BIA 650 A Homework#5 W&A Chapter 5, Problem 20

# Management Overview

Problem Statement:

The Objective is minimize the Total Cost subject to additional conditions that goods cannot be shipped between plants and between customers.

Data Sources:

* + The **inputs** are identified as Exposures to various groups per Ad, Cost per Ad, Required Exposures.
  + The key **decision variable** is the number of ads to be purchased in each of the shows
  + **Constraints** are identified as
    - Actual Exposures of the different groups of people have to be greater than the appropriate Required Exposures
    - The number of Ads purchased on each show much be lesser than the Ad limit
    - Integer Constraint – The number of Ads purchased must be an integer
  + **Uncertain Variable is identified as**
    - Ad Limit – Our goal is to find the sensitivity of Total cost on this variable.
  + **Output** is the Total Cost incurred.

Model Approach:

* + Separate the data into inputs, decision variables, constraints and output.
  + An extra cell is added to hold the value of Ad Limits.
  + In order to do sensitivity analysis of Ad Limit on Total Cost, a one-way table is created using SolverTable with Ad Limit as input and Total cost as Output.

Sensitivity Analysis:

* **Total Cost Vs Ad Limit**

The Total cost was plotted for values of Ad Limits ranging from 7 to 25. In that range, when the Ad Limits are lower, the Total Cost increases. And as the Ad Limits increase the Total Cost decreases. For example, for an Ad Limit of 7 the total Cost in 1910 and for Ad limits 17 and higher, the total cost stays the same at 1880

Solution:

* If they management does not make strict Ad Limits on the shows, then The Total cost can be significantly reduced.