Quantitative Management Modelling – Final Project Proposal

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Description:

PAWV Power and Light has contracted with a waste disposal firm to have nuclear waste from its nuclear power plants in Pennsylvania disposed of at a government-operated nuclear waste disposal site in Nevada. The waste must be shipped in reinforced container trucks across the country, and all travel must be confined to the interstate highway system. The government insists that the waste transport must be completed within 42 hours and that the trucks travel through the least populated areas possible.

Objective:

In this case study, we need to find the optimal route for trucks from Pittsburgh to Nevada with two constraints as follows,

- Trucks must reach the destination in 42 hours.
- Trucks should be exposed to least population on the route.

Data Source:

Our project is based on a case selected from the textbook Introduction to Management Science, (11th edition) by Anderson, Sweeney and Williams. Case includes data about,

- the approximate population for the metropolitan areas the trucks might travel through.
- network diagram that shows the various interstate segments the trucks might use from Pittsburgh to the Nevada waste site and their respective travel time.

Model:

The model for the project will comprise of the objective to reach the destination in desired time limit and finding the optimal route for the truck to travel.

- We are considering of using the Network Modelling to solve the problem.
- It will be an application of integer programming.
- The constraints would consist, the entry of the truck to each location and the exit of truck until it reaches the final destination.