Module 02 – Transportation Modeling

Exploratory Data Analysis

*In this section, you should perform some data analysis on the data provided to you. Please format your findings in a visually pleasing way and please be sure to include these cuts:*

A screenshot of a computer

AI-generated content may be incorrect.

A table with a number of mountains in the distance

AI-generated content may be incorrect.

Model Formulation

*Write the formulation of the model into here prior to implementing it in your Excel model. Be explicit with the definition of the decision variables, objective function, and constraints*

MIN:

Location 1 0.07X15 + 0.12X16 + 0.19X17 + 0.10X18 + 0.06X19 + 0.14X110 +

Location 2 0.12X25 + 0.08X26 + 0.18X27 + 0.10X28 + 0.11X29 + 0.10X210 +

Location 3 0.10X35 + 0.06X36 + 0.12X37 + 0.13X38 + 0.15X39 + 0.09X310 +

Location 4 0.09X45 + 0.17X46 + 0.17X47 + 0.13X48 + 0.09X49 + 0.19X410

Constraints:

Total Location 1 (Chewy Cherry Chews Channel): X15 + X16 + X17 + X18 + X19 + X110 = 128

Total Location 2 (Fizzwhiz Fjord): X25 + X26 + X27 + X28 + X29 + X210 = 175

Total Location 3 (Ginger Snap Garden): X35 + X36 + X37 + X38 + X39 + X310 = 179

Total Location 4 (Goey Ganache Grotto): X45 + X46 + X47 + X48 + X49 + X410 = 162

Location 5 (Mallow Melt Mountains): X15 + X25 + X35 + X45 <= 117

Location 6 (Molasses Marsh): X16 + X26 + X36 + X46 <= 127

Location 7 (Sherbet Shoreline): X17 + X27 + X37 + X47 <= 119

Location 8 (Snickerdoodle Slopes): X18 + X28 + X38 + X48 <= 109

Location 9 (Sugar Swirl Spires): X19 + X29 + X39 + X49 <= 119

Location 10 (Sugarplum Springs): X110 + X210 + X310 + X410 <= 122

Objective function: (X15 + X16 + X17 + X18 + X19 + X10 + X25 + X26 + X27 + X28 + X29 + X210 + X35 + X36 + X37 + X38 + X39 + X310 + X45+ X46 + X46 + X47 + X48 + X49 + X410)

Model Optimized for Profit

*Implement your formulation into Excel and be sure to make it neat. This section should include:*

* *A screenshot of your optimized final model (formatted nicely, of course)*
* *A text explanation of what your model is recommending*

A screenshot of a computer

AI-generated content may be incorrect.

My model is recommending that the optimal solution will cost $55.72.

Model with Stipulation

*Please copy the tab of your original model before continuing with the next part to avoid messing up your original solution. What happens if you add an additional constraint to the model such that all demand MUST be met. Is the solution still feasible? If not, please explain why.*

The solution is not feasible because the capacity and demand cannot be maxed out, there is no optimal solution.