**RE-DISTRIBUTION VEHICLE OPTIMIZATION**

**Problem Description**

Re-distribution operation of ABC company is done via 18 different distributor locations situated island-wide. 2293 retail outlets are catered via those 18 distribution centers on a weekly basis. Each distribution center has a heterogeneous fleet of trucks with capacities (given in units) of 900, 850, 700, 550, and 350. Distribution centers operate from 8 am – 5 pm and six days per week. All relevant and necessary data has been provided on the Excel sheet.

Re-Distribution cost is reported as 19% of the total overheads of the company and current vehicle utilization is 80%. ABC company believes distribution can be reduced and vehicle utilization can be further improved.

Following are the expected outcome of the assignment,

- Improve vehicle utilization from 80%

- Reduce/optimize the number of vehicles in the fleet

- Optimize monthly running millage as some trucks do a mileage of less than 2,000 a month

Additional questions

- Suggestions for ideal locations to have redistribution operation and demarcation of territories

**You need to:**

1. Identify the characteristics of the given transportation problem (referring to the given standard transportation problems)
2. Formulate the mathematical model (i.e, combinatorial type) for this problem, identifying the objective function, decision variables and constraints (both in words and notations)
3. Develop a distribution plan for the organization by solving the model using the Genetic Algorithm