User satisfaction with taxi and limousine services in the Melbourne metropolitan area

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ABSTRACT

Taxis are an essential mode of transport in many jurisdictions, and yet compared to more conventional public modes such as bus and train, are typically ignored in the debate on ways to improve the efficiency and effectiveness of non-private modes as part of delivering greater connectivity. To obtain better insights into the role and performance of the taxi (and hire car/limousine) sector, the Victorian Government, in 2012, commissioned a study into the demand for taxi services, which included an investigation of attitudes towards the various public transport, taxis and hire car modes, as a way of identifying the important attributes that influence customer opinions about various modes and how satisfied they are with actual modal services that they had experienced. The evidence is used to refocus the effort of the regulator and other organisations such as taxi associations and vehicle owners in improving service levels that accord with customer expectations. Surveys were undertaken for a sample of travellers in central Melbourne, those using the airport and in regional centres of Victoria for five segments (i.e., tourists, day to day activity, business, night time travel, and disability and pensioner card holders). Based on the sample, a model is proposed and operationalised that provides insights into the degree of satisfaction respondents hold for both taxi and hire car services in Melbourne, with suggestions on where improvement are warranted.

1. Introduction

Taxis are one of the modes of transport that are often not included in government's planning of public transport provisions; yet in many countries it is the mode of first choice for many trips, notably for business, night time social activities, tourism, and for individuals with special transport (disability) cards. In Australia, for example, taxis represent 0.6% of total trips taken on an average weekday in 2014, which equates to an average of 1,118,904 passenger trips per day (i.e., 408,400,000/365 days per year - see Table 1), with an average payment of AUS$23.97 with an average trip length of 8.9kms. In Melbourne, where this study pertains to, there were an estimated 48,100 daily trips, excluding trips by people with disabilities, in the year 2009/10 where the mode was either a taxi or hire car service (the latter often called a limousine service in other countries which is essentially a pre-booked luxury taxi styled service) (figures obtained from the Victorian Integrated Survey of Travel and Activity (VISTA) as reported in Rose and

Hensher, 2012). Of these, 17.2% of taxi or hire car trips were for business purposes, with a further 17% of trips being made by tourists to Melbourne, with the rest of taxi trips being by locals for non-business related activities. Twenty five percent of the total number of trips during this period occurred at night, which is a popular time to use taxis, especially for entertainment related activities.

Despite the importance of taxis as a transport mode (and more broadly the growing presence of Uber style services), there is growing criticism of taxi service levels in Australia (and in other countries; see Pells, 1990, Rouwendal et al., 1998, and Toner, 2010) which is often greater than for regular bus and train services; however little systematic effort has been made to understand the strengths and weaknesses of services provided as seen through the lense of users. The major criticism voiced by the public are centred around the cleanliness and general safety of the vehicle, the poor communication in English of many migrant drivers and the growing inability of the driver to work out how best to get to the destination.[1]

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[1] Taxis and hire cars are well aligned to the growing movement towards recognising mobility as a service (MaaS), in which the car will play an increasing role in a mobility service plan. This trend is likely to reduce the need to own a car, and together with other modal services all purchased through a monthly plan such as Whim in Finland (see http://maas.global/whim-the-worlds-first-all-inclusive-mobility-service-promises-to-change-urban-travel-forever/) will mean that car-based services such as Uber, conventional taxis and hire cars are likely to grow in popularity as a means of mobility (Hensher, 2017).

Table 1
Daily Taxi Profile in Australia (December 2014).

State	No. of taxis	No. of passengers	Average fare (AUS$)	Average fare distance (kms)	Licence price (AUS$)(Metro)
New South Wales	7347	174,600,000	24.75	7.0	367,000
Victoria	5778	42,000,000	23.50	9.7	285,000
Queensland	3264	107,222,000	24.16	11.5	519,000
South Australia	1273	15,247,000	21.50	7.8	348,100
Western Australia	2572	NA	NA	NA	291,300
Tasmania	585	NA	NA	NA	153,000
Australina Capitla Territory	316	NA	21.23	8.1	247,000
Northern Territory	209	2,835,000	26.00	18.0	NA
Australia	21,344	408,400,000	23.97	8.9	350,000

Source: www.atia.com.au/taxi-statistics, NA = not available.

As a result of concerns about the reputation of taxi services, the Victorian Government, in an inquiry into the structure of the Victorian taxi industry in 2012, identified that there currently exists very little information about the demand for taxi services, and that such a lack of information is a serious barrier to understanding the impact of any reforms that the Inquiry recommends. The Victorian Government, in 2012, commissioned a study into the demand for taxi services, which included an investigation of attitudes towards the various public transport, taxi and hire car modes, as a way of identifying the important attributes that influence customer opinions about various modes and how satisfied they are with actual modal services that they had experienced. We present the findings of this study which is regarded as the most comprehensive review of the taxi industry in Australia, providing rich evidence on where the focus of improvement is required in line with customer expectations. This paper complements Rose and Hensher (2014) which focussed on the development of various elasticity of demand estimates from a demand model (see also Beesley, 1979; Chintakayala and Maitra, 2010; Flores-Guri, 2003; Schaller, 1999, and Frankena and Pautler, 1984). In the current paper, the results presented relate to the degree of satisfaction (conditioned on attribute importance) travellers in Melbourne Australia hold towards taxi or hire car services.

The aim of this study is to identify the main level of service (LOS)-related issues that engender both satisfaction and dissatisfaction (conditioned on importance to users) with taxi and hire car (limousine) services provided in Melbourne in 2012, as a way of establishing areas that need changing (through the regulatory and educational means) in order to improve the levels of service provided by this sector.

Whilst LOS might be thought of in terms of travel times and costs, LOS can also be used to describe other factors of a journey such as comfort. It is these softer LOS variables that the current paper is mainly concerned with. What the current paper does is examine how satisfied respondents are with the current softer LOS variables such as comfort, driver attitude, etc. which are usually ignored in traditional travel choice modelling settings, alongside how important each of these factors are to the sampled respondents. Unlike discrete choice modelling, we are not attempting to quantify how improvements to these softer LOS variables affect mode choice, which would represent one particular type of metric that could be used (as in Rose and Hensher, 2014). Rather, the implications for the current model are such that management can concentrate efforts to improve customer satisfaction for variables that are jointly viewed as being both important as well as being sources of dissatisfaction. If driver presentation is unimportant but considered to be a source of dissatisfaction, whilst personal safety is both important and also a source of dissatisfaction, then companies and regulators would be better served addressing the later issue as opposed to the former. Again, the model presented below does not seek to quantify how much more market shares will improve if such sources are addressed, but simply provide guidance on where taxi companies/regulators might seek to examine if customer satisfaction is deemed to be important to the industry, which in this case it is, given that customer

satisfaction is one measure regulators use to assess taxi industry performance (it is used for benchmarking of existing companies, both within the industry and across public transport alternatives).

The remainder of the paper is set out as follows. In the next section, we provide a brief review of the literature on attitude and satisfaction. In Section 3 we describe the survey and data, after which we present the modelling methodology employed to analyse the data. Section 5 presents the results of the study, after which concluding remarks are provided.

2. Attitudes and satisfaction

From a psychological perspective, attitudes represent the evaluation of esteem or disdain an individual holds towards some object of interest. Attitudes are thought to evolve as a result of individuals possessing imperfect information about an object, leading to the formation of perception responses that may be either affective (i.e., related to feelings and emotions), cognitive (i.e., related to knowledge or beliefs) or behavioural (related to intended actions) in nature (see e.g., Mowen, 1993). Hence understanding the attitudes populations hold towards objects of interest represents an important area of study given that research has continually shown that attitudes both precede and influence behaviour (see e.g., Thurstone, 1931; Ajzen and Fishbein, 2000).

At issue however is the fact that the affect, cognition, and intended behaviour individuals hold towards an object are unobservable in a market place, and hence are latent behaviours that may not translate to actual actions. Despite this, Fishbein and Ajzen (1974, 1977) argued that attitudes do possess some predictive value leading to the formal development of the Theory of Reasoned Action (Ajzen and Fishbein, 1980), which expanded upon Fishbein's earlier Expectancy Value Theory (Fishbein, 1963).[2] The Theory of Reasoned Action posits that the best predictor of behaviour is intention, and that intention is a function of the attitudes an individual holds towards a particular behaviour, as well as the subjective norms that same individual perceives. In the current study context, we are not so much concerned with behaviour, but rather the underlying attitudes experienced by the population of Melbourne residents and tourists towards taxi and hire cars. For this reason, we make use of the original Expectancy Value Theory.

The Expectancy Value Theory posits that attitudes are a function of the beliefs an individual has about the characteristics describing an object, which are compounded by how important each characteristic is to the individual. By extension, the Expectancy Value Theory therefore suggests that the attitude one holds towards an object is multifaceted insofar as the attitude is related to multiple characteristics of the object. As such, studies invoking the Expectancy Value Theory framework generally require capturing information on importance and beliefs as

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[2] We recognise that newer theories have attempted to subdivide "EVT's attitudes" towards objects and actions in further psychological characteristics, such as norms, perceptions, and values. (e.g., Theory of planned behavior; Ajzen, 1991).