

A monetary-valuation analysis of the footpath/road tradeoff of Western Australian local government authorities

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Abstract

This study uses a monetary-valuation analysis of the footpath/road trade-off ratio of local government authorities to gather a sense of the recognition and valuation of footpaths for transport policy. The analysis shows that the average valuation local government authorities place on local footpaths is approximately \$1 per \$77.41 placed on local roads, with most authorities preferring to use the historical cost method to value their footpaths. Further analysis, employing multiple regression, shows that population density and an authority's current ratio are highly significant for monetary valuations placed by local government authorities for the footpath/road trade-off. In light of the results there appears room for local government authorities to step up their expenditure on footpath infrastructure.

INTRODUCTION

Footpaths and roads represent important transport infrastructural assets built by local government authorities to accommodate the motorised vehicle and walking needs of their residents. The footpath/road trade off represents a transport infrastructure opportunity cost to a local government authority (LGA) faced with limited resources to satisfy residents' transport infrastructure needs. This study uses a monetary-valuation analysis of the footpath/road trade-off of local government authorities of Western Australia to gather a sense of the recognition and valuation of footpaths for transport policy.

As one of three levels of government (federal, state, local) of Australia, the LGA (also referred to as councils, local councils and shires) is the level of government that manages local footpaths and local roads. Apart from local roads, Western Australia also contains state roads funded by the Western Australian state government through the Mains Roads Authority, and National Land

Transport Road Network funded by the federal government. Revenue for Western Australian local government authorities comes from taxes in the form of rates, charges for sale of goods and services, and grants from federal and state governments. The Western Australian state government allocates 27% of vehicle registration charges to fund local roads which comprise 72% of all roads in Western Australia (WALGA 2011). In contrast, there are no federal or state registration charges for footpath use and hence no direct federal or state allocations to local government authorities for local footpath construction.

Definitions of footpaths (also called sidewalks, pedestrian routes, pathways and walkways) vary widely in the literature but for the purposes of this study footpaths are defined as recognised paths for pedestrians. In this paper, footpaths are defined narrowly as local government authorities' interpretations of urban footpaths, which are treated separately from road facilities. A limitation of this definition is that some infrastructural assets, such as crosswalks or carparks, might be construed as a footpath or road. To overcome this problem, this paper uses an LGA's costing of footpaths or roads to determine whether such assets fall into one category or the other. It should be borne in mind that it is conceivable that footpaths may be provided by an LGA with road infrastructure. Nevertheless, for the sample set used in this study preparers of annual report information have been able to account separately for footpaths and roads.

Indeed, Western Australian local government authorities disclose information about local footpath and local road infrastructure in their online annual reports, financial reports and general online pages. The study attempts to provide answers to the following research questions:

1. What measurement techniques are used by local government authorities of Western Australia to present separate stand-alone monetary valuations of footpaths?
2. What is the trade-off between the monetary valuations of footpaths and roads of local government authorities of Western Australia?
3. What factors explain the variation in the trade-off between the monetary valuations of footpaths and roads of local government authorities of Western Australia?

The first question considers whether a stand-alone monetary valuation in the annual report is placed on the authority's footpaths, and what measurement technique is used for those valuations. This is

an important question because it provides an indication of the monetary standing placed by local government authorities on footpaths as a distinct form of infrastructural asset where the temptation may be to treat footpaths, as many accountants do, simply as a subsidiary part of roads. A motivation for the use of stand-alone valuations of footpaths is to provide transport policy makers with information about the potential service benefits of footpaths through monetary calculations.

The second question aims to place a relative monetary value on roads and footpaths by providing a calculable transport infrastructural asset ratio. Here, the footpath/road trade-off may be seen as a transport infrastructure opportunity cost facing authorities, indicating how many dollars' worth of road infrastructure must be given up to produce one more dollar's worth of footpath. In the context of 'competing uses of pavements and roads' (Khayesi, Heiner & Nebe 2010, p. 103), the definition of opportunity cost emphasises the trade-off between the provision of one non-market transport route (roads) against a next-best non-market transport route (footpaths). The past literature recognises this close and special trade-off between roads and footpaths. For example, Khayesi et al. (2010) note that a frustrating impediment to footpath development is a preference by planners for motorised traffic development. The definition of opportunity cost also takes into account the need to make this choice because of limited resources (particularly land and funds) available for alternative transport route infrastructure. While there is certainly an opportunity cost for an LGA of building roads and, say, library books or swimming pools, this paper narrows its focus on opportunity cost between the special trade-off between alternative transport routes.

This is useful for transport policy makers because while non-monetary reasons may influence a decision to install or demolish footpaths, a monetary ratio provides additional fiscal evidence for that decision. The trade-off decision between roads and footpaths requires the making of choices (Levine 2006) and evaluations of the decision-making (Litman 2013) as wide-ranging transportation market benefits (Goodwin 2004) or distortions (Litman 2006) may occur. The trade-off decision also invokes the theory of opportunity cost, which is the highest valued alternative foregone in the pursuit of an endeavour (Taplin, Kerr & Brown 2013). By way of example, the opportunity cost of making a financial commitment to roads may be the foregone financial commitment to footpaths. While costs are an integral part of formulating the footpath/road

trade-off decision (Bushell et al. 2013; Krizek et al. 2006; Nicholls 2011; Litman 2013), it might also be affected by walking benchmarks (ABW 2012; Frank et al. 2010), business performance (Hack 2013), home values (Cortright 2009), health benefits from car-reduction (Rabi & de Nazelle 2012; Grabow et al. 2011), economic evaluations (Leinberger & Alfonzo 2012) and social amenity preferences (Turner et al. 2011; Loukaitou-Sideris & Ehrefoecht 2010)

The third question examines the factors accounting for the variation in the footpath/road trade-off. This is a critically important question not only for LGA planning, constructing and maintaining alternative transport infrastructural assets but also higher tiers of government (in the case of Australia, state and federal governments) in assessing whether residents' transport preferences are being met by an LGA. In summary, this paper analyses the provision of footpaths by cost by predictive factors concerning local authorities.

Under Schedule 1, Part 2 (entitled 'Nature or Type of Classifications') of the Western Australian *Local Government (Financial Management) Regulations 1996*, local government authorities are encouraged to provide monetary information about roads but no similar provision is made for footpaths in that act. Thus, all footpath information provided by local government authorities of Western Australia for this study is voluntary, while valuations rendered on roads by these authorities are mandatory. It is important to note that under Section 3(b)(ii)(II) of the *Local Government (Financial Management) Amendment Regulations 2012*, an LGA was expected to show for the financial year ending on 30 June 2014 the fair value of all the assets of the authority that were infrastructure.

The remainder of the paper is organised as follows. The following section presents an accounting lens of the service potential, valuation methods and recognition of footpaths. This is followed by the hypotheses development then the sample and methodology are presented. This is followed by sections that present and discuss the results and empirical findings respectively. Implications and suggestions for further research are presented in the final section.

LITERATURE REVIEW

An important way of communicating information about transport infrastructure is through the medium of annual reports (Vermeer, Patton & Styles 2011). An annual report is a document published by an entity on a yearly basis to provide stakeholders with

financial and non-financial data. The annual report is the primary medium of accountability. Many commentators argue that the annual report has the benefit of providing a comprehensive statement of stewardship of an entity's performance reaching to a wide array of stakeholders. Hopwood (1983) argues that accounting language and practices are intertwined in issues of public policy, both reflecting and influencing the public debate through the creation of selective patterns of economic visibility and disciplining performance so that accountability can be demanded, policed and enforced. Such visibility may render a picture of service benefits and valuations.

Service benefits of footpaths include increased safety and health, and increased property values and economic development (PWC 2011; Litman 2010). Footpaths may also contribute to consumer cost savings, external cost reduction, efficient land use, community liability, reduction of liabilities, and support for equity objectives (Litman 2014a, b). Miller & Pattassini (2005) argue that there is scope for both market and non-market valuation in planning evaluation. Generally, there are many alternative valuation methods for measuring non-current assets, which could appear in the balance sheet of the annual report, including historical cost, fair cost, fair market value, deprival value, current cost, net realisable value and replacement cost.

These alternative measurement methods open up a great many possibilities for the valuing of footpaths as non-current assets, providing important information to transport planners, rate-payers, pedestrians and other stakeholder groups in making decisions. Above all, valuations provide local government authorities and transport planners with the information to create a desirable image for a cohesive 'setting' with footpaths and open spaces capable of conveying meaning to visitors (Salah el-Dien Ouf 2008). Valuations by means of motorist's willingness to trade-off certain street types (for example, cul-de-sac streets) for footpaths also establish transport planning preferences for rate-payers. Local government authorities and transport planners recognise that footpaths constitute a vulnerable but valuable asset (Ehrenfoecht & Loukaitou-Sideris 2010).

Schmidt and Neemeth (2010) note that the traditional function of footpaths is constantly challenged by new trends in public space provision and management. Thus, privatised public footpath spaces have become part of business improvement districts, festival marketplaces, gated communities or suburban shopping malls (Schmidt & Neemeth 2010; Sepe 2009).

HYPOTHESES

In attempting to explain the variation in the trade-off between the monetary valuations of footpaths and roads of local government authorities of Western Australia, this paper considers the factors of population density; preference by local residents for walking as against motorised transport use to get to work; and an authority's current ratio.

Population density may impact on a local government authority's valuation of footpaths. More walking facilities may be provided as densities rise. Relatively large population densities place increased pressure on sprawl and motor vehicle transport forcing local government authorities to become more strategic about providing footpaths to relieve the pressure. In the state of New South Wales, although footpaths had 'previously been provided on a haphazard basis in association with medium density development' (Gosford City Council 2012, p. 7), there was a need to be more strategic:

The additional population to be accommodated as a result of the projected higher density of development warrants the provision of additional footways (Gosford City Council 2012, p. 7).

Drawing on these arguments, the following hypothesis is presented:

H1: The population density of an LGA of Western Australia is positively associated with the footpath/road valuation ratio of that authority.

Another hypothesised determinant of the footpath/road trade-off is the preference by local residents for walking, as against motorised transport use, to get to work, otherwise known as the walking/motorised transport method ratio. Put another way, one might expect that the greater the proportion of residents in a local government area that prefer to walk to work rather than use motorised transport to get to work, the greater the valuation placed on footpaths by the local government authority. While commuting only represents a relatively small fraction of the total walking trip demands – other trips may include running errands, shopping and recreation – it does represent an income-generating action of residents. Deferring to residents' transport infrastructural asset preferences appears to fit well with the community ethos associated with local government authorities. Thus, the following hypothesis is posed:

H2: The local government authority walking/motorised transport method ratio is positively associated with the footpath/road valuation ratio of that authority.

This study also explores the characteristics of the LGA's measures of current ratio performance. The current ratio measures a local government authority's ability to meet its financial obligations, and provides a measure of a local government authority's solvency. It is often used to assess the adequacy of an LGA's working capital and the ability to satisfy obligations in the short term. The current ratio focuses on unrestricted current assets, which have no form of restriction imposed on them by regulations or some other externally imposed requirement. The current ratio excludes restricted current assets which have restrictions imposed on them (for example, developer contributions, road transport authority contributions, water and sewerage grants, domestic waste management charges). The current ratio demonstrates the ability to control working capital (working capital is the amount of cash or equivalent assets a council has at its disposal to meet routine commitments after taking into consideration any assets which have restrictions imposed upon them). The current ratio thus focuses on the availability of cash and cash equivalents, the level of restricted assets (this is the value or percentage of restricted assets relative to non-restricted assets) and credit management policies and economic circumstances.

There is no 'ideal' current ratio. The higher the current ratio, the more liquid the LGA, suggesting there may be many funds tied up in cash or other liquid assets. These funds could be allocated to non-current assets such as roads and footpaths. As non-current assets, footpaths remain outside the measure of the current ratio. Thus, we would expect that an LGA that attempts to improve its current ratio by liquidating more of its assets into current rather than non-current categories would devote relatively less resources to footpaths.

Thus, the following hypothesis is posed:

H3: An LGA's current ratio is negatively associated with the footpath/road valuation ratio of that authority.

DESIGN

The annual reports of local government authorities were gathered from the websites of each authority. The final sample consisted of 72 local government authorities of Western Australia. The sample included roughly 50% of all 140 local government authorities of Western Australia. Ten authorities did generate a year-ending 2012 annual report on the website and 58 authorities did not include monetary valuations of footpaths. The financial data for the 2012 fiscal year, retrieved from the annual report

was measured in Australian dollars. The figures quoted from annual reports appear to use the same accounting methods of historical cost valuation. The analysis only examines the infrastructural costs of roads and footpaths. As a consequence, the dependent variable LGA footpath/road ratio excludes other infrastructural assets such as parking facilities and cycleways. It also excludes related services such as traffic signals, clearing of roads, traffic enforcement and other operational costs.

LGA population density

The population density for each local government authority was derived from the Australian Bureau of Statistics (ABS) data (ABS 2013). Here, the ABS divided the 2011 estimated resident population of each local government authority by the land area to obtain the number of persons per square kilometre (ABS 2013). The land area data was based upon the boundaries in the Australian Statistical Geography Standard 2011 and the areas of the regions were calculated using ABS standard Geographic Information Systems software using the digital boundaries of the regions (ABS 2013).

LGA walking/motorised transport method ratio

Data for LGA residents' walking/motorised transport mode preference was derived from the 2011 Census of Population and Housing which posed a question about how a person, residing in a particular local government area, got to work on Tuesday 9 August 2011 (ABS 2013). The LGA walking/motorised transport method ratio was derived by dividing the number of residents who walked to work by the aggregate of the number of residents who used either bus, car, motor bike/scooter or other (including taxi) to get to work. The ratio excluded those residents who used more than one method to travel to work, caught a train or tram, worked from home, did not go to work or did not state their travel method.

Current ratio

The current ratio measures a local government authority's ability to meet its financial obligations and was obtained from the annual reports of the local government authorities. The current ratio is defined as follows: current assets minus restricted assets divided by current liabilities minus liabilities associated with restricted assets. A ratio greater than 1:1 indicates that unrestricted current assets exceed current liabilities. If the ratio is less than 1:1 it is generally accepted that a council might take steps to improve its financial position. A ratio of 1:1 or

greater indicates a council can meet its short term liabilities with its current assets and is generally viewed as being able to meet its obligations.

RESULTS

A little over 50% of the local government authorities clearly see a need to separate costings of local roads and local footpaths in presenting their valuations of infrastructural transport assets. *Table 1* shows that the sample's highest population density was 2704 persons per square kilometre (for the City of Subiaco LGA), while the lowest density was less than one person per square kilometre (for the Shire of Mount Magnet LGA and Shire of Mount Marshall LGA). The mean for LGA walking/motorised transport method (WMTM) ratio was 0.136 which indicates that for every 1000 West Australian residents that used the road through motorised transport to get to work in the morning, 136 West Australian residents walked to work. Put another way, for every resident that walked to work there were 7.3 residents using motorised road transport to get to work. The highest WMTM ratio of 1.769 belonged to the Shire of Sandstone LGA indicating that more residents in that Shire walked to work than used motorised transport to get to work. *Table 1* also shows the current ratio for each LGA. Conventionally a current ratio of at least 1.2 is deemed desirable (West Australian Auditor General 2013) but the mean of 1.876 shows a relatively high current ratio. The highest current ratio of 5.96 belonged to the Shire of Mount Marshall LGA and the lowest ratio belonged to the Shire of Peppermint Grove LGA. Note that the mean footpath/road ratio was 0.072. Thus, on average, for every \$1000 invested on roads, \$72 was spent on footpaths.

The correlation matrix shown in *Table 2*, prior to the interpretation of the results of the regression, indicates there were no multi-collinearity issues with the independent variables.

EMPIRICAL FINDINGS AND DISCUSSION

Seventy of the 72 local government authorities of Western Australia used historical cost to value their footpaths. The trade-off between the monetary valuations of roads and footpaths of local government authorities of Western Australia was approximately 1 to 77. This trade-off shows that the average valuation local government authorities place on roads is approximately \$77.41 per \$1 placed on footpaths. It is also noteworthy that in addition to the provision of financial information on footpaths, most local government authorities provided non-monetary information on footpaths.

Table 1
Descriptive statistics

Variables	N	Minimum	Maximum	Mean	Standard deviation
LGA population density (persons/km ²)	72	0.001	2704	459.54	799.545
LGA walking/motorised transport method (WMTM) ratio	72	0.129	1.769	0.136	0.219
LGA current ratio	72	0.286	5.960	1.876	1.210
Footpath/road ratio	72	0.0016	0.504	0.072	0.094

Table 2
Correlation matrix

	LGA population density	LGA walking/motorised transport method ratio	Current ratio
LGA population density Sig. (2-tailed)	1		
LGA walking/motorised transport method ratio Sig. (2-tailed)	-0.228 (0.054)	1	
LGA current ratio Sig. (2-tailed)	-0.177 (0.148)	0.441 (0.000)	1

Table 3 depicts the result of regression following the backward elimination approach to test hypotheses. Backward regression began with an examination of the combined effect of all independent variables (LGA population density, LGA WMTM ratio and LGA current ratio) on the dependent variable (FR ratio). Starting with the weakest predictor, an independent variable was removed, and a new analysis was performed. Thus, as depicted in Table 3, LGA WMTM ratio was removed, and the results of the analysis showed that both LGA population density and LGA current ratio were significant for the relationship. The findings of model 2 support two of the hypotheses, with an adjusted r square of 0.505. An F-test of the overall fit of the model is high (F=37.169) and probability of F statistic is low (.000).

Unsurprisingly, the footpath/road trade-off is relatively higher for an LGA with a higher population density than an LGA with a lower population density. Table 3 also shows that the relationship between LGA current ratio and the dependent variable is negative.

Table 4 looks at the five highest density local government authorities from the sample. All five

entities have population densities that exceed 2100 per square kilometre (the sample mean was 460 people per square kilometre). Further, all five local government authorities possess an LGA current ratio well below the sample mean of 1.876, and an LGA FR ratio well above the sample mean of 0.072.

In summary, the results of the study show support for both H1 and H3 but no support for H2.

IMPLICATIONS

Over 50% of local government authorities' annual reports contained stand-alone valuations of footpaths, suggesting that many authorities recognise footpaths as distinct calculative spaces. Clearly, most local government authorities preferred to use historical cost valuation in preference to other valuation techniques (fair value, market value, deprival value, current cost, net realisable value and replacement cost) in valuing footpaths. It is possible that the preference for historical cost valuation stems from its relative ease in application. Note, however that two local government authorities from the sample revalued their footpaths upwards using fair valuation. These increments indicated that the service benefits from the footpaths had increased,

Table 3
Multiple regression

Model	Unstandardised coefficients		Standardised coefficients		Sig	Adj. R ²
	B	Std. error	Beta	t		
(Constant)	0.067	0.016		4.223	0.000*	0.505
LGA population density	7.655	0.000	0.652	7.686	0.000*	
LGA current ratio	-0.016	0.007	-0.211	-2.487	0.015 [†]	

Notes:

* Highly significant; dependent variable: LGA FR ratio.

[†] Moderately significant.

Table 4
Five highest density Local Government Authorities

	LGA population density (persons/km ²)	Current ratio	Footpath/road ratio
Subiaco City (MLGA)	2704.4	1.23	0.234
East Fremantle Town (MLGA)	2377.5	0.98	0.303
Cottesloe Town (MLGA)	2120.5	1.08	0.243
Mosman Park Town (MLGA)	2153.7	1.01	0.105
South Perth City (MLGA)	2219	1.15	0.504

although it should be pointed out that there is scope for authorities to use decrements to reflect downward revaluations of footpath networks. Future research might consider the impact of the *Local Government (Financial Management) Amendment Regulations 2012* on future valuations of footpaths given the requirement to use fair valuations for all infrastructure assets at year ending 30th June, 2014.

The mean valuation local government authorities of Western Australia place on local footpaths is approximately \$1 per \$77.41 placed on local roads. In terms of planning, this is a useful infrastructural transport benchmark for local government authorities and other stakeholders to use in making decisions about planning, costing and management of footpaths. Future research might compare this footpath/road figure with the ratios of authorities of other jurisdictions, particularly in those jurisdictions which also do not have mandatory footpath reporting requirements.

Unsurprisingly, population density (H1) and current ratio (H3) were significant for the dependent variable. In terms of H1, local government authorities with relatively large population densities are prepared to increase expenditures

on footpath infrastructure to relieve the pressure on other infrastructure (including roads) in the relatively densely populated area and to cater for a critical mass of pedestrians. In terms of H3, it seems that local government authorities that attempt to improve their current ratio by liquidating more of their assets into current rather than non-current categories tend to devote relatively less money to footpath infrastructure than to roads. Proponents of footpath infrastructure might encourage authority management to be less conservative in their management of the current ratio.

The walking/motorised transport method (WMTM) ratio (H2) was not supported by the results. There may be a number of reasons for this. Local government authorities may be making haphazard decisions on choices about transport mode infrastructure that ignore their residents' preferences. Alternatively, the proxy used for the WMTM ratio may be crude as it only takes in residents' preferences for getting to work on a single weekday in August 2011; leisure time and seasonal variability are also ignored by the ratio. Nevertheless, there appears a mismatch in some areas which have relatively low levels of footpaths but a relatively high proportion of residents

prepared to walk to work. Future research might consider looking at these issues more extensively by using further support of quantitative or qualitative techniques.

REFERENCES

ABS 2013, *National Regional Profile 2007-2011*, Australian Bureau of Statistics, Canberra, ACT, viewed 10 January 2014 at <<http://www.abs.gov.au/ausstats/abs@nrp.nsf/webpages/Population+Census+2007-2011>>

ABW 2010 and 2012, *Bicycling and Walking in the U.S.: Benchmarking Reports*, Alliance for Biking & Walking, viewed 10 January 2014 at <www.peoplepoweredmovement.org/benchmarking>

Bushell, MA, Poole, BW, Zegeer, CV & Rodriguez, DA 2013, *Costs for Pedestrian and Bicyclist Infrastructure Improvements: A Resource for Researchers, Engineers, Planners, and the General Public*, Pedestrian and Bicycle Information Center, Federal Highway Administration; viewed 19 December 2014 at http://katana.hsrc.unc.edu/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf

Cortright, J 2009, *Walking the Walk: How Walkability Raises Home Values in U.S. Cities*, Imprensa, CEOs for Cities, viewed 10 January 2014 at <www.ceosforcities.org/files/WalkingTheWalk_CEOsforCities1.pdf>.

Ehrenfeucht, R & Loukaitou-Sideris, A 2010, 'Planning urban sidewalks: Infrastructure, daily life and destinations', *Journal of Urban Design*, vol 15, no. 4, pp. 459-471.

Frank, L, Devlin, A, Johnstone, S & van Loon, J 2010, *Neighbourhood Design, Travel, and Health in Metro Vancouver: Using a Walkability Index*, Active Transportation Collaboratory, UBC, viewed 19 December 2014 at <http://act-trans.ubc.ca/files/2011/06/WalkReport_ExecSum_Oct2010_HighRes.pdf>

Goodwin, P 2004, *Valuing the Small: Counting the Benefits*, Centre for Transport Studies, University College London, viewed 10 January 2014 at <http://eprints.ucl.ac.uk/archive/00001263/01/2004_27.pdf>

Gosford City Council 2012, *Contributions Plan No. 49A Medium Density Area North Gosford*, Gosford City Council, Gosford, NSW.

Grabow, ML, Spak, SN, Holloway, T, Stone Jr, B, Mednick, AC & Patz, JA 2011, 'Air quality and exercise-related health benefits from reduced car travel in the Midwestern United States, environmental health perspectives', *Environmental Health Perspectives*, no 120, pp. 68-76, viewed 10 January 2014 at <<http://dx.doi.org/10.1289/ehp.1103440>>.

Hack, G 2013, *Business Performance in Walkable Shopping Areas*, Active Living Research, Robert Wood Johnson Foundation, viewed 10 January 2014 at <http://activelivingresearch.org/files/BusinessPerformanceWalkableShoppingAreas_Nov2013.pdf>

Hopwood, AG 1983, 'On trying to study accounting in the context in which it operates', *Accounting, Organizations and Society*, vol. 8, nos. 2/3, pp. 287-305.

Khayesi, M, Heiner, M & Nebe, JM 2010, 'Negotiating 'Streets for All' in urban transport planning: The case for

pedestrians, cyclists and street vendors in Nairobi, Kenya', *Antipode*, vol. 42, no. 1, pp. 103-126.

Krizek, KJ, Barnes, G, Poindexter, G, Mogush, P, Thompson, K, Levinson, D, Tilahun, N, Loutzenheiser, D, Kidston, D, Hunter, W, Tharpe, D, Gillenwater, Z & Killingsworth, R 2006, *Guidelines for Analysis of Investments in Bicycle Facilities*, National Cooperative Highway Research Program (NCHRP) Report 552, Transportation Research Board, Washington DC, viewed 10 January 2014 at <http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_552.pdf>.

Leinberger, CB & Alfonzo, M 2012, *Walk this Way: The Economic Promise of Walkable Places in Metropolitan Washington, DC*, Brookings Institute, viewed 10 January 2014 at <www.brookings.edu/research/papers/2012/05/~~/media/Research/Files/Papers/2012/5/25%20walkable%20places%20leinberger/25%20walkable%20places%20leinberger.pdf>.

Levine, J 2006, *Zoned Out: Regulation, Markets, and Choices in Transportation and Metropolitan Land-Use*, Resources for the Future, Washington DC.

Litman, T 2006, 'Transportation market distortions', *Berkeley Planning Journal*, vol. 19, pp. 19-36, viewed 10 January 2014 at <http://www.vtppi.org/distortions_BPJ.pdf>

Litman, T 2010, *Evaluating Transportation Economic Developmental Impacts*, Victoria Transport Policy Institute, viewed 10 January 2014 at <www.vtppi.org/econ_dev.pdf>

Litman, T 2013, *Toward More Comprehensive and Multi-modal Transport Evaluation*, Victoria Policy Transport Institute, viewed 19 December 2014 at <http://vtppi.org/comp_evaluation.pdf>

Litman, T 2014a, *Economic Value of Walkability*, Victoria Transport Policy Institute, March 22, viewed 10 January 2014 at <www.vtppi.org/walkability.pdf>

Litman, T 2014b, *Evaluating Active Transportation Benefits and Costs*, Victoria Transport Policy Institute, viewed 10 January 2014 at <www.vtppi.org/nmt-tdm.pdf>

Loukaitou-Sideris, A & Ehrenfeucht, R 2010, 'Vibrant sidewalks in the United States: Re-integrating walking and a quintessential social realm', *Access*, vol. 36, pp. 22-29; viewed 10 January 2014 at <<http://www.uctc.net/access/36/access-36vibrantsidewalks.pdf>>

Miller, D & Pattassini, D 2005, *Beyond Benefit Cost Analysis: Accounting for Non-Market Values in Planning Education*, Ashgate, Hampshire.

Nicholls, J 2011, *Washington's Complete Streets and Main Street Highways: Case Study Resource*, Report WA-RD 780.1, Washington State Transportation Center, University of Washington, Seattle, report for Washington State Department of Transportation, viewed 10 January 2014 at <http://www.wsdot.wa.gov/NR/rdonlyres/A49BBBE7-16BC-4ACE-AF2B-3C14066674C9/0/CompleteStreets_110811.pdf>.

PWC 2011, *A Walking Strategy for NSW: Assessing the Economic Benefits of Walking*, A Report prepared by PricewaterhouseCoopers at the request of the Premier's Council for Active Living and Department

of Environment, Climate Change and Water (NSW), viewed 19 December 2014 at <https://view.officeapps.live.com/op/view.aspx?src=http%3A%2F%2Fwww.pcal.nsw.gov.au%2F_data%2Fassets%2Fword_doc%2F0009%2F116559%2FPwC_Walking_Methodology_Final_020311restricted_2.docx>.

Rabi, A & de Nazelle, A 2012, 'Benefits of shift from car to active transport', *Transport Policy*, vol. 19, no. 1, pp. 121-131, viewed 10 January 2014 at <www.citeulike.org/article/9904895>.

Salah el-Dien Ouf, AM 2008, 'Lower and higher urban quality cycles in urban heritage areas: rejuvenation vs. conservation', *Journal of Urban Design*, vol. 13, no. 3, pp. 403-414.

Schmidt, S & Neemeth, J 2010 'Space, place and the city: emerging research on public space design and planning', *Journal of Urban Design*, vol. 15, no. 4, pp. 453-457.

Sepe, M 2009, 'PlaceMaker method: planning "Walkability" by mapping place identity', *Journal of Urban Design*, vol. 14, no. 4, pp. 463-487.

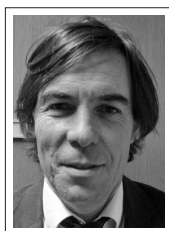
Taplin, R, Kerr, R & Brown, AM 2013, 'Who pays for blended learning? A cost-benefit analysis', *The Internet and Higher Education*, vol. 18, pp. 61-68.

Turner, S, Singh, R, Quinn, P & Allatt, T 2011, *Benefits Of New And Improved Pedestrian Facilities - Before And After Studies*, Research Report 436, NZ Transport Agency, Wellington, viewed 19 December 2014 at <<http://www.nzta.govt.nz/resources/research/reports/436/docs/436.pdf>>

Vermeer, TE, Patton, TK & Styles, AK 2011, 'Reporting of general infrastructure assets under GASB No. 34', *Accounting Horizons*, vol. 25, no. 2, pp. 381-407.

WALGA 2011, 'Roads agreement secures \$800mil', *WALGA News and Publications*, June 24, West Australian Local Government Association, Perth, viewed 10 January 2014 at <<http://www.walga.asn.au/NewsPublications/tabid/66/id/ba845d7c-a39a-49fc-8042-f84600d4b2e8/Default.aspx>>.

West Australian Auditor General 2013, *Selected Significant Financial Transactions and Financial Ratios*, Office of the Auditor General, Perth, viewed 10 January 2014 at <<https://audit.wa.gov.au/reports-and-publications/reports/audit-results-report-annual-2013-14-financial-audits/selected-significant-financial-transactions-financial-ratios/>>.



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