TRANSPORT PLANNING AND MODELING

MUHAMMAD ZUDHY IRAWAN

The Tri-proportional Approach

1. The Gravity Distribution Model

   - They start from assumptions about group trip making behavior and the way this is influenced by external factors such as total trip ends and distance travelled.

   - These models estimate trips for each cell in the matrix without directly using the observed trip pattern; therefore they are sometimes called synthetic as opposed to growth factor

2. Singly and Doubly Constrained Models

The need to ensure that the restrictions are met requires replacing the single proportionality factor α by two sets of balancing factors A_i and B_j as in the Furness model, yielding:

$$T_{ij} = A_i\, O_i\, B_j\, D_j\, f(c_{ij})$$

In a similar vein one can again subsume O_i and D_j into these factors and rewrite the model as:

$$T_{ij} = a_i\, b_j\, f(c_{ij})$$

DATA 1 Trip Length Distribution

Cost-Bin		TLD_{obs}
< 5	2.5	329
5.1 - 10	7.5	780
10.1 - 15	12.5	1164
15.1 - 20	17.5	702
20.1 - 25	22.5	796
> 25	27.5	451

DATA 2 Intrazonal Travel Times (min)

	Zone			
Zone	1	2	3	4
1	2.5	25	18	7
2	22	2.5	28	29
3	12	28	2.5	22
4	7	11	17	2.5

DATA 3 Input Information from Trip Generation

Zone	Generatio	Attractions
1	953	1301
2	1197	904
3	982	753
4	1090	1264
TOTAL	4222	4222

Iteration	k = 5				
		Zone			
Zone	1	2	3	4	u_i
1	67	106	372	408	5003
2	583	179	163	273	1646
3	737	53	40	152	5018
4	338	401	299	53	7116

Observed HBW Trip Length Distribution