

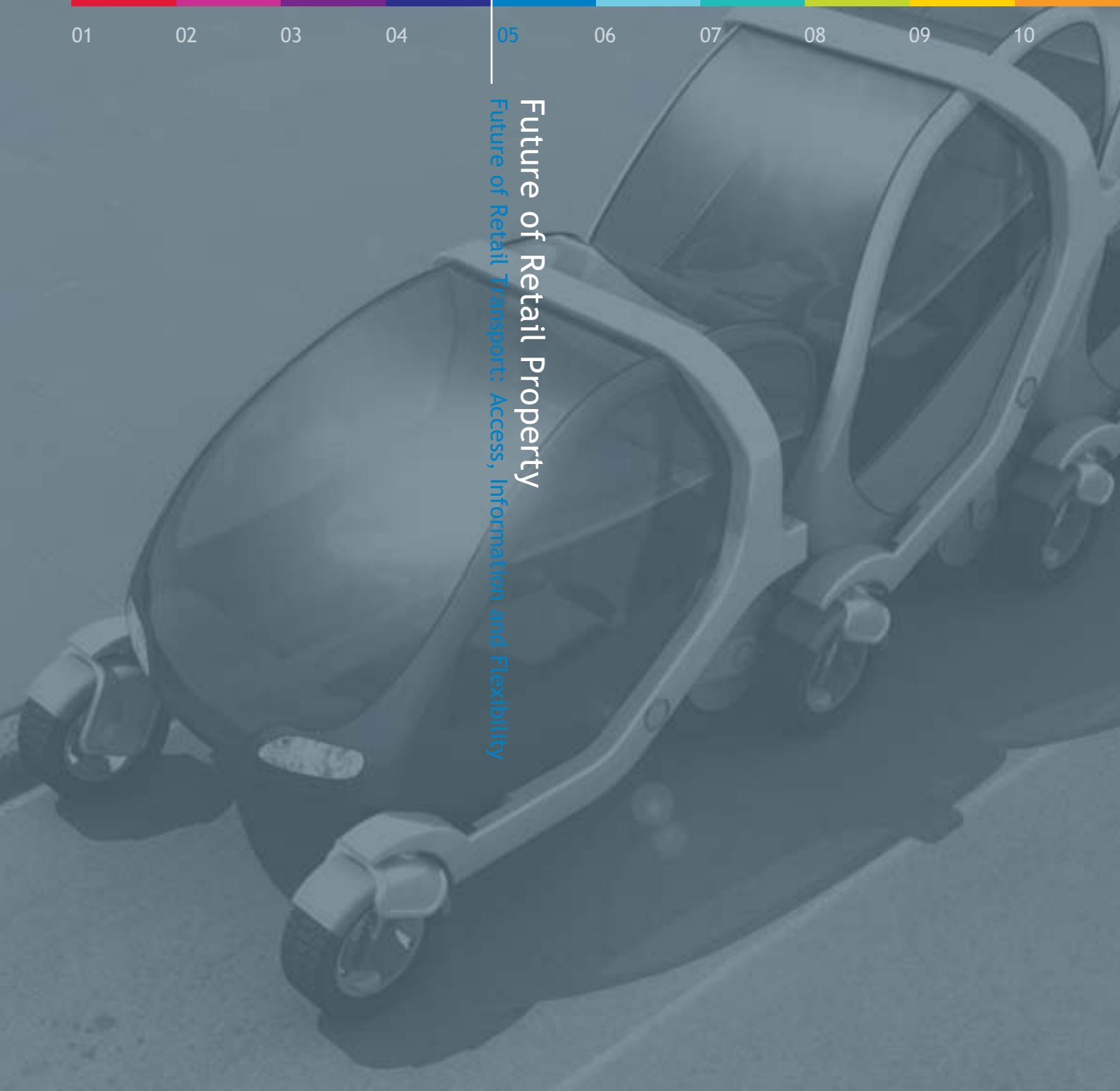
Future of Retail Property

Future of Retail Transport: Access, Information and Flexibility

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Future of Retail Property

Future of Retail Transport: Access, Information and Flexibility





Efficient and flexible transport options will be fundamental to retail growth for both suppliers and customers over the next decade. Transport pricing and policy, evolving modes of transport and increasingly accessible technology will all work to broaden choices for consumers, influencing not just how they get to a shopping place but also how and when they shop and what they choose to buy.

The retail property industry will need to understand the challenges now in order to meet them head on over the next ten years.

BCSC is pleased to present this key research.

John Strachan, President, BCSC
Global Head of Retail, Cushman & Wakefield

Future of Retail Property

Future of Retail Transport: Access, Information and Flexibility

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The development of transport, the economy and society are interdependent. In the 19th century, the developing rail network helped cities to strengthen their position as major retail centres. The 20th century was the age of the motor car widening the range and choice of viable retail locations to suburbs and out of town locations. At the start of the 21st century, fast-developing electronic information, communication and transport networks are set to make equally profound impacts on both the retail and transport industries.

This review identifies the changes taking place in transport and the factors that are influencing its evolution in relation to retail travel. The elements most likely to lead to change within the next ten years are reviewed under five headings:

- **Transport Infrastructure and Transport Cost** (Section 3)
- **Managing Passenger and Freight Transport** (Section 4)
- **Future Modes** (Section 5)
- **The Informed Traveller** (Section 6)
- **People, Lifestyles and Retail Markets** (Section 7)

Section 2 is a factual summary of retail travel trends. Sections 3 to 7 set out one possible view of the future to show the range of impacts and relevance to retailing; other views may be equally valid. The main points are summarised at the start of each section, and are explained in more detail in the text. Examples are provided to illustrate more complex issues.

In presenting this view of future transport, there has been a significant emphasis on the very important role that needs to be played by retailers and retail property developers in future. Transport and retail markets are interdependent. Successful transport solutions are a pre-requisite for competitive retail property. Retailers themselves can make a significant contribution to delivering the changes that meet transport needs as described in Section 8.

Other relevant factors are described in the Tables and Appendices, and a brief discussion of the evidence and sources is included in end notes. Section 9 summarises the overall conclusions.

All footnotes are in Appendix F and separated into the different sections.

Scope of the review

This review of transport is set within the *Future of Retail Property* research programme - mapping out the forces for change in the retail industry to 2015. The aim is to provide developers, planners, retailers and advisors with information on forecasting social, political, technological and economic changes in order to help develop better shopping places.

The work:

- involved a detailed scoping of the agents impacting on future transport and their relationship with retail travel. This was based on a review of published evidence and expert consultation.
- developed scenarios for discussion at a workshop with leading researchers, reviewing each factor and the scale of impact over the next ten years.
- projected the most likely scenarios as the basis for a main prediction backed up through consultation with leading experts in each field.

Section 1

Executive Summary



Summary overview



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Transport is becoming more important for retail competitiveness. It affects both the supply and demand sides of retailing, and has significant potential for improvement.

Increasingly, accessibility, efficiency, flexibility and information will define good retail transport. At the same time, current management by mode, infrastructure and ownership will remain important for the foreseeable future.

Travel associated with retail is growing faster than for any other trip purpose. Car travel is also growing, and accounts for over 60% of shopping trips. There is a decline in walking to the shops but pedestrians still account for more than a quarter of shopping trips.

The gap between public understanding and transport policy aims has stalled change, making future transport unpredictable. This gap in understanding is closing, and the rate of transport change will accelerate.

Overall, retail travel in 2015 will look quite like it looks today, but new pricing mechanisms, technologies and lifestyle changes will be gaining momentum.

The transport economy is large and growing. It currently accounts for over 15% of household spending. Although large transport markets evolve slowly, the sector is set for major change.


The patterns set in the next ten years will define the future of retail transport for many decades.

In the new information age, better informed travellers will be more sophisticated consumers

- The developing integration between transport and electronic communication networks will be major drivers of retail transport change.
- Technology will help people to manage the increasingly complex choices available.
- Some travellers will start to rely on mobile communications with satellite navigation to help choose shopping locations.
- The 24-hour connected society will require more flexible transport, providing trips at more times of day to more places.

Transport modes are evolving with successful options being faster, more flexible, cleaner, and safer

- As part of the preparation for a transport future less dependent on oil, new and more expensive energy sources for transport will increase their market share. Mass markets will emerge for these new energy technologies and the rate of change will depend on the incentives offered by Government. Replacing vehicle fleets with new



Travel associated with retail is growing faster than for any other trip purpose. Car travel is also growing, and accounts for over 60% of shopping trips.

vehicles and infrastructure with new facilities will take many decades.

- Car travel will continue to be the dominant mode, but will be replaced progressively by even more flexible, automated and efficient modes.
- The costs of travel will rise through fuel costs and fares, and indirectly through growing congestion. Rising labour costs will be an equally important factor influencing public transport and freight costs.
- Growth in public transport markets will be greatest for high frequency and high speed modes, with major transport hubs being even more attractive retail locations.
- In advance of widespread emissions trading in transport, carbon offsetting will be adopted on a voluntary basis as part of corporate responsibility policies in more companies.
- Overall, it will become slightly more expensive to travel to the shops.

More customer-responsive passenger and freight transport will adapt to fast changing needs

- Retail marketing will progressively provide more transport information, discounts and benefits for customers, particularly for those affected by higher travel costs and transport difficulties.
- The majority of the British population will carry and use smartcards and other smart media. The companies administering these media will gain market share for small retail purchases, public transport and, in the longer term, road pricing.
- There will be increased resilience in supply chains through improved technology and real-time tracking of goods.

There is a shift towards an 'access' economy where lifestyles and experiences are more important influences on behaviour

- Growing participation in national voluntary road pricing will reflect an increasingly 'pay as you go' society.
- Public funding for transport will be more clearly linked to benefits resulting from improved accessibility.
- Retailers will become more involved in selling and managing access to transport services. Parking will cost more, but increasingly retailers will pay for customer parking. Large retailers will become big purchasers of public transport tickets to ensure better value travel for customers and staff.
- Site-specific travel plans will become core business at most shopping places, helping managers ensure that transport difficulties do not adversely affect competitiveness.

Summary overview

Competitive shopping places

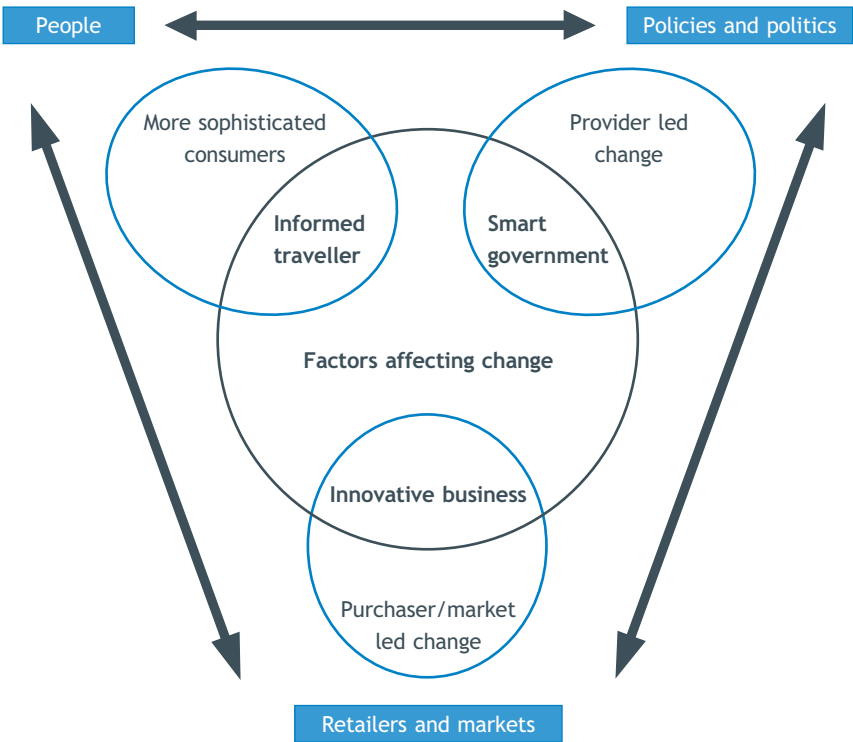
Competitive retail locations will be those with high quality accessibility, such as at multi-modal transport hubs, and locations with large local population catchments. These locations will be even more competitive in future than they are today.

Large urban areas and out-of-town centres will attract increasing retail trade, generally offering more attractive and flexible transport options than smaller centres can offer. Other retail locations may also be attractive, but the available options provided by local retail transport initiatives could have significant positive or negative impacts.

The indirect effects of wider economic, demographic and social changes on lifestyle, behaviour and attitudes will be greater than the direct effects from changes in the supply of roads, parking, buses, trains, cycleways and footpaths.

The transport changes anticipated by this review will be particularly critical for the future of secondary urban centres, freestanding towns, local centres and retail parks. Many of these locations will remain viable despite transport changes, but some will not. Development at these locations would benefit from a detailed local analysis of future transport risks.

Stakeholders in transport change



Section 2

Context



Summary

- Retail travel is growing faster than travel for any other trip purpose.
- The dominance of car travel continues to rise and currently accounts for over 60% of shopping trips.
- There is a continuing decline in walking to the shops, but walking still accounts for more than a quarter of shopping trips.
- The proportion of retail travel by public transport is relatively stable.
- Freight journeys for retail purposes have grown by over 15% in the last ten years.
- Transport provision is much more dependent on spending decisions by households and businesses than on public policy. However Government is becoming more proactive and could be increasingly influential in the future.

Tighter scheduling of freight deliveries and traffic congestion have increased both freight costs and the numbers of vehicles needed to service the needs of retailers.

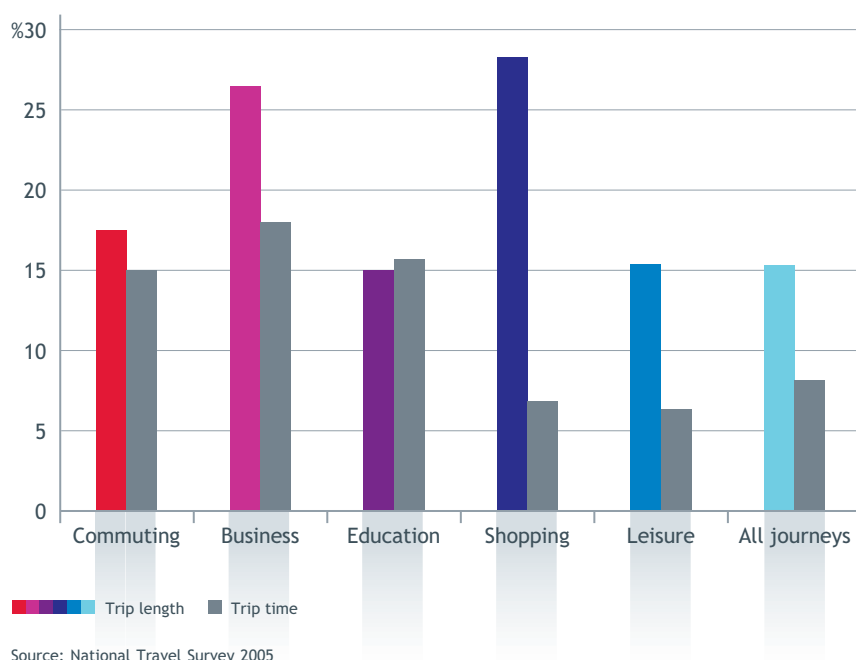
Travel to the shops is a large and fast changing transport market:

- On average, people make about 200 shopping trips per year.
- Over the last 30 years, average journey lengths have increased by nearly 50% for shopping purposes. The increase substantially exceeds travel lengths for other journey purposes.
- The proportion of trips made by car has been increasing. In 2005,

car drivers and passengers accounted for more than 60% of shopping trips.

- The percentage of walking trips to the shops has fallen by a third in the last ten years but walking still accounts for more than a quarter of all shopping trips.
- Bus travel accounts for only 9% of shopping trips.
- The largest increases in car shopping trips and trip length have been for women shoppers.

Change in average trip length and time between 1990 and 2004



Although 80% of households have access to a car, the dominance of the car for shopping trips is still growing. The proportionately large increases in trip lengths for shopping compared with other travel, can be accounted for by two main factors: people that previously walked to their local stores are increasingly driving longer distances; and shoppers can avoid the worst road congestion so increases in travel time allow larger distances to be travelled than for trips with more constraints on destination and time of day. Work or business trips can mean that a single household car is often not available for shopping. Therefore the increase multiple of car-owning households has a disproportionate effect on the growth of shopping car trips.

Transport markets and investment

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Transport markets and investment are largely dependent on household and business spending patterns:

- There is a strong and growing market for car travel: family expenditure on motoring has risen to 12% of household expenditure, and motoring costs per kilometre have been falling in real terms.
- Bus markets are declining in many areas: costs of public transport have been rising in real terms and household expenditure falling.
- There is strong growth in rail travel. However a large public subsidy is needed to support this.
- Household expenditure on transport is lowest in large urban areas and highest in rural areas.

- Over the last decade, retail freight volumes have grown by over 15%.
- Tighter scheduling of freight deliveries and traffic congestion have increased both freight costs and the numbers of vehicles needed to service the needs of retailers.

Government investment in transport is small compared with household and business expenditure, but Government also influences markets through its planning, taxation and regulatory roles. Current proposals envisage Government further increasing its influence on retail travel, as it works in partnership with the retail and transport sectors. Combined with wider effects taking place in the economy and society, retail transport markets are clearly changing. In this context past trends could be a poor guide to future trends.



Section 3

Transport Infrastructure and Transport Cost



Summary



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Impacts of infrastructure and cost changes

Cost

- Changing energy markets will create significant fluctuations in prices. These will increase awareness of travel costs and options, affecting travel behaviour in complex ways.
- The costs of travel will rise, and the increases will be greatest for rail.
- Driver wage inflation, fuel costs and requirements for out-of-hours deliveries will be the most important factors in driving up freight transport costs. These costs will rise faster than general inflation.

Paying for transport

- There will be increasing participation in national voluntary road pricing, but continued opposition to mandatory participation.
- The majority of the British population will carry and use smart media. The companies administering these media will gain market power for small retail purchases, public transport and, in the longer term, road pricing.
- Parking will cost more, but retailers will increasingly link parking costs with payment at tills.

Investment levels

- Growth in public transport use will be closely related to public

investment, which will only be prioritised in some local areas.

- Whilst short term changes in shopper travel behaviour from transport infrastructure will be relatively small, there will be many very important local impacts.
- As part of the preparation for a transport future less dependent on oil, new and more expensive energy sources for transport will see increased market share.

Retail property implications

- In general, shopper travel behaviour will be very much like today, but transport cost factors will increase steadily in importance.
- At a local level there will be some local big winners and losers resulting from infrastructure and cost changes, particularly in densely populated areas. Low value, low margin purchases will be most vulnerable to changes.
- Increases in travel costs will have the greatest impact on low income groups affecting the number and length of trips made to low price supermarkets.
- Planning for road pricing could be increasingly important for retailers in congested urban areas who are dependent on car access.

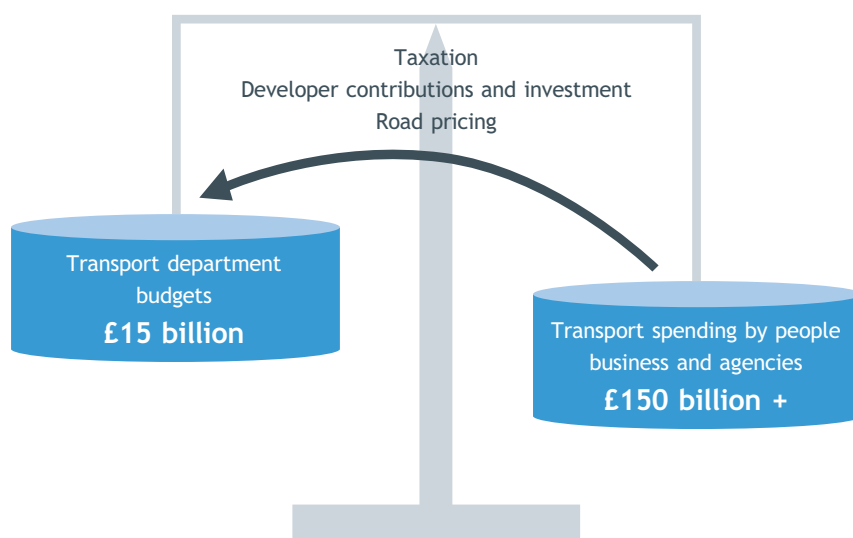
Transport investment affects retail competitiveness by changing the relative accessibility of locations. A new motorway junction or railway station can transform the prospects for retailers who benefit directly.

Private expenditure on transport and logistics exceeds public funding by a factor of more than ten, and transport markets will continue to grow faster than infrastructure supply. For most locations accessibility by car will get slightly worse as congestion grows.

The Olympics will result in large scale infrastructure investment in London, and regional development aims will underpin substantial investment in the north. Elsewhere renewals rather than new infrastructure will dominate investment programmes in roads and railways.

Overall, there will be some local impacts resulting from new roads, but most other roads will be much the same as at present, although more congested more of the time.

The gap between transport department policies and wider markets leads to unbalanced investment



Road pricing

Increasingly, Government spending programmes are seeking to capture more of the market value of transport expenditure to help fund the infrastructure and services⁽ⁱ⁾. Current plans envisage more road user charging to increase the capital and revenue funding available for all modes of transport. Local road pricing schemes in current transport plans are likely to be extremely difficult to implement quickly. The gap between travel demand growth and transport investment will widen; in the short term, journey times by car, bus and train will rise for most journeys.

However, the growing affordability gap in public services generally - and transport in particular - is likely to lead to greater acceptance by users⁽ⁱⁱ⁾ of a national voluntary road pricing scheme.

The rate of take-up of voluntary road pricing⁽ⁱⁱⁱ⁾ will be highly dependent on the potential savings for users. Transport is a significant net generator of taxation revenue, so there is scope for substantial tax savings to be offered by the UK Treasury. However initial savings are likely to be modest until the impacts of direct payment for road use on travel behaviour are better understood^(iv).

Road pricing revenue could potentially start to replace general taxation as the

main source of funding for construction, renewal and replacement of transport infrastructure. It could also affect investment needs in transport systems. Establishing a politically acceptable level of charges and investment, consistent with efficient transport, is complex and will take time^(v).

In any case, the Government would almost certainly limit the rate at which people can opt into road pricing. This would ensure that any major changes did not destabilise the economy, including the retail economy. The tax advantages for participants would need to be set to achieve a steady but slow increase in participation^(vi). Parallel to this slow rate of change would be a slow change in public opinion. By 2015, there could be significant change in the way that transport costs are viewed^(vii).

Shopping trips are more sensitive to price changes than other trip purposes^(viii). With any realistic road pricing scheme, charges will be lower at off peak times, encouraging more people to shop at these times. Overall, the impacts of road pricing on shopping in the next ten years will not be large, but planning for road pricing could be increasingly important for retailers in congested urban areas and for those dependent on car access.



A market price for privacy under road pricing?

An in-car 'black box' device uses global satellite positioning to identify where and when the car is travelling. The current Norwich Union scheme sends data to the company on the car's movements, via the mobile phone network. Lower insurance premiums are available for drivers who avoid 'high risk' periods.

The Government is considering a similar approach for road taxation. Drivers who use premium road space at peak periods could pay higher charges.

Users who want their movements to be confidential would have the option of using prepaid smartcards rather than transmitting their vehicle movements directly, via the new technology. However this would mean that a prepay tariff would need to be set up within the vehicle, increasing administrative costs which could lead to higher road charges.

Possible timeline to road pricing

- Pre 2006 - Technology trials and product development
- 2006 - Government announces national trials and starts procurement of support infrastructure
- Pay-as-you-go car insurance adopts GPS technology
- 2008 - Restricted testing of pay-as-you-go taxation of road use with volunteers
- 2010 - First large scale trials with open availability to general public
- 2012 - Transport taxation increasingly attractive for voluntary adopters of road pricing
- 2015 - Road pricing part of mainstream motoring but continuing strong opposition from a significant minority

Although the financial services industry is leading the implementation of road pricing, there is no indication as yet of more widespread adoption of road pricing by retailers. Nevertheless, over the next decade it is possible that large new markets might develop associated with 'black boxes' and smartcards. Road charging tariffs could also be packaged with telephone and other utility bills.

Fuel costs and energy markets

Increasing global GDP and a world population with ever-increasing expectations of wealth and improved lifestyle are major drivers of change. From the transport perspective, the growth in energy consumption and the relationship between this and economic growth, is of critical importance.

Based on current trends, the peak of cheap oil production will be reached soon. Traditional sources will be exhausted within a few decades^(ix). Oil prices will therefore increase to make new and more expensive oil sources viable. This will also make alternatives to oil competitive, including renewable energy sources.

Whilst energy markets re-adjust to these new sources and costs there will be large fluctuations in oil prices.

Replacing vehicle fleets, refuelling stations, maintenance facilities and other infrastructures with new vehicles and facilities that can take advantage of renewable energy sources will take many decades.



New power sources such as fuel cells will become common by 2015



Wider use of bio-diesel is planned

The rising demand for oil, particularly from Asia, increases the need to exploit new and more expensive resources, including renewable alternatives.



The future of oil

99% of transport is fuelled by oil. Steps to replace oil with renewable sources will have increasing importance for transport.

The rising demand for oil, particularly from Asia, increases the need to exploit new and more expensive resources, including renewable alternatives. The rising demand is created by 1.5 billion people in China and a billion people in India who are purchasing cars, installing air conditioning and central heating, and using the many electrical appliances available on the market, and this will have a large impact on energy consumption.

The relation between oil prices and economic growth is complex. From today's price levels for oil of around \$60/barrel, much higher prices would be needed before world economic growth fell. Until very elevated oil prices are achieved - probably well above \$80/barrel - world economic adjustment mechanisms will result in higher oil demand through the economic expansion that higher oil prices bring.

The economic attractiveness of other energy sources (many of which are sustainable) increases progressively as oil prices rise above \$60/barrel. For road transport these sources include: bio-diesel, compressed natural gas, liquid petroleum gas, methanol/ethanol, hydrogen/fuel cell and electricity.

Fuel costs and energy markets

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Although the markets may take time to adjust, over the next ten years preparation for the end of oil will become increasingly widespread, influencing the wider economy and particularly the transport sector.

In Britain, the cost of oil is a small proportion of the total price of fuel, so significant oil price changes have a limited effect on the overall price of fuel to travellers.

Past policy on fuel taxation^(x) also shows that during periods with oil price increases, political pressure results in reductions in the level of taxation to mitigate the impacts of oil price rises on consumers. The level of cost increase will therefore be limited by what the public will accept^(xi). Although taxation^(xii) of transport will continue to exceed expenditure on transport, taxation changes are likely to be used to stabilise the cost increases for losers from oil price instability and from road pricing.

Emissions trading has been extensively discussed at national and international

political levels, and could make faster progress if concern grows about climate change^(xiii).

It will take several years to agree publicly acceptable carbon rations so the impacts of trading schemes in the short term will be small^(xiv). Implementation of a trading scheme covering all modes could start within a decade. Legislation on carbon rationing and trading would be progressed through the European Parliament, extending the current planned scheme for the aviation sector to all modes^(xv). Setting transport quotas well below average current household transport usage would be unlikely to be publicly acceptable. Even with unambitious quotas, implementation of the scheme could change attitudes to transport, and reduce the number and length of shopping trips.

Associated with a new trading scheme would be parallel changes in policy, planning and transport administration. These could have impacts in advance of the trading scheme with public, private and social organisations seeking to redefine their roles.

In Britain, the cost of oil is a small proportion of the total price of fuel, so significant oil price changes have a limited effect on the overall price of fuel to travellers.

Even in the absence of emissions trading, retailers are already introducing schemes to mitigate the effects of their carbon footprints. Carbon offset options are offered on travel products by some retailers^(xvi). Carbon offsetting involves paying for carbon-reducing projects such as energy-efficient stoves in India or reforestation in Africa and South America. In the transport sector, the BP Oil Company is offsetting the carbon footprint of its freight operations and several airlines including British Airways and Virgin are offering voluntary schemes.

Emissions trading

Emissions trading in Europe involves a 'cap and trade' approach. The emissions 'cap' is the limit on the total amount of pollution that can be emitted from all regulated sources; the cap is set lower than historical emissions to cause reductions over a defined compliance period.

Allowances can be bought or sold in the open market. Sources of emissions can choose how to reduce emissions, including whether to buy additional allowances from other emissions sources. At the end of each compliance period, each source must own at least as many allowances as its emissions.



Paying for transport

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Existing stakeholders and funding structures will remain the dominant players for each mode, but new organisations will emerge to service emerging payment and pricing mechanisms.

In particular, providers of smartcards and other personal portable payment media will become major purchasers of public transport, and perhaps will also have a role in emerging road pricing technologies.

In the short term, separate smart cards may be used but it will soon become standard to incorporate electronic chips within mobile phones.

The largest smartcard scheme is currently the Oystercard in London, in which Transport for London is a major stakeholder. This may limit expansion of this brand across Britain and could leave room for a new brand or brands to emerge.

It is likely that competition between brands will emerge, so the rate of take up of smartcard ticketing could be rapid. By 2015 almost all public

transport ticketing is likely to use smartcard technology^(xvii).

With the majority of the British population carrying stored value smart media in some form, the cards are likely to become popular mechanisms for making small purchases in shops. Retailer involvement will have a notable influence on the way these new markets and payment mechanisms develop.

Purchasing power

Smartcards will be replaced with smart media where chips are embedded within mobile phones and other personal items. Users will store sufficient funding in these media to pay for small retail purchases, travel, and parking.





Transport costs as a proportion of total retail supply chain costs are a small but growing component^(xviii). The real costs of freight transport will continue to increase faster than inflation. The most important factors driving up freight transport costs will include:

- driver wage inflation
- fuel costs
- out-of-hours deliveries - particularly in urban areas
- increasingly demanding delivery schedules of retailers.

Transport costs will have a greater impact on the competitiveness of shopping locations. This will widen the gap in competitiveness between locations with high and low freight costs.

Edge-of-town locations near regional distribution centres in densely populated areas have the lowest transport costs so will continue to attract 'value' retailers.

Transport costs will have a greater impact on the competitiveness of shopping locations this will widen the gap in competitiveness between locations with high and low freight costs.

Other cost impacts

Rail and parking costs will increase more sharply than other transport costs^(xix):

- Rail is heavily dependent on public subsidy and is facing increasing demand from users. Higher fares are likely to be the most acceptable way to manage budgets, particularly on congested routes.
- As car ownership grows, parking supply will need to be managed through wider application of charges. In towns and cities, free parking will become increasingly rare.
- The higher costs for parking will grow the market for more urban multi-storey and underground car park areas.
- Increasingly, retailers will use voucher systems to refund parking costs at checkouts, ensuring that customers can benefit from free parking.

Cost changes will have the greatest impact on lower income households and their shopping patterns^(xx).

Free concessionary fares will lead to more expenditure from older shoppers in shopping places accessible by public transport, and perhaps less spending in local shops^(xxi).

In the short term, overcapacity in the motor industry will increase competition and will lead to further reductions in car prices. To raise margins, car manufacturers will therefore market new electric and hybrid cars more heavily to encourage households to replace their cars with new and more efficient models. Initially the take up for these will be greatest among wealthier households able to afford the higher capital costs associated with these cars as part of a lifestyle-based choice.

Section 4

Managing Passenger and Freight Transport



Summary

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Impacts of changing management and administration

- There is a gap between public understanding of transport policy and current policy and practice, so change in transport will continue to be slow and stalled by lack of consensus.
- Parking policy, management, and enforcement will be more rigorous in most urban areas. Increasingly, retailers will be required to implement parking policies for staff and customers including business travel plans and more driver information.
- Site-specific travel plans will become widespread for retailers, helping them to address issues relating to staff recruitment and travel costs in particular.
- Shopping behaviour will be partly influenced by Government travel awareness campaigns, but much more so by retailers seeking to gain market share by branding 'eco/green shopping locations'.

- Lower speed limits across the road network and better enforcement will increase some journey times for shoppers.
- Bus markets will evolve significantly, with cheaper, faster trips on core networks and new modes for lower-demand routes.
- Future freight and supply chain trends will largely be a continuation of current trends, but with increased resilience through improved technology and real time tracking of goods.

Retail property implications

- In the face of security and energy shocks, shopping places reliant on only one mode of transport will be vulnerable.
- Successful management of the transport footprints of retail property for passengers and freight will be more important in determining location competitiveness.



New incentives will be introduced to grow bus markets

Currently, there is a gap between public understanding of transport policy, and current policy and practice. Whilst this continues, the pressures for change in the roles, responsibilities, and liabilities of transport operators, local authorities, regulators and national government are complex and unpredictable. In these circumstances, change is likely to be slow or stalled by lack of consensus.

The continued decline in bus services in many parts of the country (see Appendix A) is likely to result in changes to regulation for bus travel. New measures are likely to include stronger incentives for operators to improve performance and quality - including ticketing. These reforms should see poorer performing

networks and operators achieving standards more consistent with the best performing networks^(xxii).

Automation to improve car driver compliance with speed limits is likely to become more common, but will not be prescribed by legislation for at least ten years. The main controls will continue to be wider deployment of speed cameras and better enforcement of licensing and insurance for all drivers. Lower speed limits will be extended to more of the road network, increasing journey times.

Taxi licensing will change. As a result of this the availability of taxis will improve, particularly in the evenings, and higher quality standards will be achieved.

The continued decline in bus services in many parts of the country is likely to result in changes to regulation for bus travel.

Public awareness



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If public concern about climate change were to grow, there could be fairly rapid changes in some transport markets. Car use might be perceived as undesirable and shopping trips by public transport might become relatively more attractive, particularly among younger groups.

The scale of such change would be relatively small since public opinion and behaviour change would be limited by established constraints in infrastructure, policies and legislation.

The ability to undertake enjoyable shopping and leisure trips will continue to increase in importance. Even within existing transport system capacity there could be changes in the type of destinations best able to compete for this increased spend. More local shopping and the development of destinations in city centres with good public transport would be the main beneficiaries of attitude change.

Culture change will be partly influenced by Government campaigns, but is likely to be much more influenced by retailers seeking to gain market share for 'eco/green shopping locations'. Public support for efficient and clean transport solutions will grow. The importance of marketing efficient transport to shopping places will therefore continue to grow.

Managing customer and staff travel

Retailers can make transport improvements and save money. Business travel plans help to manage these improvements working with public agency funders and transport providers.

For example the B&Q corporate travel plan reviews the personal travel requirements of all staff and recommends suitable journey solutions for business travel and home to work trips.

At the Glasgow Fort shopping centre the management team has recruited staff locally. Nearly half the workforce lives within easy walking distance of the centre.



There is currently a high level of activity in the development of business travel plans in some sectors^(xxiii). Business travel plans help retailers to manage customer and staff travel. Financial support with plan preparation, and in some cases implementation, is available from Government.

Travel plans are becoming the norm for many organisations such as health and leisure providers^(xxiv). Increasingly, shopping places will follow similar approaches to continue to be able to compete in attracting staff^(xxv).

Travel benefits will be used to widen the catchments for attracting staff, particularly from low mobility sectors^(xxvi). Also, retail travel plans can be used to manage parking supply for staff and shoppers^(xxvii), all of whom will be faced with increasingly limited car parking facilities.

Travel plans will become part of the core business at most shopping places to help managers ensure that transport difficulties do not adversely affect competitiveness. Widespread delivery of travel plans will also change the accessibility of shopping places significantly, with new services and facilities being purchased or negotiated with transport and parking providers.

Impacts of retail business travel plans

- Retailers could become large purchasers of public transport tickets and parking costs, bundling these with other shopper purchases.
- Public transport fares could become as common a staff benefit as company cars.
- Car parking at the workplace will become more expensive for staff.
- Retailers will discourage staff from using car park spaces which could potentially be used by customers.

Freight and logistics

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Future of Retail Transport: Access, Information and Flexibility

The major changes in the management of freight and logistics will be:

- where goods travel through distribution hubs managed as part of a hierarchy of local, regional, national and international freight movements
- where goods travel through distribution hubs managed as part of a hierarchy of local, regional, national and international freight movements
- continuing reductions of time from factory to store including more direct routing
- better risk management with more resilient and agile supply chains^(xxviii) will be better able to cope with congested roads, delivery delays and other supply chain problems

- supply chain event management with real time tracking and self regulating systems
- freight quality partnerships in local town centres defining more clearly what logistics operators expect of road authorities and vice versa.

Associated with these changes will be some growth in HGV use but very substantial growth in van traffic^(xxix). Competition within the industry is already intensive so future trends will largely be a continuation of current patterns.

Better risk management with more resilient and agile supply chains will be better able to cope with congested roads, delivery delays and other supply chain problems.

Section 5

Future Modes



Summary

Impacts of new modes

- Car travel will continue to dominate shopping trips, but new modes will emerge which can compete with the flexibility of private cars. New flexible services will allow shoppers to choose for each trip whether to travel privately or share a vehicle, to drive or be driven, and where to pick up and drop off vehicles.
- There will be better communication between transport network providers, operators and users. This will give travellers greater confidence to use public transport and travel to new destinations.

- Fast modes such as air and high speed rail will continue to grow, making long distance specialist shopping trips more competitive.
- New technology will allow all modes including freight vehicles to become more efficient and more automated.

Retail property implications

- Increasingly, retail centres will become hubs for demand - responsive transport increasing the centres' value as transport nodes.
- Larger urban and out-of-town centres will be more successful than smaller retail sites and will reinforce their position as transport hubs.



Driverless personal transport can be bus or rail based



G-Wiz city cars are already becoming popular



Futuristic stacking city cars could be parked alongside shopping trolleys

Car travel has provided the most flexible transport solution for many people but, as car ownership rises, new modes are emerging that potentially offer even greater flexibility. On a journey-by-journey basis tomorrow's travellers are likely to have the options to drive or be driven, to travel privately or share a vehicle, and to pick up and drop off vehicles at convenient places.

These new flexible and demand-responsive modes will provide premium services and will evolve from today's car clubs^(xxx), shuttles, and taxis.

Although starting from a low level of use at present, flexible public transport is growing very rapidly for many reasons:

- Where car parking at the residence end is a problem, then ownership can be more of a problem than a benefit. Being able to access a car of the right style and quality for each journey means that a small city car^(xxxi) or large people carrier can be selected for each journey as required.
- Hotel shuttles, airport transfer, shopper services and shared taxis are currently fast-growing markets providing faster, higher quality, and in some cases cheaper journeys than many fixed public transport services.

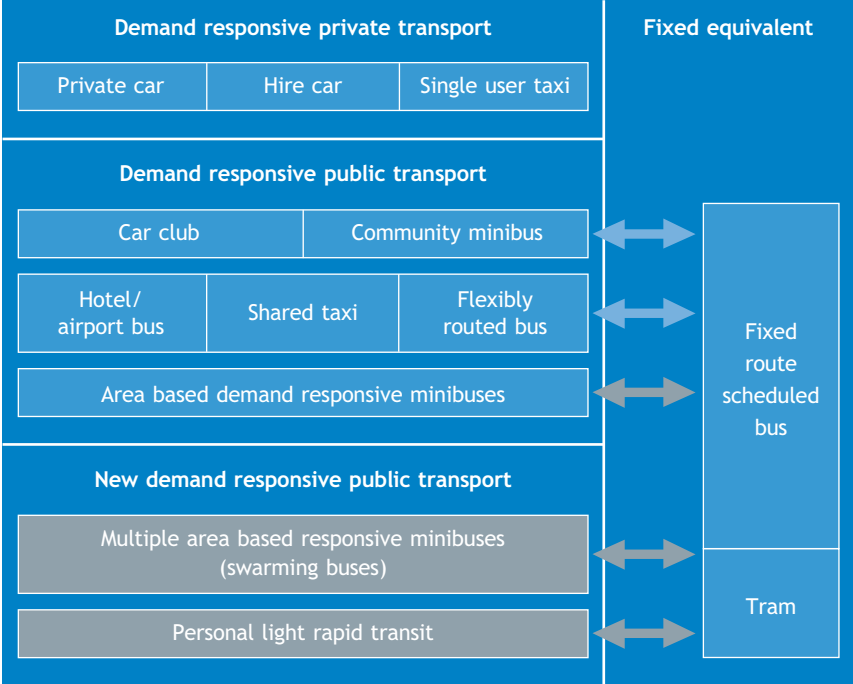
- As these modes mature, it is likely that more transport companies will offer these flexible services to shopping places, leading to greater competition. Further expansion of these flexible area-based services may lead to market development of 'swarming minibuses' (which may appear, for example, in a town with very little parking). These minibuses pick up and drop off passengers on demand within a defined area.
- A further development of this approach for the longer term is driverless personal rapid transit, which would become economic if driver wages rose further relative to infrastructure costs. Rail-based systems have been proposed in the UK but bus-based systems are also in use elsewhere^(xxxi).
- Fixed bus travel will be less well equipped to compete in increasingly competitive and complex markets. The role of fixed buses will be to serve a limited number of high demand routes and to link with flexible modes to provide wider network coverage.

These changes to new modes will make a relatively small impact over the next ten years but will become increasingly dominant during the 21st century.

New modes

Tomorrow’s travellers are likely to have the options to drive or be driven, to travel privately or share a vehicle, and to pick up and drop off vehicles at convenient places.

Increasing diversity and flexibility of transport modes



Note - Although the modes shown in light grey have not yet had successful applications in the UK, potential solutions have been designed and it is likely that within the next decade examples will start to emerge.

Even with significant development of these new modes, private cars will remain the dominant mode of transport by far, accounting for over 60% of shopping trips. The main changes will be that cars will become:

- more automated - with trials of automatic speed restriction technologies in limited zones
- more efficient - with a new generation of cars being powered from renewable sources.

In major conurbations, bus and light rapid transport systems will provide higher quality frequent services on core corridors. Elsewhere, the reliance will be increasingly on flexible transport. This could increase public transport mode share for shopping to nearer 15% compared with the current figure of around 10%.



Dominant and expanding modes

Future modes

| Future modes | Trends and changes |
|---------------------------------------|--|
| Car | <ul style="list-style-type: none"> Private cars will continue to dominate retail travel. Shared ownership vehicles and car clubs will become increasingly common. Community car and minibus schemes will replace many bus services in rural areas. |
| Minibuses | <ul style="list-style-type: none"> The current growth will continue, with particularly strong increases in demand responsive services outside major conurbations. 'Swarming minibuses' will be piloted in a town with a population of about 50,000. |
| Buses, transit systems and light rail | <ul style="list-style-type: none"> There will be lots of new services on busier bus routes. These will attract increased public transport use. A demonstration personal rapid transit scheme could be implemented as a prestigious mode for major new shopping centres or leisure attractions - for example to link a new centre to a transport hub such as a rail station. Electronic booking systems and vehicle despatch and management will assist greater interaction between managers and users of transport. |
| Motorcycles and scooters | <ul style="list-style-type: none"> Use of motor cycles and motor scooters will rise steadily, building on from the rapid expansion in London as a result of exemption from congestion charging. Wider use of powered two wheelers will also increasing average road safety levels by these modes. |
| Walking and cycling | <ul style="list-style-type: none"> The decline in walking will continue until 2010 but after that there will be modest growth in walking as a result of more pleasant town centres. Cycling will continue to decline for shopping trips. |
| Vans | <ul style="list-style-type: none"> Urban freight consolidation centres will become more common in some towns and cities to keep large freight vehicles out of urban centres and ship goods to town centre shops using smaller vans. Smaller vehicles will be used between regional distribution centres and many retailers to meet increasingly demanding delivery schedules. |
| Goods vehicles | <ul style="list-style-type: none"> Increasing automation of driver functions will be made but otherwise the goods vehicle in 2015 will be very similar to current vehicles. |

Section 6

The Informed Traveller



Summary

Impacts of better informed travellers

- Most travellers will carry mobile communication systems that will have capabilities to assist with route choice through road and public transport systems. As more people rely on these, there will be very significant changes in travel behaviour as people want more flexibility.
- New and better information provision will be increasingly important in helping shoppers choose a shopping destination. Navigation systems bundled with mobile devices will be used both for marketing and to develop shopper brand loyalty.

- Bus and rail will become much more attractive as travellers are able to do more things whilst travelling, remaining informed and connected using new information systems.
- There will be increased resilience in supply chains through improved technology and real time tracking of goods.

Retail property implications

- Centres with good access using a variety of modes will become more competitive. These will be located on major transport routes and in urban centres.



PDA's with real time updates will make public transport more attractive

Perhaps the greatest impacts on transport in the coming decade will come from better informed travellers becoming more sophisticated consumers. The gap between public understanding of transport and transport policy has defined many of the most pervasive barriers. Closing this gap could lead to major changes in behaviour.

The last ten years have seen ownership and reliance on mobile phones grow from belonging to a minority of the population to attaining penetration of the mass market. The next ten years will consolidate the behavioural and market influences of these new technologies. Increasingly, travellers have the option to be permanently linked to information systems, informing and guiding them through their journey.

Information technologies are therefore transforming the scope for new transport solutions, changing both transport supply and demand.

New information systems, such as Personal Digital Assistants (PDAs) and satellite navigation systems are increasingly important retail products in their own right. However their impact on retail markets could be greater through their use rather than through their purchase. Information will change the customer-provider relationship in transport, creating a new 'informed traveller' who will behave very differently from today.

Today's high specification driver information systems highlight congestion problems and suggest alternative routes. Future systems may also suggest alternative destinations or times of day for planned trips. Users will be able to allow systems to log their regular travel, so that they can be informed of relevant problems such as cancelled trains, road accidents or weather problems in time to influence travel choices.

The travel behaviour of shoppers will be increasingly dependent on recommendations from these information and navigation systems^(xxxiii).

Over the next decade, the combination of traveller information for shopping trips, and retail marketing of products will see growth.

- New car satellite navigation systems currently show filling stations and a range of destination types including accommodation providers and shopping places. The software bundled with these systems will be increasingly important in the choice of shopping location.
- PDAs with GPS and public transport timetable information mean that public transport will become a more practical option for shopping trips to unfamiliar centres, and should become an attractive option for trips where parking availability is poor or parking costs are high.

Information and marketing

Users will be able to allow systems to log their regular travel, so that they can be informed of relevant problems such as cancelled trains, road accidents or weather.

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- Dynamic information is already alerting travellers about disruption in transport systems. Business structures are now in place to manage and distribute this information. These systems are likely to develop rapidly towards mass market applications.
- Increasingly, new cars will come equipped with satellite navigation. The bundled software with network information will link selected transport and retail brands. Sales of dynamic driver information systems will also start to increase and there will be a mass market in these that will gradually supersede the market for static information. Dynamic systems will not only include increasingly accurate information about road conditions and congestion, but travellers will also be able to subscribe to information services such as special offers from retailers.
- 3G and wi-fi communications are allowing travellers to stay in contact whilst on the move, allowing easy access to online searches for the next shopping destination. With widespread geographic coverage of these networks in urban areas, travellers will increasingly use their PDAs to search for the best priced goods whilst on the move.
- Drivers who are informed of the real costs of each car journey using increasingly automated information systems may behave very differently from today's car users. Surveys of shoppers show that fuel and other motoring costs are consistently underestimated by car users^(xxxiv). The costs of filling the fuel tank and of vehicle maintenance are not included in day-to-day travel decisions.

Driver information will become increasingly sophisticated

Existing dynamic driver information systems continuously update network information based on prevailing congestion, but are more costly than static systems which assume freeflow network speeds.

Future information systems will have more functions. They will help shoppers to identify suitable shopping places, using searches of business databases (e.g. Yellow Pages) and marketing information.



Section 7

People, Lifestyles and Retail Markets



Summary

Impacts of retail market and lifestyle change on transport

Changing retail markets affect transport

- Relationships between transport and retail markets will become stronger with retailers becoming more involved in selling access to transport services.
- There will be greater personalisation of products, growth in business size and more sophisticated logistics.

Technological and lifestyle change

- Personal travel experiences will become more important in the shopping choices of individuals.
- There will be significant and complex impacts on transport as people embrace new e-lifestyles and adopt new technologies.
- The changes will be greatest in the densely populated and fastest growing parts of the country, particularly the south east.

Planning and regulation

- Competition within markets will be the primary driver of change, but planning and regulation will have an increasingly greater influence on retail transport investment.
- The role of planning is evolving, and the influence of planning on transport aspects of retail development applications will continue to become more unpredictable.
- Bus and rail will become much more attractive as travellers are able to do more things whilst travelling, remaining informed and connected using new information systems.
- There will be increased resilience in supply chains through improved technology and real time tracking of goods.

Retail property implications

- Centres with good access using a variety of modes will become more competitive. These will be located on major transport routes and in urban centres.



There are increasing links between transport and retail markets

The need for competitiveness is the primary driver of change in retail markets. Current trends involve:

- fewer but larger firms leading to economies of scale^(xxxv): between 1995 and 2005 the number of retail organisations fell by 20% but the number of firms with over 500 employees rose by 10%.
- new roles for shops: increasingly, sophisticated management and logistics systems are extending from factory to home.
- greater personalisation in customer business relationships including transport products.
- wider, deeper retail ranges including more links between retail and transport markets (see *Future Business Models* part of the *Future of Retail Property* series, BCSC).

Transport has influence over both retail business costs (location) and sales because of its influence on access for customers. The savings on transport costs for retail businesses from out-of-

town development will see an increased need to be balanced against the higher transport costs for customers.

Road congestion will not increase substantially in major cities and most rural areas, but edges of towns and cities will continue to experience substantially increased congestion. This congestion will reduce the attractiveness of these locations, particularly for low price retailers.

E-retailing is providing new shop windows allowing people to travel and shop differently^(xxxvi). The greater information and flexibility that these new opportunities offer customers will lead to more sharply focused shopping and leisure trips, but these are also likely to be longer trips in many cases.

Globalisation is also resulting in significant increases in international sourcing by retailers, increasing demand for inter- and intra-continental transport. This will lead to increased delays at some entry infrastructures (port, air-freight, etc), requiring some re-adjustment of scheduling within supply chains.

Retail markets and transport change

Retail markets and transport change

| Retail market change | Transport changes and new transport needs |
|---|---|
| Fewer but bigger firms | <ul style="list-style-type: none"> • Closure of small local retailers will lead to additional travel to larger retail centres. • Retailers will expand their role in transport markets, influencing fuel sales and smart media that can be topped up for public transport and parking. Bus companies and to a lesser extent rail companies will sell most of their tickets through cash machines, internet and retail stores, and supermarket forecourts will account for the majority of fuel sales. • Multi-positioning of firms and branding of more products will lead to more widespread mergers and partnerships between transport companies and retail companies^(xxxvii). Examples include 'Tesco bus', 'BMW clothing'. • Information and marketing of retail and transport experiences will become closely aligned^(xxxviii). |
| Sophisticated management and logistics systems | <ul style="list-style-type: none"> • A network of local collection and distribution points (CDP) have been envisaged for some time. A major national chain of stores/offices/service points will pilot a CDP network locally helping to show how a national network can be rolled out^(xxxix). • Partly as a result of the economies achieved in home/local delivery, including savings in reverse logistics, there will be a rapid increase in the delivery of goods with at least a doubling of the home/local delivery market. • To service the growing needs of all customers there will be more specialist logistics services. • Growth in e-retailing will increase the size of retail markets. The travel demands of both shoppers and goods will also grow^(xl). |
| More links between transport and retail markets | <ul style="list-style-type: none"> • Some transport products are bundled with other retail products. These include parking vouchers at the tills and discounted fuel, car hire, and rail fares. The type and range of bundled transport products will expand significantly to include discount car insurance, bus fares and vouchers for vehicle servicing. This will reduce shopping transport costs for some people. • Associated with the product packaging will be greater personalisation in customer business relationships. Brand loyalty will lead to growing sales of transport products through retail chains, particularly for younger people. • The rapid growth of retailing at transport nodes will accelerate, as transport nodes become relatively more competitive locations in increasingly congested networks. New transport nodes, such as Park and Ride schemes for example will include retail facilities. |

People's travel horizons and expectations are growing. This will lead to more specialised shopping trips, greater demands for improved transport experiences, increased variety-seeking in shopping trips, and greater differences between the travel and shopping behaviour of different people.

Large urban areas and out-of-town centres will attract increasing retail trade, offering more attractive transport than smaller centres.

Larger supermarkets will continue to grow on the edge of towns and cities in the absence of suitable affordable land in urban centres. Accessibility will be maintained in the face of growing congestion through longer opening hours, allowing more people to shop off-peak.

Growth in traffic congestion will be greatest in smaller towns. They will become less pleasant and less attractive places to shop and will lose market share to larger centres. This will increase the demand for shopping at large shopping places where continuing investment will create more attractive and competitive places to shop. The increase in travel distances people make to the larger centres will reinforce these trends further.

The increasingly ageing population will include more non-drivers, which may help to support local shopping. These people would need to rely on public and community transport to larger centres (*Consumers over 55: Silver Shoppers Provide a Golden Opportunity*, part of *The Future of Retail Property* series, BCSC).

Growth in traffic congestion will be greatest in smaller towns. They will become less pleasant and less attractive places to shop and will lose market share to larger centres.

People, places and lifestyles

Impacts of people, places and lifestyles on transport

| Changes in people and places | Impacts on transport |
|-------------------------------|---|
| Demographic change | <ul style="list-style-type: none">• 10% population growth in the South East by 2016 will lead to increasingly congested transport systems.• There will be increased mobility generally, and increased structural and conscious car dependence for shopping trips for over half the population. Car-accessible shopping locations will continue to win increased market share.• More smaller and in particular one-person households will widen the existing gap between car ownership in central urban locations and other areas^(xli).• The ageing population will have a higher reliance on public and community transport^(xlii).• Ethnicity will become increasingly complex with mixed cultures leading to new transport cultures and expectations in some areas. For example, some groups prefer taxis while others prefer buses or trains. |
| Changes in shopping behaviour | <ul style="list-style-type: none">• There will be a steady increase in multi-purpose trips increasing the preference and need for car travel^(xliii).• There will be greater willingness to spend longer travelling to shops^(xliv).• Growth in healthy travel choices as a result of concerns about obesity will drive growth in some local food shopping markets^(xlv). |
| Attitude and behaviour change | <ul style="list-style-type: none">• More information and greater awareness of shopping options will increase trip lengths and travel horizons steadily. This will mean that minor shopping places will lose out to larger centres^(xlii).• Geographical communities will continue to be replaced with new communities defined according to interests and lifestyles^(xlvii).• Frequent changes of job will require more flexible transport systems^(xlviii) and will result in travel patterns that are less stable.• Increasing differentiation in travel and shopping behaviour between different groups such as 'car addicts' 'reluctant motorists' and 'die-hard environmentalists'. |

The economic gap between the south east of England and other parts of Britain will grow^(xlix). This will result in more intensive land use and travel in the south, and increasingly stringent planning requirements.

In the south east, expectations for transport systems will change, with greater acceptance of road congestion and higher requirements from public transport.

The last ten years have been dominated by the rapid changes in technology with widespread mass adoption of computers, mobile phones and many other associated technologies. The factors⁽ⁱ⁾ affecting the future rate of change are numerous, uncertain and complex. However the overall rate of adoption of technology will increase and impact on retail transport in new ways⁽ⁱⁱ⁾.

Direct impacts of technology on transport are discussed in Sections 3 and 6. Indirect impacts from people, lifestyles and retail markets⁽ⁱⁱⁱ⁾ will be:

- technology increasingly balancing economic growth with social and environmental goals
- improved levels of safety
- wider gaps between haves and have-nots⁽ⁱⁱⁱ⁾
- increased waste and as a result growth in waste management and recycling businesses
- increasing standardisation of technologies such as operating systems of computers/information systems; but also an increasing suspicion that standard technologies could undermine competition in technology markets
- new energy technologies with associated energy shocks in existing markets
- increased security concerns, including some violent reactions from losers in the digital age, resulting in growth of 'secure environments'.

The last ten years have been dominated by the rapid changes in technology with widespread mass adoption of computers, mobile phones and many other associated technologies.

Planning and regulation

There has been a steady growth in regulations^(liv) in recent years. Consumers are expecting higher standards of protection, and public opinion appears to be supporting further increases in regulations^(lv). If concerns about the environment, security and well being grow sharply, the future might be much more dominated by regulatory controls.

Planning and regulation are shaping future transport:

- Transport requirements for new development are influencing planning decisions to a greater extent^(lvi).
- Planning is becoming more effective in reducing the level of induced longer trips, particularly by car^(lvii).
- One possibility is that the planning system might become more proactive, working with markets to achieve planned development consistent with a political rather than market view of the future. Government policy is already seeking to secure this more proactive and managed approach, but progress is slow^(lviii).
- Increased requirements for transport infrastructure as part of retail development will continue to put greater pressure on larger centres both in town and out of town.

Overall the influence of planning on transport aspects of retail development applications will continue to become more unpredictable^(lix).

Despite these possible increases in regulation, the primary influences over future provision will continue to be competition and market forces. For example, in Scotland - where the population mainly lives in large cities, small towns and rural areas - new

retail development has mainly been out of town (*In Town or Out of Town?* part of the *Future of Retail Property* series, BCSC). Such development can help to intercept trips to cities from large rural hinterlands reducing trip lengths^(lx).

More discerning shoppers will drive future change even more than today. The overall impact of planning on shopping travel patterns will not be large, but there may still be some significant local impacts related to individual developments.

Transport is becoming an increasing barrier when planning retail development

Although slightly different systems apply in different parts of the UK, the approach is generally similar. Planning has three main tiers: national, regional and local and there have been frequent changes to make the system more efficient and effective.

Planning seeks to harmonise transport proposals between each planning level and with land use plans. Although harmonisation remains elusive, progress has been made towards greater consistency and this increases the influence of planning over future transport.

The local transport plans and regional transport strategies currently being prepared in England are intended to further improve co-ordination between land use and transport plans by linking with local development frameworks, regional economic strategies, and regional spatial strategies.

Section 8

How Much Change and How Fast?



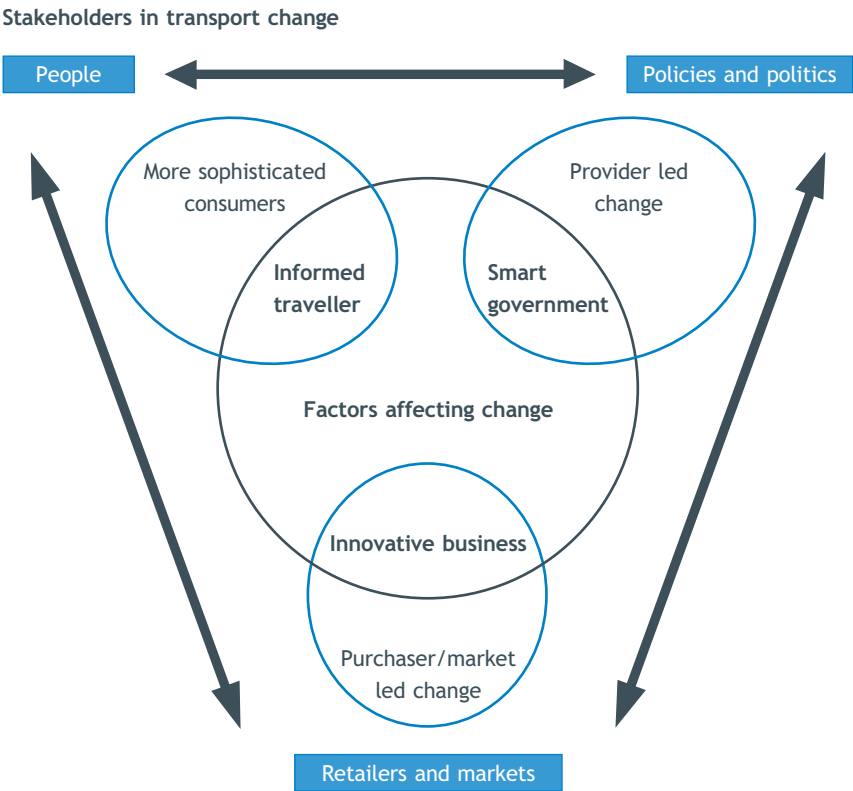
Summary



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BCSC: Future of Retail Property
Future of Retail Transport: Access, Information and Flexibility

- The transport industry has been slow to change but the role of transport in affecting competitiveness is becoming more important.
- The major impacts on retail travel are likely to be driven by retail markets and increasingly well informed travellers.
- Faster and more substantial change is increasingly being achieved by linking transport initiatives with market and lifestyle changes.
- Information, management and cost factors are likely to have the greatest impact on retail property.



Transport, communications and retail change are inextricably linked and are evolving in complex ways. The transport industry has been slow to change because of the following factors:

- Infrastructure provision, particularly road, rail and tram networks, take a long time to plan and build.
- The industry is heavily regulated, so new technologies and practices face many barriers.
- There is caution within Government and markets about implementing policy and practice changes capable of destabilising the wider economy. Transport accounts for about 15% of household expenditure^(lx), and generates substantial taxation revenue.
- There is a low level of confidence amongst transport professionals about the ability of the sector to deliver substantial policy changes^(lxii).

Yet as competitive pressures grow within the economy generally - and the retail economy specifically - the role of transport in affecting competitiveness is becoming more important^(lxiii). Much faster and more substantial change in transport is likely to be achieved by linking transport planning with the wider economy and society^(lxiv).

Appendix D discusses the scale of change that might derive from action by businesses, Government and informed

travellers. Across Britain, it is unlikely that short term change will be led by Government as it has been in London. Achieving political structures capable of managing such changes would take many years. The major impacts on retail travel in the next ten years are much more likely to be driven by retail markets and increasingly well informed travellers.

Information, management and cost factors emerge as the transport levers likely to have the greatest impact over the future of retail property. It should be emphasised that these are not necessarily the most important factors in absolute terms but are the most important predicted changes.

Some factors, such as increasing restrictions on freight delivery times, will impact more on transport than on the competitiveness of retail locations. Other factors such as supply chain event management will be relatively important for retailers.

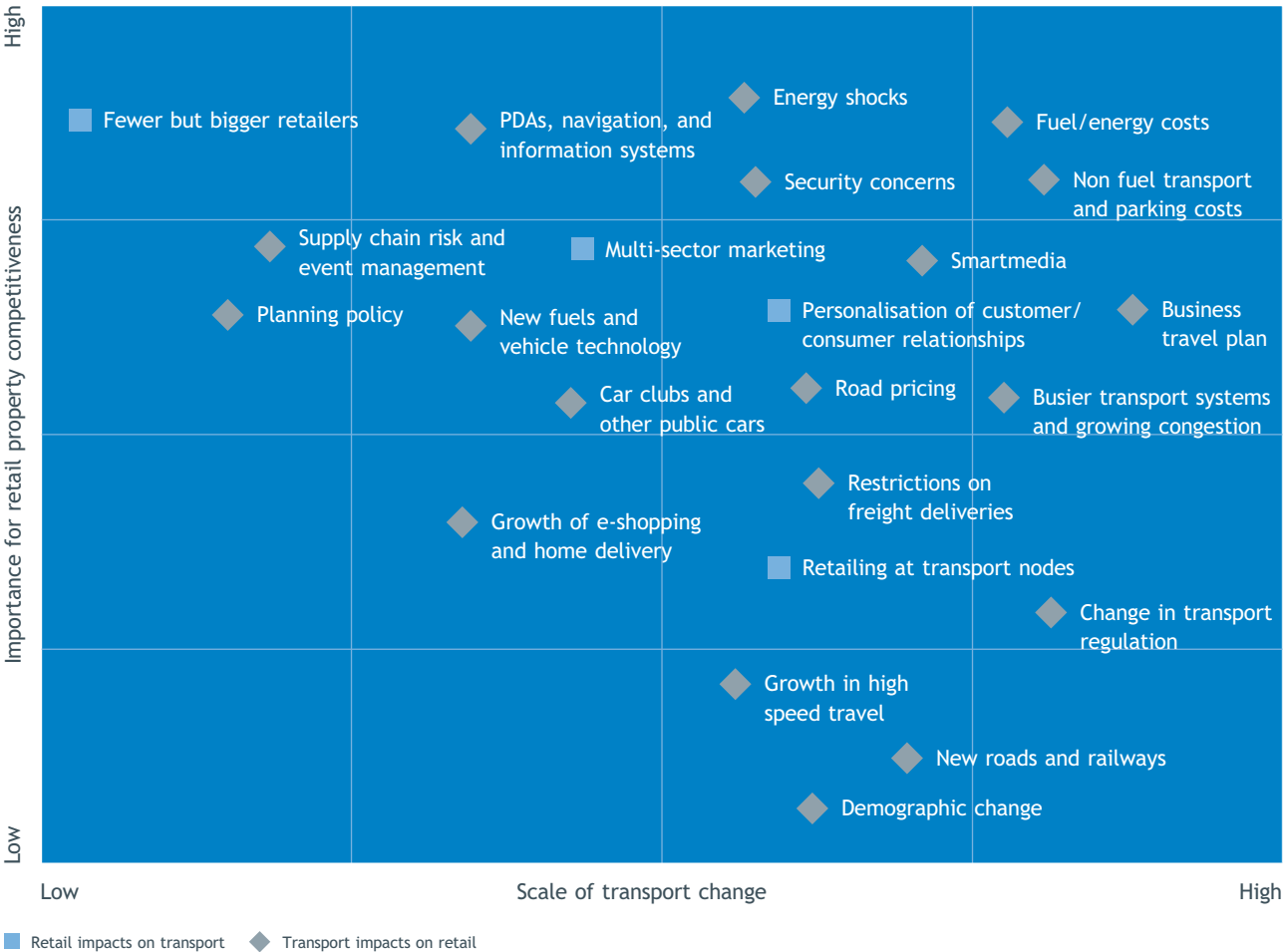
Fast-developing information technology will become an increasingly important battleground, influencing people's travel patterns with a direct impact on retail competitiveness.

Where cost and information factors are combined, such as linked tariffs^(lxv) for travel costs, navigation information and telephone on PDAs and mobile phones (e.g. parking, road charges, telephone calls, retail loyalty discounts, transport fares), then the impacts are likely to be particularly significant.

Information, management and cost factors emerge as the transport levers likely to have the greatest impact over the future of retail property.

Impact of change

The scale of change and impacts on retail property



These impacts are averages. A particular site may suffer very badly if there is a localised congestion issue resulting from poor traffic management. Retail business travel plans will have little or no impact unless they genuinely offer more attractive travel choices.

Section 9

Overview of Impacts on Retail Property



Summary

- Increasingly, good transport will be defined in terms of accessibility, efficiency, flexibility and information although current definitions by mode, infrastructure and ownership will remain important.
- Successful retail property will be associated with choice of mode, managed support for customer travel, pleasant transport environments, and good parking.

This overview of transport change has identified five main themes that define the relationship between future transport and the future of retail property. Retail travel in 2015 will look quite like retail travel today, but the emerging pricing, technologies and lifestyles will be gaining momentum.

The main transport changes

| |
|--|
| Transport infrastructure and transport cost: There is a shift towards an ‘access’ economy with ownership becoming less important for some people and organisations |
| <ul style="list-style-type: none">Parking will cost more, but retailers will increasingly link parking costs with payment at tills.‘Demand management’ by government to keep traffic moving will give way to accessibility planning to secure social, economic and environmental goals such as better access.It will become slightly more expensive to drive and significantly more expensive to take the train. |
| Managing passenger and freight transport: More customer-responsive and better regulated |
| <ul style="list-style-type: none">The effects of management and pricing changes will be substantial and will include business travel plans, driver information, road pricing and network management.Bus markets will evolve significantly, with cheaper, faster trips on core networks and new modes for lower-demand routes.There will be more major shocks from energy and security concerns. |
| Future Modes: Transport modes are evolving. Successful modes are faster, more flexible, cleaner, safer, and better regulated |
| <ul style="list-style-type: none">Car travel will continue to be the dominant mode and will probably increase its share of the retail travel market outside London.Growth in public transport markets will be greatest for flexible, responsive and high speed modes.There will be increasing preparation for a post-oil transport world with mass markets emerging for new vehicle technologies. |
| The Informed Traveller: In the new ‘information age’, major drivers of retail transport change will be the developing integration between transport, electronic and communication networks |
| <ul style="list-style-type: none">Technology will help people to manage the increasing complex choices available.The ‘always on’ 24-hour connected society will require more flexible transport. |
| People, lifestyles and retail markets: Lifestyle and shopping trends will require higher quality transport experiences |
| <ul style="list-style-type: none">Retail locations with high quality access, such as town centres and large shopping places, will dominate and other locations will decline.Retailers will become more involved in selling access to transport services, including electronic ticketing, with the large retailers negotiating good deals with transport providers for wholesale purchase of these services. |

These transport changes will affect retail property in complex ways that will manifest themselves differently in each local context. Despite this, there are some characteristics of retail property consistent with future transport that will affect the success of future developments^(lxvi).

Transport and future retail property

| Characteristics of shopping places consistent with future transport | Characteristics of shopping places inconsistent with future transport |
|--|--|
| Retail locations at transport hubs | Reliance on only one mode |
| Well managed supply of parking, free for the use of customers | Unmanaged constrained parking supply |
| Personalised information and support to help fund and manage customer travel time, mode, parking, cost and other factors | No support from retailers despite increasing parking constraints, costs and congestion |
| Pleasant transport environment around the shopping centre | Poor walking environment near the shops and congested streets |
| Large local catchment population with good accessibility | Limited local population/ shopper/employee catchment |
| Support for flexible transport | Reliance on fixed transport |

These characteristics can be applied to typical retail locations to show the transport factors affecting the competitiveness of each type of location.

The anticipated transport changes will be particularly critical for secondary urban centres, freestanding towns, local centres and retail parks. For other centres, the changes in transport will still be important but are likely to depend more on the indirect transport effects.

For all locations, the indirect effects of wider economic and social changes on lifestyle, behaviour and attitudes will be greater than the direct effects from changes in the supply of roads, parking, buses, trains, cycleways and footpaths.

There will be many exceptions to the impacts shown in the table. Location-specific transport analysis taking account of local transport plans is needed to make accurate local predictions.

Overall impacts on retail locations

Transport factors by retail location type

| Retail location type | Transport factors affecting competitiveness of locations |
|---|---|
| A major city centre such as Bristol or Manchester | <ul style="list-style-type: none">• Already dependent on multiple modes of transport for access, and well placed to cope with increasingly stretched transport systems. Locations near established transport hubs will increase in attractiveness for existing and new retailers. |
| Other major centres such as Oxford, Exeter, or Dundee | <ul style="list-style-type: none">• Transport will be a critical factor. Where these centres emulate the transport hubs of the major cities, they could perform very well. However some major centres will be big losers if congestion levels, parking costs, and public transport supply are uncompetitive with other centres. |
| Metropolitan towns such as Kingston on Thames, Altrincham | <ul style="list-style-type: none">• These towns will be increasingly attractive intercept locations for people who do not have time to travel into the major centres. |
| Regional freestanding towns such as Taunton and Falkirk | <ul style="list-style-type: none">• Competitiveness will be heavily dependent on effectiveness of transport elements of town centre management and marketing. |
| Urban centres | <ul style="list-style-type: none">• Successful locations near car parks, transport interchanges and in pedestrianised streets will define how these centres consolidate their general decline. |
| Local centres | <ul style="list-style-type: none">• The rate of decline of each local centre will be most significantly affected by convenience and attractiveness of short trips, with walking to and within the local centre acting as major factors. |
| Rural centres such as Hay-on-Wye and Penrith | <ul style="list-style-type: none">• Future success will be defined around innovative or speciality retailing, with suitable transport to support the identity (such as heritage transport tours to Bridgnorth, bicycles in Peebles and books in Hay-on-Wye). |
| Out of town regional centres such as Trafford | <ul style="list-style-type: none">• Peak period congestion may limit expansion, but overall the attraction of these centres will be fairly stable, and could be enhanced with improved multi-modal accessibility. |
| Purpose built district centres | <ul style="list-style-type: none">• Convenience of transport will define success. Easy parking and branded bus routes will be consistent with the low effort purchases at these locations. |
| Factory outlet centres | <ul style="list-style-type: none">• Attractive transport solutions with free flowing roads are needed to maintain the market for extended leisure shopping visits. |
| Fashion parks | <ul style="list-style-type: none">• Longer journey times and higher costs will not deter the growth in attractiveness of these centres for leisure shopping. |
| Retail parks | <ul style="list-style-type: none">• Local congestion on surrounding road networks will be a significant deterrent, encouraging shoppers to choose alternative locations or to use internet shopping. |

Transport and retail sectors have achieved large gains in efficiency in recent years. The flow of goods and services between suppliers and consumers is now faster and cheaper. Although there is scope for further efficiency gains, even greater challenges and opportunities may lie elsewhere.

Within emerging retail and transport markets, accessibility, information and flexibility will be the major drivers of change.

- Access rather than mobility will define people's shopping opportunities both online and in-store.
- Public transport smart tickets and road pricing products (including in-car GPS units) will emerge as increasingly important new markets.
- Informed travellers will be more sophisticated consumers. Transport marketing has been dominated by telling and selling. Stronger customer relationships are emerging within both transport and retail sectors that will increasingly cross boundaries between marketing in the two sectors.

- Managed approaches to workplace travel will increasingly tackle staffing problems.

Changes to regulation and taxation could significantly speed up the rate at which these trends develop. Tax benefits for road pricing participants and incentives for renewable fuels could significantly accelerate the rate of change.

Retailers and consumers face major uncertainties about the future of retail travel. Developers and shoppers need to work within these uncertainties in order to develop locations and modes of transport with enough flexibility to inspire the future success of the industry. This report aims to support:

- industry as it manages these uncertainties
- policy makers and planners as they work to reduce uncertainties
- transport providers as they develop new market opportunities
- more sophisticated consumers who will buy into the future of retail transport.

Section 10

Appendices and Additional Resources

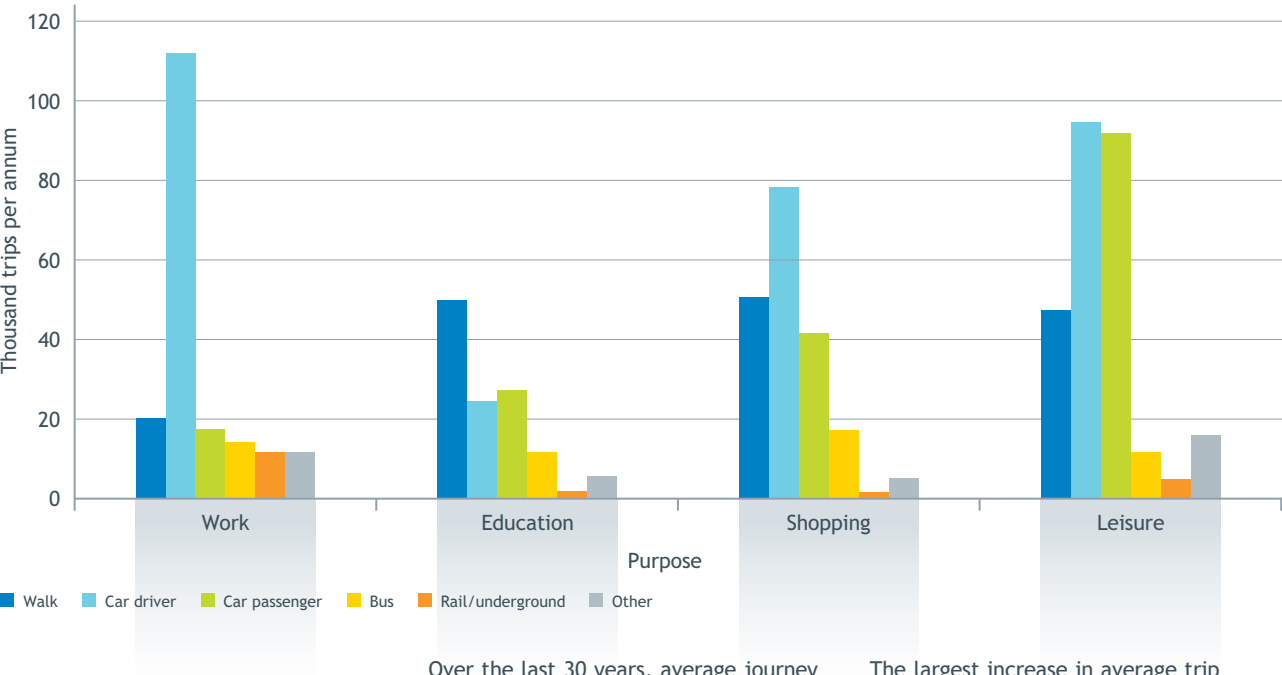


Appendix A: Transport trends

Trip characteristics

Shopping and personal business trips account for over a quarter of all trips and this percentage is increasing. Of nearly 1000 trips made per person per year on average over a quarter are for shopping. The graph below shows that the car is the dominant mode with about 80,000 trips made as a car driver and 40,000 as a car passenger to the shops each year.

Trips per person per year by purpose



Over the last 30 years, average journey lengths have increased by nearly 50% but the time spent travelling has been fairly static. This reflects the fact that as transport has improved people have been able to travel further. Nevertheless the stability of travel time budgets over time in the face of major changes to transport systems is remarkable^(lxvii). With electronic communications there is some evidence that the ability to undertake more activities whilst travelling is increasing the length of time and distances that people are prepared to travel.

The time spent on each trip has been increasing. Since 1990, with rising congestion on the roads, less ambitious timetabling of rail journeys, reduced bus network coverage, and changing land use patterns, the average time spent on journeys with fixed destinations such as for work and business has risen by over 15%. In contrast, where users have been able to choose their destination, such as for shopping and leisure, the time spent on each trip has risen by less than half this amount.

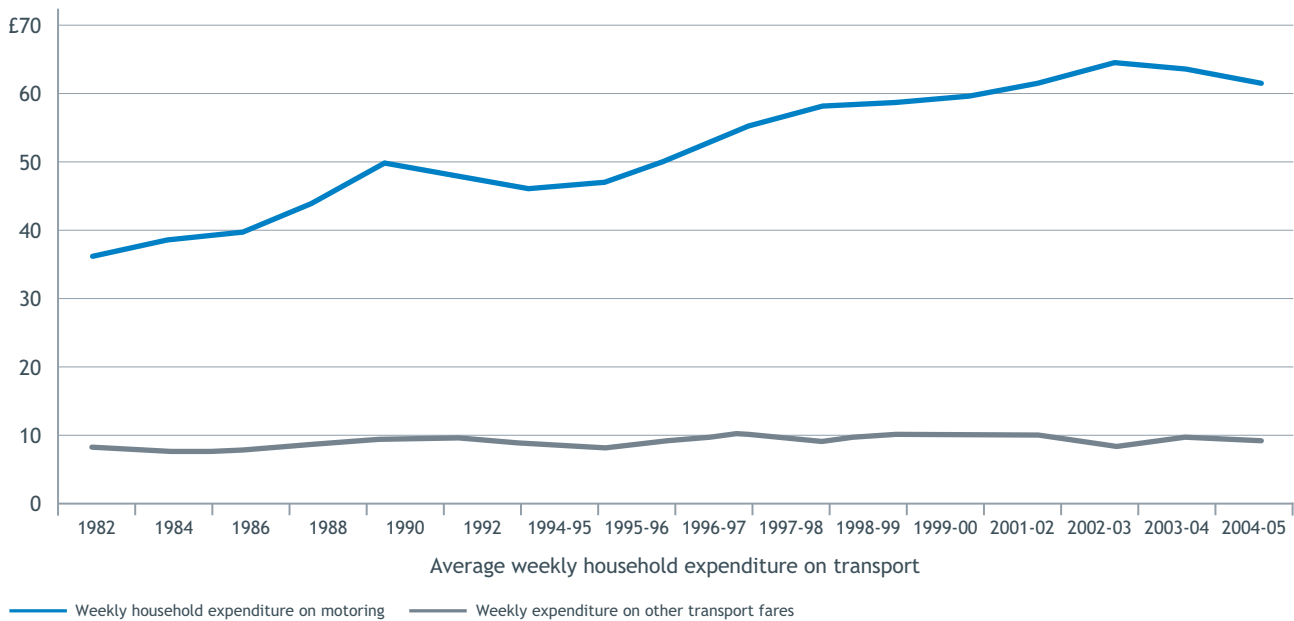
The largest increase in average trip lengths has been for shopping. This trip purpose has experienced the greatest increase in choice and opportunity. The increases have stemmed in part from more options to take advantage of new and better shopping opportunities and the need to travel further to reach these new shopping destinations. The largest increases have been for women shoppers with increases in car ownership allowing longer shopping trips. There has also been substantial growth in shopping at edge-of-town sites. With easier car access, shoppers have the option to travel to stores on the edge of larger towns, avoiding the more congested town centres in smaller towns where they live.

There is considerable difference in personal transport trip patterns in the case of shopping for food as compared to shopping for non-food items. Non-food trips, although less frequent, are almost twice as long as food trips (9km compared with 4.8km).

Cost of transport

In real terms, average weekly household expenditure^(lxviii) on motoring has nearly doubled since the early 1980s whilst expenditure on other transport fares has been relatively static.

Average weekly household expenditure on transport



As a proportion of family expenditure, motoring costs have also been increasing and reached 12% in the 2003-2005 period. This is paralleled with a fall in real terms in the cost of motoring.

The lowest proportion of household expenditure on transport is in large

urban areas (13%) and the highest is in small towns and rural areas (16%)^(lxix). In London about 18% of the transport spend is on public transport compared with 5-8% in other urban areas and less than 5% in rural areas. Costs of public transport have also been rising in real terms and expenditure on public transport declining.

The lowest proportion of household expenditure on transport is in large urban areas (13%) and the highest is in small towns and rural areas (16%).

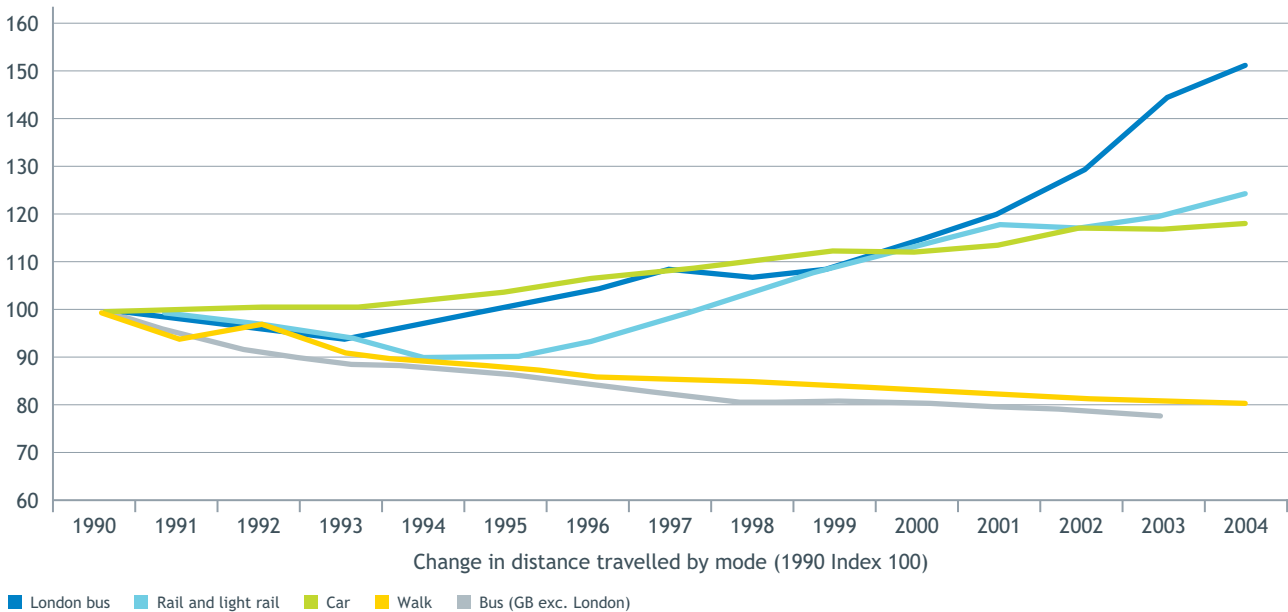
Appendix A: Transport trends

Trends in transport markets

These cost changes are partly due to the changing markets for travel with:

- a strong and growing market for car travel
- fragile traditional bus markets but strong growth in some areas and sectors
- strong growth in rail travel, but a requirement for large public subsidy to support this.

Change in distance travelled by mode (1990 Index 100)



One of the main problems faced by transport markets is that they are poorly understood by users^(bxx). Flexible, growing markets can make cost effective investments and bring prices down, but declining markets are unattractive for both customers and investors.

Price of transport is not the main determinant for users when deciding how to travel^(bxxi). Decisions make implicit and explicit trade-offs between travel time and cost, alongside many other quality, reliability and cultural factors^(bxxii). Attractive travel choices therefore rely on improved co-ordination between operators, and between transport modes, to reduce the generalised cost of journeys using single or multiple modes^(bxxiii).

Competitive transport markets continue to grow.

- In general, car travel is by far the largest provider of transport.
- Car travel tends not to be the preferred mode for certain inter-city journeys and for trips starting or ending in central London, where rail may have some market power.
- In the right market conditions, local bus services compete with car travel and low-cost coach services are growing on many longer distance routes.

- There is sometimes insufficient capacity or demand to permit competition (for example, on the rail network or in remote areas), and in these cases the size of the market depends on decisions of regulatory authorities and public funders.
- New niche markets are growing strongly such as demand-responsive transport from airports and other major trip attractors.
- A growing number of 'conscious objectors' to car travel are underpinning growth in some other transport markets.
- Regulatory reform in transport is likely to be an important factor influencing future trends. On balance this is likely to improve the competitive position of public transport, particularly bus travel relative to car travel.

Travel behaviour

Travel behaviour is changing, partly as a result of growing lifestyle expectations and incomes, and partly as a response to the changes in the built environment and markets. Road transport continues to be one of the few markets where demand is managed more through supply constraints rather than price.

Mode choice and destination choice are strongly related. People will often choose a shopping destination if car transport is a suitable mode for their trip, particularly if they have goods or passengers to carry. 70% of the population live in suburbs and currently out-of-town locations are more attractive for car access. Predicting how people will respond to changing transport opportunities is complex.

Perhaps the greatest problem in understanding and predicting travel behaviour is that socio-economic and demographic characteristics are much poorer predictors of behaviour than behavioural data such as 'adventure seeking', 'travel liking', 'social and environmental consciousness', etc. Motivation to travel is therefore important, particularly for shopping travel. Behaviour is very different for frequent necessary short trips e.g. for food.

When attitudes in society change, then behaviour mirrors this closely. Drink driving and seat belt wearing are two well known examples in relation to motoring. Past trends are therefore not necessarily a guide to future trends. This presents a problem in predicting travel behaviour in a fast changing world. In particular:

- The public response to growing concern about climate change is unknown and could have substantial impacts on behaviour.
- Technological change, such as information and communications technology (ICT) developments, means that people can respond to changes very differently when compared to past responses under different circumstances. Elasticity in travel demand for example as a reaction to travel price changes may not be an accurate predictor of future behaviour.
- Personal behavioural data sources have not been available in the past, although this is changing with the collection of storecard data by some retailers.

Appendix B: Transport policy impacts

- Transport policies fall into three main categories:
- Infrastructure development
 - Products and services
 - Complementary initiatives

This Appendix provides an overview of the impacts of these policies.

Infrastructure development

National policy^(bxxiv) identifies that there is not just a need for improvements to transport networks, but a need to make better use of the capacity that is already available.

Changes to transport infrastructure and the built environment work in parallel. The development of the railway network in the 19th century helped to create viable cities associated with industrialisation. In the 20th century the progressive development of car ownership helped to support the suburbs and the development of the service sector. The emergence of the internet is supporting new patterns of business and lifestyle that are only starting to emerge. As the pace of change accelerates, it can be expected that the changes which will occur in the next 50 years will be at least as substantial as the developments which occurred over the last century.

The table titled ‘Impacts of infrastructure on future transport’ on page 66 summarises the main mechanisms of change and how these will impact on future transport.

Although there is increasing emphasis on the role of Government as a facilitator rather than a deliverer of transport systems, progress in this direction has been slow. Decision making on investment in road and rail networks is still almost entirely controlled by public bodies.

This has led to anomalies in delivery, with Government prepared to intervene in the transport markets it largely controls in very major ways, such as by supporting the introduction of road pricing. In contrast, Government has taken a relaxed view towards developing partnerships with providers of services to ensure improved access for all (Halden 2005). From the perspective of consumers, the choice of location depends on both the transport and non-transport factors. Sustainable growing markets will only be achieved if relevant partners work together. For example, to improve access to local shops, partnership approaches to local network management could have a greater potential impact than many more expensive or complex changes to infrastructure. New accessibility planning approaches are seeking to deliver this joint approach (DfT 2004).

National policy identifies that there is not just a need for improvements to transport networks, but a need to make better use of the capacity that is already available.



Transport has real market value for shopping trips. If the cost of travel rises, then the competitiveness of locations changes. From the graph on page 11 it appears that shoppers have been able to escape the main costs of increasing congestion by taking advantage of free underutilised road space and travelling to more distant destinations. Spare capacity is becoming increasingly rare.

Shopping places must not only be accessible to the population they serve (in terms of both public and private transport) but also must be accessible to the pedestrian. Key attributes for the pedestrian have been defined in terms of walking catchment areas from gateways such as public transport termini and car parks (DCLG 2002).

Each infrastructure network has strengths in terms of the particular length of a given trip. For long distance travel the main choice is between rail and air transport and for regional transport road transport becomes increasingly competitive. For shopping trips, car and bus are the two most

competitive modes. The reluctance of car owning households in the UK to use buses (a characteristic not shared by most other European countries), means that car travel is particularly important for shopping.

However cars need to be parked and parking supply is increasingly limited in residential areas, town centres and at major trip attractors. Most parking policies aim to meet a complex mix of objectives including managing demand, providing an income stream to the local authority and preventing trade from migrating to other economic centres.

Of particular concern to parking supply is the large number of multi-storey car parks in town centres built in the 1960s and 1970s ready for replacement in the near future. This is likely to push the cost of parking upwards.

Parking cost is an integral part of car travel and cannot be separated from other journey costs, such as operating costs and road charges/tolls. In the following table parking cost and road pricing are therefore considered jointly.

Appendix B: Transport policy impacts

Impacts of infrastructure on future transport

| Policy or change | Mechanisms | Impacts |
|--|---|--|
| Networks and interchanges | | |
| New roads and improved road capacity | Locations benefiting from the infrastructure will become more competitive, attracting more of the market | Reduced journey times for selected journeys |
| Rail network enhancements | Reinforces traditional land use and travel patterns by connecting people and places to established networks | Improves the competitive position of rail-based travel (which is most important for London and major conurbations) |
| High speed rail including maglev ^(boxv) | Major conurbations attract more development and travel | Development of premium interchange nodes: road, rail, bus, underground, tram etc |
| Priority lane routes for only some road vehicles - principally buses - but also other multi-occupancy vehicles | Public transport becomes relatively more competitive with car travel | Reduced public transport travel time in many cases leading to more public transport travel |
| Light rapid transit (LRT) and light rail network development | Creates and develops a premium tier of urban public transport | Locally specific impacts depending on how services complement the bus and rail networks |
| Personal rapid transit (PRT) | A new urban geography would emerge around these premium networks | A viable system would require many urban dwellers to change from car ownership and use to PRT |
| Airport expansion | Airports as hubs for more transport covering increasingly shorter distances | Higher market share for air in long distance travel |
| New parking capacity | More multi-storey and underground car parks | Improved opportunities for car trips, particularly for urban areas |
| Improved facilities at stops and interchanges including Park and Ride | Transport hubs increasingly linked with economic activities acting as foci for travel | More multi-modal trips |
| Improved inter-modal facilities for freight | Develop markets for rail, maritime and inland waterway freight transport | More multi-modal trips |
| More multi-modal trips | | |
| Town centre streetscape improvements, pedestrianisation, improved town centre management | Town centres become more attractive environments | More walking and cycling around town centres with increased demand for public transport access to town centres |
| Home zones, car free areas | More attractive residential environments and better management of parking | More walking and cycling for short trips |
| Improved traffic management | Better use of space to keep traffic moving and reduce wasted mileage | Reduced car and bus travel times |
| Network pricing | | |
| Road pricing, tolling and parking cost management | Create a marketplace for personal and freight travel with supply and demand managed through pricing rather than queuing. Significant additional revenues available for transport investment | Some local road pricing and tolling schemes funding new infrastructure and services |

Products and services

With the well developed infrastructure in the UK, even a very large construction programme would take some time to change accessibility significantly. The largest short term impacts can therefore be made through price and service changes. The table below summarises some of the main changes in products and services by mode.

Impacts of product and service changes on transport (*continued overleaf*)

| Policy or change | Consequences | Impacts on transport |
|--|---|---|
| Car travel | | |
| Car clubs | Generally lower car ownership | Increased public transport usage with car use being restricted to more optimal car journeys |
| In-car navigation - static and dynamic ^(Lxxvi) | Systems provide information on retail store locations in addition to route planning | Car travel becomes relatively more attractive |
| Roadside and parking driver information | Improved resilience of road network when problems arise. Drivers are guided to find the best route to available parking | Improved car journey time reliability |
| Car sharing systems to match journeys and suggest pick up times and points | Work, shopping and leisure site-managed systems to match cars and trips | Lower cost and more competitive car travel options |
| Pay-as-you-drive vehicle insurance | Lower annual mileage by many car owners | Increased public transport usage with car use being restricted to more optimal car journeys |
| Driverless vehicles | Progressive replacement or partial replacement of driver functions within congested areas to maximise capacity and improve safety | Improved car journey times |
| New electric cars, hybrid power systems, fuel-cell vehicles, etc | Improved attractiveness of car travel as cleaner options become economic | More car travel |
| Rescheduling trips | 24-hour opening and management of delivery times to ease congestion | More car travel and reduced journey times. Increased freight costs of night deliveries |
| Public transport | | |
| New bus services | Progressive increase in the rate of change of bus routes and services to reflect current and new land uses | More bus use |
| Demand-responsive services | Most major trip attractors will expand existing taxi provision with shared taxis and minibuses | Less car use and expanding flexible transport markets and range of providers |
| New rail franchises taking account of accessibility needs | Rail services which target different markets from practical bus services | More bus travel and increase in average rail trip length |

Appendix B: Transport policy impacts

Impacts of product and service changes on transport (continued)

| Policy or change | Consequences | Impacts on transport |
|---|--|--|
| Public transport | | |
| Public transport information | Portable electronic devices with up to date UK bus and rail timetables | More public transport use |
| Fare integration | Development of multi-operator tickets in line with consumer demand for more convenient ticketing products | Growth of public transport customer base (perhaps traded against some loss of income from existing passengers) |
| Smart-media for fare payment | Increasingly, smart media companies compete to offer the best payment packages and tariffs for customers, so that these companies become the largest customers of public transport operators | Substantial increase in public transport use |
| Luggage deposit and handling facilities at more interchanges | Luggage check-in at public transport hubs with links to home delivery if required | Growth of public transport attractiveness even when travelling with bulky items |
| Security improvements for public transport travellers with CCTV and helplines | Increased propensity for people to use public transport, particularly at night | Increase public transport use |
| Freight | | |
| Efficiency improvements for home delivery and collection and delivery points | Substantially increased attractiveness of home delivery | Increase in home delivery and reduced car travel to shops |
| Improved tracking of parcels | Current journey stage tracking being replaced with real time geographic tracking | Increase in home delivery |

Public transport has been slow to respond to changing lifestyles and requirements of new development. For example public transport networks still offer only a reduced service to shopping places on Sundays, despite the fact that Sunday is increasingly important shopping day.

Providers of smartcards and other personal portable payment media will become progressively more important. The problems bringing some rail services into the Oystercard scheme in London will be minor compared with the negotiations required outside London in deregulated bus markets. Smart media can also help to transform the image of public transport into a desirable consumer product.

Communication between public transport operators and users may improve as a result of improved communication technology. Text messages can inform passengers about delays or capacity problems and CCTV will monitor more operations, not just at interchanges but also on vehicle.

Car navigation systems are provided with software which includes data on the locations of: the road network, railway stations, filling stations, accommodation, tourist attractions and other information. This provides marketing opportunities for retailers to advertise and assist with navigation to their stores.

Impacts of complementary initiatives

| Initiative | Consequences | Impacts on transport |
|--|---|--|
| Retail and other business travel plans | More attractive shopping experience for customers and efficiency saving for staff | Various increases and decreases in travel patterns by time of day |
| School, college and hospital travel plans | Managed travel for large trip attractors | Increase in public transport, walking and cycling and reduced costs for students, staff and visitors |
| Product branding | Brand loyalty being used to develop new markets | New services and types of service |
| Tele-working and tele-shopping | New options present more lifestyle choices | Generally increased travel due to new opportunities |
| Travel awareness campaigns and personalised travel planning | People have the support and knowledge to realise their potential and optimise their lifestyles | Various increases and decreases in travel by each mode |
| Raising travel horizons | Residents consider opportunities to work, shop and learn beyond their traditional boundaries | Increased travel, often by public transport but including car travel |
| Supply chain management | Minimising stockholding and ensuring the right products are in the right place at the right time | Reduced transport costs and abortive movement of goods |
| Mixed land use development | Viable development often depends on a mix of uses and tends to be more influenced by investor return than accessibility for customers | Current development patterns tend to increase demand for car travel relative to other modes |
| Carbon rationing/trading perhaps as a subsidiary scheme within a UK or EC trading scheme | Environmental concerns are internalised within commercial decisions | Pressure for less polluting modes of transport and shorter journeys |

In principle, local collection and delivery points could substantially reduce costs of home delivery, and could help to revitalise local centres. Although there are large potential financial and efficiency savings to be made by operators, these would not help with the competitiveness of individual firms, since the mechanism would need to be available for all couriers in order to be viable. This emphasises that it is competitiveness rather than efficiency that drives change.

Complementary initiatives

Staff, visitor and customer travel plans managed and maintained by individual organisations have the potential to

manage efficient travel solutions at the level of each of these individual organisations. By playing a greater role in supporting the travel needs of customers, individual retailers can not only support efficient transport solutions, but can also improve their own competitive positions. Travel plans include many possible components such as personalised journey information, guaranteed rides home in an emergency, public transport fares support, and incentives to walk more. Plans can be highly effective in managing site-specific travel if correctly targeted and implemented but good examples of retail travel plans are rare (Devine 2005).

Appendix B: Transport policy impacts



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Therefore, in addition to this range of transport initiatives there is an additional range of measures affecting travel where the motive and benefits of developing the initiative are as great if not greater in non-transport sectors than within transport. These include tele-working and product branding. It is not possible to list all the complementary initiatives however the table on page 69 summarises some of the initiatives to illustrate the general approaches.

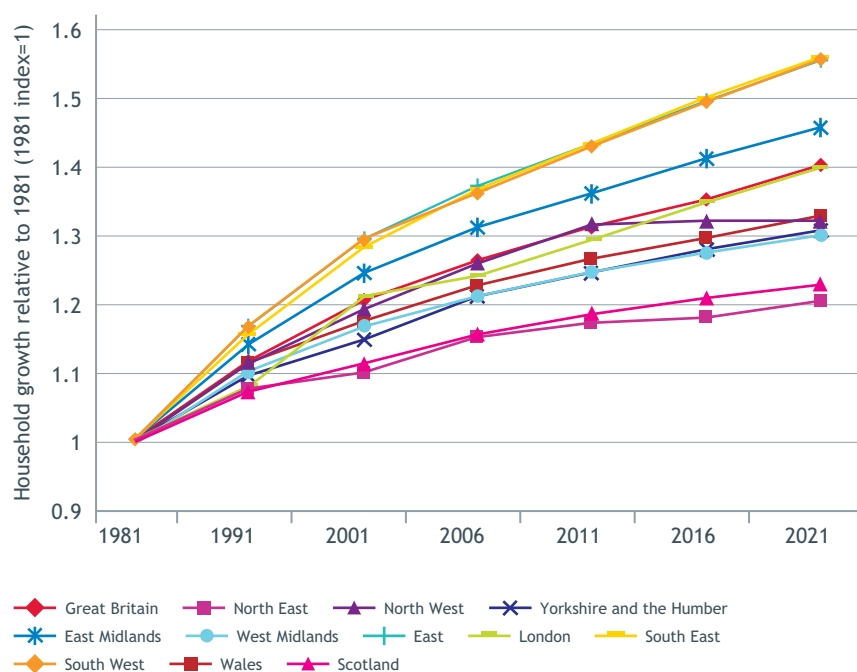
E-working and e-shopping have seen rapid growth and are opening up new additional shopping opportunities, resulting in more travel in total. However for supermarket shopping there is some substitution of car trips, and with substantial take-up of internet grocery shopping, it is estimated that a direct substitution of car trips by van trips could reduce vehicle-km by 70% for grocery shopping.

By playing a greater role in supporting the travel needs of customers, individual retailers can not only support efficient transport solutions, but can also improve their own competitive positions.

Household forecasts

Household growth will be greatest in the south where there is already the greatest road congestion.

Forecast household growth

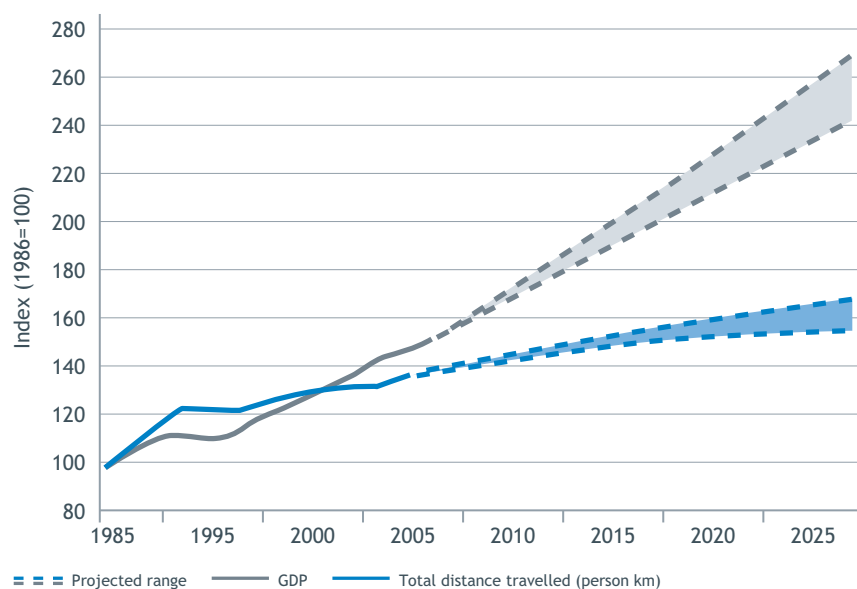


Source: DCLG

Traffic growth

In the 2004 White Paper the Department for Transport forecast that traffic growth would be lower than GDP growth. However if aviation is included distance travelled is still increasing as fast as GDP.

Traffic growth forecasts



Appendix C: Forecasts



Potential impacts of transport investment

Analysis by Department for Transport (DfT) in 2004 identified the possible range of traffic growth based on different infrastructure scenario and economic forecasts. The tables are taken from this analysis. These forecasts are currently being revised, since much lower traffic growth has been observed in the major conurbations than had been predicted.

DfT traffic growth forecasts

| % change on 2000 | All roads | | | | | Inter-urban trunk roads |
|------------------|-----------|----------|----------------------------|-------------|----------|-------------------------|
| | All areas | London | Conurbations & large urban | Other urban | Other | |
| 2010 | 23 to 29 | 18 to 26 | 19 to 26 | 19 to 24 | 27 to 33 | 33 to 40 |
| 2015 | 29 to 38 | 22 to 34 | 23 to 34 | 25 to 31 | 34 to 43 | 40 to 51 |
| 2025 | 38 to 53 | 30 to 50 | 29 to 46 | 34 to 45 | 45 to 59 | 51 to 69 |

Bus and rail forecasts

| % change on 2000 | Bus (boardings, England) | Rail (passenger kms, England) |
|------------------|--------------------------|-------------------------------|
| 2010 | 23 to 29 | 18 to 26 |
| 2015 | 29 to 38 | 22 to 34 |
| 2025 | 38 to 53 | 30 to 50 |

The three main actors in future retail transport are:

- business and markets
- Government
- informed consumers and travellers

The table below shows how these three sectors can shape transport identifying the scale of change that might derive from each factor.

Under some categories, market factors dominate and under others, action by government is needed. Overall, the third category - better informed travellers - appears to deliver more economic, social and environmental winners. If governments and retailers engage more effectively with their voters and customers then this may be a more effective way to meet complementary objectives.

The table shows the mechanisms by which the main actors (people, businesses and Government) will influence transport and what the outcomes will be. For some factors there will be different outcomes depending on which agenda prevails since different stakeholders start from different aims. Each stakeholder also has potentially conflicting objectives. The analysis has been used to review the different and sometimes competing impacts. Where all stakeholders have the same aims and are working together, the outcome is more likely to happen and is more certain. Where there are major differences between the outcomes that Government, people and businesses could deliver, change is more uncertain and the rate of change is likely to be slower.

Actors and impacts on future transport to 2015 (*continued overleaf*)

| | Sector | | |
|--------------------------------|--|---|--|
| | Businesses | Government | Informed travellers |
| Management | | | |
| Main mechanisms | Products and competition - transport provision largely dependent on unregulated commercial markets | Services and charges - levels of service dominated by taxing and regulated charging regimes | PDAs and new networks - greater emphasis on new modes and products |
| Leadership | Retailers, transport operators and network providers | Transport and planning authorities, infrastructure funders | Community leaders, public attitude change, special interest networks |
| Technology | Rapid product development but mismatch between economic growth and environmental limits | Big winners and losers, increased sharing of technologies, lack of trust in technology | 24 hour 'always on' society, 'high automation' |
| Business models | Mergers and partnerships between transport and retail companies | Public private partnership companies | Rapid growth of specialist logistics companies, expansion into passenger logistics |
| Social | | | |
| Attitudes and behaviour | Increased customer loyalty | High growth of niche markets and behaviours: e.g. 'petrolheads', 'environmentalists' | Wider travel horizons |
| Social inclusion | Gap between haves and have-nots | Society slow to change | Less geographically networked society and a society more networked by social and interest groups; urban and rural villages |

Appendix D: Actors in delivering change

Actors and impacts on future transport to 2015 (*continued*)

| | Sector | | |
|--------------------------|--|--|---|
| | Businesses | Government | Informed travellers |
| Regulation and taxation | | | |
| Regulation | Weak regulation and integration | High levels of regulation | Stronger customer protection focus to regulation |
| Taxation | More direct taxes | Increase in overall transport taxation | More direct taxes and fall in indirect transport taxation on transport in real terms |
| Travel demand by 2015 | | | |
| Road | Market trends suggest growth of 40% | Review of policy impacts suggests growth of 30% | Behavioural response could lead to traffic growth of 20% to 50% |
| Bus | 30% fall in patronage by 2010 followed by a small rise in patronage | 25% fall in patronage and continuing to fall | Large rise in patronage fuelled by culture change or decline by 30% if industry does not respond to new markets |
| Rail | Capacity constraints increasingly suppress growth although up by 30% | 50% rise in rail travel | Capacity constraints suppress growth |
| Cycling | Increase in leisure cycling and sales of cycles but decline in work and shopping cycle trips | Cycle trips numbers increased by 2% | Cycle travel -5% to +5% |
| Walking | 20% increase in walking trips | 30% increase in walking for local trips | 30% increase in walking trips |
| Freight | Increasing costs from requirements for overnight delivery | Local distribution companies to manage deliveries from trans-shipment centres to shops | |
| Transport supply in 2015 | | | |
| General | Patchy public investment | High levels of public investment in networks and services | User-funded investment |
| Roads | New roads restricted to serving development and expansions in motorway and trunk road capacity | Investment in town centre traffic management but low investment overall | High levels of investment associated with new payment mechanisms |

Actors and impacts on future transport to 2015 (*continued*)

| | Sector | | |
|---|---|--|---|
| | Businesses | Government | Informed travellers |
| Transport supply in 2015 (<i>continued</i>) | | | |
| Parking | 20% increase in supply with parking increasingly managed within the marketplace (and retailers becoming the largest provider of off-street parking) | Supply of 10%, mainly at edge-of-town and out-of-town locations | 20% growth at edge-of-town and out-of-town locations |
| New technology | High technology guided buses | Personal rapid transit trials from major transport hubs | Autonomous swarming ^(boxvii) public transport networks in medium-sized towns |
| Faster modes | Airport and air service expansion with transport hubs/interchanges at airports | High speed rail lines with hubs and interchanges in city centres or new out of town centres | Growth of e-networks and air travel |
| Information | Commercial marketing through personalised travel plans | Social marketing through personalised travel plans | Membership networks and other trusted sources providing more transport information |
| Home delivery | Collection and delivery points in major towns and rural areas at freight/postal depots | Collection and delivery points in each local community or street | Collection and delivery points in local shops and stores |
| Paying for transport in 2015 | | | |
| Non-user funding | Price of transport increasingly included in product or staff costs | Public funding for networks linked to political objectives | Trip price more closely related to marginal operating costs |
| Products and tickets | Joint marketing of tickets and services | Partnership agreements for products and services | Expansion of independent brokers to purchase trips and services |
| Smart media | Single smartcard for parking, public transport and other small purchases: 80-100% smartcard holding | Smartcard for accessing public services including public transport: 50%-80% | Smart media increasingly universal for small purchases including 100% of public transport and parking |
| Road pricing | No road pricing outside London | National mandatory road pricing scheme implemented in 2020 with pilots in some cities and towns in advance | Voluntary road pricing from 2015 as an alternative to taxation |

Appendix D: Actors in delivering change

Actors and impacts on Future Transport to 2015 (continued)

| | Sector | | |
|-------------------------|---|--|---|
| | Businesses | Government | Informed travellers |
| Regional differences | | | |
| London | Significant rise in road congestion and costs | Increasing gap between higher transport costs in London and other areas, but also the best public transport networks | Increasingly intelligent systems with automated flexible networks |
| South East of England | Growing gap between demand for travel and network supply, leading to shorter trips for routine shopping | Increasing imbalance between transport supply and demand | Reduced growth in travel |
| Midlands and North West | | Large investment in transport networks and substantial increases in travel | |
| Scotland and Wales | Growing gap between haves and have-nots | Footprint of major centres growing with large increase in travel demand | |

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The Steering Group

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Appendix F: References and notes

Section 3

(i) such as the transport innovation fund, kick-start funding and the sustainable distribution fund administered by DfT. The 2004 DfT *Future of Transport White Paper* shows that spending after 2007 depends partly on road charging revenue levered through the transport innovation fund.

(ii) Public attitudes to funding of public services and infrastructure are subject to many uncertainties. The principle of greater direct charging could start to become more accepted for other services such as health and water supply. Alternatively there could be a public rebellion against the concept of direct charging if policy developments in other sectors face difficulties, e.g. if people were to perceive that the increasing use of water meters between 2006 and 2010 is associated with massive increases in the cost of water for householders.

(iii) The DfT road pricing review identified a number of possible technologies for road pricing. The technology envisaged here on this timescale would be secure GPS metering in cars. Car owners would be able to purchase tamper-proof boxes at about £50. Cars fitted with these black boxes would be exempt from car tax or would be able to claim rebates on fuel tax. Smartcard users would be required to maintain a positive balance by topping up pre-pay media at filling stations, cash machines and probably supermarkets. The black boxes would monitor time of day and location of journey and would deduct costs based on an appropriate tariff. The location and journey patterns of users will be the property of the car owner and would only be accessed by public authorities at the owner's request, e.g. if there was doubt about the correct operation of the charging mechanism. At any time, users could use the linked satellite navigation systems to seek suggestions of alternative routes or times of day to minimise journey cost.

(iv) The impacts are known to be substantial from evidence at tolled locations but until there is empirical evidence from implementation the actual impacts are uncertain.

(v) There have been many attempts around the world to establish fair and efficient pricing regimes for transport (see AA 1998 - *Attitudes to Road Pricing*). The basic principle is that travellers should pay at least the full marginal cost of their journey. Marginal social and environmental costs for any journey can be very different from average costs, and the more these differences can be defined, the stronger becomes the case for travellers to be priced rather than taxed (e.g. fuel duty).

(vi) particularly if favourable reports start to emerge on the benefits of the national road pricing scheme in the Netherlands which could be implemented by then.

(vii) The point at which road pricing makes good political sense will depend on significant changes in public opinion. Poor timing in promoting policies will ultimately delay their introduction - no matter how good the policies are (see Clinton 2004 - *My Life*).

(viii) Glaister and Graham 2006 - *Road Pricing in Great Britain: Winners and Losers*. Independent Transport Commission, Rees Jeffreys Road Fund, the Joseph Rowntree Foundation and the Esme Fairbairn Foundation.

(ix) There is a vast volume of research on energy markets, with substantially different analysis of trends and forecasts (sources include: The Energy Institute London, World Energy Council International Energy Agency, OECD, www.energyinsights.net, Hirsch 2005 - *Peaking of World Oil Production: Impacts, Mitigation and Risk Management*). Long-term growth in oil consumption has been about 1.8% per year (1990-2000).



The emerging economies of China, India, and other large-population industrialising countries (e.g. Turkey, Brazil, Iran), will put pressure on oil demand growth rates which will probably continue to be at or above this long term trend rate. Depending on oil price rises, and certainly with price levels of up to the current \$60/barrel, world economic growth rates are more likely to grow than to shrink. Higher oil prices, up to at least the \$80/barrel range, will almost certainly increase oil demand growth rates through the macroeconomic impacts of higher oil and energy prices at the global level. World oil demand growth may well attain 2%-2.5% per year at these prices. There is considerable disagreement about the size of available oil reserves and the ability to exploit these. It is clear however that the oil price will continue to rise in the short term, in order to make more production viable, and that if demand grows at 2.5% per year and production and refining succeed in meeting this, then within a few decades known oil reserves will be exhausted. It is likely that at least some further discoveries will be made, extending the life of oil supplies, but the rate of discovery will almost certainly continue to decline as shown from the Exxon Mobil analysis below (see Anable 2006).

(x) See AA 1998 - *Fair payment from Road Users*. Professor David Newberry for the Automobile Association.

(xi) Anable, Lane and Kelay 2006 - *Public Attitudes to Climate Change and Travel Behaviour* shows that travel behaviour change is less attractive to most people than other responses to climate change to reduce emissions such as new technologies or change in other sectors such as power generation.

(xii) Although public attitudes can change very rapidly, current taxation and spending on transport appears to

be moving away from direct to indirect mechanisms, with free bus travel for elderly people, lower car tax for many, and removal of bridge tolls. In the short term it seems likely that taxation changes will encourage more travel and longer trips. The potential consequential effects of these taxation changes could also magnify the effects (e.g. local shop closures if more elderly people travel free on the bus to the town rather than shop in the village).

(xiii) The EU emissions trading scheme proposals currently include only intra-EU air services but discussions are underway to extend this to all modes. The air services trading scheme was agreed in December 2005. Implementation could set quotas, which might impact on UK travel markets, given the relatively high reliance on air travel in the UK (e.g. relative to high speed rail). Further legislative proposals are planned by the end of 2006.

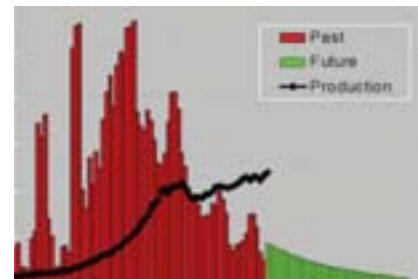
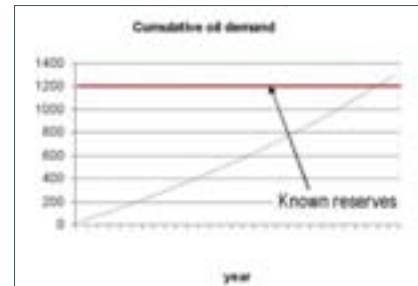
(xiv) Anable et al 2006^(xv).

(xv) UK Government ministers (e.g. David Miliband's lecture to the Audit Commission July in 2006) have recently highlighted the possibility of personal carbon trading being implemented across the EU. Individuals would be allocated personal carbon allowances including for household and travel which they could buy from households with less energy-intensive lifestyles.

(xvi) The Co-op invested £250,000 in carbon offsetting measures in 2005.

(xvii) By 2010 there are likely to be at least 20 million smartcard holders.

(xviii) Fernie, J. and McKinnon, A. 2003. *The grocery supply chain in the UK: improving efficiency in the logistics network*, *The International Review of Retail, Distribution and Consumer Research*, 13, pp. 161-174.



Appendix F: References and notes

(xix) Cost increases to travellers have been below the market levels. There has been large public investment in rail networks, which has fuelled demand which in turn requires more public investment to enhance the infrastructure. At some point further increases in public funding will not be possible. The same mechanism applies to buses in London. Partly funded by road charging revenue, there has been significant investment in buses and increases in demand.

(xx) E.g. Walmart August 2006 news release blaming drop in profits on the increasing price of fuel.

(xxi) Concessionary travel schemes encourage different travel patterns. The recent introduction of free schemes for people aged over 60 in Scotland, and Wales, and the planned scheme for England from 2008, could encourage older people to travel further to the shops, reducing the attractiveness of local shops relative to more major centres.

Section 4

(xxii) For example - new performance improvement partnerships will lead to investment by some local authorities in bus priority measures and failing bus operators could be forced out of business by more rigorous enforcement by the Traffic Commissioner.

(xxiii) See for example the Association of Commuter Transport www.act-uk.com.

(xxiv) This is subject to the current generation of travel plans delivering successful travel solutions for staff and customers.

(xxv) Progress in travel plans within public organisations has been much slower than was envisaged when these were promoted in the 1990s. The Government proposed that all

Government departments would have travel plans by 2000 and all other public organisations such as hospitals would have plans by 2001. However, despite the slow progress in the public sector, progress has been much faster amongst private companies as a result of CSR.

(xxvi) CSR programmes are one of the main reasons for companies to develop staff and visitor travel plans (DfT 2000).

(xxvii) Mobility management centres are increasingly co-ordinating the travel plans of businesses. In the same way that logistics providers have delivered efficiency gains in freight markets, these new providers could potentially manage much more passenger travel. However, Government support for such initiatives has concentrated on assistance with funding travel plan preparation rather than assistance with the implementation of the recommendations.

(xxviii) Radio frequency identification tags (RFID) will make supply chains more visible and help to manage delays due to congestion, breakdown, delivery delays and other problems.

(xxix) Analysis of trends in logistics and freight by McKinnon 2004 suggests HGV growth of around 10% to 2015 and in van traffic of 40% with regional distribution centres being increasingly the focus for trans-shipment between vehicle types.

Section 5

(xxx) Car club membership has grown from around 1000 in 2004 to over 20,000 today.

(xxxi) Futuristic stacking cars have been proposed by the transport team at the Massachusetts Institute of Technology. Production of these city cars is many years away but new city cars managed through car clubs may provide the business model for their development.

(xxxii) See for example the schemes in the Netherlands www.2getthere.nl.

Section 6

(xxxiii) Technology Foresight 2006 - *Intelligent Transport Futures: Towards 2055*.

(xxxiv) Bright M 1993 - *Stated and Revealed Preference Surveys of Cross Forth Travel*, Scottish Executive.

Section 7

(xxxv) Data from ONS, Retail Knowledge Bank and Dawson J 2004. *Retail change in Britain during 30 years: The strategic use of economies of scale and scope*. Centre for Study of Retailing in Scotland Research Paper 0402.

(xxxvi) Farag et al 2006 - *Shopping and its Relationship with In-store Shopping: Empirical Evidence from the Netherlands and the USA*. Transport Reviews, Vol. 26, No. 1, 43-61.

(xxxvii) For example from June 2006, a strategic partnership between Aldi supermarket and low cost air company dba in Germany will be offering discounted flights.

(xxxviii) Warnaby G, Bennison D, Davies B J and Hughes H (2004) *People and partnerships: marketing urban retailing*, *International Journal of Retail and Distribution Management*, 32(11), 545-556.

(xxxix) McKinnon 2005. *New Developments in Supply Chain Management*.

(xl) Cairns S 2005 - *Delivering supermarket shopping: more or less traffic*. Transport Reviews, 25(1), 51-84.

(xli) Smaller households are associated with increased numbers of cars per head of population but there are increasing problems with residential parking in urban areas (RACF 2050 - *Parking in Transport Policy*. RAC Foundation).

(xlii) For attractive shopping trips, an ageing population will require convenient, comfortable and secure public transport options recognising that mobility declines with age. This may help to underpin growth in local shopping trips and facilities, particularly where these are associated with pleasant walking environments.

(xliii) *Patterns of work and childcare needs to work within increasingly restricted time budgets* (Lyons et al 2000 - *Transport and Society*).

(xliv) There are growing segments of the population which are time-rich and cash-rich.

(xlv) Healthcare is becoming an increasingly economic choice (Davies 2006 - *What role does accessibility play in the delivery of health services*, Landor Publications) as the costs of potential treatments increasingly outstrip affordability.

(xlii) Education is moving away from 'factories for children' to environments that support individual learning. Together with the enabling power of technology this is fostering greater individuality and independence.

(xlvii) Unlocking community capacity is increasingly developing new social economies. (See for example Sears 2005 - *The experience in Ealing*, CTA).

(xlviii) Employment patterns are changing from 'a job for life' to 'a life of jobs'. Working practices are changing to accommodate individual preferences on location, working till later in life, and requirements for 24 hour staffing.

(xlix) The population of the UK is expected to grow by 2.3 million by 2016 from 60.3 million in 2006 to 63.8 million in 2021 (DCLG 2006 - *Household and Population Projections - Regional Trends 38*). Most

Appendix F: References and notes

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of this growth will occur in England, and in particular in the regions of greater London, the east and the southwest, where growth of around 10% is forecast. This part of the country already has the highest stress levels within road and rail networks, and there has been a growing gap between transport provision and land use development plans (Highways Agency 2005).

(i) The main uncertainties affecting the scale and rate of adoption of new technology have been identified in (Technology Foresight 2006 - *Intelligent Transport Futures: Towards 2055*). These are: growing skills shortage, increasing migration (and emigration), clashes of multicultural values (faith vs secular, for example), growing awareness of the importance of 'employee liveability', increasing importance of the knowledge economy, ageing yet more active population, reaction to increasing time-intensity, growth in 'cyberfraud', emergence of better physical and virtual management systems, satellite location devices, smart antennas increasing use of 'telepresence', technology converging revolutions in biotech/nanotech/infotech and cognitive science, culture of control, 'real time' everywhere, growing debate on housing density in inner cities, growth of Asian economies, a growing global energy deficit (increased demand and consumption), emergence of radical solutions to climate change, declining trust in institutions, growing crisis in higher education putting the science base under threat, decline in power of national governments, increasing world trade, emergence of networked organisations, clusters and supply chains, new decision-making frameworks, proliferation of choice, the rise of pan-regional hubs, the end of affluence, increasing emphasis on sustainable design, rise of 'zero waste' movement, changing patterns of demand for housing in some areas, e-commerce growth, increasing focus on tourism and its

contribution to climate change, decoupling of tourism and transport, rising tension between freedom of information and privacy, emergence of megacities, changing family and household structures, the rise of 'slow', growing utilisation of 'embedded' technology, continued growth of an 'always on' culture, semi-autonomous/autonomous vehicles becoming safer and more efficient, grids and networks create shared capacity, behaviour of 'digital natives' - growing up accustomed to technology, reducing cost of ICT and enhanced data processing, higher-speed rail travel, impacts of a growing gap between rich and poor, continued capital underinvestment, the impact of climate change, increasingly localised/decentralised energy production, spend on energy research and development, consumer desire for social and environmental responsibility and transparency, the growth of the surveillance society, vulnerability of just-in-time models to external shocks, demand management of transport provision, changing data storage (from desktop to network), a movement away from office-based working, an emerging debate around provision of 'citizen's income', the rising importance of local provision, taxation increasingly based on resource consumption rather than income, a move towards full-cost accounting, emerging infrastructure, emerging cultural form.

(ii) Whilst some cultural factors, particularly the protection of privacy, will have a constraining effect on the rate of change, an increasing proportion of the population will have grown up accustomed to technology, and the 'always on' society will connect people and retailers in progressively different ways.

(iii) Technology Foresight 2006 *Intelligent Infrastructure Futures* - Project Overview.



(liii) Despite 'digital inclusion' measures to assist deprived groups with the investment and training to be able to use new technology.

(liv) People and markets operate within narrower boundaries than sustainable development. In the absence of markets for all economic, environmental and social needs, public policies secure sustainable approaches through regulation, taxation, funding and publicity.

(lv) Future Foundation 2006. *Understanding the consumer of the future* - nVision research in 14 European Countries.

(lvi) CB Hillier Parker and Cardiff University publication - *A policy evaluation of the effectiveness of PPG6*. Retail policy impacts directly and indirectly on markets. PPG6 resulted in an important sea change in the way that retailers and developers thought about retail planning with an acceptance of regulatory practices and attempts to develop retail innovations within this framework.

(lvii) Guy 2003. *Is retail planning policy effective. The case of very large store development in the UK*. International Journal of Retail and Distribution Management, 24(6), 3-10.

(lviii) Barker 2006 - *Review of the Planning System*. Of particular importance to transport will be the review of the extent to which the planning system is now sufficiently 'joined-up' with other related aspects of government policy. In particular, it is considering whether Regional Economic Strategies are delivering a clear economic framework to help inform Regional Spatial Strategies including the Regional Transport Strategies.

(lix) Significant changes in public attitudes and behaviour would be needed to support changes towards more managed approaches with the planning system playing a more central role. Support

for these policies would depend on greater public funding to complement the planning policies. Delivery of these more interventionist policies would also lead to big winners and losers in the retail sector, which would be supported and opposed in equal measure. This would make a politically stable approach hard to achieve. Action would also be needed to build community ownership of local services. In recent years the role of local government has changed substantially from being largely providers of defined services to champions of local community needs. In most parts of the country community planning structures have been established, but the crossover to delivery has been weak. Community planning tends to reinforce local delivery and has included initiatives such as: regeneration of local centres, support for farmers' markets and community food schemes, joint commissioning of transport services by public agencies, employability initiatives and support for excluded population groups. Even if more interventionist planning policies were delivered, the targeted reductions in travel would be relatively small. Informed and increasingly mobile travellers will use the shopping facilities which best fit their needs, even if the shopping is done from home. People take advantage of the choices available and make different choices on different days - see for example Goodwin 1998. *Solving congestion*. University College London.

(lx) DHC 2003. *City Region Boundaries Study*, Scottish Executive Cities Review.

Section 8

(lxi) Although the transport sector in itself accounts for only about 10% of GDP (*UK National Accounts* - The Blue Book 2006), Government expenditure and exports include significant transport costs so the total value is in excess of 15%. Household expenditure on transport accounts for 15% of total household expenditure.



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(lxii) *The Transport Planning Skills Initiative: progress and achievements*, April 2002-November 2003. Transport Planning Society.

(lxiii) Analysis shows that in order to deliver a low cost business model, increased investment was made by Matalan and Primark in logistics. This research was reported in *Future Retail Business Models*, part of BCSC's *Future of Retail Property* series, 2007.

(lxiv) Independent Transport Commission, *Tomorrow's Transport 2001* and Halden 2005, *Delivering Transport through Accessibility Planning*. Cairns et al 2005, *Smarter Choices*. Department for Transport.

(lxv) i.e. a new business lifestyle tariff might be a logical extension of the many travel and retail options offered on current bank accounts e.g. Royalties Gold from RBS.

Section 9

(lxvi) BCSC 2005, *The Good Transport Guide* Update.

Appendix A

(lxvii) Noble and Potter 1998 - *Travel Patterns and Journey Purposes*. Transport Trends. Government Statistical Service.

(lxviii) At 2004/05 prices.

(lxix) Total family expenditure in metropolitan and urban areas is 15-25% lower than for London and rural areas.

(lxx) DHC 2003 - *Barriers to Using Public Transport*, National Travelwise Conference, Cardiff.

(lxxi) TAS 2004 - *Competition in the UK Passenger Transport Industry*, Commission for Integrated Transport.

(lxxii) To plan transport systems, time and cost are combined within the concept of generalised cost. It is assumed that the maximum benefit to the public interest comes from the minimisation of generalised cost (i.e. keeping cost as low as possible and reducing the journey time.)

(lxxiii) In any case, as car ownership grows, public transport operators need to compete and co-operate with the private car. Such co-operation is already widespread since local rail services are largely accessed by car intercepting journeys into major urban centres.

Appendix B

(lxxiv) See for example DfT 2004 - *The Future of Transport*. Scottish Executive 2004 - *Scotland's Transport Future*.

(lxxv) Some of the highest speed services use magnetic levitation technology.

(lxxvi) Two main types of car navigation systems have been developed - static and dynamic. The static systems assume that network conditions are uncongested, and the dynamic systems are updated regularly based on monitoring of speeds on the network. A mass market has emerged for static systems over the last five years but attractive pricing structures have not yet emerged for mass market dynamic systems.

Appendix D

(lxxvii) See discussion of new modes.

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