CE 5585: Transport Policy and Planning
Due Thursday, November 1, 2018

Problem 1: Using the data provided in the Table 1, 2 and 3, develop a model to estimate work trips and shopping trips?

Problem 2: Using the models developed in Problem 1, estimate total work and shopping trips for four zones. Develop a zone production matrix?

Problem 3: Using the following zone attractions models, estimate zone attractions for four zones. Develop a zone attraction matrix?

Zone attraction model for work trips: $Work\ Trips = 2{,}500 + \dfrac{AnnualIncome}{3000} + \dfrac{OfficeSpace\ (ft^2)}{250}$

Zone attraction model for shopping trips: $Shopping\ Trips = -3{,}500 + \dfrac{AnnualIncome}{100} + \dfrac{RetailSpace\ (ft^2)}{250}$

Problem 4: Balance the zone attractions matrix considering as zone productions as a control?

Table 1: Socioeconomic and Employment Data from the US Census

Zone	Households	Income	Cars	Size	Workers	Office space (ft^2)	Retail space (ft^2)
1	23,000	30,000	1.4	2.1	1.4	2.00E+06	5.00E+06
2	35,000	25,000	1.8	2.2	1.6	3.00E+06	1.50E+07
3	85,000	55,000	2.5	2.3	1.5	1.00E+07	1.00E+07
4	15,000	85,000	1.1	1.5	1.3	2.50E+07	2.00E+07

Table 2: Distance Matrix among Traffic Analysis Zones

	1	2	3	4
1	5	15	15	25
2	15	5	25	15
3	15	25	5	15
4	25	15	15	5

Table 3: Survey Results for 20 Households

Household	Income	Cars	Size	Workers	Work trips	Shopping trips
1	61,000	3	1	1	1.1	0.9
2	36,000	1	6	5	4.2	2.3
3	75,000	2	5	1	0.3	2.9
4	60,000	3	4	1	1	2.4
5	54,000	1	5	3	2.4	2.1
6	30,000	1	1	1	0.6	0.1
7	62,000	1	5	2	1.9	1.6
8	44,000	1	5	4	3.2	1.7
9	44,000	0	4	3	2.9	1.2
10	54,000	2	1	1	0.9	1.5
11	39,000	1	2	1	0.6	0.9
12	55,000	3	6	3	2.1	2.1
13	35,000	1	6	2	1.8	1.6
14	71,000	1	2	1	0.8	1.5
15	40,000	2	4	2	2.2	1.3
16	58,000	2	3	2	1.3	1.2
17	48,000	1	5	4	3.2	1.9
18	45,000	0	3	1	1	1
19	48,000	2	1	1	0.7	1.1
20	55,000	2	3	1	0.5	2