Ⅳ-34 INTRODUCING PANEL ANALYSIS IN THE STUDY OF TRAVEL BEHAVIOR IN METRO MANILA

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1. INTRODUCTION

This paper would try to initiate the application of panel data in studying travel behavior in Metro Manila. For this purpose, a panel survey was tried in Metro Manila in 1990 with the belief that such a survey is possible in that region and hopefully in the developing countries in general. A 1987 transport survey (892 households with 1437 members interviewed) in Metro Manila was considered to be the first wave for the 1990 panel survey. The results of this survey showed that more than 50% (50.11%) of the 892 households in Wave 1 were covered in Wave 2 (1990). Despite the three-year interval, it almost exhibited the same household acceptance rate in Wave 2 as those of the Dutch Panel (58.45%), Cardiff Panel (48.91%), and the Puget Sound Panel (56.30%). However, on the household member level interviewed, the rate was quite low (14.20%). To augment the sample, 445 new households were surveyed.

This paper aims to provide the approach in studying modal choice behavior in Metro Manila using panel-like data. At this point, this paper is limited to the descriptive analysis of changes of panel sample members (204) between the two waves and analysis of modal choice of all samples of the two waves.

2. DESCRIPTIVE ANALYSIS

Of particular interest among the socioeconomic characteristics of the panel samples to be described in this paper are employment and work place. These attribute seem to have most dynamic change among the socioeconomic characteristics. Of the 204 panel members who were employed in Wave 1, 32 (15.69%) were no longer employed in Wave 2; and out of these unemployed members, ten reverted to plain housewives (4.9%).

Almost 57% of employed panel members have changed employment (Figure 2.1). Considering the three-year gap, this phenomenon represents a dynamic change.

FIGURE 2.1: EMPLOYMENT SECTOR

		WAVE 2						
		A	B	C	D	E	F	TOTAL
WAVE 1	A	14	9	2	1	1	2	29
	B	2	13	3	9	3	6	36
	C	1	6	23	0	1	2	33
	D	5	15	3	15	5	3	46
	F	1	7	3	6	2	9	28
TOTAL		23	50	34	31	12	22	172

LEGEND: A MANUFACTURING
B SERVICE IND.
C GOV'T SECTOR
D COMM'L. SECTOR
E HOME-BASED IND.
F OTHERS

74/172 = 43% (CHANGE IN EMPL.)
98/172 = 57% (NO CHANGE)

These observations clearly indicate that any change or movement in one particular socioeconomic characteristics greatly affects the other characteristics of people.

3. ANALYSIS OF MODE-CHOICE "TO WORK TRIP'

Out of the 172 employed panel samples only 141 had valid trips. Hence, the disaggregate multinomial logit models for the two waves were calibrated using the total survey samples for both waves. The results of the estimation of disaggregate models are summarized in Table 3.2. These yield the follow-

ing: a) the values of ρ^2 and HIT are high implying that the data provide good estimation; b) t-values of the parameters, except Wave1 Model's TOC and Wave2 Model's INC and JCONST, are accept-able at 5% significance level; c) the signs of the parameters for both models are the same and have good fitness; and d) from Table 3.3,except for TOC, INC, JCONST and LCONST the parameters are statistically indifferent.

The t-test statistic for each parameter was calculated are given in Table 3.3. The findings of this analysis yield the following: a) modal choice models' estimation parameters are not stable; and b) further analysis is needed to identify the causes of instability, however, it can be inferred that total operating costs and member income are not stable over the three year interval.

TABLE 3.2: COMPARISON OF MODELS

		Wave 1 Model		Wave 2 Model	
		θ	t-value	θ	t-value
L	OVTT (G)	-0.1863	-3.76	-0.1389	-2.40
O	IVTT (G)	-0.0148	-2.58	-0.0240	-4.03
S	TOC (S)	-0.0066	-0.73*	-0.0489	-2.94
S	INC (S)	0.0089	3.25	0.0014	0.85*
E	LIC (S)	1.1678	3.27	1.7064	4.54
C	J CONST	2.2379	5.52	0.0858	0.23*
O	B CONST	1.1203	2.56	1.3265	3.16
N	L CONST	2.8030	6.00	0.8216	1.85
D.F.		8		8	
χ		351		315	
L(θ)		-631.9574		-468.6959	
ρ		0.2129		0.2463	
HIT		64.2		68.0	
SAMPLES		860		644	

LEGEND: (G) = Generic
(S) = Specific to Car
*not significant at 5% Significance Level

TABLE 3.3: t-Tests Results

Parameter	t-Value
OVTT	0.6239
IVTT	1.0971
TOC	2.3857**
INC	19.3592**
LIC	1.0261
JCONST	3.6702**
BCONST	0.3299
LCONST	2.9878**

**Significant at 5% Significance Level

4. SUMMARY OF CONCLUSION

Three main points were discussed in this paper: a) exploring the possibility of introducing panel analysis in studying the dynamic change on people's socioeconomic and trip characteristics; b) effectiveness of panel data.

Thus, despite the shortcomings of this initial attempt of introducing panel analysis in Metro Manila, it is a vital tool for studying travel behavior even in a developing country. To ensure a more productive panel survey design, appropriate measures must be instituted. The next tasks for this study are: a) to determine the dynamism of travel behavior in the developing countries, and b) to develop more appropriate methodology needed in introducing analysis in the field of transport planning in those regions.

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