How Do Taxi Fares Compare to Value of Time

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ABSTRACT

Taxi fares provide a source of information that can be used in consideration of value of time. Most value of time studies can be extensive and expensive. Taxi fares were found to be comparable to value of time research and while not a replacement to such studies, provide an inexpensive method to validate research and establish a useful, localized starting point for comparison.

KEY WORDS

Value of Time, taxi fare, pricing, benefit/cost

PAPER

Substantial analysis in transportation engineering is dependent upon value of time (VOT). This measure is central to the transportation economic benefit/cost analysis, roadway pricing studies and travel demand forecast models. The core assumptions and input for VOT commonly come from stated choice, discrete choice, preference surveys or regionalized average wage data and research. The State of Oregon Department of Transportation routinely publishes a VOT report[1] that can be utilized by local analysts, but this is not common across the United States or elsewhere. Many times these research-based approaches are expensive and time consuming. Rarely are simple market-based data sets explored and compared to the expensive studies associated with value of time.

One example of this would be taxi fares, which provide a market-based test of value of time. The cost of the taxi trip includes vehicle, driver, fuel, maintenance, insurance and overhead associated with the full cost of transportation for getting between points in the transportation system. It also includes regulation by government agencies which to a great extent control taxi fares (not unlike conditions in the transportation industry). The fare for taxi service represents what a market area is willing to pay for a type of transportation service. While overly simplest in nature, the comparison of the VOT from research with that from basic taxi fares provides an interesting contract in establishing “plausible ranges” for VOT.

Findings of Select Research on Value of Time

Numerous studies are available on the web and other sources related to VOT. These are used in benefit cost studies to estimate benefits of delay reduction, inputs to travel demand forecast model algorithms and road user pricing studies. Table 1 highlights the extracted VOT finding from various studies from a variety of sources, in chronological order. FHWA in past documents has indicated that the value of time would be equal to ½ the prevailing wage rate for personal travel – this would imply substantial variations between various wage earners.

Table 1
Sample Value of Time Study Findings

Source	Auto or General VOT $ per hour	Heavy Truck or For Hire VOT $ per hour
2011 Florida Department of Transportation[2]	$32.00	
2009 Oregon Department of Transportation[3]	$21.80	$31.68
Kazuya Kawammur, University of California dissertation paper[4]	$23.40	$28.10
2008 Puget Sound Regional Council[5]	$9.52 low income $33.33 high income	
2007 Palmquist, Phaneuf, Smith[6] North Carolina survey	$26.64	
2006 Tilahum and Levinson[7] MnDOT studies	$25.42 (when late) $10.62 (on-time/early)	
2005 Small, Winston, Yan[8] Los Angeles/SR 91	$21.46	
2004 Steimetz, Brownstone[9] UC - Irvine	$30.00	
Hess, Bierlaire and Polak, Imperial College London[10]	$41.78	
2003 USDOT, Guidance on Value of Travel Time in Economic Analysis[11]	$13.93	$17.51

2011 Taxi Fare Data in the United States

A survey of current taxi fare data was conducted, collecting data from each of the 55 largest metropolitan statistical areas in the United States. Every taxi company has rates they charge based upon the length of trip and the wait time. Fares per mile and per hour were summarized for each metropolitan area. In most cases the fares among various companies were exactly the same for each metropolitan area since they were regulated. These data provide an interesting comparison and establish another data point for comparison and reasonableness testing to the more rigorous and expensive research. Tables 2 and 3 summarize the cost per hour and cost per mile for taxi fares both in the USA and on the west coast.

The complexity of value of time is extensive. Averages of the value of time do not represent the variations or the impacts of reliability on values. For taxi trips there are numerous factors that can bias the meter rates. For example, value of airport trips, medical trips, trips made by non-residents of the area as compared to value to recurring commute trips. Additionally, subsidization of trips made by persons using taxis may bias the meter rate based upon things like expense report reimbursement (not

personally valuing the time) or Medicade non-emergency medical travel. Even with all these factors, the overall average of per hour and per mile taxi fare data provides a reference that can be used to confirm order of magnitude values and add a reference point for consideration in the establishment of value of time for a region.

Table 2
USA Taxi Fare Data

Statistic	**$ per Hour**	**$ per Mile**
Number of Cities	55	55
Average	**$24.23**	**$2.29**
Standard Deviation	$5.25	$0.39
High	$40	$3.20
Low	$15	$1.50

Data obtained between December 2010 and August 2011 for 55 MSAs in the USA

Table 3
West Coast Taxi Fare Data

Statistic	**$ per Hour**	**$ per Mile**
Number of Cities	11	11
Average	**$27.56**	**$2.58**
Standard Deviation	$2.77	$0.20
High	$30	$3.00
Low	$21	$2.30

Data obtained between December 2010 for 11 west coast cities

The range and the scale of the values of time from rigorous analysis and research ($9.52 to $41.78) is not unlike the data from the taxi fares in the USA and most common conditions where in the mid-$20 – similar to the average for the taxi fare data. For those that may have taken the taxi in from Santa Barbara Airport prior to this meeting, you would have paid $40 per hour and $3 per mile.

Conclusion

Value of time is a critical transportation planning parameter the can greatly aid assessment of benefits. While a survey of taxi fares will never supplant detailed research, analysis and study of value of time, the use of taxi fare data to help verify and confirm the range of reasonableness for findings may be considered as a factor in the study of value of time. Since taxi fare data is very inexpensive to obtain it provides a valuable local piece of information for the analyst.

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