Workers' Attitude Towards Bus Rapid Transit in Dhaka, Bangladesh

Introduction

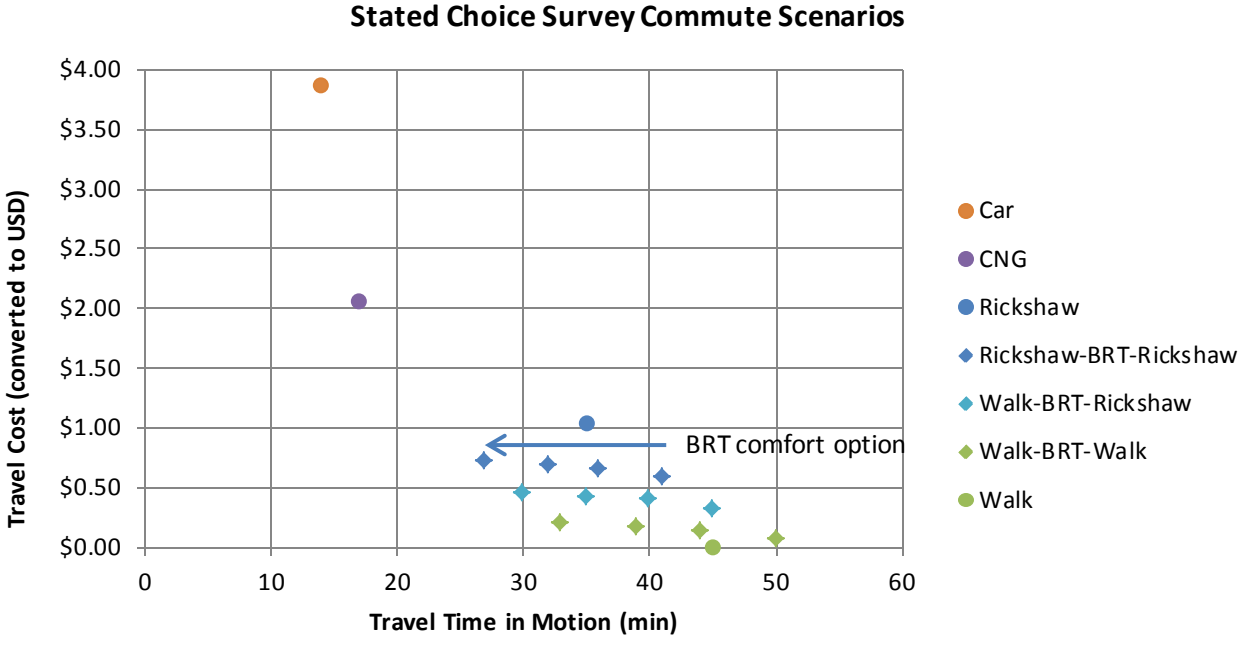
This study investigates:

- how travel and socio-demographic attributes act on workers' mode choice decisions in Dhaka
- whether Dhaka's commuters would choose BRT for their work trip once implemented

- Very limited research exists on users' perceptions of BRT in developing countries' megacities
- We adopted a discrete choice modelling approach
- As BRT has not yet been implemented in Dhaka, we collected Stated Choice (SC) survey data including a hypothetical BRT mode to understand factors important to workers' mode choice decisions
- We compare the impact of travel factors between Dhaka and cities of developed countries

Stated Choice Experiment Design

- Fixed choice set with full factorial orthogonal design
- Sample of 426 participants
- Paper based survey media used for its simplicity and convenience for face to face interaction
- We asked participants to assume they live 5km (3mi) from their usual work place
- Due to limited time to access participants and limited literacy levels, we gave participants a fixed choice set of 16 possible commute scenarios from which to choose one only



Multinomial Logit (MNL) Model

$$Pr(i) = \frac{\exp(v_i)}{\sum_{i=1}^{j} exp\ (v_i)}$$

$Pr(i)$ = probability of choosing mode alternative i
v_i = utility function of any mode alternative i
j = total number of mode alternatives

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Attribute Type	Attribute	Description
Generic	Travel Cost	Total spend for work trip (BDT)
	Time in Motion	Total time commuting including access time to/from transit (min)
Socio-Demographic (Dummy Variables)	Income	1 = Poor: income less than or equal to 5000 BDT (US$65/month) 0 = Not Poor: income more than 5000 BDT
	Gender	1 = male 2 = female
	Education	1 = postgraduate education qualification 0 = no postgraduate education qualification
	Age	1 = age above 35 years 0 = age less than or equal to 35 years
Constant	Specific constant for: BRT, Car and PPT, Walk	

Attribute Type	Attribute	Coefficient	Std Err	t-ratio	P-value
Generic	Time in Motion	-0.066	0.02	3.07	<0.01
	Travel Cost	-0.024	0.01	4.97	<0.01
Bus	Education	-2.308	0.45	5.14	<0.01
	Gender	-0.637	0.37	1.73	<0.01
BRT	Constant	0.824	0.38	2.16	<0.01
	Income	-3.497	0.76	-4.61	<0.01
	Age	0.713	0.38	1.88	<0.01
Car & PPT	Constant	0.765	1.71	0.45	<0.01
	Postgraduate	3.234	1.05	3.08	<0.01
	Age	2.094	0.63	3.34	<0.01
Walk	Constant	-2.383	1.02	2.34	<0.01
	Gender	-1.772	0.59	-0.99	<0.01
	Income	3.935	0.80	4.90	<0.01
	Age	1.489	0.53	2.84	<0.01
Model overall goodness of fit: Log Likelihood Function=-267.0, Pseudo R^2=0.43					

Elasticity of Travel Time in Motion by Reference Mode				
Mode	Bus	BRT	Car &PPT	Walk
Bus	-0.63	0.47	0.01	0.63
BRT	0.19	-0.37	0.05	0.03
Car & PPT	0.06	0.75	-0.45	0.04
Walk	0.50	0.06	0.01	-1.38

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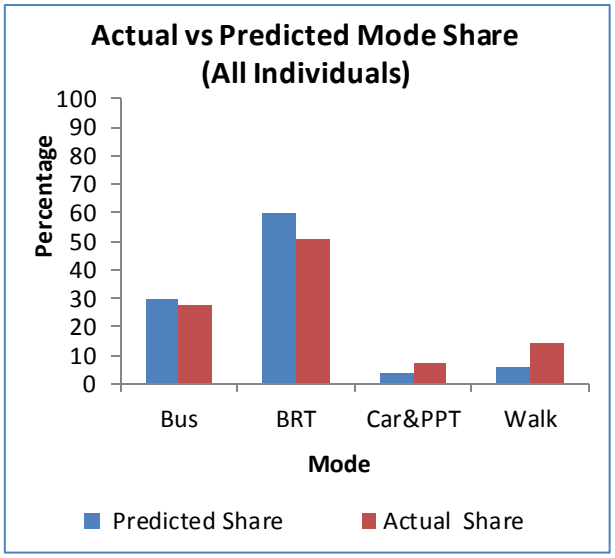
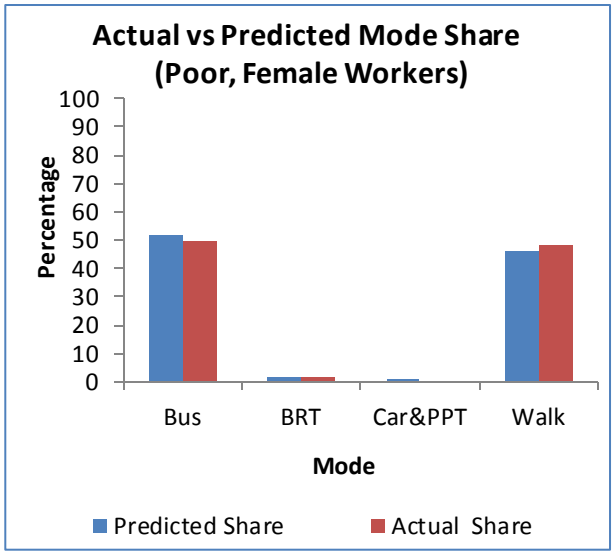
Elasticity of Travel Cost by Reference Mode			
Mode	**Bus**	**BRT**	**Car & PPT**
Bus	-0.07	0.23	0.09
BRT	0.02	-0.19	0.43
Car & PPT	0.01	0.41	-3.61
Walk	0.05	0.03	0.05





Conclusions

- Dhaka Workers' mode choice decision is highly influenced by travel cost, travel time in motion, income, age, education level, and gender
- Model suggests many male and female commuters who are not poor would choose BRT for their work trip
- Age and education significantly influence workers' BRT preference
- Mature aged males, not poor with higher education have greater tendency to choose BRT for work trip
- Dhaka commuters are very inelastic to bus travel cost compared with those of developed cities
- Dhaka workers who would use BRT are relatively less elastic to travel time in motion than travel cost
- Dhaka workers are less elastic to car travel time in motion compared to counterparts in developed countries
- Dhaka workers are much more elastic to walk travel time compared to counterparts in developed countries
- Workers in developing countries treat walking as purely a transport mode whereas counterparts in developed countries also treat it as a means of physical exercise

Further Considerations

- Unlike this study, elasticity data from other cities did not combine in vehicle time with access time
- BRT is not yet in operation in Dhaka so model would need to be post-validated

Acknowledgments

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