

## Transport Studies Annual Report 2007 and 2008

### OVERVIEW

This report for the years 2007 and 2008 covers a period of continuing change and challenge for Transport Studies at the University of Westminster. The Department of Transport Studies is providing an enhanced contribution to the School of Architecture and the Built Environment through a progressive integration of research, teaching and learning activities as well as the pursuit of intra School initiatives.

Research in the Department embraces the main modes of land and air transport. The period covered by this review experienced further development in research on freight transport and logistics, air traffic management and air transport, travel planning and mobility management and transport and social exclusion, as well as in public transport and strategic policy guidance and advice. A general overview of the research and allied activity in the Department may be obtained through its website [www.wmin.ac.uk/transport](http://www.wmin.ac.uk/transport).

There is a continuing emphasis on promoting international links as well as collaboration with researchers throughout the United Kingdom. The Department's staff also continue to present their work at international fora and conferences as well as contributing to the activities of leading international bodies, including the US National Academy of Sciences Transport Research Board and the Association for European Transport. Publications also exhibit a strong international presence by key researchers in the team. Promoting international links is further reflected in the strengthening of international partnerships in the Masters teaching programmes and the recruitment of overseas postgraduate students to study at Westminster.

The Transport Studies Group of the University of Westminster (then known as the Polytechnic for Central London) was established in 1971, when the MSc Transport Planning and Management course commenced. A wide range of transport modes and policy issues is covered in both teaching and research work, including traveller behaviour, public transport, and logistics and aviation. The fifth edition of **Peter White's** textbook, *Public Transport, Its Planning, Management and Operation* was published in 2008 (White 2008a). It covers many aspects of public transport found in teaching within the MSc Transport Planning and Management course, and also draws on research work in Transport Studies at Westminster both by the author and his colleagues.

A wide range of subjects is researched in dissertation work undertaken as an integral part of

the Masters courses. The Buchanan Prize for best dissertation on the MSc Transport Planning and Management course in 2006/07 was won by **Richard Cameron** for his work on the potential role of the Boeing 787-9 Dreamliner and in 2007/08 by **Duncan Sharp** for his study of cargo aircraft for exceptional loads.

The MSc European Logistics, Transport and Distribution course, established in 1998/99 was renamed MSc Logistics and Supply Chain Management from the 2007/08 academic year, reflecting the increasing focus on global supply chain issues in the teaching programme. The course retains its three European partners (in France, Netherlands and Norway), providing a wide range of study options to students. As in previous years, the course continues to recruit students from a large number of countries around the world. The prize for the best dissertation in 2006/07 was awarded jointly to **Jingjing Lu** and **Jolanda Schweitzer** for their work on the impacts of the Betuwe line and local food product sourcing respectively.

Research in Air Transport is complemented by a wide range of short course and training initiatives. A programme of six aviation seminars was organised in 2008. This included events on Marketing & Market Research for Air Transport in February, Airport Policy & Planning in June, Regional & Low-Cost Air Transport in July and Demand Analysis & Capacity Management in November as well as the annual Airport Economics & Finance Symposium held in April.

*European Air Traffic Management: Principles, Practice and Research* edited by **Andrew Cook** (2007), with contributions from **Graham Tanner**, **Nigel Dennis** and a number of other leading authors, is the first book of its kind on European Air Traffic Management (ATM). It brings together material that was previously unobtainable, hidden within technical documents or dispersed across disparate sources. With a broad cross-section of contributors from across the industry and academia, the book offers a treatment of the key issues in current, and developing, European ATM. It explains the principles of air traffic management and its practical workings, bridging the academic and operational worlds to give an insight into this evolving field, with a number of fresh perspectives brought to the text. On-going research and developments are closely integrated into the themes, demonstrating the likely directions of future ATM in Europe and the challenges it will face.

### STAFFING MATTERS

**Dr Jacques Leonardi** joined the Freight Transport and Logistics group in May 2007 having spent the previous 12 years at the Max Planck Institute and INRETS. He is a specialist in energy use and transport and brings extra strengths to the work concerned with sustainability in logistics and freight transport. From September 2007 to March 2008 **Christophe Ripert** joined the team on secondment from his post as head of freight transport for the City of Paris. This has strengthened the international element of the work on urban distribution. During his secondment he helped organise two study visits involving an exchange of policy-makers, companies and trade associations between Paris and London.

### PRINCIPAL RESEARCH AREAS AND STUDIES

#### FREIGHT TRANSPORT AND LOGISTICS

**Green Logistics** (EPSRC and Department for Transport, 2006-2010)  
*Michael Browne, Julian Allen, Jacques Leonardi, Marzena Piotrowska, Allan Woodburn.*

This research programme is being carried out with the universities of Leeds, Cardiff, Heriot-Watt, Southampton and Lancaster. It is examining a range of ways of reducing its environmental impact, many of which will also have the potential to cut the cost of distribution. The main part of the programme comprises a series of separate, but inter-linked, modules focusing on measures that companies can adopt to make their logistical operations more 'green', with Westminster having responsibility for three work modules and being involved in a number of the others. These three work modules are: "Scope for modal shift through fiscal, regulatory and organisational change" (WM7), "Achieving greater sustainability in the urban distribution operations" (WM9), and "Data management and data collection techniques for sustainable distribution" (WM3).

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Work carried out to date as part of WM7 includes: i) a study into the nature of service provision for container trains to/from deep sea ports, ii) an investigation of the wagonload rail freight market (Woodburn, 2009), and iii) examination of the specific markets for rail, both in terms of the rail industry's abilities to serve and develop the markets and on the necessary supply chain and government policy actions that would encourage greater 'rail-friendliness' through primary research and in-depth interviews.

In WM9 the following research has been carried out: i) an analysis of the degree to which the external costs of road freight transport are currently internalized by taxation has been carried out for light goods vehicle in Britain, and for light and heavy goods vehicle in London (Allen, Piecyk, and McKinnon, 2008a and 2008b), ii) a major review of urban freight survey techniques involving approximately 160 studies in the UK and the rest of the world (Allen and Browne, 2008a and 2008b), iii) an investigation of the findings of studies since the 1970s that have collected urban freight data in UK towns and cities (Allen, Browne, Cherrett and McLeod, 2008), iv) an investigation of light goods vehicle activity in Britain through existing data sources (Allen and Browne, 2008c), v) a feasibility study into using electrically-assisted bicycles instead of goods vehicles to deliver parcels in the City of London, and vi) a freight study of Regent Street to understand current patterns of activity and to consider the potential for an urban consolidation centre.

A synthesis report on freight transport data has been produced as part of WM3. Over the four-year programme we will identify and evaluate a range of measures and technologies with the assistance of a group of partner companies which are heavily involved in various aspects of logistics. Different forms of research being used in the project include traditional and Delphi surveys, in-depth interviews, 'focus group' discussions, pilot projects and computer modelling.

### **Freight Transport Data Centre for London**

(Transport for London, 2006-2008)

*Julian Allen, Michael Browne, Allan Woodburn.*

The University of Westminster has established the London Freight Transport Data and Knowledge Centre for Transport for London (TfL). The Centre has produced the first annual London Freight Data Report which is a supporting document to the London Freight Plan (Browne et al, 2008). It reports on a wide variety of topics related to freight transport activity in London. A second Freight Data Report is currently being produced. In addition, the University has assisted TfL in developing a set of sustainable freight distribution progress measures that can be used to monitor the economic, environmental and social performance of freight transport in London. The work has also involved working with other organisations involved in urban freight transport to share ideas and knowledge. The London Freight Data Report is

available at:

[www.tfl.gov.uk/businessandpartners/freight/1296.aspx](http://www.tfl.gov.uk/businessandpartners/freight/1296.aspx).

**SUGAR** (European Regional Development Fund and INTERREG, 2008-2012)

*Michael Browne, Jacques Leonardi*

The SUGAR (Sustainable Urban Goods logistics Achieved by Regional and local policies) is co-financed by the European Regional Development Fund and made possible by the INTERREG IVC Programme and will last for 40 months. The INTERREG IVC Programme is part of the European Territorial Cooperation Objective of the Structural Fund policies for the period 2007-2013. It aims, by means of interregional cooperation, to improve the effectiveness of regional development policies and contribute to economic modernisation and increased competitiveness of Europe.

SUGAR focuses on addressing the problem of inefficient and ineffective management of urban freight distribution (which is a critical component of the overall urban transport system and a primary source of vehicle pollutant emissions). To accomplish this, SUGAR promotes the exchange, discussion and transfer of policy experience, knowledge and good practice in the field of urban freight management, with regards to policy and planning levers between and among advanced and less experienced partners. Activities will range from training sessions to workshops and joint planning events as well as publications and training tools.

The University is assisting Transport for London in dissemination and training concerning Delivery and Servicing Plans (DSPs), an approach to freight management at urban sites that receive collections and deliveries by goods vehicles that has been developed by the TfL Freight Unit.

The project is being led by the Emilia-Romagna Region in Italy and has 17 other partners from countries including Belgium, Bulgaria, Czech Republic, France, Greece, Poland, Spain, Slovenia, and the UK.

### **Global Road and Rail Freight** (OECD, 2008)

*Michael Browne*

The University was invited by the OECD and International Transport Forum (ITF) to produce a paper on "The impact of globalisation on international road and rail freight transport activity" as part of their "Global Forum on Sustainable Development: Transport and Environment in a Globalising World" (Woodburn, Allen, Browne and Leonardi, 2008). The purpose of the Global Forum was to consider major transport trends - both in large urban areas and those raised by a globalising economy; to address challenges caused by these trends - for the environment at large and for human health in particular, and to share information about effective

and efficient policies that can reduce these negative impacts.

The paper was presented at the joint OECD/ITF Global Forum in Guadalajara, Mexico in November 2008, and will be published in a forthcoming book based on papers presented at the event.

### **BESTUFS II** (European Commission, 2004-2008)

*Julian Allen, Michael Browne*

This EU-funded thematic network was concerned with establishing and maintaining an open European network between urban freight transport experts, user groups/associations, ongoing projects, interested cities, the relevant European Commission Directorates and representatives of national, regional and local transport administrations. The aim was to identify, describe and disseminate best practices, success criteria and bottlenecks with respect to the movement of goods in urban areas. The project followed on from the BESTUFS project which ran from 2000 to 2003. In addition to continuing the activities on BESTUFS through workshops, conferences and good practice publications, BESTUFS II further developed the network to include medium sized cities. A set of urban freight transport Good Practice Guides were produced in 17 languages. In addition, an investigation of good practice for data collection and modelling in urban freight was carried out. The BESTUFS network was successfully completed in September 2008. A wide range of reports and other material has been made available on the BESTUFS website at: [www.bestufs.net](http://www.bestufs.net).

### **FIDEUS** (European Commission, 2005-2008)

*Jacques Leonardi, Michael Browne*

The FIDEUS project developed an innovative approach to the organisation of urban freight deliveries by proposing a strategy of efficient logistics while safeguarding the 'liveability' of cities. A complementary range of delivery vehicles was developed, consisting of: i) an innovative "micro carrier", ii) an adapted 3.5-ton van and iii) a 12-tonne truck. These incorporated advanced technologies and equipment, including: urban goods containers, telematics to support the logistics management and control of the delivery operations, a low noise option for the vehicle and the control opportunity for cities in terms of low emission initiatives. The University of Westminster was responsible for evaluating the tests of vehicles in Lyon and Barcelona, which showed a clear reduction in noise and emissions and a low impact on traffic disturbances during unloading operations. The project was successfully completed in May 2008.

### **EU COST Action 355** (European Commission, 2004-2008)

*Michael Browne, Jacques Leonardi*

The Group participated in the EU COST Action

355 "Changing behaviour towards a more sustainable transport system". The main objective of the Action was to analyse the conditions under which the process of growing unsustainable transport demand could be reversed, by changing travellers', shippers' and carriers' behaviours. The Action included consideration of three key topics: freight transport and energy consumption, automobiles, and an overview of national travel surveys. The project partners developed researcher and user networks that exchanged information and ideas about each of these topics both at conferences and remotely. In terms of freight transport, attention was paid to energy consumption in transport and logistics activities along the entire supply chain adopting a variety of approaches: vehicle approach, company approach, supply chain approach, importance of last mile. The final project report was published in 2008 (Zumkeller et al, 2008). Full details of the outputs from the project are available at: <http://cost355.inrets.fr>.

**Life cycle approaches to supply chain energy use** (ADEME, France, 2006-2008)  
*Jacques Leonardi, Marzena Piotrowska, Michael Browne*

The university worked with project partners INRETS (in France) and the University of Namur (Belgium) to investigate energy use and emissions across several supply chains. Early work concerned supply chains for yoghurt and jeans. This follow-on study focused on fresh produce and furniture supply chains. A new methodology was developed for the survey of company data use for calculating the specific contribution of each leg of the supply chain energy and to identify the key decision points affecting supply chain energy use. Comparisons were made between: home produced and imported products, shop sales and street markets, and low density rural areas and urban areas (for distribution and consumer trips) (Rizet, Browne, Leonardi, Allen, Piotrowska, Cornelis, and Descamps, 2008).

**Rail freight service provision in Britain** (University of Westminster, 2008-2009)  
*Allan Woodburn*

This is an on-going monitoring study that feeds in to the work of the Department about sustainable logistics as well as providing evidence of changes in rail freight within the UK. An inventory of rail freight service provision in Britain was conducted for January 2009, as part of ongoing annual monitoring of changes in the non-coal rail freight market. This has taken place since 1997 and provides information at a disaggregated level which, in conjunction with published data, leads to a more detailed understanding of the structure of the rail freight market and helps to identify trends in service provision. The databases also assist with other rail freight research being undertaken.

## PUBLIC TRANSPORT

**Impact of Teleworking and Teleconferencing on Transport Systems in London** (Transport for London and British Telecom, 2006-2007)  
*Peter White, Georgina Christodoulou*

This study was undertaken jointly with University College London and Imperial College London, funded by Transport for London (TfL) and British Telecom (BT). Principal results were presented in a paper at the European Transport Conference in October 2007 (White et al 2007). Interviews were carried with a number of large organisations in the London area, and extensive analysis of National Travel Survey data undertaken. Further analysis of National Travel Survey data has been completed subsequently to assess possible differences by gender, and a book chapter has been written examining further aspects of teleworking.

Findings indicated that the appeal of full-time home teleworking to both employers and employees was limited, but that part-time teleworking (typically one or two days per week) was favoured by both, and is slowly growing. Transport implications are that reduction in total distance travelled may be marginal, but more substantial effects may be found (especially in public transport systems) in reducing or spreading peak demand. There are also implications for economic evaluation, including possible impacts of greater productivity through reduction in travel time.

**Analysing trends in bus use** (University of Westminster, 2007-ongoing)  
*Peter White*

Trends in bus use may be explained in part by well-established quantifiable relationships (so-called 'hard factors') such as bus-kilometres run, real fare levels, and car ownership, but increased attention is being paid to 'soft factors' such as marketing, other aspects of service quality and user perceptions.

Strong growth has occurred in bus use in London in recent years. An assessment has been made of the extent to which it may be accounted for by quantified factors. This indicates that a substantial element may be thus explained, but much greater growth has taken place than accounted for by these factors alone. Contributory factors include simplified ticketing and passenger information. An overview was provided at the tenth 'Thredbo' conference in Australia in August 2007 (White 2007a) and subsequently published in revised form (White 2009a). Further work has been undertaken for the Passenger Transport Executive Group (PTEG) analysing the six metropolitan areas in more detail. Here, while a decline has occurred, it is not as great as would be expected. There may also be lessons to be drawn from the London case (White 2008b).

## Other Research Related Activity in Public Transport

(National Consumer Council, other external funders and University of Westminster)  
*Peter White*

A review of the bus market in Britain was prepared on behalf of the National Consumer Council (White 2008c). An overview of NTS data relevant to managers in the bus and coach industry has been provided (White 2008e). Peter White is also acting in an advisory capacity to the study led by Faber Maunsell for the Department for Transport on the effects of 'soft factors' on bus use.

An invited response to a paper by David Hensher on the role of tendering and contracting in urban public transport was published, emphasising the importance of issues related to infrastructure (White 2007b).

Further work has continued in analysis of smartcard data for public transport management, a presentation being made at the ITS(UK) PIIG seminars in December 2007 (Bagchi, White and Hamilton 2007) and November 2008, and lectures were given in the series on Data Mining Applications organised by the University's School of Informatics in March 2008 and 2009. Parallels may also be drawn with analysis of data from earlier types of electronic ticketing systems, for example in the identification of linked trips (Hofmann et al 2009).

An overview of transport policy issues in London in the context of national transport policy, focusing on bus ridership growth, the Underground PPP and congestion charging emphasises the extent to which policy in London has been successful in stimulating a shift to public transport use (White, 2008d).

The extension of free concessionary bus travel to all aged 60 and over in England from 1 April 2006 produced a large growth in bus use. This was associated with a very large increase in the number of pass holders, as well as the growth that might be expected from those already holding a half-fare pass. This was examined in a detailed case study of the Salisbury area by Stuart Baker for his MSc dissertation, and a paper outlining the results was presented at the Sixth Transport Practitioners' Meeting (Baker and White 2008).

## AIR TRAFFIC MANAGEMENT AND AIR TRANSPORT RESEARCH

**Centre of Excellence** (EUROCONTROL, 2008-2013)  
Andrew Cook, Graham Tanner: [airspace-research@westminster.ac.uk](mailto:airspace-research@westminster.ac.uk).

In recognition of its status as a centre of excellence, the air traffic management research undertaken within the Department has been given a special innovation award by EUROCONTROL, the

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largest funder of R&D in this field, in Europe. The University of Westminster thus joins a select group of eight other (mostly European) universities which have also been awarded such grants.

This will provide five years of funding to team led by Andrew Cook. The grant was awarded by the Innovative Studies Programme, at EUROCONTROL's Experimental Centre. The strategic objective is to "promote long-term collaboration with universities' research groups that are centres of excellence for a technology, method or theory and that have a keen interest to test the applicability / feasibility of approaches novel to ATM".

Building on previous research within the Department, our 5-year research programme addresses 'The cost of air transport delay in Europe'. Delays cost airlines vast sums of money (EUROCONTROL estimates that 'flow-management' delays alone in 2008 cost around ?1.6 billion). Our research objectives are to: (i) evaluate, using novel research approaches both 'hard' (e.g. passenger compensation) and 'soft' (e.g. passenger loyalty) delay costs incurred by airlines; (ii) disseminate this area of research more widely in the airline and ATM communities; and, (iii) synthesise other research activities in updating non-passenger delay costs, in consultation with industry partners, for example the Department's new cost models for aircraft maintenance. For further details, see: [www.eurocontrol.int/eec/public/standard\\_page/EEC\\_News\\_2008\\_2\\_Grants.html](http://www.eurocontrol.int/eec/public/standard_page/EEC_News_2008_2_Grants.html).

In the Single European Sky ATM Research programme (SESAR), the ATM Concept of Operations for 2020 represents an important conceptual shift which will link very closely with our research programme, since this shift is from an airspace-based environment to a trajectory-based environment. Our research will particularly contribute to 4D trajectory management, collaborative planning and integrated airport operations, through our cost-benefit modelling and development of improved decision-support tools. Papers have been submitted to Transportation Research and to the annual world conference of the Air Transport Research Society.

**Dynamic Cost Indexing**  
(EUROCONTROL, 2007-2008)  
*Andrew Cook, Graham Tanner*  
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This initiative continues to research cheaper and greener ways of managing aircraft trajectories. Cost indexing is a mechanism for aircraft Flight Management Systems to trade off the cost of fuel burn against time savings, for example by opting for an 'accelerated' fuel burn to recover a certain delay. The Cost Index values currently used in Europe are typically fairly arbitrary, with very limited supporting cost data.

The first phase was a project run in close collaboration with our two partners, the Centre for Transport Studies, Imperial College London and Lufthansa Systems Aeronautics, and was funded through the Innovative Cooperative Actions of R&D in EUROCONTROL Programme (CARE INO III). A dynamic Cost Index prototype tool was designed, which includes a framework for: calculating existing costs incurred as a result of delay, on a flight-by-flight basis; incorporating future, emissions-based taxes, charges or trading schemes; and making tactical, en-route cost updates to aircraft via datalink. To our knowledge, none of these three had been previously achieved. The first phase thus delivered an innovative model which could save airlines considerable costs with immediate effect, and offer a framework for including future, emissions-based costs.

Journal and conference papers, plus numerous technical reports are listed in the publications (below). For other information, and some of these reports, please see: [www.eurocontrol.int/eec/public/standard\\_page/proj\\_CARE\\_INO\\_III\\_Dynamic\\_Cost.html](http://www.eurocontrol.int/eec/public/standard_page/proj_CARE_INO_III_Dynamic_Cost.html)

**VANTAGE** (BERR, 2005-2007)  
*Andrew Cook, Graham Tanner, Nigel Dennis.*

This project was funded by BERR (formerly DTI), initiating the Air Traffic Management Technology Validation Programme by addressing priority environmental issues for UK aviation and commerce. Growth and capacity of many regional airports is constrained by environmental issues, by a lack of accurate surveillance and of integrated models for environmental and economic impacts, and for airport operations. VANTAGE was a collaborative programme that addressed these issues by drawing on the UK's science, engineering and technology base. It used modelling and simulation to provide integrated, innovative systems and procedures that optimise airport operations - for example with improved efficiencies for airport services and lower pollution rates.

The University of Westminster's role in this project was to provide a traffic forecast for all 36 regional airports in 2015 to act as input data into the Synthetic Environment model. A number of traffic scenarios were modelled, with integrated tools to facilitate the forecasting and allow iterations across certain assumptions.

Key outputs of the forecast were: routes operated by scheduled services, frequencies, (generalised) aircraft types/sizes, operator types, passengers carried, and net CO<sub>2</sub> estimates. Such a complex electronic model had not been achieved before, as it incorporated such input parameters as runway length and fuel prices, and then output airport-specific timetables. The model was designed with the essential forecasting expertise of Dr Nigel Dennis. Final reporting from the University of Westminster on the Traffic Flow Model is detailed in: Tanner G, Cook A and Dennis N (2007).

**Attitudes to Societal Demands in ATM Operations**  
(EUROCONTROL, 2004-2007)  
*Andrew Cook, Graham Tanner.*

This study, undertaken for the EUROCONTROL Experimental Centre, sought to improve the understanding of attitudes to change in ATM. It delineated the barriers to, and drivers of, such change, within the societal context. For example: how directly and how intensely do ATC personnel and pilots feel community pressure and through what processes? The study was generic in its approach and based on 82 structured interviews with controllers and pilots, plus other interviews with airline managerial / training captains, controller supervisors, Continuous Descent Approach designers and airport authority representatives. The need was identified to assess attitude to change at both the organisational and individual levels, for both macro-level and micro-level objectives. The final report (Cook and Tanner, 2007a) details the methodology and presents the results from the case studies - the introduction of Continuous Descent Approach trials at Manchester, Bucharest and Stockholm-Arlanda airports.

In addition to a paper being tracked into the innovative ATM research stream at the biennial conference jointly run by the US Federal Aviation Administration and EUROCONTROL to foster the realization of a harmonised global air traffic management system (see: Cook A, Tanner G, Pilon N and Joyce T, 2007), and a presentation made to airline and ATC partners in Stockholm (Cook and Tanner, 2007b), a journal paper has also been published (Cook and Tanner, 2008a).

This area of research is conducted in conjunction with a range of short course and training initiatives. A programme of six aviation seminars was organised in 2008. This included events on Marketing & Market Research for Air Transport in February, Airport Policy & Planning in June, Regional & Low-Cost Air Transport in July and Demand Analysis & Capacity Management in November as well as the annual Airport Economics & Finance Symposium held in April.

**Evaluation of the Scottish Air Route Development Fund**  
(Scottish Enterprise, Scottish Development, VisitScotland and Highlands and Islands Airports Ltd (HIAL) 2007-2009)  
*Austin Smyth, Nigel Dennis, Georgina Christodoulou.*

The Air Route Development Fund (RDF) was established in November 2002 to improve business connectivity and inbound tourist access all year round for Scotland. The RDF provides incentives through public funding to initiate new direct airline links that will benefit the overall economic development of the region. The overall objective of the study was to evaluate the benefits and impacts of the Scottish Air RDF in terms of: passenger flows; transport economic efficiency

(TEE) appraisal; gross value added (GVA); tourist & business trip spend; numbers of additional jobs; connectivity and market efficiency issues; social inclusion; and environmental impacts.

Within this project among the roles played by TSD was to assess current policies that have been introduced to increase accessibility into 'out of reach' areas and peer review the process of the study.

#### **Low-cost carriers (LCCs) and reactions of the traditional airlines**

(University of Westminster, 2008)  
*Nigel Dennis.*

Following on from previous research on the low-cost airline industry, a case study was undertaken of the impact of low-cost airlines in Malta, a market that they have only recently entered. Comparisons were made with other long-established LCC markets such as Pisa and Barcelona. The unusual role of Air Malta as a traditional flag carrier that has more in common with the charter airlines was also analysed (Graham & Dennis, 2008). The impact of the low-cost airlines on different market types has been updated and this shows that the major carriers are surrendering their leading position on all except the hub to hub routes. Services away from an airline's main hub airport have often been curtailed or if there is sufficient business traffic, handed to regional partners with smaller aircraft.

#### **Regional air services**

(University of Westminster, 2008)  
*Nigel Dennis.*

A major research focus in the last year has been on the regional sector of the air transport industry - using small aircraft and secondary airports, which has been performing relatively well in recent times. The US regional industry was found to have higher load factors and lower costs partly as a result of the major airlines tendering services as part of their hub networks (Dennis, Smyth & Stevens, 2008). The shifting balance between business and leisure traffic has made European regionals vulnerable to low frequency competition from LCCs such as Ryanair, while congestion at major airports such as Heathrow is squeezing them out in favour of larger aircraft (Dennis & Stevens, 2008). A cost comparison of BA Connect and flybe shows that the new owners of BA's regional operations have 30% lower cost levels and this has the potential to turn historic losses into profit if revenue can be maintained (Dennis, 2008b). A key study on the scope for new services from smaller airports identified a number of potential niches such as city centre links, regional hubs, domestic operations and non-commercial services in remote regions. Larger aircraft can provide holiday or long-haul services if operated on an inbound basis from the other end of the route (Dennis, 2008c).

**Long-haul market** (University of Westminster, 2008)

*Nigel Dennis.*

Long-haul airline operations have also been undergoing significant change. Although several operators of all-business services have failed on the North Atlantic, British Airways purchased the French airline L'Avion and plans A318 services from London City to New York, while executive jets have been deployed on thin intercontinental routes by Lufthansa, Air France/KLM and Swiss. Saturation of the short-haul market has also prompted growing interest in the scope for long-haul low-cost services. A study indicated that only a small cost differential can be achieved compared to short-haul operations while 'frills' and network links remain relatively more important. Research into the impact of the US-EU 'Open Skies' agreement is ongoing but many of the new services launched in 2008 have proved to be unsustainable and UK regional airports have seen services cut back as airlines are forced to justify the high prices paid for slots at Heathrow by concentrating activity there. In many cases, services moved from Gatwick are performing no better at Heathrow suggesting that there could be a more competitive environment at the larger airport and weak brand presence may be a grater handicap than airport location.

#### **Airline revenue management**

(University of Westminster, 2008)  
*Nigel Dennis.*

Major changes have been taking place in airline pricing and yield management strategies over the last few years (Dennis, 2008a). In the European arena this has been particularly as a reaction to the growth of LCCs and their simplified pricing structure. It was found that the traditional airlines have retained some sophistication by including network connections and offering the lowest fares on a round-trip basis only which prevents unnecessary dilution. The rationale for unofficial discount ('bucket shop') fares was investigated and these remain important in the long-haul market where there are often still regulatory barriers, geographical differences in cost structures and competition from indirect routes.

### **TRAVEL PLANNING AND MOBILITY MANAGEMENT**

#### **OPTIMUM 2**

(European Commission and London Borough of Southwark, 2004-2008)  
*Sophie Tyler, Karen Lucas.*

OPTIMUM 2 (Optimal Planning Through Implementation of Mobility Management) is a four year research and demonstration project, funded by the European Commission (INTERREG IIIB programme) and involving five UK and four Dutch partners. Each partner has one or more pilot sites in business or hospital areas, where a variety of different mobility management techniques are

being tested. The project started in 2004 and concluded in June 2008.

In 2007-8, TSD continued to work in two capacities: first to continue to develop and implement a variety of measures in Southwark, where the focus is on working with local businesses (Tyler, Enoch and Zhang 2007). Work in 2007 has focused on developing an area wide travel plan on behalf of the Better Bankside Travel Planning Group, set up in the Bankside area of north Southwark, in collaboration with the Better Bankside Business Improvement District. In addition, the focus in Camberwell was on the organisation of a "Transport Summit" bringing together a wide range of local and professional stakeholders to help inform the priorities of the Camberwell Travel Plan Group. The group has subsequently focused on developing joint activities between the three main local employers: Kings College Hospital NHS Foundation Trust, the South London & Maudsley NHS Foundation Trust and the Institute of Psychiatry (Kings College London).

Second, TSD is a member of the team, led by SenterNovem, responsible for overall monitoring and assessment of the project and assisting partners with the implementation of innovative measures at their pilot sites. Part of this role has been to work on the development of the final project output, the "OPTIMUM2 Cookbook" and to coordinate the activities of the two groups set up for technical discussions, the Hospital Area Group and the Business Area Group.

Further information about the project, including details about the pilot in Southwark can be found on the project website: [www.optimum2.org](http://www.optimum2.org).

#### **Sutton Active Travel Scheme Referral Assessment** (Transport for London, 2008-2010) *Sophie Tyler, Georgina Christodoulou.*

This project aims to evaluate the outcomes of a pilot scheme jointly set up by the Sutton and Merton NHS Primary Care Trust, London Borough of Sutton and Transport for London. 'Active Steps' involves health professionals such as GPs and practice nurses identifying patients that are willing to increase their levels of walking and cycling. They are then offered a 12 week programme of support starting with an interview with an Active Steps Advisor to explore motivations and set goals, as well as to provide local information on walking and cycling.

Transport Studies is leading a team from Cavill Associates and the Department of Exercise, Nutrition and Health Sciences at the University of Bristol to evaluate the pilot in terms of its impacts on both travel behaviour and physical activity levels.

Work in 2008 has focused on developing a robust methodology including the design of a one of the first ever joint physical activity and travel behaviour diary.

For more information about Active Steps and related projects under the Smarter Travel Sutton programme, see: [www.smartertravelsutton.org](http://www.smartertravelsutton.org).

### TRANSPORT AND SOCIAL EXCLUSION

#### Assessing the 'value' of new transport initiatives in deprived areas (The Joseph Rowntree Foundation, 2006-2007)

*Sophie Tyler, Karen Lucas*

The Joseph Rowntree Foundation funded a one-year study to qualitatively and quantitatively evaluate the benefits of new transport projects in deprived and disadvantaged communities. Its key objectives were to:

- To identify the changes in travel behaviour and accessibility that have been brought about through the introduction of transport interventions within deprived and disadvantaged communities;
- To explore the perceptions of local people in relation to these new services and with the broader aim of identifying the impact of these on the quality of life of the people who use them;
- To explore the views of local practitioners regarding the contribution of such projects to the wider process of neighbourhood renewal in these areas;
- To offer recommendations to central and local government on how such schemes can be better supported in the context of policies for neighbourhood renewal and the new requirements for accessibility planning in the 2006-2011 Local Transport Plans.

Four case study areas were selected to represent a variety of setting and transport services: a fixed route bus service in Braunstone (Leicester), a travel information and free travel pass scheme for those starting a job in Walsall, (West Midlands), a demand responsive bus service in Wythenshawe (Greater Manchester) and a fixed route bus service in Camborne, Redruth and Pool (Cornwall). A combination of one to one interviews with key stakeholders, user surveys and end user one to one interviews were carried out and analysed to tease out key benefits, both to the users themselves and wider impacts on the community.

The study commenced in April 2006 and was completed in October 2007. The final report was published by the Joseph Rowntree Foundation in July 2008.

### STRATEGIC POLICY GUIDANCE AND ADVICE

#### 'Refresh' the New Approach to Appraisal (NATA) (Commission of Integrated Transport (CfIT), 2008-2009)

*Austin Smyth, Nigel Dennis, Georgina Christodoulou.*

The Department for Transport (DfT) announced in May 2007 its intention to 'Refresh' the New Approach to Appraisal (NATA). The Commission for

Integrated Transport (CfIT) was subsequently invited by DfT to provide an audit of the consultative process undertaken by DfT. The Audit was intended to provide assurance to stakeholders / participants that all of the responses have been considered and the NATA Refresh team's portrayal of the responses has been 'fair' and 'even-handed'. The Audit was required to review execution of both stages of scrutiny of respondent responses undertaken by DfT. TSD was commissioned by CfIT to review the application of a coding system to classify responses developed by DfT under Stage One, and under Stage Two for each of DfT's summaries of responses advise whether these summaries were a fair and reflection of the range of opinions expressed by the respondents. TSD was required to provide guidance and advice to DfT on how the Refresh and its consultative process could be more effective, in terms of process, priorities, and emerging proposals.

Further analysis of sampled individual submissions identified differences between the concerns held by CfIT and those voiced by the respondents to the consultation exercise. Discussions between CfIT and the Auditor stimulated expansion of the strategic criteria of interest to the Commission and the desirability of extending the scope of the inquiry to embrace all the submissions received by the Department. This led to a synthesis of the views expressed by respondents, across all responses, on each of the expanded set of key strategic criteria.

#### Making Better Use of the Road Network (MBURN) (Commission for Integrated Transport (CfIT), 2008)

*Austin Smyth, Georgina Christodoulou.*

The Commission for Integrated Transport (CfIT) and the Motorists' Forum (MF) have initiated a research project on "Making Better Use of the Road Network" (MBURN). This research proposes to identify measures to manage future demand for the road network which are politically sellable and will attract support from the wider motoring public. The project working group identified a role for a team of Strategic Advisors (SA's), to aid the development of this challenging work programme. TSD has been contracted as one of three SA's which included Dr Jillian Anable, from the University of Aberdeen and Paul Emmerson, Transport Research Laboratory to assist the Working Group in the development of advice.

The Strategic Advisors (SA's) have been commissioned to provide strategic advice in determining the appropriate policy response in light of the evidence presented. It is envisaged this will encompass:

- Identification of and assessing the data held by Government
- Identifying the gaps in such knowledge and proposing ways of filling such gaps;
- Providing input into the development of project specifications, research reports and other technical documents;

- Assisting the Secretariat in directing the work of consultants;
- Providing a technical audit of the method, process, content and conclusions of the research through analysis of its components;
- Identifying priorities for action to improve the research, and/or propose solutions; and
- Providing feedback to the Working Group assessing the research and proposing specific actions where necessary.

In addition, the SA's are required to assist in the drafting of the Working Group policy response and the activities of the Secretariat; assimilate research generated from the work programme, draft papers in line with Working Group requests and assist the Working Group in drafting a policy response.

The advice is intended to inform policy development and stimulate discussion by improving understanding of the impacts on and attitudes of motorists and to assist the Government in developing a way forward.

The project has been broken down into a number of phases. In Phase 1 which involves desktop research (Oct 08 – March 09), the aim is to draw on existing data sources to develop a set of research questions and issues to take forward to the main body of the research, noting which can be addressed as a desktop study using existing data and modelling frameworks and which will require new data collection and analysis. TSD have also coordinated the contributions of the partner institutions.

### OTHER STAFF ACTIVITIES

**Professor Michael Browne** continued his membership of the Freight Logistics Research Group established by the Department for Transport. He also chairs the Central London Freight Quality Partnership and represents the University on the London Sustainable Distribution Partnership. During 2007 he continued as a member of the European Logistics Association Research and Development Committee. He is a member of the Management Committee of COST 355 - the COST action is concerned with changing behaviour towards a more sustainable transport system (both freight and passenger transport). He continues to serve as Assistant Editor of Transport Reviews and is on the editorial boards of the Journal of International Logistics: Research and Applications, and Supply Chain Forum.

**Dr Andrew Cook** leads the Department's engagement in the Single European Sky ATM Research programme (SESAR). He continues to represent the Department in the UK ATM R&D Knowledge Network and the corresponding Steering Group. Dr Cook is coordinator of an international Airline Working Group on delay cost management.

**Dr Nigel Dennis** was invited to participate in an OECD (International Transport Forum) Research

Round Table in Paris during October 2008 on the subject of Airline Competition, Systems of Airports and Intermodal Connections. Nigel serves as a member of the Aviation Economics and Forecasting Committee of the Transportation Research Board (US) and the European Transport Conference programme committee for European Transport Policy. He is also a fellow of Airneth, a Dutch government supported body that aims to link research and practice in air transport.

**Professor Austin Smyth** continued to serve as Member of US National Academy of Sciences, Transport Research Board Committee: Geographic Information Science and Applications Committee. He provided advice to the Chartered Institute of Logistics and Transport Ireland on that country's 10 year multi billion euro transport investment programme Transport 21. He was keynote speaker at the Irish Sustainable Development Council's Mobility Measures to Manage Transport Demand forum in December 2007, the Island of Ireland Annual Transport Conference on the theme 'Transport Ireland: Towards a Modern Sustainable Transport future' May 2008 and at the first joint Irish - Swedish Government Symposium, Public Transportation - The Way Forward on the subject 'Public Transport - Which way now? The challenge for transport after the 2008 Crash' (November 2008).

**Sophie Tyler** was invited to co-deliver a short course module in January 2008 on "Sustainable Transportation" at the School of Public and International Affairs at Virginia Tech (USA). She has also been a guest lecturer at Kingston and Loughborough Universities.

**Professor Peter White** again acted as a member of the judging panel for the UK Bus Awards in 2007 and 2008. He serves as a member of the Editorial Board of Transport Reviews, and of the Transport Planning Forum Committee of the Chartered Institute of Logistics and Transport. He acted as external examiner for the MSc in Transport and Planning at Cardiff University from 2005 to 2008. He was invited by Vinnova - the Swedish Government Agency for Innovation Systems - to act as a specialist assessor for a review of a transport research centre in that country in October 2007 (Vinnova 2007). He chaired the Bus Rapid Transit UK third annual conference in Cambridge in December 2007. He spoke on 'The Future of the UK Bus Industry' in the light of the Local Transport Act 2008 at the 'Moving On' conference in London in December 2008, and on 'Modal Alternatives to Trams' at the London Assembly Transport Committee's seminar on the Cross River Tram in October 2008.

#### M PHIL AND PHD RESEARCH ACTIVITIES

**Len Nockles** concluded his research into the freight forwarding industry, with particular reference to financial performance, and the skills base, receiving the award of Master of Philosophy in 2008 (Nockles 2008). **Silvanos Gwarinda** has

completed a survey of tourism providers in southern Africa as part of his work examining links between air transport and tourism in that region, transferring from M Phil to PhD registration in 2007.

**Chris Cook** is examining the public transport systems of Berlin and London to establish comparative performance. **Glynis Johnston** is investigating the relationship between transport infrastructure and urban development, funded by Transport for London. **Juan Mao** is researching the role of Green Logistics.

Two further research students joined us in Autumn 2007. **Toral Patel** is assessing transport safety by different modes, in order to evaluate the safety benefits that might arise from modal transfer. **Jane Edwards** is examining perceptions of low-cost airlines focusing upon the pre-trip decision making of passengers of UK low cost carriers and the implications of their decision making for air travel. It is her intention through interviewing passengers of low cost airlines, to develop a model to inform understanding of the decision making processes and the choices passengers will make when faced with a set of attributes related to airline choice based upon the routes, services and products that are available to them.

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