



Department
for Transport

Joint Analysis Development Panel

Annual Report 2016/17

December 2017

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Forewords

This is the second annual report of the Joint Analysis Development Panel, established by the Department for Transport (DfT) in June 2015 to provide strategic advice on our transport appraisal guidance and modelling methods. Building on the success of the first year, we have continued to work collaboratively with the panel, meeting four times including holding an all day workshop to discuss longer term modelling and appraisal needs. The panel has provided valuable comment and challenge on topics including: priorities for future research on wider economic impacts, methods for appraising packages of schemes and diagnostic testing of the Department's National Transport Model.

My colleagues and I have very much welcomed the constructive challenge and steers from the panel over the past year which has influenced our core modelling and appraisal work programmes and strengthened our understanding of external perspectives and priorities.

I would like to thank panel members and, in particular, my co-chair, Professor Peter Jones, for their valuable time and input to our work programmes and I look forward to continued close working over the coming year.



Amanda Rowlatt, Chief Analyst and Science Director

Having successfully completed its second year, the Joint Analysis Development Panel is proving to be a very effective forum for active engagement between Department for Transport and representatives of the transport academic and consulting communities, on a wide range of issues relating to analysis, modelling and appraisal.

On behalf of myself and the other non-DfT members of the Panel, I would like to thank Amanda Rowlatt and her colleagues for sharing their research programme and forward thinking with us. We have played an active role in setting the agenda and in our discussions the Department has been very open and responsive to the comments we have made. The meetings have provided the opportunity to constructively examine and challenge some of the work being carried out by the Department, and to inject latest academic evidence and consulting practice into the debates.

We look forward to building on this dynamic and working with DfT colleagues in the coming year.



Peter Jones, Director, Centre for Transport Studies, UCL
Co-chair, Joint Analysis Development Panel

Executive summary

Introduction

1. This is the second annual report of the Joint Analysis Development Panel¹, covering the panel's activities between May 2016 and April 2017. The panel brings together eminent academics, professional experts and senior Departmental analysts to provide strategic comment and advice on DfT's approach to developing its transport modelling, appraisal and evaluation guidance and methods.
2. The panel is co-chaired by the Department for Transport's Chief Analyst and Science Director, Amanda Rowlatt, and Professor Peter Jones, Director, OBE, Centre for Transport Studies, University College London.

Membership

3. Following a review of the panel at the end of the first year, it was decided that the panel should meet more frequently to enable more timely discussions of topics and also to hold an all day workshop where we could explore significant issues relating to the future needs for modelling and appraisal.
4. The membership of the panel has remained the same during the second year and we are once again grateful to panel members for providing their time free of charge:
 - Peter Jones, Director, OBE, Centre for Transport Studies, University College London (co-chair)
 - Richard Batley, Professor of Transport Demand and Valuation and Director of the Institute for Transport Studies, University of Leeds
 - Phil Goodwin, Emeritus Professor of Transport Policy, University College London and University of the West of England
 - Glenn Lyons, Mott MacDonald Professor of Future Mobility, UWE Bristol and Mott MacDonald
 - Anthony Venables, Professor of Economics, Oxford University
 - Tom van Vuren, visiting professor ITS Leeds and Mott MacDonald
5. Biographies of members can be found in Section 4.
6. The panel has been supported by a broader network of subject matter experts who have attended meetings on specific issues.

¹ The first annual report can be found <https://www.gov.uk/government/publications/joint-analysis-development-panel-annual-report-2015-to-2016>

Impact of the Joint Analysis Development Panel

- 7.** The panel has brought fresh insights and a broad range of perspectives to our discussion topics and strengthened our understanding of external views and priorities. Topics for discussion have reflected both DfT priorities and challenges from the panel.
- 8.** This year the panel has discussed the following topics: priorities for developing DfT's evidence base on wider economic impacts; identifying options for supporting those undertaking programmatic appraisals and diagnostic testing of the National Transport Model.
- 9.** Discussions on wider economic impacts and programmatic appraisal influenced the Wider Economic Impacts guidance that was published in December 2017² and our thinking about its application, particularly in terms of the economic narrative. The discussion around diagnostic testing confirmed the value of this form of model testing and the need to review and prioritise the development of scenarios.
- 10.** The panel's first all day workshop provided an opportunity to take a longer term view of modelling and appraisal needs and identified some key themes around engagement and developing tools and analysis to support decision making under uncertainty. We will be discussing these topics further and building into our work programmes over the coming year.
- 11.** Overall, the panel's constructive challenge and targeted advice has reinforced the value of the panel to DfT over the year, informing and influencing both our longer term strategies and also more immediate projects.

² <https://www.gov.uk/government/publications/webtag-forthcoming-change-to-wider-economic-impacts>

1. Introduction

- 1.2** This is the second annual report of the Department for Transport's Joint Analysis Development Panel. It covers the panel's activities from May 2016 to April 2017. The panel has discussed topics including research priorities for wider economic impacts, the challenges of programme appraisal, diagnostic testing of the National Transport Model and longer term needs for modelling and appraisal. This report summarises the outputs of the panel's discussions and is being published in the spirit of openness and transparency.

Background

- 1.3** The Department for Transport's appraisal framework and strategic models that are used to produce forecasts and assess policy impacts have evolved over many years to be a world-class basis for informing decisions about transport investment options. It is vital that the Department's strategic models, forecasts and appraisal framework remain robust, facilitate decision making, are transparent and can meet decision makers' needs in a world of advancing evidence and greater stakeholder scrutiny.
- 1.4** The Joint Analysis Development Panel was established in June 2015 to provide strategic advice on our transport appraisal guidance and modelling methods. In its first year, the panel met three times and provided valuable comment and challenge on subjects including our strategy for developing road demand forecasts, the treatment of uncertainty in long-term forecasting and ways to strengthen the links between appraisal and evaluation.
- 1.5** Following a review of the panel at the end of the first year, it was decided to meet more frequently to facilitate more timely discussions of topics and also to hold an all day workshop where we could explore in more detail issues relating to longer term demands for modelling and appraisal.

Format of Meetings

- 1.6** The Joint Analysis Development Panel has met four times in its second year, including an all day workshop in Birmingham hosted by Mott Macdonald. Meetings have been structured around one or more substantive topics with Departmental analysts presenting papers for discussion, providing background information and posing key analytical questions. Where relevant, external subject matter experts have been invited to attend and present on topics.
- 1.7** Topics for the second year were selected according to priorities in DfT's analytical strategies and/or in response to particular areas of challenge

from the panel, for example, diagnostic testing of the National Transport Model.

2. Discussion Topics

Introduction

- 2.1** This section provides an overview of the topics discussed by the panel over its second year of operation. The panel has provided valuable input and challenge on topics including: the Department's new Wider Economic Impacts guidance, diagnostic testing of the National Transport Model and challenges associated with Package Appraisal and Complementary Investment.

Wider Economic Impacts guidance: Updating the Methods and Assumptions

Discussed on 23rd June 2016

- 2.2** In June, the Department introduced its new Wider Economic Impacts guidance to the panel which was published for public consultation in September 2016³. The Department presented four proposed research priorities around updating existing methods and/or assumptions to estimate: agglomeration benefits, movement to more/less productive jobs, labour supply effects and dependent developments. The panel was joined for the discussion by Professor Dan Graham, Imperial College, and Lewis Atter, KPMG.
- 2.3** The panel discussed the need to make better use of existing empirical evidence on agglomeration elasticities. It was suggested that re-estimating elasticities should not be a priority but that there should be a focus on the application of these elasticities in appraisals. It was also suggested by panel members that future research should focus on understanding the mechanisms by which transport impacts on the economy, in particular the responses of workers and firms to transport improvements.
- 2.4** Given the effects tend to be relatively small, attendees suggested that, from an appraisal and welfare impacts perspective, labour supply effects should not be a priority for future research.
- 2.5** The panel suggested future research should focus on appraising packages of transport schemes, instead of providing estimates of each individual scheme, including identifying synergies between transport and other sectors.

³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/554783/transport-appraisal-guidance-webtag-consultation-document.pdf

- 2.6** In terms of long-term research, panel members suggested exploring in more depth the benefits of attractiveness improvements and the implications for the “rule-of-a-half” problem.

National Transport Model: Diagnostic Testing

Discussed on 3rd October 2016

- 2.7** Following a suggestion from the panel back in February 2016, the Department carried out initial diagnostic tests to assess the performance of the National Transport Model (NTM). These tests explored whether outturn data fell within the range of forecasts provided by the five scenarios set out in the Department’s 2015 Road Traffic Forecasts⁴. The results suggested that the model performed well at an aggregate and regional level, with the exception of London, the South East and North East. At the broad road type level the model performed well, but performed less well when looking specifically at motorways and trunk roads. The model over and under forecasts traffic in urban and rural areas respectively.
- 2.8** Panel members questioned the testing method as differences were not evenly spread around the outturn data and no single scenario came close to all results across the segmentations considered. It was suggested that changes in car ownership were likely to be a key factor/explanation and that consideration be given to greater disaggregation to understand the results, particularly in terms of different types of urban areas.
- 2.9** The panel was then invited to comment on how the Department could develop the tests to help assess the forecasting performance of a new model that is being developed, which will only include car travel. It was broadly agreed that the Department should carry out back-casting to ensure the changes over the last 15 years have been captured by the updated model and disaggregated by model components. An experimental control was also suggested where DfT would change one model variable at a time to test what was going on in the model.
- 2.10** It was further suggested by panel member that the Department should attempt to look at what impact policies have had on the model results, differences with outturn data as well as make a distinction between bias in the model outputs and lack of precision.
- 2.11** We are grateful to Simon Nielsen (Transport for London) and Ian Williams (University of Cambridge) for joining us for this discussion.

⁴ <https://www.gov.uk/government/publications/road-traffic-forecasts-2015>

Challenges of Programme Appraisal: Package Appraisal and Complementary Investment

Discussed on 7th February 2017

- 2.12** In February, the Department initiated a discussion on the challenges of programme appraisal including: identifying and appropriately allocating synergies to individual components; identifying a proportionate approach to reflect programme uncertainty; and, integrating different government departments' guidance whilst avoiding double-counting in multi-sector programme appraisal. Panel members were joined by Nicola Kane and Ian Palmer (Transport for the North) and Joanna Averley (Transport for London).
- 2.13** During the wide ranging discussion, attendees suggested that people think about packages in different ways (for example, different agents influence each other in cities); having a 50% funding requirement changes behaviour; and, given the complexity of appraising packages of policies, they should be assessed against a range of scenarios.
- 2.14** It was suggested by panel members that DfT could usefully highlight the better uses of Supplementary Economic Modelling and do more around the economic narrative to design the appraisal and frame the analysis (for example deciding on possible scenarios).
- 2.15** Referring to WebTAG, the panel suggested that more could be done to make limitations and degrees of discretion clear, including what's 'core' and what is a 'sensitivity'. Assumptions that have a material impact on the outcome should be made more explicit.
- 2.16** There was some agreement about the need for some 'meta-level guidance' to understand interdependencies and highlight sensitivities to non-academic and non-analytical audiences. It was also suggested that it was important to get the quantities right and identify private sector responses, complementarities and substitutions.
- 2.17** Drawing on existing literature, the panel suggested that there may be evidence from Stated Preference work which would give an insight into interaction effects and whether additional policies/schemes add benefit or not. Evidence from 'smarter choices' policies, road pricing and also empirical before and after studies should help to show whether packages have been successful. Even if individual impacts can't be separated, if the overall impact is known then comparisons can be made between cities/areas with different combinations of policies.

3. All Day Workshop

- 3.1** In November 2016, the first JADP all day workshop was hosted by Mott MacDonald in Birmingham with the theme of “Developing Modelling and Appraisal Tools for the Future”. The day was divided into three sessions: “What is the Current Policy Agenda and How Might it Evolve?”; “Modelling and Appraisal Priorities”; and “Alternative Approaches, New Methods and Evidence”.
- 3.2** Each session started with a series of presentations from DfT analysts, panel members and guest speakers. The panel was joined for the day by Alison Irvine (Transport for Scotland), Dr Aruna Sivakumar (Imperial College), Tim Gent (Technical Director, Atkins) and Bianca Letti and Alwyn Spencer (National Infrastructure Commission).
- 3.3** Several themes emanated from the day as outlined below.

Developing a robust narrative on modelling and appraisal issues

- 3.4** Panel members felt that the Department should strengthen its communication of modelling inputs, assumptions, weaknesses and outputs; as well as development plans and strategies. It was suggested that a robust narrative needed to be put in place and that there would be particular challenges in due course around communicating how and why outputs from the updated/new National Transport Models are different.

Developing a broader range of modelling tools

- 3.5** There was a sense throughout the day that unprecedented uncertainties relating to behaviour, technology, the economy and politics mean that a broad range of tools and analysis is needed to inform policy.
- 3.6** While there was some scepticism from the panel about the development and use of activity based models for forecasting, there was agreement that there's a need to better understand household decisions and trip chaining. It was also noted that modelling would ideally be multi-modal and multi-sectoral. Aggregate econometric models were mentioned as one alternative tool, though their limitations in terms of understanding trip making behaviour was noted.
- 3.7** There was general agreement on the need to develop and use scenarios in policy making.

Skills gaps and shortages of appraisal and modelling capability

- 3.8** Discussions revealed several concerns around skills gaps and shortages and there was a feeling amongst panel members that, with lower numbers of students, the shortage of modellers and transport experts is likely to be exacerbated. Continued refinements of WebTAG need to be proportional and reflect the skill base. It was suggested that DfT may be able to do more to help upskill the industry. It was also discussed that the Department could develop more effective mechanisms to set the academic research agenda.

4. Next Steps

- 4.1** We look forward to working collaboratively with the Joint Analysis Development Panel over the coming year. Four meetings and another all day workshop in November are planned. We intend to hold further discussions on topics identified at this year's all day workshop - including uncertainty and communication and engagement - and will supplement these with other policy-led topics over the year.
- 4.2** We will continue to seek to maximise the value of the panel to DfT, in particular, how it can influence and shape our next analytical strategy, which we will start to develop later this year.

5. Biographies

Peter Jones

- 5.1 Peter Jones is Professor of Transport and Sustainable Development. His PhD, DIC (Engineering) Thesis from Imperial College was entitled: 'The Development of a New Approach to Understanding Travel Behaviour and its Implications for Transportation Planning'. Before joining UCL in 2005, Peter was director of the Transport Studies Group at the University of Westminster where he carried out numerous research projects funded by organisations including the Department for Transport, the European Commission, the Joseph Rowntree Foundation, and BAA.
- 5.2 He is a member of the Independent Transport Commission, the London Roads Task Force, the UCL Grand Challenges Sustainable Cities theme leader for Transport & Sustainable Mobility, and Chair of the RGS-IBG Transport Geography Research Group. He is Overseas Special Advisor to the International Association of Traffic and Safety Sciences, Japan, and a member of the International Steering Committee for the International Travel Survey Conference and a member of the Technical Committee of the South Africa Transport Conference.
- 5.3 He has also acted as a consultant to Transport for London, the European Commission and several national and local governments.

Richard Batley

- 5.4 Richard Batley is Professor of Transport Demand and Valuation and Director of the Institute for Transport Studies (ITS), University of Leeds. With a disciplinary background in transport economics, Richard's specialist expertise covers two related areas: first, valuing qualitative aspects of travel (e.g. journey time, punctuality and comfort) in monetary terms, and second, forecasting the impacts of changes in these qualitative aspects on the demand for travel.
- 5.5 He has operated mainly at the interface between academe and public policy, and can demonstrate lasting impacts from his research, especially in the form of official UK policy and practitioner guidance issued to transport operators and transport scheme promoters. Richard has reported research outcomes to senior public servants and politicians (e.g. to transport ministers, and to the House of Commons Transport Select Committee). He played a leading role in the programme of research, underpinning the Department's 2017 major update to appraisal guidance on The Value of Travel Time Savings.

Phil Goodwin

- 5.6 Phil Goodwin is Emeritus Professor of Transport Policy at University College London and University of the West of England. He was previously Director of the Transport Studies Unit, an ESRC centre of

excellence at Oxford University and UCL, a transport planner at the Greater London Council, and non-executive Director of the Port of Dover.

- 5.7** He was a member of SACTRA and co-author of its three reports on Transport and the Environment (1991), Induced Traffic (1994), and Transport and the Economy (1999). He has carried out research for the DfT and other agencies on travel demand, transport appraisal, road and public transport projects, road pricing, suppressed traffic, smarter choices, wider economic benefits (and losses) and transport strategy.

Glenn Lyons

- 5.8** Glenn Lyons, Mott MacDonald Professor of Future Mobility, UWE Bristol and Mott MacDonald. While remaining fully employed at UWE Bristol, from January 2018 Glenn will be dividing his time between UWE and (on secondment) Mott MacDonald, bridging between academia and practice. His position is helping to further develop the consultancy's transport expertise in relation to understanding and responding to a changing and uncertain mobility landscape, which is shaped by technological possibilities and societal needs and preferences.

- 5.9** From 2002-2017, Glenn has been professor of transport and society at UWE Bristol and was the founding director of the university's Centre for Transport and Society. He was CTS Director from 2002 to 2010 and then from 2010 to 2017 Associate Dean (Research and Enterprise) for the Faculty of Environment and Technology and its 300+ staff alongside continuing to be active as a research professor. His research focuses upon the role of new technologies in supporting and influencing travel behaviour both directly and through shaping lifestyles and social practices. A former secondee and expert advisor to the Department for Transport's Transport Direct initiative for national travel information provision, Glenn has led major studies for the DfT and UK research councils into traveller information systems, teleworking, virtual mobility, travel time use, user innovation, road pricing, public and business attitudes to transport and future mobility. He has been involved in a number of strategic futures studies.

- 5.10** In 2014 he was seconded to the New Zealand Ministry of Transport in the role of Strategy Director and was responsible for leading a major piece of national work examining uncertainty in future demand for travel out to 2042 and its implications for policy and investment. During 2015-16 Glenn led the CIHT FUTURES initiative involving workshops across the UK with members of the Chartered Institution of Highways and Transportation to examine the profession's views concerning future uncertainty and whether or not our existing approaches to transport analysis, policymaking and investment are fit for purpose. In June 2016 he joined the CIHT Board of Trustees and from 2017 now Chairs its Membership and Skills Strategy Board.

Anthony Venables CBE, FBA

- 5.11** Tony Venables is Professor of Economics at Oxford University where he also directs a programme of research on urbanisation in developing countries and the Oxford Centre for the Analysis of Resource Rich

Economies. He is a Fellow of the Econometric Society and of the Regional Science Association, and is a Fellow and Council member of the British Academy. Former positions include chief economist at the UK Department for International Development, professor at the London School of Economics, research manager of the trade group in the World Bank, and advisor to the UK Treasury.

- 5.12** He has published extensively in the areas of international trade and spatial economics, including work on trade and imperfect competition, economic integration, multinational firms, economic geography, and natural resources. Publications include "The Spatial Economy; Cities, Regions and International Trade", with M. Fujita and P. Krugman (MIT press, 1999), and "Multinationals in the World Economy" with G. Barba Navaretti (Princeton 2004).

Tom van Vuren

- 5.13** A transport modeller and demand forecaster, Tom van Vuren combines an interest in academically sound theory with experience and pragmatism in application to real life situations. As a Visiting Professor at the University of Leeds and a Divisional Director at Mott MacDonald he is well positioned to advise the Department for Transport on making their analytical methods accessible to the profession. He has been a long-term supporter of TASM's efforts to make forecasting and appraisal more transparent, and in particular WebTAG as a tool to improve best practice.
- 5.14** Throughout his career, Tom has emphasised and contributed to knowledge sharing in modelling and forecasting. Between 2008 and 2010 he was Chairman of the Association for European Transport and in that capacity had responsibility for the organisation of the annual European Transport Conference. Since 2006, Tom has organised and chaired Modelling World.

6. Terms of Reference: Second Year

Aim

- 6.1** The aim of the Joint Analysis Development Panel is to provide strategic comment and recommendations on the Department's approach to developing its transport modelling, appraisal and evaluation guidance and methods.
- 6.2** The panel is jointly chaired by DfT's Chief Analyst, Amanda Rowlatt, and Peter Jones, Director of the Centre for Transport Studies, University College London. It brings together academic and professional experts with senior Departmental analysts.

Remit

- 6.3** The panel, which meets four to five times a year, will be asked to discuss the overall direction and technical merit of the Department's transport modelling, appraisal and evaluation methods. In addition, the group may choose to focus on specific areas for discussion which will be agreed before each meeting.
- 6.4** The panel has been established to help identify priorities in relation to our analytical strategies and will provide strategic level comment and recommendations. It is not intended to replace the more focused peer review we subject our analysis and research to on a regular basis. We will continue to hold engagement events on topic areas where we look forward to maintaining close and productive working relationships with all our stakeholders.
- 6.5** Over the first year, the panel has helped to shape priorities within our strategy for improving our modelling and forecasts of road travel and our research to strengthen the links between appraisal and evaluation. It has provided input to, and challenge on, our work on long term forecasting and uncertainty, cross modal analysis and also highlighted some of the main challenges associated with modelling and forecasting the long term impact of new technologies on travel demand.
- 6.6** During the second year, we will continue to focus on priorities within our analytical strategies, including Understanding and Valuing the Impacts of Transport Investment and our plans for developing our road demand modelling and forecasting. Members generously give their time free of charge to attend meetings. They may, however, be asked to provide further input in terms of preparation of papers and/or presentations for meetings and subsequent follow up on topics for which they will be

reimbursed at their daily rate, upon completion of satisfactory deliverables. Any additional work undertaken by individual members in response to requests from DfT will be optional: the availability/willingness to undertake additional work is not a requirement of being on the panel.

- 6.7** The panel will not be discussing details of research specifications or work that is imminently going out to tender.

Membership

- 6.8** The panel consists of six external members (including the co-chair). These are senior professionals with a range of expertise, skills and experience and an ability to take a strategic view of Departmental issues.
- 6.9** All members (including the co-chair) are expected to abide by the seven principles of public life (Nolan Principles, attached at Annex A). They will also need to complete and sign a Declaration of Interests (see Annex B) and update as appropriate. The Register will be held by DfT and not shared with third parties.
- 6.10** The group includes a number of DfT senior analysts, with the DfT's Chief Analyst who jointly chairs the panel with Professor Peter Jones.
- 6.11** Given the range of issues the panel will be invited to discuss, the core group will be supported by a wider network of subject matter experts who will be invited to attend meetings as appropriate.

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