BIA 650 A Homework#8 W&A Chapter 7, Problem 70

# Management Overview

Problem Statement:

1. To find the equilibrium point where the time taken by road equals time taken by train
2. To find the Number of people travelling by road so as to minimize the average time taken per person to reach New York

Data Sources:

* + The **inputs** are Total Number of rush hour travellers and the time taken to reach New York by Train.
  + The key **decision variable** is the Number of People travelling by Road
  + **Constraint** is that **N**umber of people travelling by road and train must equal 10000
  + **Output** is the Time taken by people travelling on the Road for Problem **a** and Average time taken for Problem **b**

Model Approach:

* + Separate the data into inputs, decision variables, constraints and output and enter them on the spreadsheet.
  + The constraints, Decision Variables and objective cell to be minimized are added in Solver and it is run. The algorithm we use is GRG Non-Linear.
  + To solve problem a, we set the time taken by people who travel on the road to 40 in Solver’s Objective function box.
  + To solve problem b, we ‘minimize’ average travel time per person in the object function box of Solver.

Solution:

* For the time taken by train to equal time taken by road (to hit equilibrium), 4000 people should travel by road
* In order to minimize the average travel time per person (rail and road combined), 2000 people must travel by road