

1. In an area of 3 zones A, B & C, the year 2030 trip productions are 50, 30 & 20x10³ and trip attractions are 40, 20 & 20x10³ respectively. You are asked to answer the following:

OD	A	B	C
A	-	16	10
B	16	-	4
C	10	4	-
Current year O/D trips x10 ³			

- A) Adjust the given year 2030 Trip Production and Trip Attraction estimates for Trip Distribution analysis
 B) If the given O/D matrix is the current inter-zonal trips between the three zones, use your answer of question part (A) to forecast year 2030 inter-zonal trips using "Uniform Growth Factor" trip distribution method.

2. Using data of Question 1 and the trip distribution model: $T_{ij} = A_i B_j O_i D_j F_{ij}$

Where: T_{ij} = Future trip between zones i and j, A_i, B_j = Calibration parameters
 O_i = Future trip production of zone i, D_j = Future trip attraction of zone j
 F_{ij} = Future travel resistance between zone i and j = $c_{ij}^{-\alpha}$
 c_{ij} = Travel cost & $\alpha = 2$

Values of $(A_i \times B_j \times 10^3)$ and the travel cost matrix (2030) are given below.

Zone	1	2	3
1	--	0.80	10.80
2	1.80	--	4.00
3	9.00	3.89	--

Zone	1	2	3
1	--	10	30
2	12	--	20
3	30	18	--

$(A_i \times B_j \times 10^3)$ Values

Travel-Cost-Matrix

3. The objective of the following transportation problem is to minimize the total cost of the transportation from all sources to all unit cost between each pair of origin and destination. Use the following information to formulate the distribution plan of commodity between locations.

Cost Units	Destination				
	1	2	3	4	
Source	1	10	10	20	11
	2	12	7	9	20
	3	0	14	16	18

Source	Supply	Destination	Demand
1	15	1	15
2	25	2	15
3	18	3	15
		4	10

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Spring (2019)
Assignment No. (2)
Trip Distribution

