
By Professor Abigail Bristow

INTRODUCTION

This has been a successful year for the Transport Studies Group (TSG) culminating in a very satisfying outcome in the 2008 Research Assessment Exercise (RAE). The year saw the start of eight newly awarded research projects.

Key events included the launch of TRAVEL PLAN PLUS at Loughborough University, which includes partners from the Netherlands, Spain, Hungary, Sweden and elsewhere in the UK. Dr Marcus Enoch is the principal investigator of the 1 million euro project. The new EPSRC project RIMATTS, led by Dr Mohammed Quddus, has seen the purchase and instrumentation with ITS sensors and data of a car. This test vehicle is used to collect real-world ITS data and assist researchers in the development, testing, assessment and validation of ITS algorithms. A multi-disciplinary two-day INDICATOR workshop was organised by Dr Tim Ryley in June 2008, entitled ‘Aviation futures: air travel and operational research’. Presentations were given by British Airways, Department for Transport, Sustainable Development Commission, Transport & Logistics Consultancy, and the INDICATOR team (US & UK).

October saw the creation of the new Postgraduate Travel Planning Network chaired by Professor Steve Ison and supported by the Department for Transport and the National Business Travel Network represented by Jacqui Wilkinson and Heather McIntyre respectively at the launch event in November. The TSG also hosted an ACT Travelwise Master class on travel plans in July.

2008 also saw continuing good performance of our undergraduate and postgraduate programmes with the first students graduating from the new MSc in Sustainable Transport and Travel Planning. A “Lunch and Lecture” initiative was launched to further involve practitioners in the delivery and experience of our modules.

STAFF NEWS

Professor Bristow was elected to Fellowship of the Royal Society for the encouragement of the Arts, Manufactures and Commerce in October 2008 and she has joined the Planning for Sustainable Land Use and Transport Programme Committee of the European Transport Conference.

Dr Lucy Budd was nominated for the 2008 International Aerospace Journalist of the Year Award.

Dr Marcus Enoch was invited to speak at the European Conference on Mobility Management in July in London with respect to training and educating mobility managers and was invited to address the National Business Travel Network, also in London about his and Professor Ison’s Blueprint for Travel Plans study. He was also invited to a workshop at CERTU in Lyon, in April to discuss his work on DRT, car clubs and travel plans.

Professor Ison has accepted an invitation to join the Editorial Board of Transport Policy. He was invited to speak at the Air Transport and Airport Management and Operations at London Metropolitan University.

Dr Mohammed Quddus joined the Advisory Board of the Journal of Intelligent Transportation Systems. He accepted an invitation to join the TRB Committee on Geographical Information Science and Applications (AB1) 60. In August 2008, he gave a keynote paper on the application of GPS and GIS in transport at the International Symposium on Sustainable Transport in Dhaka, Bangladesh. Dr Quddus co-edited a special issue on “intelligent vehicle navigation” of the Journal of Intelligent Transportation Systems.

Dr Tim Ryley gave an invited presentation on “Sustainability and air travel: segmenting low-cost airline users from the East Midlands” as part of the Sustainability Seminar Series at the University of Exeter.

VISITORS

Academic visitors in 2008 included: Dr Elisabette Arsenio, LNEC, Lisbon; Dr Greg Coldren: Coldren Choice Consulting, Washington DC; Dr Laurie Garrow: Georgia Institute of Technology, Atlanta.
and Professor William Young, Monash University, Australia;

A number of visiting academics and practitioners contributed to our undergraduate and postgraduate programmes including: Dave Clasby, Sustrans; Dr Nigel Dennis, University of Westminster; John Elliott, independent consultant; Nigel Foot, Aston University; Andrew Forster, Local Transport Today; Chris Geere, Leicestershire County Council; Dr Anne Graham, University of Westminster; Graham Greaves, Aviation Consultant; Caroline Hedger, JMP; Peter Hind, RDC Aviation; Norman James, STAR Consultancy; Patrick Kitterick, Leicester City Council; Raj Kotecha, OR division of BAA; Rebecca Laws, ITP; Peter Maynard, OR division of BAA; Iain MacBeth JMP; Rose McArthur, Colin Buchanan and Partners; Dr Will Murray, Interactive Driving Systems; Professor Stephen Potter, Open University; Helen Roby, Open University; Yolanda Schmal, Province of North Holland; Kim Smith, London Borough of Greenwich; Emma Sheridan, Transport for London; Dr Robert Watson, RWA Rail Loughborough and Dr James Warren, Open University.

**RESEARCH STUDENTS**

Other than those awarded degrees, the research students registered for PhDs in 2008 were: Saleh Althajj: The application of GIS in transport planning: a case study of Riyadh; Andrew Appleyard: Normalisation of accident data on near Airports and their Location; Mohammed Bitemal: Formulating Strategies to Create and Sustain Competitive Advantages: Lessons from the practice of Dubai Airport; Bruno Desart: Strategic Airport Capacity Dynamics; Joe Kendal: Transport Planning in UK National Parks; Rebecca Laws: Evaluating Publicly Funded Demand Responsive Transport Schemes in England and Wales.; Ross MacGregor: Tradable Permits and the Aviation Industry; Elias Maragakis: Wind Farms and Airport Planning; Mohammed Abdullah Al Mumun: Travel Demand Management for Sustainable Urban Transport; Robert Mayer: The change in air travellers’ attitude towards air travel. The seven distinct segments developed from this air travel survey are based upon socio-economic (age, gender, children in household, status, income, multiple deprivation quintile) and travel behaviour data (frequency and purpose of travel). During 2008, segmentation results were presented at the Air Transport Research Society (ATRS) World Conference Athens, 6-10 July. Further East Midlands air travel surveys have more of a focus on environmental issues associated with aviation. Each of the air travel surveys contain a series of stated preference questions, in which respondents make hypothetical choices of whether to fly or not for specified leisure trips using low-cost airlines. The project delivers a stated choice modelling capability and a greater understanding of air travel market segments. Such findings are of benefit to aviation policy-makers, as they consider air travel demand forecasting and future airport capacity. Airlines and regional airports are also beneficiaries, particularly those interested in the demand for air travel in the East Midlands region.

**RESEARCH PROJECTS**

**AIR TRANSPORT**

**Propensity to Fly**

EPSRC from November 2006 to April 2009
Grant holder: Dr Tim Ryley.
The overall goal of the research is to assess the propensity, or likelihood, of individuals to fly. It concerns the development of stated choice models to assess this, as well as how it varies across different segments of the population. Data for these modelling and segmentation tasks has come from a series of questionnaire surveys of individual flying preferences. The First East Midlands air travel household survey, undertaken in Autumn 2007, has a sample of over 600 residents; questions in the survey concerned socio-economic information, access to airports, flight history and attitudes towards air travel. The seven distinct segments developed from this air travel survey are based upon socio-economic (age, gender, children in household, status, income, multiple deprivation quintile) and travel behaviour data (frequency and purpose of travel). During 2008, segmentation results were presented at the Air Transport Research Society (ATRS) World Conference Athens, 6-10 July. Further East Midlands air travel surveys have more of a focus on environmental issues associated with aviation. Each of the air travel surveys contain a series of stated preference questions, in which respondents make hypothetical choices of whether to fly or not for specified leisure trips using low-cost airlines. The project delivers a stated choice modelling capability and a greater understanding of air travel market segments. Such findings are of benefit to aviation policy-makers, as they consider air travel demand forecasting and future airport capacity. Airlines and regional airports are also beneficiaries, particularly those interested in the demand for air travel in the East Midlands region.

**INDICATOR project: ‘International and National Developments in Collaborations relating to Air Travel and Operational Research’**

EPSRC from October 2007 to June 2008
Grant holder: Dr Tim Ryley.
The INDICATOR (International & National Developments in Collaborations relating to Air Travel & Operational Research) project, October 2007 - June 2008, was in response to the EPSRC ‘Collaborating for success through people’ call. The UK research team (Dr Tim Ryley & Dr Lisa Davison) collaborated with a highly-renowned US aviation OR team, across multiple universities and industry. INDICATOR concerned two people exchanges. The first consisted of two week-long activities for the UK team to visit the US (Georgia Tech, Atlanta & Southwest Airlines HQ, Dallas). The second was a return visit of two US team members (Dr Garow, Dr Coldren) to the UK in June 2008. The INDICATOR project also included the following four outreach events for the UK team: a series of UK collaboration visits; a research study visit to the TRB conference, Washington DC; a discrete Choice Analysis training course, Lausanne; and a multi-disciplinary two-day workshop, Loughborough University. Two major air travel behaviour surveys were undertaken. Accent conducted an East Midlands flight choice survey of 500 residents in Spring 2008; Resource Systems Group Inc collected airport choice survey data for 500 residents in ‘East coast’ USA. Collaborations and activities from INDICATOR have complemented and supplemented on-going Propensity to Fly research.

**Economic Benefits of Aviation**

HEFCE HEIF 3 Omega Project from September 2008 to December 2008
Grant holders: Dr David Gillingwater and Dr David Pitfield
To appreciate both the environmental costs and the benefits of the aviation sector requires the costs and benefits to both receive attention. This study reviews the benefits with a view to balancing them against environmental impacts so that a viable cost-benefit analysis can be undertaken. Questions addressed are, what metrics are used to assess benefits; what are the main outputs from existing literature; is there information that needs updating?

**Quantitative Analysis of the Impact on Competition of Cooperative Agreements, with a focus on Alliances in Transatlantic Markets in the Airline Industry**

Competition Directorate of the European Commission, from September 2008 to March 2009
Grant holder: Dr David E Pitfield, Collaborator: London Economics
To determine and estimate the most appropriate forms of econometric analysis to assess the price and output effects from reduced competition due to strategic alliances and industry consolidation on the north Atlantic and to measure degrees of competition and market power.

**MOBILITY MANAGEMENT**

**TRAVEL PLAN PLUS**

European Commission from November 2008 to June 2011
Grant holders: Dr Marcus Enoch and Professor Stephen Ison
Collaborators: Loughborough University (Lead Partner) (UK); Cambridgeshire County Council (UK); Mobycon (NL), Consell Comarcal Del Bages (ES), Municipality of Győr (HU), Swedish Road...
Administration (SWE).

TRAVEL PLAN PLUS stands for “Travel Reduction Attainment Via Energy-efficient Localities PLANning”. It is a project comprising six partners with expertise in mobility management, united by a vision that travel plans can be more efficient and effective if implemented jointly by local groups or networks of organisations (i.e. Local Travel Plan Networks) rather than on an individual basis so as to promote energy saving. The objective of the project is to promote energy efficiency through the use of LTPNs across the EU. This will be achieved by developing a framework in order to aid and promote the implementation and dissemination of LTPNs in a systematic way, to implement four LTPNs in representative locations across the EU, to monitor and evaluate these LTPNs, to provide recommendations for developing an effective policy framework and to encourage and support the widespread adoption of LTPNs across the EU. The work undertaken will provide important guidelines on the implementation process of use to policy makers and implementers. Project website is at http://www.travelplanplus.eu/

**ENVIRONMENT AND SUSTAINABILITY**

- **Environmental effects of aircraft operations and airspace charging regimes**
  - HEFCE HEIF 3 Omega Project from July 2008 to December 2008
  - Grant holder: Dr David Gillingwater
  - Evidence suggests that differences in airspace charging rates are significantly influencing airline routes and flight plans through European airspace. The resulting changes in routings can extend flight distances by up to 20% compared to shortest routes and have a range of damaging environmental consequences. Drs David Gillingwater, Lucy Budd, Bob Caves, and Tom Reynolds (Cambridge University) have completed a strategic analysis of a sample of 97 intra-European airline flightplans and used Eurocontrol’s BADA (Base of Aircraft Data) application and the RSO (Route per State Overflown) distance charging tool to compute the airspace charges that would be due, and the carbon dioxide emissions that would be produced, as a result of operating these routes. Following in-depth discussions with key industry stakeholders, our early findings indicate that, on some routes, differences in airspace charges between European nations do influence airline route choice behaviour. The final report will be available in Spring 2009.

- **Climate related ATM**
  - HEFCE HEIF 3 Omega Project from July 2008 to December 2008
  - Grant holder: Dr David Gillingwater, Collaborator: Dr Tom Reynolds (Cambridge University)
  - Making the Air Traffic Management (ATM) system more efficient is one of the primary areas of interest for reducing the environmental impact of aviation. This Omega study was initiated to explore the fundamental issues surrounding the role of ATM on the environmental performance of the air transportation system as a whole, now and in the future. Working in partnership with colleagues at Cambridge University, Drs David Gillingwater, Bob Caves, and Lucy Budd have undertaken in-depth airport landside capacity modelling, provided expert judgement on the applications (and limitations) of existing ATM strategies at different flight phases, and identified barriers to ATM optimisation. The final report will be available in Spring 2009.

- **Sustainable transport for the urban poor**
  - British Council from February 2008 to January 2010
  - Grant holder: Dr Mohammed A Quddus
  - Collaborator: Professor J obair Bin Alam (BUET, Bangladesh)
  - The purpose of the programme is to support the development of co-operation which contributes to staff and institutional capacity building in Bangladesh in priority areas which contribute directly to skills development. The link will assist in enhancing the capacity of BUET to integrate sustainable transport issues in the context of socio-economic development. Close cooperation with Loughborough University will facilitate scope for advanced learning, research and sharing of expertise, and technology.

**OPTIMUM2**

- **European Commission from January 2004 to June 2008**
  - Grant holder: Dr Marcus Enoch
  - Collaborators: Province of North Holland (NL); Province of South Holland (NL); Essex County Council (UK); Lancashire County Council (UK); City of Edinburgh Council (UK); Royal Devon & Exeter Hospital (UK); Province of Gelderland (NL); Senter Novem (NL); London Borough of Southwark (UK)

**OPTIMUM2**, was a European Commission Interreg IIIB project which developed a new approach for using Mobility Management measures to tackle the accessibility and mobility problems caused by congestion in urban areas. Led by the Province of North Holland, the key objective of the Southwark cluster, of which Loughborough was a part, was to encourage the take up of effective mobility management measures among local traffic generators (e.g. businesses, hospitals etc) to reduce the (solo) use of cars in the Borough. This was accomplished by establishing two Local Travel Plan Groups (LTPGs); developing a planning financial obligation tool; developing and testing a range of innovative mobility management tools; developing and analysing possible methods of incorporating the LTPG regime into the local political, transport and planning framework; and determining the barriers to implementing LTPGs and methods of overcoming these. Project website is at http://www.optimum2.org/

**Developing a Blueprint for Travel Plans in the UK**

- **Department for Transport (via National Business Travel Network) from July 2007 to November 2008**
  - Grant holders: Dr Marcus Enoch and Professor Stephen Ison.

This study comprised of two parts. The first consisted of a literature review and in-depth interviews with ten key travel plan experts to determine the current state of play regarding travel plans in the UK. The second meanwhile formulated possible policy proposals for Government to consider. Project reports are at http://www.ntbn.org.uk/

**Personal Carbon Trading: using stated preference to investigate behavioural response.**

- **RSA (Royal Society for the encouragement of Arts, Manufactures & Commerce) Carbonlimited from December 2007 to July 2008**
  - Grant holder: Professor Abigail Bristow; Collaborator: Professor Mark Wardman, University of Leeds

This study involved an innovative application of stated choice methods to explore, firstly, how the acceptability of a personal carbon trading scheme might vary with respect to its design attributes and secondly, the acceptability of a personal carbon trading scheme relative to other policy instruments with the same aim such as a carbon tax. The second strand of the research explored to the potential behavioural response to a personal carbon trading scheme that covers domestic energy and transport and to a carbon tax with similar coverage to test for differences. The final report is available on the RSA website http://www.rsa.carbonlimited.org

**The determinants of bus patronage in England:**

- **The role of softer factors in influencing patronage and modal shift**
  - Department for Transport: from May 2007 to April 2009
  - Grant holder: Professor Abigail Bristow; Collaborators: Faber Maunsell, University of Leeds and Star Independent Consultants

Loughborough is part of a consortium led by Faber Maunsell and including the Institute for Transport Studies, University of Leeds and STAR Independent Consultants. The main research task at Loughborough was a comprehensive literature review covering two key areas. Firstly, studies that have sought to place a monetary value on softer factors. Secondly, studies that identified impacts on patronage and / or modal shift as a result of soft interventions.

**Noise Futures Network**

- **EPSRC, from June 2006 to May 2009**
  - Grant holder: Professor Abigail Bristow, Collaborator: Professor J Ian Kang (University of Sheffield)

Noise is usually defined as “unwanted sound”. Environmental noise, including sounds from road/rail/air traffic, industries, construction, public work, and the neighbourhood, creates disturbance and distress. Policy is aimed at measuring noise levels and controlling or reducing noise levels in order to meet targets and limits for exposure. What isn’t addressed is the issue of the sounds we want to hear. What makes sounds attractive or unattractive? Can we find out? Then can we
develop ways of measuring “sound quality” rather than noise? Ultimately can we design desirable soundscapes in the same way that we design buildings, lighting or landscape effects in urban areas?

This network brings together academics from a wide range of different disciplines, experts from industry and policy makers to explore these questions. Bringing people together sparks different ways of looking at problems and collaborative research ideas. The ultimate aim being to make the world sound better! The network website provides details of network meetings and other activities and membership application see http://noisefutures.org/.

**Achieving low carbon city transport systems that are also robust to climate change**

Tyndall Centre for Climate Change Research from July 2006 to April 2008

Grant holder Professor Abigail Brustow, Collaborator: Dr Miles Tight, University of Leeds

This research activity forms part of the Tyndall Centre for Climate Change Research ‘Cities’ Programme. The aim of this project is to develop an emissions accounting tool which will permit the estimation of carbon emissions from transport activity in London and potentially other cities and regions. Research at Loughborough has focused on establishing trends in freight vehicle kilometres and emissions in London and projections of trends. Review of the literature on measures that might reduce emissions revealed a limited amount of evidence. The possible long run impacts of a range of measures have been explored.

**Metrics, Models and Toolkits for Whole Life Sustainable Urban Development**

EPSRC from May 2005 to April 2009

Grant Holder: Professor Abigail Bristow, Professor Andrew Price, Professor Simon Austin Collaborators: University of Dundee, Glasgow Caledonian University, ST Andrews University, The Building Research Establishment, The Construction Industry Research and Information Association, Faithful and Gould WS Atkins, Levett-Therivel Sustainability Consultants.

The overall vision of the programme is to develop a comprehensive and transparent framework that encourages key decision-makers to systematically assess the sustainability of urban developments taking account of scale, life cycle, location, context and all stakeholder values. Professor Bristow is contributing to Work Package P2 which will investigate the barriers and incentives to sustainability assessment and the adoption of assessment tools. Approaches to overcoming barriers to the adoption of sustainability assessment tools will be examined.

**PUBLICATIONS 2008**


