, video-telephony and video-on-demand.

**Future intentions**

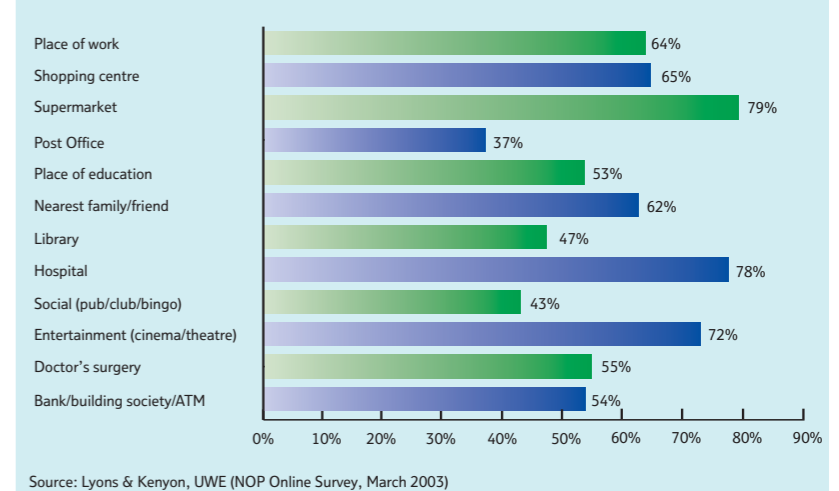
Achieving a 10 percent reduction in each of these four areas (commuting, business, shopping and personal business) would deliver an overall saving of six percent in car and taxi mileage undertaken, a significant contribution towards alleviating the problem. It would also be equivalent to 17 million cars (two-thirds of the total) foregoing a trip from Lands End to John O'Groats.

The congestion problem across the UK is real and getting worse. Road building and other traffic management measures alone will not redress the balance, requiring all of us to examine alternative strategies. Setting realistic targets for what can be achieved, together with a commitment to addressing the issue by all, could pay real long term dividends.

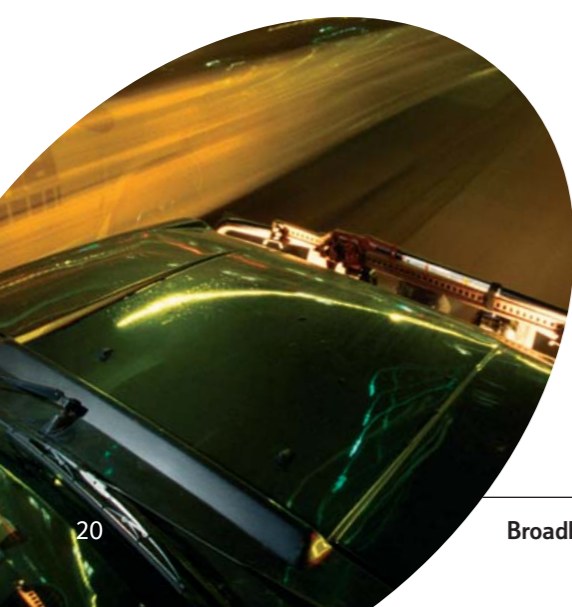
**Potential reduction in commuting mileage from additional homeworking**



**Car usage for personal business**



It is plausible to assume that broadband facilitated travel substitution could reduce car usage for personal business by 10 percent.



# Scotland

## Congestion facts

- Population: 5,057,400 on June 30 2003 (Figures from the Registrar General for Scotland).
- The average M8 journey time between Glasgow and Edinburgh has increased by seven minutes in the past two years, according to figures compiled by Trafficmaster for *Scotland on Sunday*. Rising car ownership and congestion levels mean the rush-hour journey between the two cities now takes a gruelling 64 minutes, compared with just 51 minutes in 1998.
- The Scottish Executive estimates a 40 percent increase in traffic growth in Glasgow by 2021.
- One of the biggest traffic congestion hotspots in Scotland is the road crossing across the Firth of Forth, the key link between south east Scotland, Perth, Dundee and Aberdeen. When it opened in 1964, the bridge carried 4 million vehicles – last year this had risen to 24 million.
- In 2004, researchers from Calor Gas ranked Glasgow the third worst polluted spot in the UK, where it was estimated that during a 24 hour period a person would consume the same amount of nitrogen oxide, a dangerous pollutant emitted from car exhausts, as if they had smoked almost 45 cigarettes.
- Reporters travelling across Glasgow and Edinburgh in March this year claimed that a two mile trip across Scotland's capital during rush hour took 13 minutes while a similar trip across Glasgow took double that. The same journey across Manchester and Birmingham took half an hour.

## BT's analysis

Traffic growth during the ten-year period from 1993-2003 in terms of the number of vehicle miles driven rose by 20 percent in Scotland from 21.8 to 26.1 billion miles. This was slightly higher than the UK average. Growth was highest in West Lothian (27 percent) and East Ayrshire (26 percent) and lowest in Dundee (9 percent).

The largest actual increase was in Glasgow with 319 million additional vehicle miles between 1993 and 2003, followed by Fife with 286 additional million vehicle miles and Perth & Kinross with 273 million. The Orkney Isles and Eilean Siar have seen the lowest increase in miles driven at 11 and 18 million miles respectively.

Glasgow tops the list of the most miles driven with 2.0 billion, followed by Edinburgh and North Lanarkshire, both with 1.8 billion.

## Scotland on the move

The Scots make by far the largest number of trips of all kinds – 1,074 compared with 1,018 for the English and 952 for the Welsh.

Walking accounts for 30 percent of their trips, compared with 26 percent for the Welsh and 25 percent for the English, a higher percentage in Scotland walk to work than anywhere else in the UK at 12 percent.

The Scots make 57 percent of their trips by car (including as a passenger) fewer than both Wales and England. And they come top of the table for using public transport – 10 percent of journeys are made this way, compared to six percent of journeys in Wales and nine percent in England. This may be a reflection of the fact that Scotland has the best bus services of the three with 92 percent of the population within 13 minutes' walk of a stop for an hourly bus service. They also travel the furthest in this way, going some 1,128 miles each year using buses or other modes of public transport – this makes up 15.6 percent of the total distance travelled. This is more than double the mileage of the Welsh who travel 494 miles per person or eight percent of the distance travelled in this way.

The Scots also travel further than the Welsh or the English, recording an average of 7,213 miles per person, per year, compared with 6,819 for the English and 6,111 for the Welsh. Though as a percentage of distances travelled, the English

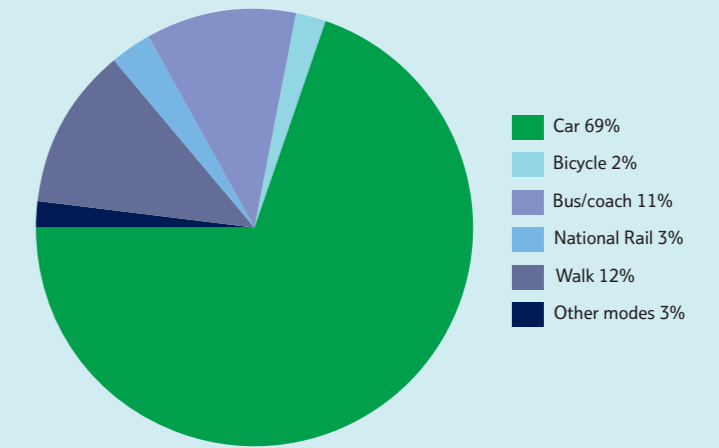
travel further in cars, either as a driver or passenger, with 82 percent of the total distance, compared with 78 percent for the Scots.

Interestingly, all three countries reveal that the percentage of numbers of trips commuting is exactly the same at 15 percent and is virtually the same for percentage of trips on business (three percent for Wales and Scotland and 3.5 percent for England). The Welsh and the Scots get this 0.5 percent back in the shopping statistics – they both use 21.5 percent of trips to go shopping, compared with 21 percent of the English. When they're not doing this, they appear to spend their time improving themselves – the Scots top the list of journeys made for educational purposes at 76 per year. (Source: National Travel Survey).

As with the rest of the country, the large majority of Scots drive to work, though fewer than the rest – 69 percent as opposed to 70 percent of the English and 81 percent of the Welsh. The percentage of Scots who work from home is not available. They are middle of the table with regards to the time it takes them to get to work – 48 percent reach work in less than 20 minutes compared to 55 percent of Welsh people and 45 percent of the English. And eight percent of Scots take more than an hour to get to work, compared to four percent of the Welsh and 11 percent of the English (Source: Labour Force Survey).

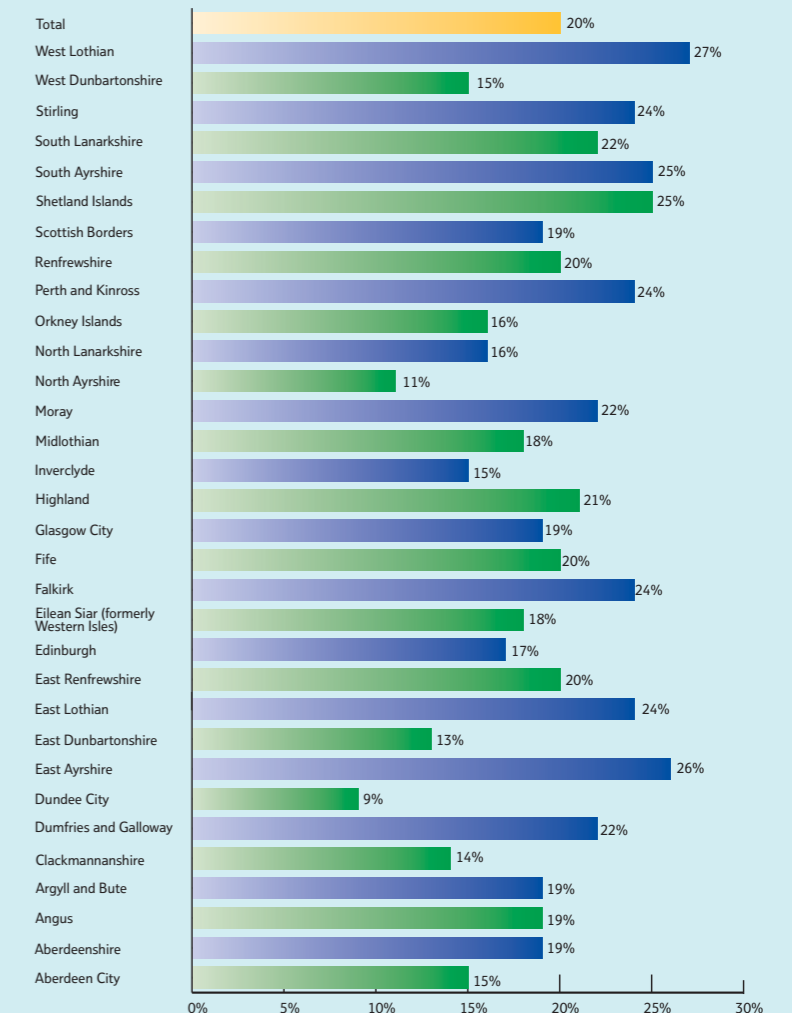
The country has the smallest percentage of internet users who do not currently work from home but would like to at 13 percent (compared with 16 percent in Wales and 23 percent nationally) but this could still reduce commuting mileage by a projected five percent. However, only eight percent of these people would be allowed by their employers to work from home (Source: NOP).

## Usual method of travel to work in Scotland



Source: Labour Force Survey, Autumn 2002

## Vehicle mileage growth in Scotland, 1993 to 2003



Source: Department for Transport

The Scots make 57 percent of their trips by car. And they come top of the table for using public transport.



# Wales

## Congestion facts

- Population: 2,903,085 (Source: 2001 Census of population).
- In August 2004, one of Wales' leading transport experts Professor Garel Rhys of Cardiff University warned that South Wales' attempts to become a booming European region are being hampered by congestion and poor transport links.
- The Institute of Civil Engineers Wales said this year that at least £1billion needs to be spent to bring Welsh roads up to 21st century standards. They claim that an estimated 25 percent of highways are now at the end of their useful life. It was six percent 10 years ago.
- Transport infrastructure is a key issue for many businesses in Wales, with problems such as congestion on the M4 and poor links to Cardiff International Airport among the problems causing concern.
- A 2004 poll by pollsters YouGov found that 80 percent of the Welsh public want government action to reduce traffic on the roads and to improve public transport.

Welsh people are bottom of the league when it comes to using public transport with only six percent of journeys per year made by bus or other public transport method.



## BT's analysis

The average percentage increase in miles driven in Wales stands at 20 percent (up from 13.8 to 16.6 billion miles) slightly above the national average. The biggest increase by far was in Anglesey which saw a 34 percent increase between 1993 – 2003, although the figures for volume growth and actual volumes remain among the lowest in Wales. The probable reason is the opening of the A55 dual carriageway across the island to serve the port of Holyhead and ferry connections to Dublin.

The other parts of Wales to see above-average increases are largely on the M4 corridor in South Wales with Newport coming second (30 percent) followed by Bridgend and Neath Port Talbot, (both at 26 percent).

The largest actual increase is in Cardiff with 312 additional million vehicle miles followed by Newport with 214 million. Cardiff also tops the list for actual mileages with 1.8 billion miles driven in 2003. Second is Carmarthenshire followed closely by Rhondda Cynon Taf, both with 1.1 billion miles.

## The Welsh behind the wheel

People in Wales make the least amount of journeys of any part of the UK with 952 trips per year. At the same time, the Welsh make most journeys by car, making 41 percent of trips behind the wheel compared with 40 percent of the English and 37 percent of the Scots. This pattern is reflected in the percentages of journeys undertaken as car passengers with the Welsh again topping the list with 24 percent, the English in second with 23 percent and the Scots third with 20 percent.

Welsh people are bottom of the league when it comes to using public transport with only six percent of journeys per year made by bus or other public transport methods. The Scots come top with 10 percent with the English closely behind on nine percent. This may be a reflection of the fact that Wales has the worst availability of bus services with 79 percent of the population within 13 minutes walk of an hourly bus service stop. This compares with 89 percent in England and 92 percent in Scotland.

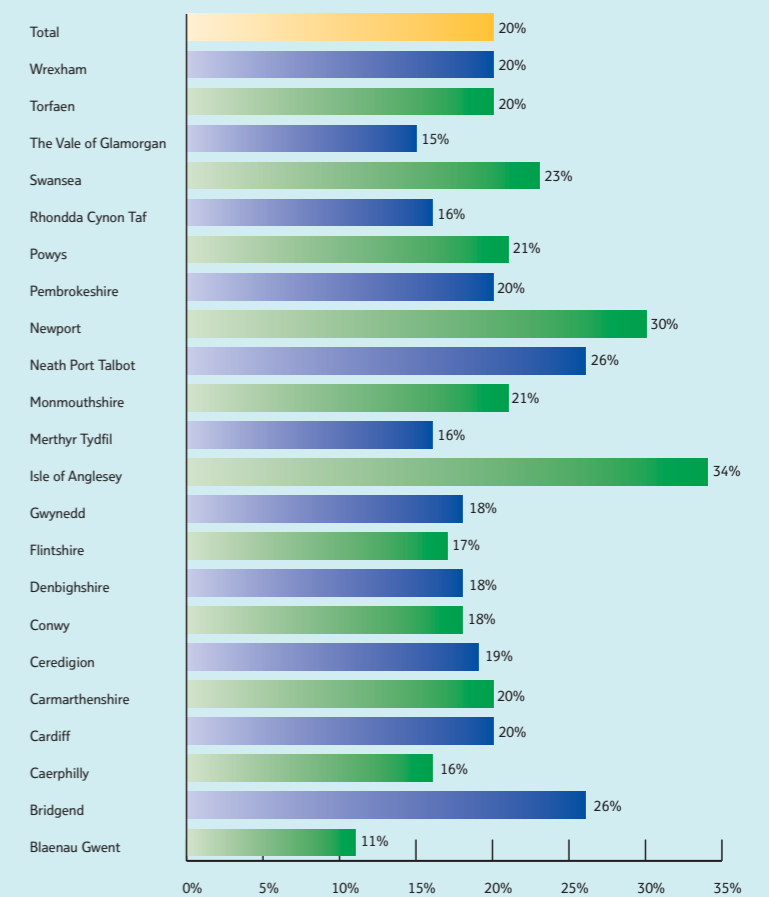
Meanwhile Wales is the cheapest place to run a car with weekly expenditure per car coming in at £43.10 compared with £52.10 in both Scotland and England. (Source: Expenditure and Food Survey). And the Welsh are by far the biggest users of cars to travel to work with 81 percent of journeys made by car compared with 70 percent of English and 69 percent of Scottish journeys.

The Welsh also spend much less time commuting with 55 percent reaching their place of work in less than 20 minutes compared with 48 percent in Scotland and 45 percent in England. Only four percent of the Welsh take more than an hour to get to work compared with eight percent of Scots and 11 percent of the English.

Data from all three countries reveal that the percentage of trips commuting is exactly the same at 15 percent and is virtually the same for percentage of trips on business at three percent for Wales and Scotland and 3.5 percent for England. The Welsh and the Scots get this 0.5 percent back in the shopping statistics which show they use 21.5 percent of their trips on shopping expeditions compared with 21 percent of the English.

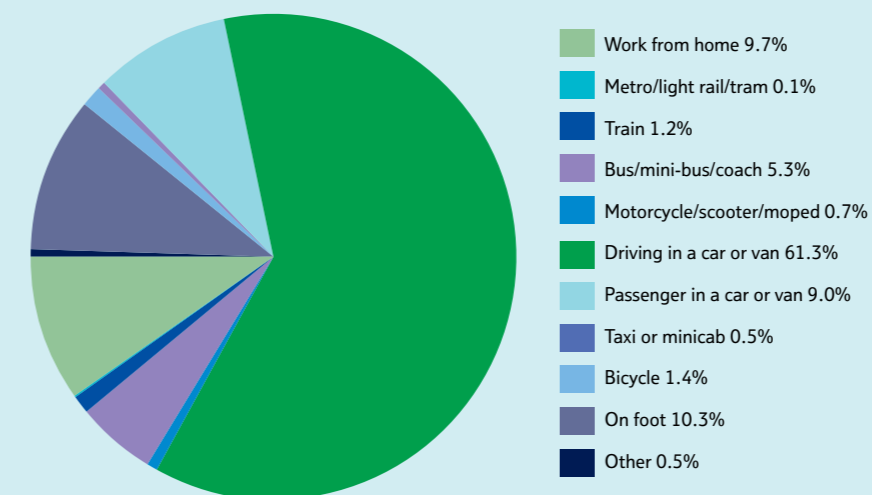
At 9.7 percent, more people work from home in Wales than in England where the figure is 9.2 percent (this figure does not just include teleworkers – it also covers people who might, for example, run a day-care centre or a nursery from their home). Sixteen percent of Welsh internet users who do not currently work from home would like to and this could reduce commuting mileage by a projected seven percent. However, only 11 percent of these people would be allowed by their employers to work from home.

## Vehicle mileage growth in Wales, 1993 to 2003



Source: Department for Transport

## Usual method of travel to work in Wales



Source: 2001 Census

# London



## Congestion facts

- Population: 7,172,091 (Source: 2001 Census of population).
- Since 17 February 2003 drivers entering or driving within a cordon around the central area of London have incurred a charge. The Central London Congestion Charging scheme is the second UK initiative (Durham was the first) to use cordon charging to reduce traffic congestion in an urban area.
- Three out of every eight London households do not own a car.
- More than half of Londoners (51 percent) face a 40 minute plus commute to work.
- Travel during peak periods: in autumn 2002 1.1 million people entered central London on a typical weekday between 0700 and 1000 – the majority travel by national rail, tube and Docklands Light Railway.
- In central London, cars and vans are only used by 10 percent of people as the main mode to work. This rises to 64 percent in outer London and to 76 percent in the rest of Great Britain.

## BT's analysis

The average percentage increase in miles driven in London between 1993 and 2003 stands at seven percent (up from 19.2 to 20.5 billion) the only region which is way below the national average. There are no areas of the city where the measure is over the UK average of 19 percent growth between 93-03. There are only seven boroughs of the city which have seen traffic growth in double digits in that period. London is unique in the UK in that mileages in some parts have actually dropped.

The largest percentage increase has been seen in Bexley with 15 percent followed by Ealing with 12 percent. Then comes Enfield, Harrow and Tower Hamlets, all with 11 percent. Traffic is down by four percent in Westminster and one percent in Wandsworth. Meanwhile Croydon traffic shows zero growth.

The largest actual increase was in both Hillingdon and Enfield with 107 million additional vehicle miles, followed by Barnet with 90 million additional vehicle miles. However, reductions

have been achieved in two parts of London, Westminster (down 26 million vehicle miles) and Wandsworth (down seven million).

The busiest part of London for miles driven per year is Barnet with 1.22 billion, followed closely by Hillingdon, also with 1.16 billion and Havering with 1.07 billion.

## Keeping London moving

It is not surprising that, of all the English regions, people in London make the most journeys by foot at 299 trips per year although they remain behind the Scots who take 326 walks each year. Londoners also come bottom of the list for journeys driven by car (292 trips) and as passengers (176). Londoners walk the furthest with people walking an average of 237 miles on foot each year.

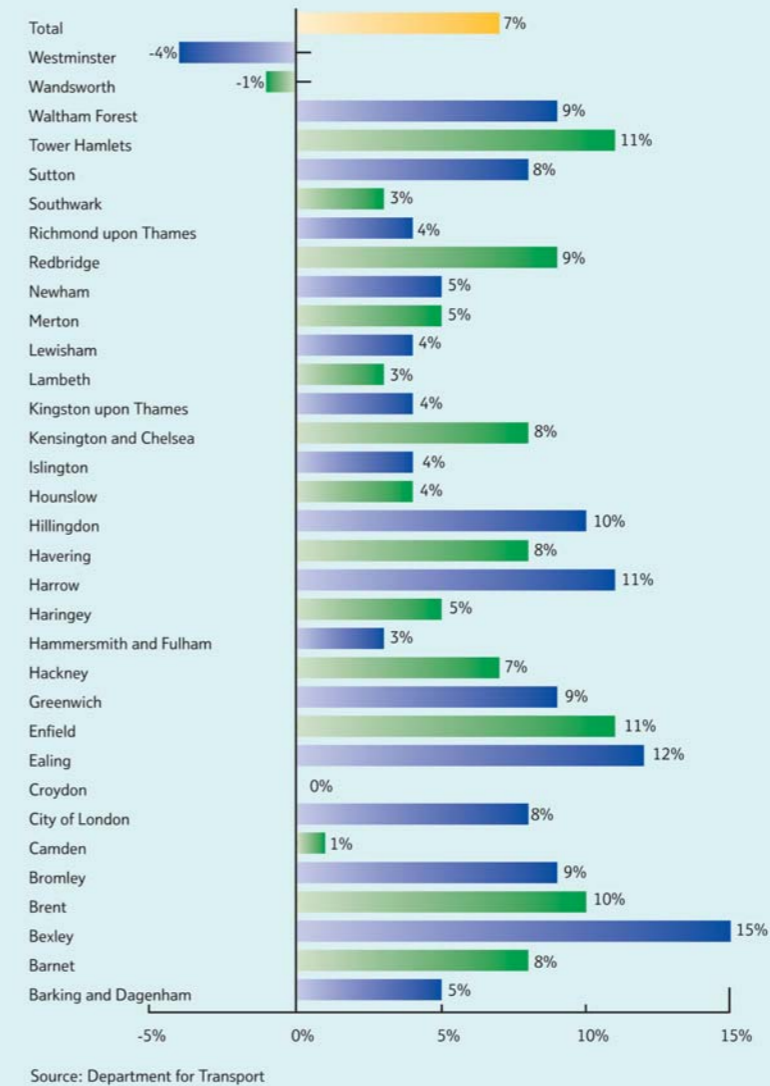
They come second to people in the North East as the best users of public bus services with 94 trips as opposed to 104 – an average of 333 miles a year against an average of 448. However Londoners race ahead when all public services are included with 107 journeys a year made on 'other' public transport facilities.

Again, not surprisingly, people living in London travel the least distance every year with 5,452 miles. And the capital tops the list of fewest miles driven and as a passenger with 2,148 and 1,396 miles respectively.

Londoners make the second highest number of business trips with 40 per year and the second fewest to go shopping with only 201 per person per year, just ahead of the East Midlands where people go shopping 199 times a year. They make up for it though with trips for educational purposes – here they come second to Scotland with 74 trips per person, per year.

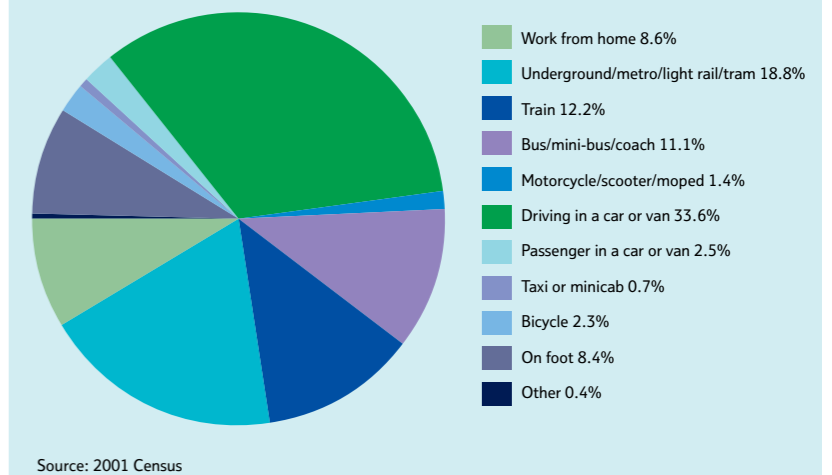
The 2001 Census showed that 8.6 percent of Londoners work from home (this figure does not just include teleworkers – it also covers people who might, for example, run a day-care centre or a nursery from their home). Thirty-five percent of internet users who do not currently work from home would like to, the highest proportion in the nation. This could reduce commuting mileage by a projected 16 percent. However, only 15 percent of these people would be allowed to work from home by their employers.

## Vehicle mileage growth in London, 1993 to 2003



Londoners make the second highest number of business trips with 40 per year and the second fewest to go shopping with only 201 per person per year.

## Usual method of travel to work in London



# West Midlands

## Congestion facts

- Population: 5,267,308 (Source: 2001 Census of population).
- The West Midlands Multi-Modal Study, commissioned by the government two years ago suggested that £7.5 billion was needed to alleviate the current congestion problems in the Midlands.
- Time and fuel wasted in traffic jams in the West Midlands currently cost businesses about £2 billion annually. This figure could reach more than £3 billion per year over the next 20 years. (Commission for Integrated Transport).
- In Birmingham 2002 figures showed levels of congestion on all significant roads with the morning peak worse than the afternoon peak. (Birmingham City Council).
- According to Professor David Begg, Chair of the Commission for Integrated Transport (CfIT) heavy traffic flows in the region are second only to those in London and even the best plans for integrated transport would not suffice in the face of a predicted 50 percent rise in Birmingham's traffic over the next 20 years.

## BT's analysis

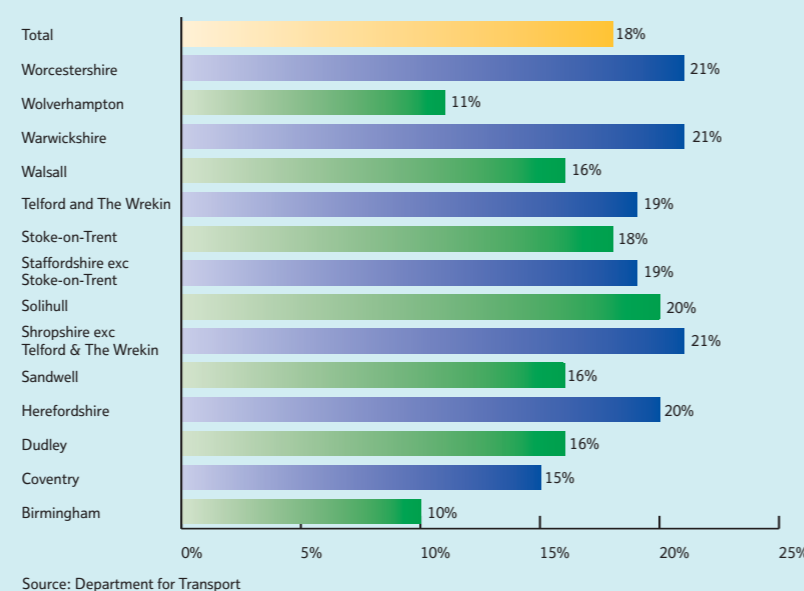
The average percentage increase in miles driven in the West Midlands stands at 18 percent (up from 25.3 to 29.8 billion) slightly below the national average. There are only five local authority areas in the region where growth is more than the UK average of 19 percent between 93-03. Topping the list is Worcestershire, Warwickshire and Shropshire, excluding Telford and The Wrekin, all with a 21 percent increase. Solihull and Herefordshire both had a 20 percent increase. The smallest increase has been seen in Birmingham with 10 percent growth followed by Wolverhampton with an 11 percent increase.

The largest actual increase is in Warwickshire with 912 million vehicle miles, followed by Staffordshire (excluding Stoke-on-Trent) with 879 additional million vehicle miles. It is followed by Worcestershire with a 698 million mile increase.

In terms of actual mileage the three busiest areas are Staffordshire (excluding Stoke-on-Trent) with 5.4 billion miles followed by Warwickshire and Worcestershire with 5.2 billion and 4.1 billion miles respectively.

People in the Midlands make more commuting journeys per year than almost any other part of the UK.

Vehicle mileage growth in the West Midlands, 1993 to 2003



## Unblocking Birmingham and the Black Country

People in the Midlands make more commuting journeys per year than almost any other part of the UK. The West Midlands comes top of the list with 166 commuting journeys made per person per year. At the same time the region comes second bottom of the list of business trips made per year with 26.

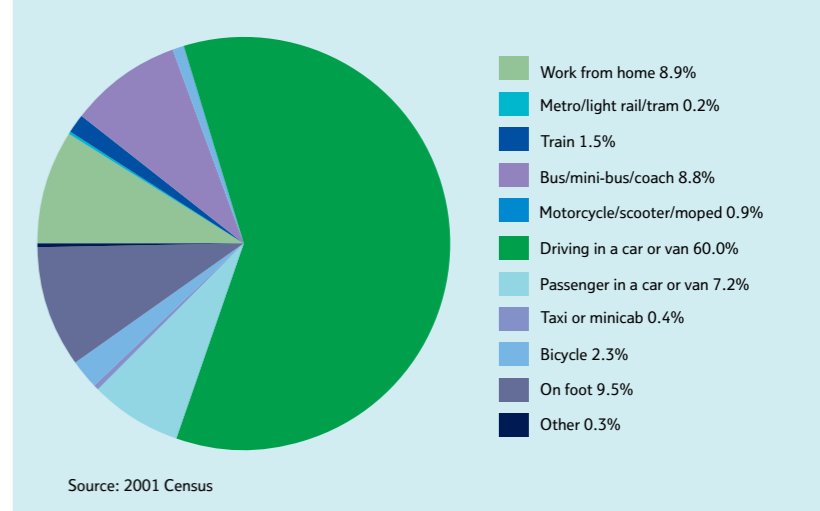
The West Midlands comes third in the highest percentage of people who drive to work, with 60 percent of people climbing behind the wheel. At the same time, 47 percent of West Midlands commuters spend less than 20 minutes driving between work and home and only 17 percent of them face a commute of more than 40 minutes or more. This compares with London where more than half (51 percent) face a 40 minute plus journey.

The West Midlands has seen the second largest increase in the availability of public bus services after the South East with an 18 percent increase in availability from 76 percent in 1992/4 to 94 percent in 1999/2001. But the fact still remains that there is no region outside London and the South East where public transport is used as a means of commuting to and from work by more than one in five of the working population. This remains the biggest single opportunity to reduce both the number of journeys and the mileage travelled.

Almost nine percent of people in the West Midlands work from home (this figure does not just include teleworkers – it also covers people who might, for example, run a day-care centre or a nursery from their home).

Twenty-one percent of internet users who do not currently work from home would like to do so and this could achieve a projected nine percent reduction in commuting mileage. However, only 11 percent of these people would be allowed by their employers to work from home.

Usual method of travel to work in the West Midlands



The West Midlands has seen the second largest increase in the availability of public bus services after the South East with an 18 percent increase in availability from 76 percent in 1992/4 to 94 percent in 1999/2001.



# East Midlands

## Congestion facts

- Population: 4,172,174 (Source: 2001 Census of population).
- Targeted road projects in the area include the widening of the M1 through the region and the A453-M1 around Nottingham.
- The M1 in this area is the UK's fifth most congested stretch of road.
- A £9m traffic information system with a series of giant message boards was installed along the M1 in parts of the East Midlands in 2003 to improve congestion.

## BT analysis

The average percentage increase in miles driven in the East Midlands stands at 22 percent (up from 20.4 to 25.0 billion) slightly above the UK average. There are three local authorities in the region where the measure is significantly over the UK average of 19 percent growth between 93-03. Topping the list is Northamptonshire with a 30 percent increase followed by Leicestershire (excluding Leicester and Rutland) with a 28 percent increase. Next comes Lincolnshire with a 23 percent increase. The smallest increase has been seen in Derby which together with Bristol has seen the lowest growth outside of London with only seven percent growth in the decade.

The largest actual increase is in Northamptonshire with an additional 1.2 billion vehicle miles followed by Leicestershire (excluding

Leicester and Rutland) with an extra 991 million vehicle miles and Derbyshire (excluding Derby) with 775 million additional vehicle miles.

The same three counties are also top of the list for actual mileages with Northamptonshire having the largest actual level at 5.2 billion, followed by Leicestershire (excluding Leicester and Rutland) and Derbyshire (excluding Derby) both with 4.5 billion miles.

## Who goes where in the East Midlands?

People in the East Midlands are second from the bottom of the league table when it comes to the amount of journeys taken, coming in just before the Welsh with 957 trips per year.

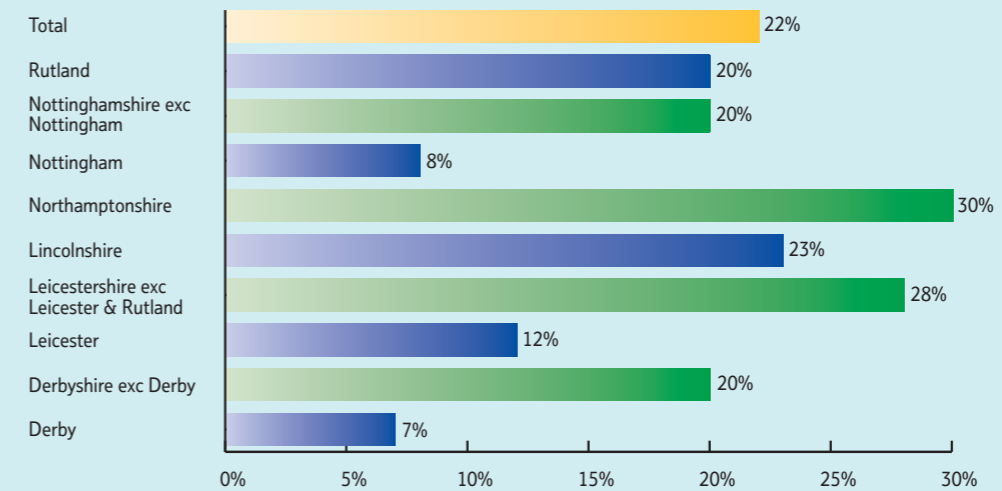
They do however venture out to work – people in the Midlands make more commuting journeys than almost any other part of the UK. Here the East Midlands comes third from the top with 163 journeys compared to top placed West Midlands with 166 journeys per person, per year.

Nine percent of East Midlands people work from home (this figure does not just include teleworkers – it also covers people who might, for example, run a day-care centre or a nursery from their home).

Twenty-one percent of the region's internet users who do not currently work from home would like to do so and this could reduce commuting mileage by a projected nine percent. However, only 11 percent of these people would be allowed by their employers to work from home.

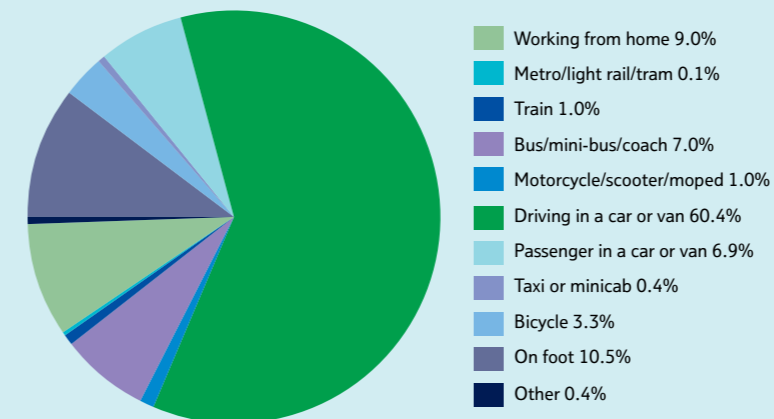
Nine percent of East Midlands people work from home.

## Vehicle mileage growth in the East Midlands, 1993 to 2003



Source: Department for Transport

## Usual method of travel to work in the East Midlands



Source: 2001 Census

People in the East Midlands are second from the bottom of the league table when it comes to the amount of journeys taken, coming in just before the Welsh with 957 trips per year.



# South West

## Congestion facts

- Population: The South West has 18 percent of England's land area but only 10 percent of England's population at 4,928,434 (Source: 2001 Census of population).
- Half the people in the South West live in towns of less than 20,000. Parts of the westerly counties are as remote as any part of England. With lower densities, distances to work and other facilities tend to be greater and dependency on the car higher.
- The M4/M5 is the principal corridor for the east of the region. Congestion around Bristol is mainly due to local traffic and peak holiday movements.
- The busiest sections of road are the M4 and M5 motorways but overall, the region's major roads have the lightest volume of traffic in England.

## BT analysis

The average percentage increase in miles driven in the South West stands at 21 percent (up from 24.0 to 29.0 billion) slightly above the national average. There are nine local authority areas in the South West where growth is over the UK average of 19 percent growth between 93-03.

Topping the list is South Gloucestershire which has seen a 28 percent increase in the miles driven annually, followed closely by Cornwall at 27 percent and Gloucestershire at 25 percent.

The largest actual increase is in Gloucestershire with 786 additional million vehicle miles. The closest then are Devon (excluding Plymouth and Torbay) with an additional 728 million miles and Somerset with 637 million.

Devon (excluding Plymouth and Torbay) is top of the list for actual mileages with 4.1 billion miles driven in 2003. Second is Gloucestershire with 3.9 billion followed by Somerset with 3.6 billion.

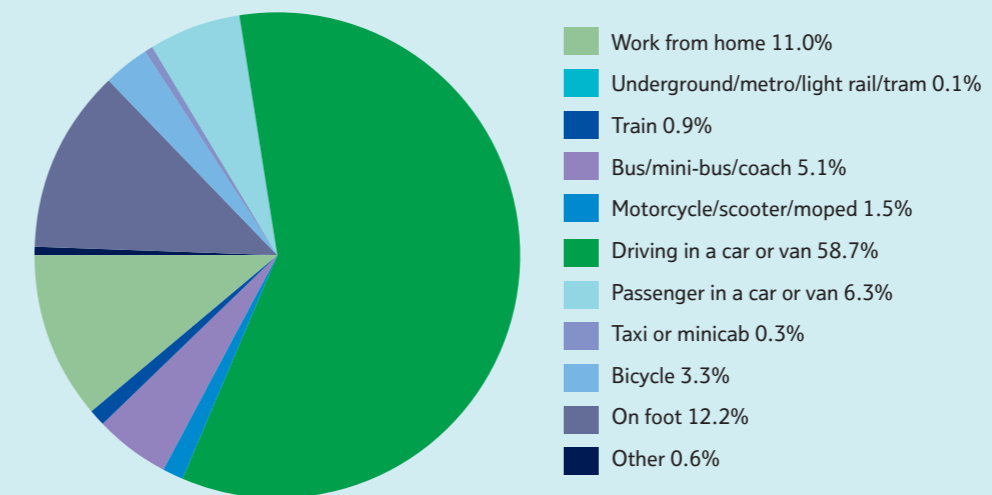
## Surfing the South West

The 2001 Census showed that the South West has the highest percentage of its working population working from home at 11 percent, followed by the South East with 9.9 percent and the East of England with 9.4 percent (This figure does not just include teleworkers – it also covers people who might, for example, run a day-care centre or a nursery from their home). This could be accounted for by the fact that compared to other regions the South West has few large businesses, being host to only seven of the top 100 companies in the UK. Recent research conducted by the Global Entrepreneurial Monitor 2003, however, indicated that the South West has the highest percentage of would-be entrepreneurs in the country (Source: *Western Morning News*, January 2004).

The region has more cars per household (1.23) than other regions except the South East (1.30) and the East of England (1.27).

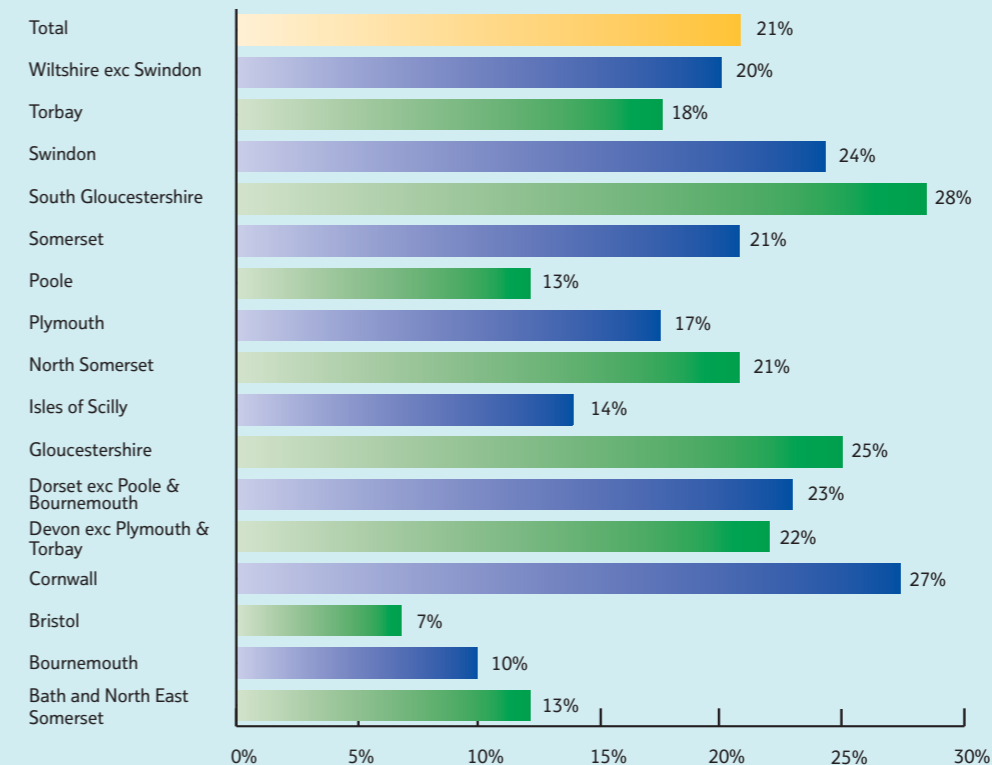
Fourteen percent of the region's internet users who do not currently work from home would like to do so and this could reduce commuting mileage by a projected six percent.

Usual method of travel to work in the South West



Source: 2001 Census

Vehicle mileage growth in the South West, 1993 to 2003



Source: Department for Transport

The region has more cars per household (1.23) than other regions except the South East (1.30) and the East of England (1.27).



# South East

## Congestion facts

- Population: 8,000,645, the largest region in England. (Source: 2001 Census of population).
- According to a recent MORI poll commissioned by the South East England Regional Assembly this year, traffic congestion is a serious problem for 45 percent of people.
- 50 percent say improvements to bus and rail services are key priorities.
- Respondents were concerned that congestion will get worse with more development. Despite this, 65 percent of those polled oppose the introduction of a congestion charge.

## BT analysis

The average percentage increase in miles driven in the South East stands at 21 percent (up from 44.1 to 53.5 billion) slightly above the national average. There are 10 local authority areas in the region where growth is over the UK average of 19 percent growth between 93-03. Topping the list are the Medway Towns with a 27 percent increase, followed closely by Kent (excluding the Medway towns) at 26 percent. Portsmouth shows least growth in the decade with 12 percent closely followed by Southampton, Reading and Bracknell Forest, all on 13 percent.

The largest actual increase was in Kent (excluding Medway Towns) with 1.8 billion additional vehicle miles. It was closely followed by Hampshire (excluding Portsmouth and Southampton) with a 1.7 billion mile increase and Surrey with a 1.1 billion mile increase.

This pecking order is also largely reflected in the fact that the top three are also top of the list for actual mileages with Hampshire (excluding Portsmouth and Southampton) having the largest actual volumes at 9.3 billion miles per year. Second is Kent (excluding Medway Towns) with 8.9 billion and third is Surrey with 6.5 billion. In other words the places which already have the heaviest volumes are also showing significant growth.

## The story down south

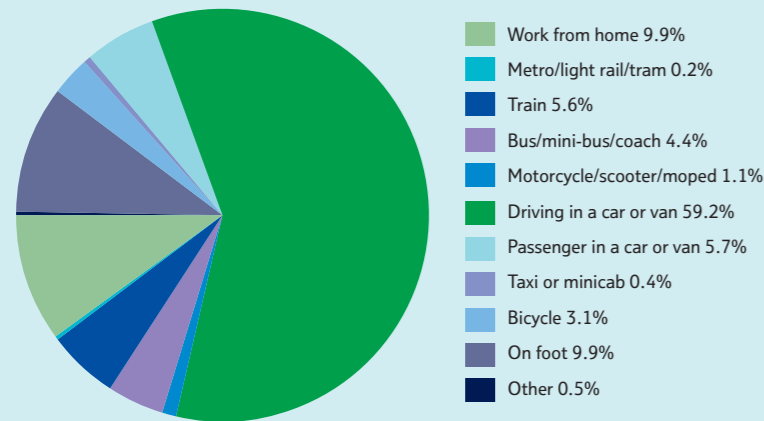
Statistics show that people in the South East make the second highest number of trips from home per year after the Scots – 1,059 as opposed to 1,074. They also come second – this time to people in the East of England – in terms of most trips made as car drivers – 465 versus 474. This one-two is reversed in the list of trips made as car passengers with people in the South East topping the list with 257 compared to the East's 253.

People in this area drive the most miles – 4,558 per year and travel the second furthest as passengers with 2,259 miles. And they make the most business trips with 46 a year, followed by London and the East both at 40.

The South East has the second highest percentage of people who work from home at 9.9 percent.

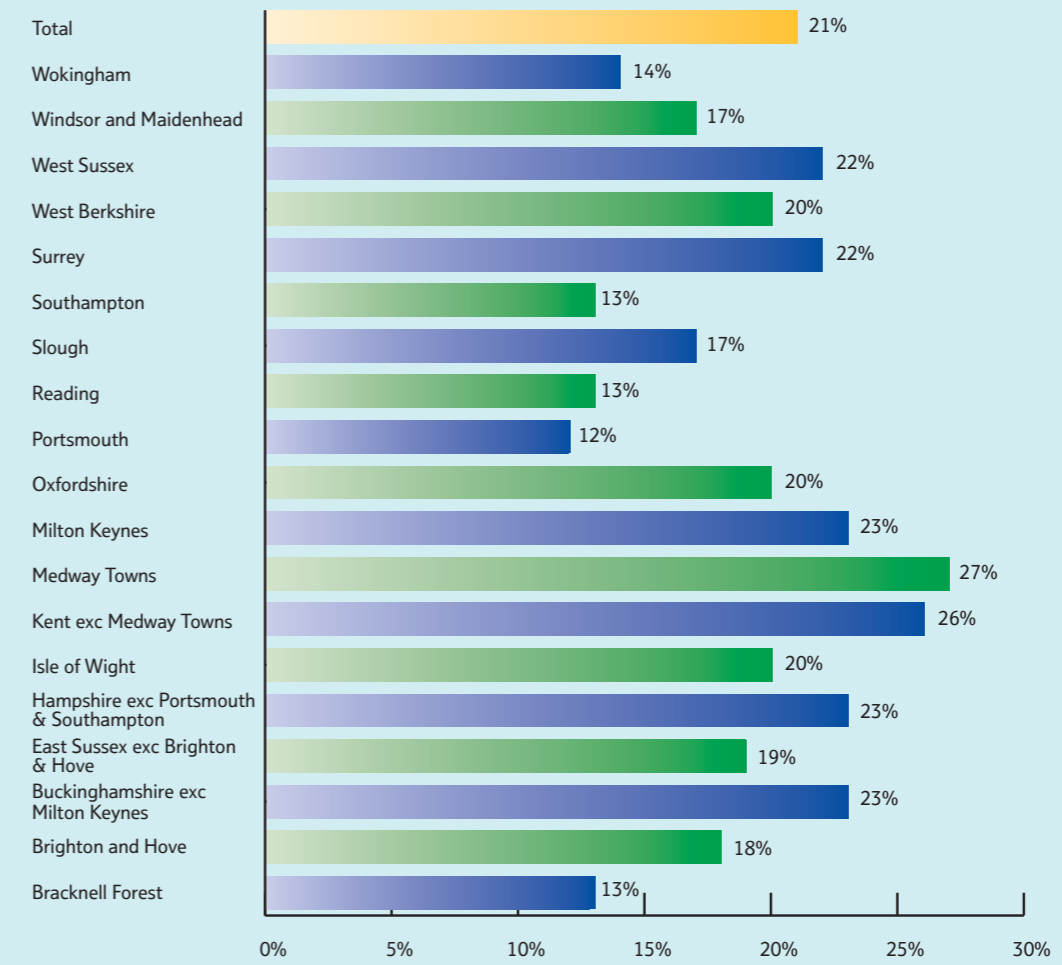
Twenty-five percent of the region's internet users who do not currently work from home would like to do so and this could reduce commuting mileage by a projected nine percent. However, only 17 percent of these people would be allowed by their employers to work from home.

## Usual method of travel to work in the South East



Source: 2001 Census

## Vehicle mileage growth in the South East, 1993 to 2003



Source: Department for Transport

People in this area drive the most miles – 4,558 per year and travel the second furthest as passengers with 2,259 miles. And they make the most business trips with 46 a year, followed by London and the East both at 40.



# The East of England

People in the East of England travel the furthest each year – an average of 8,280 miles each per year.

### Congestion facts

- Population: 5,388,140 (Source: 2001 Census of population).
- The A14 is possibly the most controversial stretch of road in Cambridgeshire. With frequent major accidents and jams during rush hour – not to mention the chaos when it snows – it has been described locally as the ‘bane of many people’s lives’.
- Traffic congestion in the region occurs mainly in more accessible areas, such as Hertfordshire and with traffic travelling to popular tourist destinations during the summer months.
- The rural areas of the region, particularly in the north and east are not well served by the major road network. They also have limited access to public transport. People living in these areas therefore rely on cars and journeys tend to be longer and more frequent than for urban residents.
- Britain’s busiest speed camera is situated at the bottom of the M11 near Loughton (Source: BBC Essex).

### BT analysis

The average percentage increase in miles driven in the East between 93-03 stands at 19 percent (up from 28.4 to 33.7 billion) the same as the national average. There are only three local authority areas in the East of England where the measure is over the UK average. Topping the list by some distance is Thurrock with a 25 percent increase. The others are Cambridgeshire (excluding Peterborough) at 22 percent and Suffolk at 20 percent. The largest actual increase is in Essex (excluding Southend and Thurrock) with 1.2 billion additional vehicle miles. It is closely followed by Hertfordshire with a 1.0 billion increase.

This pecking order is also mirrored in the top of the list for actual mileages with Essex (excluding Southend and Thurrock) having the largest actual mileage at 8.3 billion and Hertfordshire in second at 7.0 billion vehicle miles. In other words, the places which already have the heaviest volumes are also showing significant volume growth although this is not reflected fully in the percentage increases.

### Eastern reflections

Statistics from the National Travel Survey (1999/2001) show that people in the East of England make the most trips behind the wheel, with 474, followed closely by people in the South East with 465. This one-two is reversed in the list of trips made as car passengers, with people in the South East topping the list with 257 trips compared with those in the East at 253 trips every year.

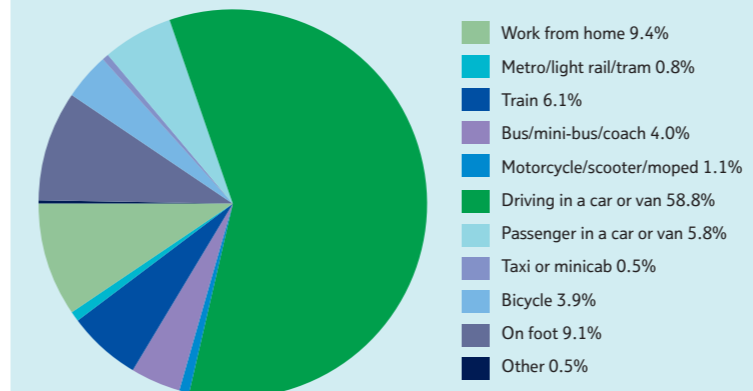
People in the East of England also travel the furthest each year – an average of 8,280 miles per person. And these figures are reflected in the numbers of miles driven by car – as drivers, people in the East come second with a total of 4,493 miles driven, though they top the chart as car passengers with 2,427 miles each.

On average, people in the East make the second most commuting journeys per year – together with the Scots who make 164 on average, per person. The West Midlands is top of the list with 166 commuting journeys made per person per year. Along with Londoners, people in the East of England also make the second highest number of business trips – on average 40 trips a year, compared to the first-placed South East with 46.

The region has the second highest number of people who commute by train – 6.1 percent and it also has the second highest number of cars per household at 1.27 compared to the South East’s 1.3. The East is also just behind the South East, which tops the list in the amount its people spend per month on vehicle purchases, repairs, spares and accessories, insurance, tax and fuel.

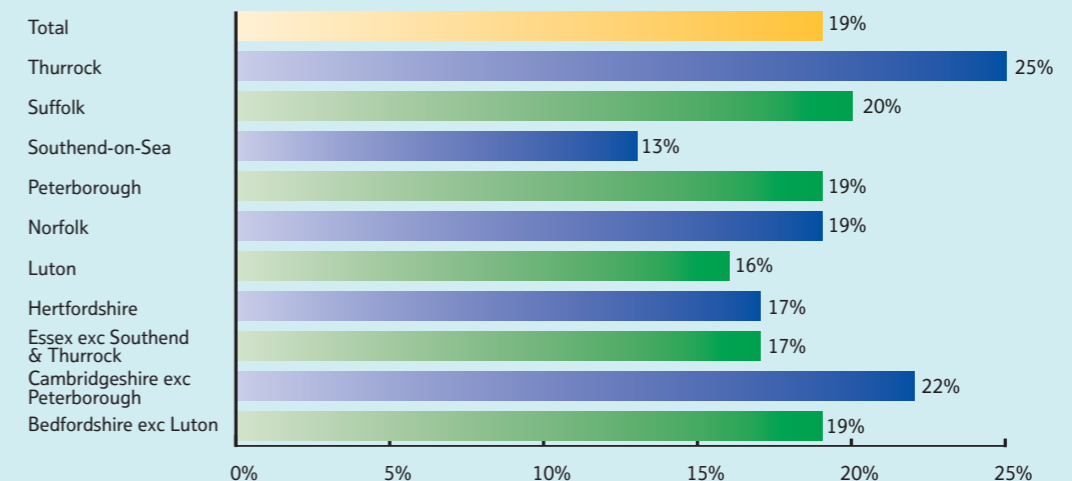
The percentage of people in the East of England who work from home is 9.4 percent – the third highest after the South West with 11 percent and the South East with 9.9 percent (this figure does not just include teleworkers – it also covers people who might, for example, run a day-care centre or a nursery from their home). Twenty-four percent of the region’s internet users who do not currently work from home would like to do so and this could reduce commuting mileage by a projected 10 percent. However, only 16 percent of these people would be allowed by their employers to work from home.

### Usual method of travel to work in East England



Source: Census 2001

### Vehicle mileage growth in East England, 1993 to 2003



Source: Department for Transport

On average, people in the East make the second most commuting journeys per year – together with the Scots they make 164 on average, per person.

# Yorkshire and the Humber

## Congestion facts

- Population: 4,964,833 (Source: 2001 Census of population).
- In April this year councillors called on city leaders to help alleviate Hull's growing traffic by introducing Venetian-style water taxis on the River Humber.
- There is an extensive network of 'green lanes' in the Yorkshire Dales National Park which prevent motor vehicles from using particular routes. The Dales have over eight million visitors annually and an estimated 90 percent of them travel to the park by car.
- Measures to reduce car ownership such as car clubs are currently being introduced in Leeds. The Carplus scheme, for example, offers a pay-as-you-drive alternative to car ownership for people in West Yorkshire and discounted public transport to members.
- Plans for the Leeds Supertram had to go back to the drawing board in July after Government objections to the rise in costs – an estimated £500 million, at least £140 million more than first proposed.

## BT's analysis

The average percentage increase in miles driven in Yorkshire and the Humber stands at 19 percent (up from 21.2 to 25.4 billion) the same as the national average. There are eight local authority areas in the region where growth is over the UK average of 19 percent between 93-03. Topping the list is Doncaster with a 27 percent increase. Next come Barnsley and North Lincolnshire, both with 24 percent, followed by York with 22 percent and Wakefield with 21 percent. The least increase has been seen in Kingston upon Hull with 10 percent and Bradford with 13 percent.

The largest actual increase is in North Yorkshire (excluding York) with 794 million additional vehicle miles followed by Leeds with 610 million and Doncaster at 390 million additional miles.

This pecking order is largely reflected in the top of the list for actual mileages with North Yorkshire (excluding York) having the largest actual volume at 4.7 billion vehicle miles, Leeds in second with 3.9 billion and East Riding of Yorkshire in third with 2.0 billion. In other words, the places which already have the heaviest volumes are also showing significant volume growth although this is not fully reflected in the percentage increases.

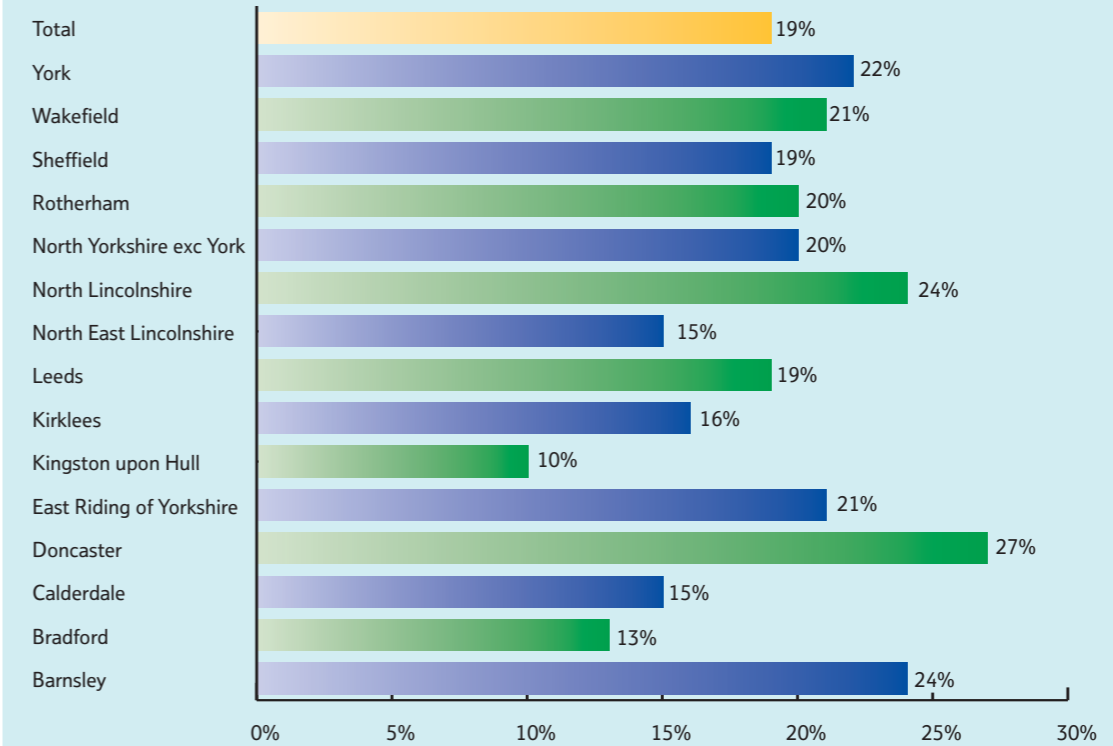
## From the Humber to the Wash

People in the North seem to be among the friendliest and the biggest shoppers with people from Yorkshire and the Humber making the second most shopping trips per year. They are also the third most likely to spend time visiting friends with 188 journeys a year for that purpose.

At 8.4 percent, about one-in-twelve of people in the region work from home. (This figure does not just include teleworkers – it also covers people who might, for example, run a day-care centre or a nursery from their home).

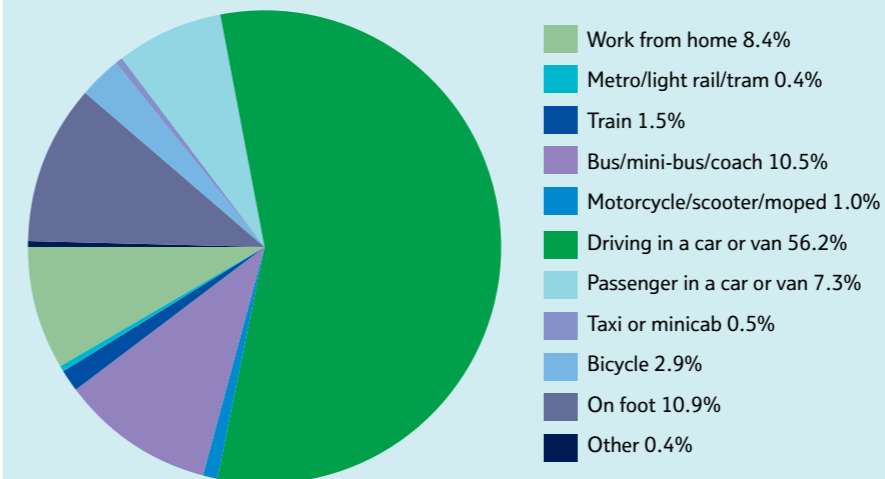
Twenty-six percent of the region's internet users who do not currently work from home would like to and this could reduce commuting mileage by a projected 12 percent. However, only 17 percent of these people would be allowed by their employers to work from home.

Vehicle mileage growth in Yorkshire and the Humber, 1993 to 2003



Source: Department for Transport

Usual method of travel to work in Yorkshire and the Humber



Source: Census 2001

People in the North seem to be among the friendliest and the biggest shoppers with people from Yorkshire and the Humber making the second most shopping trips per year.



# North West

## Congestion facts

- Population: 6,729,764 (Source: 2001 Census of population).
- The highest concentration of motorways in the UK are situated here.
- The region makes up nearly 12 percent of the UK's population and includes Chester, Liverpool, Manchester, Lancaster and Carlisle.

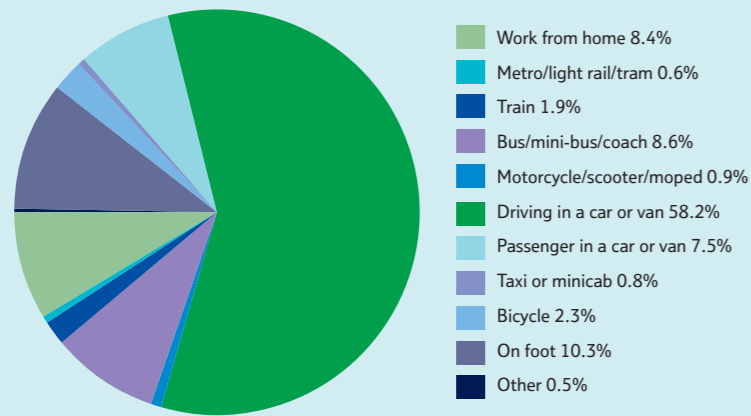
## BT analysis

There are 10 local authority areas in the North West where the percentage increase in miles driven is higher than the national average of 19 percent growth between 93-03.

Two stand out. Tameside with roughly double the national average at 39 percent and Oldham with a 35 percent increase. Also above national average are Halton with 26 percent growth, Bury at 25 percent and Rochdale at 24 percent. The regional average, at 19 percent (up from 29.0 to 34.6 billion) is the same as the national average. Two areas show single digit growth with Blackpool seeing a nine percent increase and Sefton last with eight percent.

The largest actual increases are in Lancashire (excluding Blackburn and Blackpool) with 1.0 billion additional vehicle miles and Cheshire (excluding Halton and Warrington) at 884 million additional miles. These areas are also the busiest with annual mileage of 6.8 billion and 5.2 billion miles respectively. Cumbria comes third in actual mileage increases at 557 million while the rest of the area is way behind; the nearest being Warrington at 262 million miles.

## Usual method of travel to work in the North West



Source: Census 2001

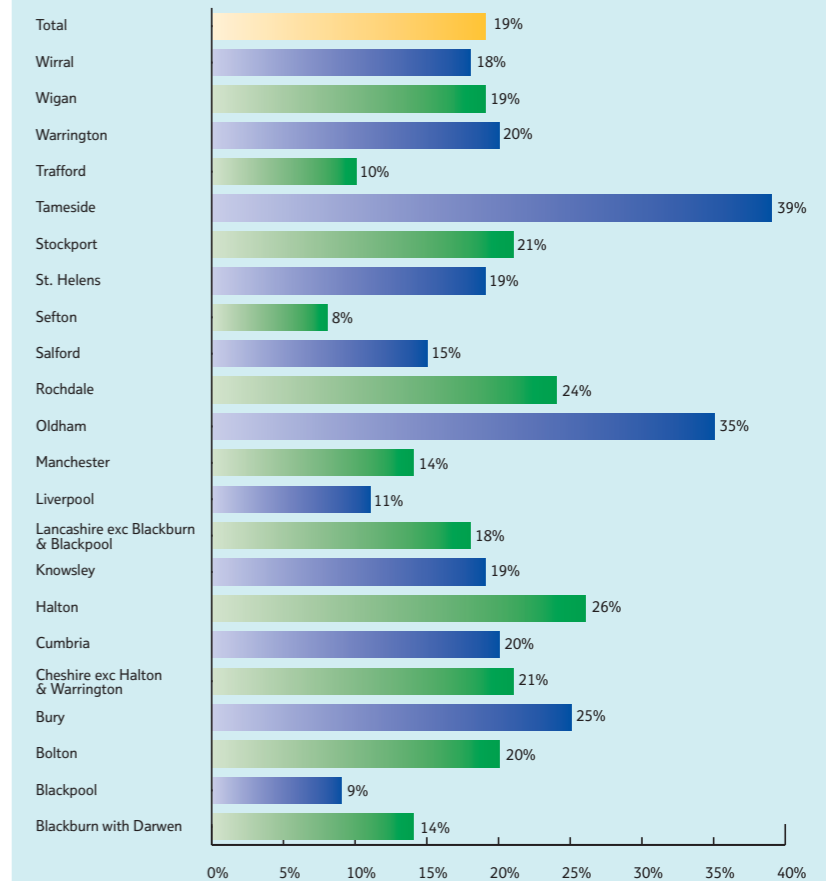
## The friendly North West

Government statistics show that people in the North West stay fairly much in the middle of the table in most areas – the number of trips from home, for example, the ways in which they travel, the distance they travel and the number of commuting journeys they make. However, they are amongst the friendliest – coming second in the list of journeys made to visit friends. And they seem to enjoy shopping, coming third in the table for trips to the shops – 218 a year compared to people in the North East who come out top with 224.

They also seem to spend quite a bit of time commuting – only 47 percent of commuters in the North West spend less than 20 minutes moving between home and work. As with Yorkshire and the Humber, 8.4 percent of people in the region work from home (this figures does not just include teleworkers – it also covers people who might, for example, run a day-care centre or a nursery from their home).

Nineteen percent of the region's internet users who do not currently work from home would like to do so and this could reduce commuting mileage by a projected nine percent. However, only six percent of these people would be allowed by their employers to work from home.

## Vehicle mileage growth in the North West, 1993 to 2003



Source: Department for Transport

Nineteen percent of the region's internet users who do not currently work from home would like to do so and this could reduce commuting mileage by a projected nine percent.



# North East

People in the North East make the fewest business trips – 23 per year – but the second most shopping trips after Scotland with 224 per year.

## Congestion facts

- The North East is one of the smallest of the English regions in both area (5,339 square miles) and population 2,515,442 million (Source: 2001 Census of population).
- The North East faces some of the UK's most daunting challenges in relation to raising economic performance, combating social exclusion and improving its urban and rural areas (Source: North East Assembly's draft Regional Transport Strategy, 2002).
- The North East is not connected by motorway to the national motorway network and the main road connections to the rest of the country are all of generally low capacity (Source: North East Assembly's draft Regional Transport Strategy, 2002).
- The Department of Transport recently reported that nearly 1,000 miles of roads across the North East and North Yorkshire are in need of repair. Bottom of the table is Hartlepool with 33 percent of its roads in need of structural maintenance.
- The Tyne and Wear Metro, a light rail system opened in 1980, served 40 million journeys in 2002-3. It runs mainly overground but includes underground sections in Newcastle and Gateshead.

## BT's analysis

Mileage travelled in the North East over the last ten years increased from 10.3 to 12.2 billion miles, representing an 18 percent increase which was just below the national average. There are only four local authorities in North East where the percentage increase in miles driven is higher than the national average of 19 percent growth between 93-03. They are Darlington at 25 percent, Durham (excluding Darlington) at 24 percent, Hartlepool at 22 percent and Northumberland at 20 percent.

Of the 12 local authority areas in the region, exactly half show increases which are well below the national average of 19 percent and regional average of 18 percent growth. Redcar and Cleveland shows the least growth at 13 percent and Gateshead comes next with a 14 percent increase.

The largest actual increase by a long way is in Durham (excluding Darlington) with 466 million additional vehicle miles. The closest then is Northumberland with an additional 262 million miles. These two are in the same pecking order for highest mileages as well with 2.4 billion miles driven in Durham (excluding Darlington) in 2003 and 1.6 billion in Northumberland.

## Driving in Durham, Darlington and Newcastle

People in the North East are the most prolific users of public bus services of all the regions after London – 104 trips a year – and come second to London when it comes to using 'other' public transport facilities – 36 against London's 107. They travel further on their buses than Londoners – an average 448 miles per year compared to London's 333 miles a year. And

bus services are readily available in the area – 98 percent of the population were within reach of a bus stop in 1999/01, coming second only to London on 99 percent.

At the same time, the people of the region travel the second least distance overall each year – 5,737 miles per year as opposed to bottom placed London's 5,452. The North East comes second on the list of fewest miles both driven and as a passenger at 2,694 and 1,781 miles respectively – just behind London in both instances.

The region also has the second fewest number of cars per household – 0.90 – just ahead of London at 0.87. However, the North East is the area with the highest expenditure per car/van – it costs £57.30 per week to run a car/van here compared to £54.90 in London and £57.20 in the East of England.

The region has the second largest number of people commuting via metro – 2.2 percent compared to first-placed London's almost 19 percent. And the region has the second least number of driver-commuters at 55.2 percent.

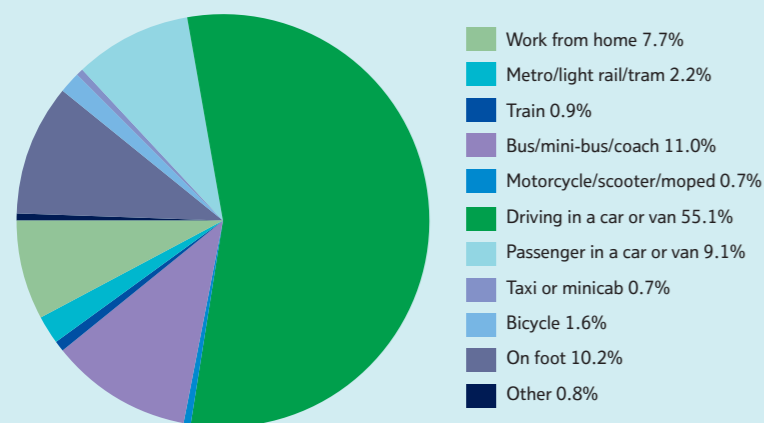
This is, however, still above the English average of 54.9 percent which is brought down by the relatively low percentage of commuter drivers in London (33.5 percent).

People in the North East make the fewest business trips – 23 per year – but the second most shopping trips after Scotland with 224 per year. They are also the most friendly, making 208 journeys a year to visit friends compared to the second-placed North West with 201.

The region has the lowest percentage of people who work from home – 7.7 percent compared to highest, 11.0 percent, who work from home in the South West (this figure does not just include teleworkers – it also covers people who might, for example, run a day-care centre or a nursery from their home).

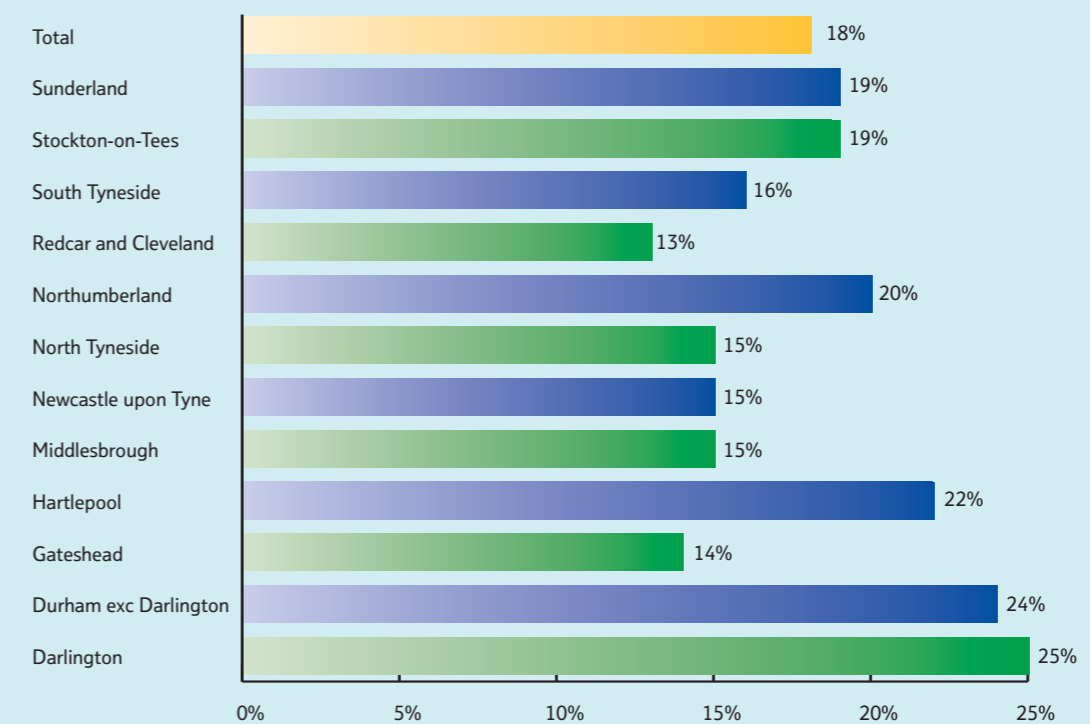
Eighteen percent of the region's internet users who do not currently work from home would like to do so and this could reduce commuting mileage by a projected eight percent. However, only two percent would be allowed by their employers to work from home, the lowest figure for any of the regions.

Usual method of travel to work in the North East



Source: Census 2001

Vehicle mileage growth in the North East, 1993 to 2003



Source: Department for Transport

People in the North East are the most prolific users of public bus services of all the regions after London.





## Broadband's contribution to solving our congestion crisis

**In the early days of the internet, commentators announced 'The Death of Distance'. Still unfulfilled, broadband now offers the promise of delivering on this ambition and helping to beat congestion at the same time.**

In his book, *Being Digital*, Nicholas Negroponte of the Massachusetts Institute of Technology's Media Lab said: "Granted, if you make pizzas you need to be close to the dough; if you're a surgeon you must be close to your patients (at least for the next two decades). But if your trade involves bits (not atoms) you probably don't need to be anywhere specific – at least most of the time."

Nearly 10 years later, digital technologies are changing the way we work but they haven't rewritten the rules yet. E-working hasn't quite measured up to its early hype and our roads are still congested with people driving to work and organising their leisure in patterns designed for a nine-to-five society. This report shows that distance hasn't died, it has just got more crowded and if we carry on within the same paradigm, the whole country will be gridlocked.

So new thinking needs to be applied to these issues. As our academic colleagues at the University of Bradford point out: "UK transport policy has traditionally focused on hard factors, such as building roads or investing in new buses and trains." BT is not arguing that these should be ignored – instead, we are urging government to consider transport and communications issues as part of the wider infrastructure debate.

"...that doesn't really happen at the moment," said Jonathon Porritt, Chairman, UK Sustainable Development Commission and programme director of Forum for the Future. "The level at which it should be happening is regionally, but even here, it's a very mixed picture."

What's more the time is right for this change – improved communications infrastructure and more affordable pricing mean that e-working is now a real option for many people. In the space of five years, access to the World Wide Web and mobile telephony has gone from an expensive luxury to an everyday tool. New mobile data services are emerging. And the coming together of telecommunications, broadcasting and the internet will result in the proliferation of high-speed multimedia services.

As the CBI says in this report: "...there have been major changes in the way businesses use transport, partly as a way of dealing with the impacts of congestion. UK businesses have adopted information and communications technologies (ICTs) to improve efficiency and drive down costs in the distribution chain to offset the high cost of moving freight on our roads. But there is still further scope to continue to innovate and improve technologies to manage the use of

transport for people..."

So this report calls on government, in particular, but all who have a vested interest in tackling the issue of congestion to add communications to the mix. BT suggests that a realistic target is to substitute actual mileage travelled with broadband communications technology to eliminate six percent of car and taxi miles currently undertaken.

Achieving this target would represent a saving equivalent to more than 14.5 billion miles per year, equal to about three years growth in car and taxi traffic at current rates. Given what congestion costs us all, what have we got to lose?

### BT's investment in change

Clearly, BT and other communications companies have a vested interest in these changes, as we sell the means of achieving it. But we also have a vested interest in the success of 'UK plc'.

And we practice what we preach. We have, for example, championed the cause of flexible working among our people since the 1980s and we are now focusing on creating a more 'agile' environment. As a result we have saved tens of millions of pounds in terms of office space, transport costs, recruitment and retention. And this sustainable policy has paid dividends – both for our people, in terms of quality of life, and our customers.

What's more, we are willing to put our 'money where our mouth is' with regard to broadband. In the UK uptake will be driven, in large part, by BT's commitment to invest in making broadband available to 99.6 percent of the population by summer 2005. BT currently installs around 150,000 new lines a month at a wholesale level. Cable companies serve approximately 1.5 million customers. People are starting to experience the advantages and customer numbers continue to rise.

And we're looking to the future. BT is creating the infrastructure for the UK that will make this

kind of traffic substitution possible through a multi-million pound investment programme.

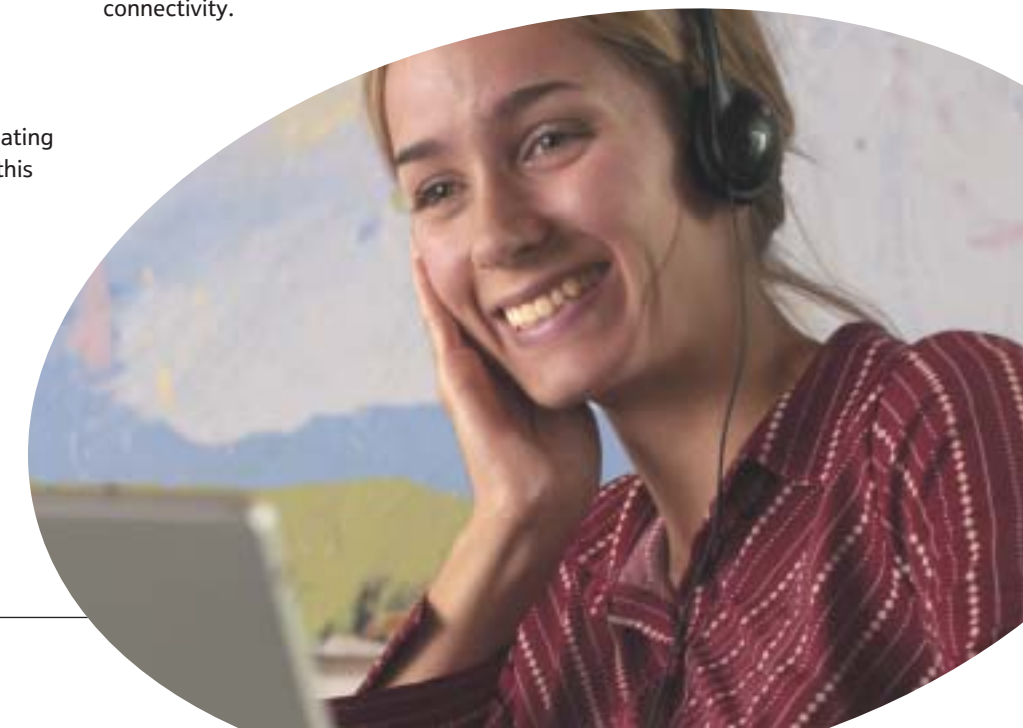
BT has set out its timetable for the implementation of its 21st century network vision – a programme that will allow communications in a range of formats across an IP-based network.

What will this mean for BT customers? Both their telephone service and access to data services such as email, for example, will become applications sitting on an IP network rather than separate services with a network and a management system to go with them. This means that it will be easier for companies of all kinds to develop clever new applications that will also simply sit on the network, helping people to alter the way they organise their lives.

This infrastructure will offer people access to all kinds of information, including video and databases, at broadband speeds on any device. These new levels of convergence and mobility will allow all of us to do things differently. For example, broadband will widen the availability of services such as medical consultations online, easier and more interactive collaboration at work, e-learning packages to improve our children's home study and entertainment packages which could include the legal download of films, television, radio and games of all kinds.

At the moment we often have a range of devices such as televisions, computers, set-top boxes, alarm systems and mobiles. But very few of them are linked. Broadband will do that. So, we will no longer be tethered to our desks or our TV – what's on offer is the flexibility to have the bandwidth we currently have at our desks, in our homes, on a mobile device, armed with wireless connectivity.

**...there have been major changes in the way businesses use transport, partly as a way of dealing with the impacts of congestion.**



The most common reasons for working from home were work-related: 35 percent cited 'demands of the job' and 38 percent said they 'wanted to get more work done' or 'it is more efficient'.

So what's in it for business?

According to a recent RAC Foundation study, *Motors or Modems*, commuting costs companies dearly in areas such as staff retention, productivity, cost savings and quality of life. For example, it quotes East Riding Council which says that teleworking has reduced staff turnover by 60 percent and saved the council £48,000 in six months.

In the area of productivity, a study from the Department for Education and Skills (DfES – formerly the DfEE) on work-life balance reported: "the most common reasons for working from home were work-related: 35 percent cited 'demands of the job' and 38 percent said they 'wanted to get more work done' or 'it is more efficient'."

This is backed up by findings from a research project called Teleworking and Sustainable Development carried out by the University of Bradford which included BT employees.

### Improved performance

Of the large majority of BT respondents (85.6 percent) who felt that their performance had improved, 47.2 percent believed that teleworking had made a major contribution to this. The main forms of performance improvement were higher productivity and better quality of work and the main causes were reduced stress and better concentration.

In addition, teleworking can be shown to improve employees work-life balance and therefore their quality of life. Some of the findings in the

University of Bradford study for example were that 90.3 percent of BT and 78.2 percent of BAA respondents felt that teleworking was having a positive effect on their quality of life. 65.3 percent of BT and 76.5 percent of BAA respondents felt that they had a very good or good work-life balance and a majority felt that teleworking had positive impacts on partners, children and adult dependants.

The RAC's *Motors or Modems* report concurs with these findings – it quotes a MORI survey on behalf of Mitel Networks looking at stress levels in the workplace which found that 41 percent of workers rated travel as the most annoying aspect of their job. The RAC also quotes a Rowntree Foundation report which says: "There is a direct correlation between hours spent at work by fathers and the quality of family life."

Moving to costs, BT's investment in flexible working has helped save the business £220m in estate costs, increased customer satisfaction by five percent and boosted employee satisfaction. The company has saved £42m annually in rent and rates since implementing its flexible working scheme, and desk spaces in London have been reduced from 10,000 in 1993 to 3,000 today.

This is backed-up by data, showing that since 1998, there has been a 15 percent reduction in BT car and van fleet miles travelled, contributing to a 32 percent reduction in CO<sub>2</sub> emissions since 1992. These are just two factors that saw BT ranked as the world's top telecommunications company in the Dow Jones Sustainability Index for the fourth year running in 2004/5.

Other companies including IBM and Shell have recorded similar savings. Shell has cut property

costs by 45 percent, despite constant headcount. IBM has cut accommodation by 1.2 million square feet, improved staff retention and reduced travel costs.

And as the example of East Riding Council shows, the cost advantages do not just apply to large companies. Employers from small and medium sized businesses (SMEs) in the North West said in research conducted by Bolton University that following their take-up of broadband 32 percent have experienced better performance in sales revenues, 46 percent have experienced cost savings, 31 percent have experienced a growth in sales, nearly 80 percent are forecasting growth in their future revenues and 72 percent are using broadband in their procurement process of which 36 percent are already seeing cost savings.

What's more, agile working can benefit a business of any size which wants to expand. Searching for new premises or extending existing buildings can be expensive, time-consuming and disruptive. Allowing a proportion of staff to work from home or work flexibly could avoid that.

### The route to the future

There is extensive support available for companies looking to tap into this communications infrastructure. For example, BT is involved and investing in more than 50 technology-neutral broadband partnerships across the UK looking at addressing issues of social inclusion and the economic advantages broadband can bring to all areas.

And on a regional basis, this is already proving its worth. BT's first partnership with the public sector, actnow, in Cornwall has generated more than £22.5 million Gross Domestic Product (GDP) for the county and 1,287 jobs. Its key objective was to recruit 3,300 SMEs into a programme to help them climb the e-adoption ladder. In little more than two years, the partnership has achieved 20,201 broadband connections and 3,605 SMEs have signed up to the business programme.

These results are echoed in Wales where Opportunity Wales, a programme backed by a combination of public, private, voluntary and academic institutions, including BT, has increased broadband usage by Welsh SMEs from nine percent to 24 percent among micro-businesses, 14 to 32 percent in small businesses and 18 to 38 percent in medium-sized businesses. Since the introduction of broadband, Welsh SMEs using e-commerce have seen a combined increase in turnover of £130 million (14.1 percent) and 1,660

new jobs have been created.

So, to sum up, the bad news is that traffic congestion in the UK is set to get worse. The good news is there are alternatives to building new roads. Making significantly greater use of the communications infrastructure is one of them.

BT, therefore, calls on UK government to follow the lead of countries like Finland and consider transport and communications issues together. We call on business to be innovative and look at how improved ways of working can make them more efficient and give their people more choice about how and where they work. We also call on individuals to grasp the potential to live a much more fulfilling, less stressful existence.

When electricity was initially installed in homes its sole function was to provide adequate lighting, safely. Now we couldn't live without it. We use it to cook, to heat our homes and for many leisure activities. Similarly the telephone started out as a device to enable people to talk to each other over distances. The internet and the introduction of universal broadband will 'turbocharge' the way we use the communications network. It has the potential to help enhance our work-life balance, our family lives, our wealth, our communities and in part, our environment.

Reducing it to the simplest level, to cut congestion, all we need to do is reorganise how we do things a little. And what better way of starting than taking one in 10 of our journeys and making it down the digital superhighway?



Broadband has the potential to help enhance our work-life balance, our family lives, our wealth, our communities and in part, our environment.

## Useful information

For more information you may find these websites helpful.

### NATIONAL

Transport ten year plan 2000  
Road traffic statistics 2003  
Measuring traffic congestion  
The Future of Transport white paper  
<http://www.dft.gov.uk/>

ICT and sustainable development  
<http://www.sustainit.org/>

A 2002-2004 research project on teleworking financed by the European Commission's IST initiative  
<http://www.sustel.org/>

BT's work in this area  
<http://www.bt.com/betterworld>

BT broadband partnerships  
<http://www.bt.com/broadband-partnerships>

The Confederation of British Industry is one of the UK's leading independent employers' organisations  
[www.cbi.org.uk/](http://www.cbi.org.uk/)

The RAC Foundation for Motoring is established to promote the environmental, economic, mobility and safety issues relating to use of motor vehicles  
[www.racfoundation.org/](http://www.racfoundation.org/)

The University of Bradford  
<http://www.bradford.ac.uk/external/>

Teleworker association  
<http://www.tca.org.uk>

Commission for Integrated Transport  
<http://www.cfit.gov.uk>

Transport 2000  
<http://www.transport2000.org.uk>

Trafficmaster  
<http://www.trafficmaster.co.uk/>

actnow  
<http://www.actnowcornwall.co.uk>

### SCOTLAND

The Scottish Executive's plans to develop transport infrastructure  
Transport & travel statistics  
<http://www.scotland.gov.uk/>

Proposals for a third bridge across the Firth of Forth  
<http://scotlandonsunday.scotsman.com/index.cfm?id=641812004>

Congestion charging in Scotland?  
<http://news.scotsman.com/topics.cfm?tid=477&id=776532004>

Figures project up to a 40% increase in traffic growth in Glasgow by 2021  
<http://www.spt.co.uk/news/story103.html>

Broadband for Scotland  
<http://www.broadbandforscotland.co.uk>

Scottish Enterprise  
<http://www.scottish-enterprise.com>

Highlands and Islands Enterprise  
<http://www.hie.co.uk>

### LONDON

Congestion is London's biggest issue says CfIT survey  
<http://www.mori.com/polls/2001/cfit-london.shtml>

Congestion costs London households £697 per year  
[http://www.foe.co.uk/resource/press\\_releases/19970916141219.html](http://www.foe.co.uk/resource/press_releases/19970916141219.html)

Why a charging scheme was needed  
<http://www.cfit.gov.uk/congestioncharging/factsheets/london/>

GLA transport website  
<http://www.london.gov.uk/londonissues/transport.jsp>

### WALES

A new way of paying for road use could slash traffic congestion in Wales  
<http://www.cfit.gov.uk/pn/031028/>

National Assembly's Transport Directorate homepage  
<http://www.wales.gov.uk/subitransport/index.htm>

Rush hour traffic jams in Cardiff could be a thing of the past, if new recommendations are brought into effect  
<http://www.newswales.co.uk/?section=Transport&F=1&id=6665>

Economic Development and Transport Minister Andrew Davies announces a review of temporary 50 mph speed restrictions on a section of the M4  
<http://www.midwalesonline.co.uk/news.cfm?id=7273>

Welsh Development Agency  
<http://www.wda.co.uk>

Opportunity Wales  
<http://www.opportunitywales.co.uk>

### REGIONAL DEVELOPMENT AGENCIES

[www.southwestrda.org.uk/](http://www.southwestrda.org.uk/)  
[www.nwda.co.uk/](http://www.nwda.co.uk/)  
[www.yorkshire-forward.com/](http://www.yorkshire-forward.com/)  
[www.onenortheast.co.uk/](http://www.onenortheast.co.uk/)  
[www.seeda.co.uk/](http://www.seeda.co.uk/)  
[www.eeda.org.uk/](http://www.eeda.org.uk/)  
[www.advantagewm.co.uk/](http://www.advantagewm.co.uk/)  
[www.emda.org.uk/main/](http://www.emda.org.uk/main/)

All websites correct at time of printing.

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paper mills of the Marchi Group on the basis of  
their sustainable forest development policies.  
In particular they are asked to respect the criteria  
and indicators for sustainable forest management.