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1. Performance indicators for public transit connectivity in multi-modal transportation networks

August 2012

Sabyasachee Mishra | Timothy F. Welch | Manoj K. Jha

Abstract: Connectivity plays a crucial role as agencies at the federal and state level focus on expanding the public transit system to meet the demands of a multimodal transportation system. Transit agencies have a need to explore mechanisms to improve connectivity by improving transit service. This requires a systemic approach to develop measures that can prioritize the allocation of funding to locations that provide greater connectivity, or in some cases direct funding towards underperforming areas. The concept of connectivity is well documented in social network literature and to some extent, transportation engineering literature. However, connectivity measures have limited capability to analyze multi-modal public transportation systems which are much more complex in nature than highway networks. In this paper, we propose measures to determine connectivity from a graph theoretical approach for all levels of transit service coverage integrating routes, schedules, socio-economic, demographic and spatial activity patterns. The objective of using connectivity as an indicator is to quantify and evaluate transit service in terms of prioritizing transit locations for funding; providing service delivery strategies, especially for areas with large multi-jurisdictional, multi-modal transit networks; providing an indicator of multi-level transit capacity for planning purposes; assessing the effectiveness and efficiency for node/stop prioritization; and making a user friendly tool to determine locations with highest connectivity while choosing transit as a mode of travel. An example problem shows how the graph theoretical approach can be used as a tool to incorporate transit specific variables in the indicator formulations and compares the advantage of the proposed approach compared to its previous counterparts. Then the proposed framework is applied to the comprehensive transit network in the Washington–Baltimore region. The proposed analysis offers reliable indicators that can be used as tools for determining the transit connectivity of a multimodal transportation network.

2. Mainstream consumers driving plug-in battery-electric and plug-in hybrid electric cars: A qualitative analysis of responses and evaluations

January 2012

Ella Graham-Rowe | Benjamin Gardner | Charles Abraham | Stephen Skippon | Helga Dittmar | Rebecca Hutchins | Jenny Stannard

Abstract: Plug-in electric vehicles can potentially emit substantially lower CO₂ emissions than internal combustion engine vehicles, and so have the potential to reduce transport emissions without curtailing personal car use. Assessing the potential uptake of these new categories of vehicles requires an understanding of likely consumer responses. Previous in-depth explorations of appraisals and evaluations of electric vehicles have tended to focus on 'early adopters', who may not represent mainstream consumers. This paper reports a qualitative analysis of responses to electric cars, based on semi-structured interviews conducted with 40 UK non-commercial drivers (20 males, 20 females; age 24–70 years) at the end of a seven-day period of using a battery electric car (20 participants) or a plug-in hybrid car (20 participants). Six core categories of response were identified: (1) cost minimisation; (2) vehicle confidence; (3) vehicle adaptation demands; (4) environmental beliefs; (5) impression management; and, underpinning all other categories, (6) the perception of electric cars generally as 'work in progress' products. Results highlight potential barriers to the uptake of current-generation (2010) plug-in electric cars by mainstream consumers. These include the prioritization of personal mobility needs over environmental benefits, concerns over the social desirability of electric vehicle use, and the expectation that rapid technological and infrastructural developments will make current models obsolete. Implications for the potential uptake of future electric vehicles are discussed.

3. Is a new applied transportation research field emerging?—A review of intermodal rail–truck freight transport literature

January 2004

Y.M Bontekoning | C Macharis | J.J Trip

Abstract: Intermodal freight transport has developed into a significant sector of the transport industry in its own right. This development has been followed by an increase in intermodal freight transportation research. We contend that a new transportation research application field is emerging; and that, while still in a pre-paradigmatic phase, it is now time to move on to a more mature independent research field. An independent research field can be justified because intermodal transport is a complex system that has characteristics

which distinguishes it from other transport systems. We have reviewed 92 publications in order to identify the characteristics of the intermodal research community and scientific knowledge base. This paper will discuss aspects of this research, assessing the status quo and seeking directions for the future. To conclude, we will propose an intermodal research agenda which can direct the intermodal research field towards a period of "normal science".

[4. Sustainable commute in a car-dominant city: Factors affecting alternative mode choices among university students](#)

August 2012
Jiangping Zhou

Abstract: This paper studies university students' commute and housing behaviors using samples from Los Angeles, a place notorious for car dependence and dominance. It finds that being embedded in this place does not make university students drive alone more than their peers in other places. Being multimodal and having a discounted transit pass increase the odds of alternative modes while holding a parking permit reduces the odds of these modes. Commute distance is positively related to carpool and telecommuting. Gender, status (undergraduate vs. graduate) and age are significantly correlated to biking, walking or public transit. Students living alone are more likely to commute by driving alone than other students. Having friends and classmates living nearby increases the odds of taking public transit. Due to data constraints, this study cannot prove whether there is any correlation between information contagion and the effects of living alone and having friends and classmates living nearby on alternative mode choice. But it proposes that the issue be worthwhile of further investigations. Based on the above, the paper recommends a comprehensive travel demand management program, utilization of information contagion effects of students and promotion of multimodal commute to better promote alternative mode of commute among university students.

[5. Bicycling renaissance in North America? An update and re-appraisal of cycling trends and policies](#)

July 2011
John Pucher | Ralph Buehler | Mark Seinen

Abstract: This paper reviews trends in cycling levels, safety, and policies in Canada and the USA over the past two decades. We analyze aggregate data for the two countries as well as city-specific case study data for nine large cities (Chicago, Minneapolis, Montréal, New York, Portland, San Francisco, Toronto, Vancouver, and Washington). Cycling levels have increased in both the USA and Canada, while cyclist fatalities have fallen. There is much spatial variation and socioeconomic inequality in cycling rates. The bike share of work commuters is more than twice as high in Canada as in the USA, and is higher in the western parts of both countries. Cycling is concentrated in central cities, especially near universities and in gentrified neighborhoods near the city center. Almost all the growth in cycling in the USA has been among men between 25–64 years old, while cycling rates have remained steady among women and fallen sharply for children. Cycling rates have risen much faster in the nine case study cities than in their countries as a whole, at least doubling in all the cities since 1990. They have implemented a wide range of infrastructure and programs to promote cycling and increase cycling safety: expanded and improved bike lanes and paths, traffic calming, parking, bike-transit integration, bike sharing, training programs, and promotional events. We describe the specific accomplishments of the nine case study cities, focusing on each city's innovations and lessons for other cities trying to increase cycling. Portland's comprehensive package of cycling policies has succeeded in raising cycling levels 6-fold and provides an example that other North American cities can follow.

[6. Value of travel time reliability: A review of current evidence](#)

May 2012
Carlos Carrion | David Levinson

Abstract: Travel time reliability is a fundamental factor in travel behavior. It represents the temporal uncertainty experienced by travelers in their movement between any two nodes in a network. The importance of the time reliability depends on the penalties incurred by the travelers. In road networks, travelers consider the existence of a trip travel time uncertainty in different choice situations (departure time, route, mode, and others). In this paper, a systematic review of the current state of research in travel time reliability, and more explicitly in the value of travel time reliability is presented. Moreover, a meta-analysis is performed in order to determine the reasons behind the discrepancy among the reliability estimates.

[7. Shopping online and/or in-store? A structural equation model of the relationships between e-shopping and in-store shopping](#)

February 2007
Sandy Farag | Tim Schwanen | Martin Dijst | Jan Faber

Abstract: Searching product information and buying goods online are becoming increasingly popular

activities, which would seem likely to affect shopping trips. However, little empirical evidence about the relationships between e-shopping and in-store shopping is available. The aim of this study is to describe how the frequencies of online searching, online buying, and non-daily shopping trips relate to each other, and how they are influenced by such factors as attitudes, behaviour, and land use features. Questionnaire data were collected from 826 respondents residing in four municipalities (one urban, three suburban) in the centre of the Netherlands. Structural equation modelling was used to examine the variables' multiple and complex relationships. The results show that searching online positively affects the frequency of shopping trips, which in its turn positively influences buying online. An indirect positive effect of time-pressure on online buying was found and an indirect negative effect of online searching on shopping duration. These findings suggest that, for some people, e-shopping could be task-oriented (a time-saving strategy), and leisure-oriented for others. Urban residents shop online more often than suburban residents, because they tend to have a faster Internet connection. The more shopping opportunities one can reach within 10min by bicycle, the less often one searches online.

8. The design of interurban bus networks in city centers

October 2012

Mireia Roca-Riu | Miquel Estrada | César Trapote

Abstract: This paper proposes a bilevel formulation for solving the Bus Network Design Problem (BNDP) of interurban services entering a major city. It is focused in interurban services because it is a growing problem in most of major cities, yet new in the literature. The layout of interurban bus routes and the locations of transfer stations in the main city are the key factors to provide a competitive public transportation service to commuters in a metropolitan area. The number of commuters in huge urban concentrations is growing due to the difficulties of living near the city center. The objective function of the first level is defined with the aim of reducing user and agency costs. In the second level the performance of users is addressed. Furthermore, a local search method based on the Tabu Search algorithm was carried out to guide the exploration in the solution domain. The results obtained in a set of test problems have demonstrated that the restart parameters of the algorithm play a significant role in the efficiency of the algorithm. Finally, implementation in the large network of Barcelona (Spain) reduces the total cost by 5% with regard to the present situation.

9. The relationships between e-shopping and store shopping in the shopping process of search goods

August 2012

Xinyu (Jason) Cao

Abstract: Internet facilitates hybrid shopping processes by enabling consumers to acquire information, experience product, and conduct transaction using different media (e.g., internet, store, and catalog) at different locations at different times. Although several studies have explored how internet transactions and store sales influence each other, few investigated transportation implications of the hybrid shopping process of single products. Using 540 internet users in the Minneapolis-St. Paul metropolitan area, USA, this study decomposed their shopping processes of a group of search goods (books, CDs, VCDs, videotapes, and album) to understand the relationships of e-shopping and store shopping. We found the media for product awareness, information search, and product trial are important predictors of transaction medium; and the awareness medium is the most important. Further, 17% of store buyers used internet for information search and/or product trial, and about 10% of internet buyers made trips to store to acquire information and/or experience product. The findings carry implications for marketing strategies and travel demand analysis.

10. Reforming the urban public transport bus system in Malta: Approach and acceptance

August 2012

Maria Attard

Abstract: The islands of Malta have joined the European Union in 2004 and have for the past decade suffered a decline in the patronage of its public transport service. Offered under a monopoly by an Association of individual owner drivers, the public transport service has not changed dramatically since its start in the early 1900s. Instead, an organic growth alongside the main routes linking new areas to the public transport network and a declining level of service pushed even more the local population to switch to private mobility. This has classified the islands amongst the countries in the world with the highest levels of motorisation. In 2008, following a general election and a general strike held by the public transport operators over the Government's intentions to remove monopolies, the new Minister for Transport published his intentions to reform public transport from its roots. This reform included the removal of the monopolies protecting the incumbents as well as developing a new network of services which cater more effectively to the public's travelling demands. This paper deals with the public transport reform and through direct observation details the processes involved in the regulation of public transport as well as the design of the new public transport network. The paper concludes with the critical factors which led to implementation of the reform and how this is applicable to cities worldwide.

11. Scientific research about climate change mitigation in transport: A critical review

December 2011

Tim Schwanen | David Banister | Jillian Anable

Abstract: This paper seeks to develop a deeper understanding of the research on climate change mitigation in transport. We suggest that work to date has focused on the effects of improvements in transport technologies, changes in the price of transport, physical infrastructure provision, behavioural change and alternative institutional arrangements for governing transport systems. In terms of research methodologies, positivist and quantitative analysis prevails, although there are signs of experimentation with non-positivist epistemologies and participatory methods. These particular engagements with climate change mitigation reflect mutually reinforcing tendencies within and beyond the academic transport community. We first draw on a revised version of Thomas Kuhn's philosophy of science to explore the path dependencies within transport studies, which are at least partly responsible for the predisposition towards quantitative modelling and technology, pricing and infrastructure oriented interventions in transport systems. We then employ the governmentality perspective to examine how transport academics' engagements with climate change mitigation depend on and align with more general understandings of climate change in UK society and beyond. The analysis makes clear that ecological modernisation and neo-liberal governmentality more generally provide the context for the current focus on and belief in technological, behaviour change, and especially market-based mitigation strategies. While current research trajectories are important and insightful, we believe that a deeper engagement with theoretical insights from the social sciences will produce richer understandings of transport mitigation in transport and briefly outline some of the contributions thinking on socio-technical transitions and practice theories can make.

12. Active transportation and physical activity: opportunities for collaboration on transportation and public health research

May 2004

James F Sallis | Lawrence D Frank | Brian E Saelens | M.Katherine Kraft

Abstract: Physically inactive lifestyles are a major public health challenge, and research in the transportation field on influences on the choice to walk and bike may provide guidance toward solutions. In the interests of promoting effective collaboration among the transportation, planning, and health fields, the current paper was written to fulfill three purposes. The first purpose was to summarize the transportation and planning studies on the relation between community design and non-motorized ("active") transport and to interpret these studies from a health perspective. The second purpose was to summarize studies from the health literature that examine the relation between physical environmental variables and leisure-time physical activity that have relevance for transportation research. The third purpose was to promote more collaboration among transportation, planning, and health investigators by identifying opportunities for transdisciplinary research.

13. The statistical analysis of crash-frequency data: A review and assessment of methodological alternatives

June 2010

Dominique Lord | Fred Mannering

Abstract: Gaining a better understanding of the factors that affect the likelihood of a vehicle crash has been an area of research focus for many decades. However, in the absence of detailed driving data that would help improve the identification of cause and effect relationships with individual vehicle crashes, most researchers have addressed this problem by framing it in terms of understanding the factors that affect the frequency of crashes – the number of crashes occurring in some geographical space (usually a roadway segment or intersection) over some specified time period. This paper provides a detailed review of the key issues associated with crash-frequency data as well as the strengths and weaknesses of the various methodological approaches that researchers have used to address these problems. While the steady march of methodological innovation (including recent applications of random parameter and finite mixture models) has substantially improved our understanding of the factors that affect crash-frequencies, it is the prospect of combining evolving methodologies with far more detailed vehicle crash data that holds the greatest promise for the future.

14. The influence of individual's risk perception and attitudes on travel behavior

October 2012

Wafa Elias | Yoram Shiftan

Abstract: This study analyzes the effect of individuals' risk perception of being involved in road crashes, awareness of the negative environmental effects of transportation, knowledge of environmental problems, fatalistic beliefs, attitudes toward various public transport (PT) features, and beliefs on their level of intention to shift from car to public transportation and walking. It attempts to examine the potential of transport

policies to improve PT systems and the pedestrian road safety level by bettering traffic arrangements on the intention to shift from car to PT and walking. The study uses an integrated approach consisting of a descriptive analysis; a factor analysis to create attitudinal factors; and an intention model that is developed, based on a stated-preference survey, with attitudinal factors among the explanatory variables, in regard to the use of public transportation for commuting. The approach, set within a theoretical framework that is also developed, is applied to a case study of Arab cities in the Galilee region of northern Israel. The results support the hypothesis that perception of the risk of being involved in road crashes positively affects sustainable travel behavior, as expressed by the level of intention to use public transport; concern for and knowledge of environmental problems, in contrast, exerts no significant effect on the intention to shift to PT. The results showed that people have a higher intention to shift to public transport for work trips than for other purposes. Improving the PT system and the pedestrian road-safety level promote the intention to shift to PT, in particular for commute trips.

15. Integrating congestion pricing, transit subsidies and mode choice

July 2012

Leonardo J. Basso | Sergio R. Jara-Díaz

Abstract: We model and analyze optimal (welfare maximizing) prices and design of transport services in a bimodal context. Car congestion and transit design are simultaneously introduced and consumers choose based on the full price they perceive. The optimization variables are the congestion toll, the transit fare (and hence the level of subsidies) and transit frequency. We obtain six main results: (i) the optimal car-transit split is generally different from the total cost minimizing one; (ii) optimal congestion and transit price are interdependent and have an optimal frequency attached; (iii) the optimal money price difference together with the optimal frequency yield the optimal modal split; (iv) if this modal split is used in traditional stand-alone formulations – where each mode is priced independently – resulting congestion tolls and transit subsidies and fares are consistent with the optimal money price difference; (v) self-financing of the transport sector is feasible; and (vi) investment in car infrastructure induces an increase in generalized cost for all public transport users.

16. Air transportation in a carbon constrained world: Long-term dynamics of policies and strategies for mitigating the carbon footprint of commercial aviation

December 2011

Sgouris Sgouridis | Philippe A. Bonnefoy | R. John Hansman

Abstract: With increasing demand for air transportation worldwide and decreasing marginal fuel efficiency improvements, the contribution of aviation to climate change relative to other sectors is projected to increase in the future. As a result, growing public and political pressures are likely to further target air transportation to reduce its greenhouse gas emissions. The key challenges faced by policy makers and air transportation industry stakeholders is to reduce aviation greenhouse gas emissions while sustaining mobility for passengers and time-sensitive cargo as well as meeting future demand for air transportation in developing and emerging countries. This paper examines five generic policies for reducing the emissions of commercial aviation; (1) technological efficiency improvements, (2) operational efficiency improvements, (3) use of alternative fuels, (4) demand shift and (5) carbon pricing (i.e. market-based incentives). In order to evaluate the impacts of these policies on total emissions, air transport mobility, airfares and airline profitability, a system dynamics modeling approach was used. The Global Aviation Industry Dynamics (GAID) model captures the systemic interactions and the delayed feedbacks in the air transportation system and allows scenarios testing through simulations. For this analysis, a set of 34 scenarios with various levels of aggressiveness along the five generic policies were simulated and tested. It was found that no single policy can maintain emissions levels steady while increasing projected demand for air transportation. Simulation results suggest that a combination of the proposed policies does produce results that are close to a “weak” sustainability definition of increasing supply to meet new demand needs while maintaining constant or increasing slightly emissions levels. A combination of policies that includes aggressive levels of technological and operations efficiency improvements, use of biofuels along with moderate levels of carbon pricing and short-haul demand shifts efforts achieves a 140% increase in capacity in 2024 over 2004 while only increasing emissions by 20% over 2004. In addition, airline profitability is moderately impacted (10% reduction) compared to other scenarios where profitability is reduced by over 50% which pose a threat to necessary investments and the implementation of mitigating measures to reduce CO₂ emissions. This study has shown that an approach based on a portfolio of mitigating measures and policies spanning across technology and operational improvements, use of biofuels, demand shift and carbon pricing is required to transition the air transportation industry close to an operating point of environmental and mobility sustainability.

17. Port privatization, efficiency and competitiveness: Some empirical evidence from container ports (terminals)

June 2005

Jose Tongzon | Wu Heng

Abstract: Few studies have investigated the quantitative relationship between port ownership structure and port efficiency with mixed results. This study applies a stochastic frontier model proposed by Battese and Coelli [Battese, G.E., Coelli, T.J., 1995. A model for technique inefficiency effects in a stochastic frontier production function for panel data. *Empirical Economics* 20, 325–332], which incorporates the inefficiency effect, to show whether port privatization is a necessary strategy for ports to gain a competitive advantage. While this stochastic frontier model has been used to a wide number of industries where the technical inefficiency effect is required, this method has rarely been employed to port industry. This study also investigates the determinants of port competitiveness. Both the principal component analysis (PCA) and the linear regression model are used to examine the effects of identified key factors on port competitiveness. Based on a sample of selected container terminals around the world, the results of this study have shown that private sector participation in the port industry to some extent can improve port operation efficiency, which will in turn increase port competitiveness. Another important determinant of port competitiveness is the adaptability to the customers' demand. All these results provide some policy implications and guidance for port authorities and port operators in formulating effective strategies to improve their competitiveness vis-à-vis rivals.

18. Investigating structural relationships between service quality, perceived value, satisfaction, and behavioral intentions for air passengers: Evidence from Taiwan

May 2008

Ching-Fu Chen

Abstract: This study aims to investigate the relationships between service quality, perceived value, satisfaction, and behavioral intentions for air passengers through a structural equation model (SEM). The main study's results are as follows. Service expectation has a significantly positive effect on perceived performance, but not on perceived value and satisfaction. Perceived performance has a significantly positive effect on perceived value, but not on satisfaction. Perceived value has a significantly positive effect on satisfaction. Both perceived value and satisfaction have significantly positive effects on behavioral intentions. In addition, perceived performance reveals the indirect effect on satisfaction moderated by perceived value. Finally, perceived value reveals a larger effect than overall satisfaction on behavioral intentions. Specific theoretical and managerial implications are discussed.

19. Towards integrated land use and transportation: A dynamic disequilibrium based microsimulation framework for built space markets

August 2012

Bilal Farooq | Eric J. Miller

Abstract: Investigating the factors and processes that influence the spatiotemporal distribution of built space and population in an urban area, plays an extremely important role in our greater understanding of the urban travel behaviour. Existing location of activity centres, especially home and work, strongly influences the short-term individual-level decisions such as mode of transportation, and long-term household-level decisions such as change in job and residential location. Conditions in the built space market also affect households' and firms' location and relocation decisions, and hence influence the general travel patterns in an urban area. In this context, this paper addresses a very important, but at the same time, not very widely investigated dimension that plays a key role in the evolution of built space and population distribution: Market. A disequilibrium based microsimulation modelling framework is developed for the built space markets. This framework is then used to operationalize the Greater Toronto and Hamilton Area's owner-occupied housing market within Integrated Land Use Transportation and Environment (ILUTE) modelling system. Simulation results captured heterogeneity in the transaction prices, due to type of dwellings and different market conditions, in a very disaggregate fashion. The proposed methodology is validated by running the simulation from 1986 to 2006 and comparing the results with the historic data.

20. Customer segmentation revisited: The case of the airline industry

January 2008

Thorsten Teichert | Edlira Shehu | Iwan von Wartburg

Abstract: Although the application of segmentation is a topic of central importance in marketing literature and practice, managers tend to rely on intuition and on traditional segmentation techniques based on socio-demographic variables. In the airline industry, it is regarded as common sense to separate between business and economy passengers. However, the simplicity of this segmentation logic no longer matches the ever more complex and heterogeneous choices made by customers. Airline companies relying solely on flight class as the segmentation criterion may not be able to customize their product offerings and marketing policies to an appropriate degree in order to respond to the shifting importance and growing complexity of customer choice drivers, e.g. flexibility and price as a result of liberalization in the airline industry. Thus, there is a need to re-evaluate the traditional market segmentation criterion. By analyzing the stated preference data of more than 5800 airline passengers, we show that segmenting into business and leisure (a) does not sufficiently capture the preference heterogeneity among customers and (b) leads to a

misunderstanding of consumer preferences. We apply latent class modeling to our data and propose an alternative segmentation approach: we profile the identified segments along behavioral and socio-demographic variables. We combine our findings with observable consumer characteristics to derive pronounced fencing mechanisms for isolating and addressing customer segments receptive for tailored product packages.

[21. Transit network design and scheduling: A global review](#)

December 2008

Valérie Guihaire | Jin-Kao Hao

Abstract: This paper presents a global review of the crucial strategic and tactical steps of transit planning: the design and scheduling of the network. These steps influence directly the quality of service through coverage and directness concerns but also the economic profitability of the system since operational costs are highly dependent on the network structure. We first exhibit the context and the goals of strategic and tactical transit planning. We then establish a terminology proposal in order to name sub-problems and thereby structure the review. Then, we propose a classification of 69 approaches dealing with the design, frequencies setting, timetabling of transit lines and their combinations. We provide a descriptive analysis of each work so as to highlight their main characteristics in the frame of a two-fold classification referencing both the problem tackled and the solution method used. Finally, we expose recent context evolutions and identify some trends for future research. This paper aims to contribute to unification of the field and constitutes a useful complement to the few existing reviews.

[22. Home-to-work commuting, urban form and potential energy savings: A local scale approach to regional statistics](#)

August 2012

S. Dujardin | F. Pirart | F. Brévers | A.-F. Marique | J. Teller

Abstract: The link between transport energy consumption and land use patterns has been the focus of a considerable amount of academic works over the past decades. While many empirical researches are backed up with solid statistical techniques, most of them do not fully consider the influence of scale underlying empirical quantitative investigations. Using fine-scale home-to-work commuting data for Wallonia (Belgium), this paper re-evaluates Breheny's (1995) assertion that urban structure should hold the characteristics of major cities if substantial energy savings are to be achieved. A local scale approach highlights efficient settlements in terms of transport energy consumption not only within major towns, but also within remote rural areas. Furthermore, results suggest that influencing the urban form following local energy efficient examples rather than regional ones could also yield significant gains, without an extreme policy stance of re-urbanisation in major cities.

[23. Residential location and transit-oriented development in a new rail corridor](#)

March 2011

Doina Olaru | Brett Smith | John H.E. Taplin

Abstract: The relationship of form, use, and density in urban development and their influence on human behavior and travel is a key element of many land use and transport policies. Prior research indicates high-density urban development leads to decreased travel and thus sustainable mobility; however, personal attitudes seem to have greater effect on mobility than does the urban form. This research evaluates how households consider transit-oriented development (TOD) characteristics in their location decisions with regard to new Mandurah railway line stations opened in December 2007 in Perth, Western Australia. The results indicate that the choice of residence reflects neighborhood and housing attributes, with significant heterogeneity in the populations of the three precincts in terms of their valuation of various housing characteristics, proximity to urban facilities, and transport. There is also significant variation in households' attitudes to natural and artificial environments. A better understanding of the complex relationships among environment, travel, socio-demographic characteristics, and household attitudes can help transport planners leverage the benefits of TOD and improve the quality of urban design and community life.

[24. Urban spatial location advantage: The dual of the transportation problem and its implications for land-use and transport planning](#)

January 2012

Enda Murphy

Abstract: Numerous recent studies have investigated the relationship between the location of jobs and housing in urban areas and how this relates to urban commuting patterns. Few have utilised the dual of the transportation problem of linear programming (TLP) to provide insights into these relationships. Accordingly, this analysis utilises the TLP to determine dual variable values (shadow prices) for a study area in Dublin, Ireland. The approach determines the pattern of relative location advantage for the peak and off-peak travel periods and for public and private transport for 1991 and 2001. The results are set against the expected

results for hypothetical urban structures. The results show that the pattern of relative location advantage has altered sharply over the study period for off-peak trip-making but has remained more or less the same for trip-making in the peak period. For the off-peak period, the pattern of relative location advantage has shifted from the central area to the periphery specifically for private transport trips; for public transport, the pattern has remained focused on the city centre. This indicates that private transport users can react more quickly to changes in the distribution of land-use activities than their public transport counterparts due to the relatively fixed nature of the latter mode. This implies that the public transport network needs to be reorganized to better reflect the revised pattern of trip-making specifically for the off-peak period. The results demonstrate the value of using the approach for providing information about the spatial organisation of land uses within cities and where future development may be targeted.

25. The value of travel time and reliability-evidence from a stated preference survey and actual usage

October 2012

Prem Chand Devarasetty | Mark Burriss | W. Douglass Shaw

Abstract: This research examined travel behavior of Managed Lane (ML) users to better understand the value travelers place on travel time savings and travel time reliability. We also highlight the importance of survey design techniques. These objectives were accomplished through a stated preference survey of Houston's Katy Freeway travelers. Three stated choice experiment survey design techniques were tested in this study: Bayesian (Db) efficient, random level attribute generation, and an adaptive random approach. Mixed logit models were developed from responses using each of those designs. The value of travel time savings (VTTSs) estimates do vary across the design strategies, with the VTTS estimates based on the Db-efficient design being approximately half the estimates from the other two designs. However, among the three design strategies, the value of travel time reliability (VOR) was only significant in the Db-efficient design. The estimated VTTS from actual Katy Freeway usage (as measured using actual tolls paid and travel time saved on the managed lanes) is \$51/h. This likely also includes any value that travelers place on travel time reliability. In comparison, our combined estimate of VTTS and VOR based on the SP survey (Db-efficient design) was \$50/h, which is remarkably close to the estimate from the actual usage data. Based on our dataset, the Db-efficient design technique proved superior to the other two techniques. Finally, this research also supports the importance of including both travel time and travel time reliability parameters when estimating the willingness to pay for, and therefore benefits derived from, ML travel.